Arms Procurement Decision Making

Volume I: China, India, Israel, Japan, South Korea and Thailand

Stockholm International Peace Research Institute

SIPRI is an independent international institute for research into problems of peace and conflict, especially those of arms control and disarmament. It was established in 1966 to commemorate Sweden's 150 years of unbroken peace.

The Institute is financed mainly by the Swedish Parliament. The staff and the Governing Board are international. The Institute also has an Advisory Committee as an international consultative body.

The Governing Board is not responsible for the views expressed in the publications of the Institute.

sipri

Stockholm International Peace Research Institute
Frösunda, S-169 70 Solna, Sweden
Cable: SIPRI
Telephone: 46 8/655 97 00
Telefax: 46 8/655 97 33
E-mail: sipri@sipri.se
Internet URL: http://www.sipri.se

Arms Procurement Decision Making

Volume I: China, India, Israel, Japan, South Korea and Thailand

Edited by

Ravinder Pal Singh

sipri

OXFORD UNIVERSITY PRESS

1998

Oxford University Press, Great Clarendon Street, Oxford OX2 6DP
Oxford New York
Athens Auckland Bangkok Bogotá Bombay Buenos Aires
Calcutta Cape Town Dar es Salaam Delhi Florence Hong Kong Istanbul
Karachi Kuala Lumpur Madras Madrid Melbourne Mexico City
Nairobi Paris Singapore Taipei Tokyo Toronto Warsaw
and associated companies in
Berlin Ibadan

Oxford is a registered trade mark of Oxford University Press

Published in the United States
by Oxford University Press Inc., New York

British Library Cataloguing in Publication Data
Data available

Library of Congress Cataloging in Publication Data
Data available

ISBN 0–19–829279–1

Typeset and originated by Stockholm International Peace Research Institute
Printed in Great Britain
on acid-free paper by
Biddles Ltd, Guildford and King's Lynn

Contents

Preface

This book is the result of a pioneering study initiated in 1993 by the SIPRI Project on Arms Procurement Decision Making. It examines why and how nations procure weapons and how national arms procurement decision-making processes can be harmonized with the requirements of public accountability. The authors of the chapters in the book have taken a comprehensive view of security decision-making processes which encompasses the perspectives of society as well as those of the military.

The task of the authors, as formulated by the editor of the volume, Ravinder Pal Singh, was to advance the debate on the development of norms for public accountability in arms procurement decision making and thereby contribute to arms procurement restraint.

While it is recognized that different governments have different organizational capabilities, it is believed that increased accountability will lead to greater consistency and predictability in the functioning of national decision-making structures. By avoiding arbitrary actions, governments will foster the confidence not only of their own societies but also of other nations in their regions. In turn, this could contribute to the harmonization of public interests with the military's perceptions of national security needs. This is true not only in the field of security decision making but in all areas of public policy.

This volume—the first of two—is the product of a remarkable success in the collection of information from a range of countries and unique in its exploration of all the levels of arms procurement decision making in China, India, Israel, Japan, South Korea and Thailand. By drawing on contributions from national experts, it elucidates both national characteristics and a complex range of factors that influence decisions. It is also likely that recommendations by national experts will be more acceptable and durable in processes of introducing arms procurement restraint.

I wish to express my gratitude to all the authors, and primarily to Ravinder Pal Singh for his innovative approach in assembling a team of national and international experts able to address the key issues. Special thanks go to the SIPRI editors. The SIPRI Project on Arms Procurement Decision Making is funded by the Ford Foundation, and I would like here to acknowledge their support most gratefully.

Adam Daniel Rotfeld
Director, SIPRI
September 1998

Acknowledgements

This volume could not have been produced without the contributions of many experts from diverse backgrounds and disciplines in countries where traditionally such issues have not been publicly discussed. The contributors are listed and their biographical details given in annexe C. Their belief in public accountability and dedication to advancing public knowledge of the sensitive subject of national security decision-making processes placed them, on occasion, in unenviable positions with respect to the security establishments in their countries. I am grateful to them for contributing to the success of this work.

Adam Daniel Rotfeld, Director of SIPRI, was helpful in facilitating the research and providing encouragement during the course of the project. Acknowledgement is also due to several other colleagues at SIPRI. Ian Anthony reviewed the entire volume and Bates Gill facilitated the research contacts in China. They, together with Eric Arnett, Peter Jones, Elisabeth Sköns, Pieter D. Wezeman and Siemon T. Wezeman, reviewed individual country studies and provided useful comments. Inger Buxton and Eva Hagström provided invaluable research and other assistance for the project. Ingvor Wallin facilitated communications, so essential for a project of this nature, and Cynthia Loo provided secretarial assistance. The chapters were edited by Billie Bielckus, Rebecka Charan, Eve Johansson and Don Odom; Don Odom assisted in coordinating the early stages of the project, and Rebecka Charan and Eve Johansson were responsible for setting the book in camera-ready format.

The project also received professional advice from experts outside SIPRI: Michael Broszska, of the Bonn International Center for Conversion (BICC); Björn Hagelin, at that time of the Department of Peace and Conflict Research, Uppsala University; Gunnar Johnsen, of the Norwegian Defence Research Establishment in Oslo; and Peter Lock, of the Berghof Stiftung für Konfliktforschung in Berlin. The volume was indexed by Peter Rea, UK.

I am particularly grateful to the anonymous reviewers of the country studies and would also like to thank the cooperating institutes for facilitating research in their countries, namely, the Centre for Policy Research, New Delhi; the Begin–Sadat (BESA) Center for Strategic Studies, Tel Aviv; the Research Institute of Peace Studies, Seoul; and the Institute of Security and International Studies, Bangkok.

Any errors and omissions remaining are of course my own.

Finally, I would like to acknowledge the generous financial support which the project has received from the Ford Foundation.

Ravinder Pal Singh
SIPRI Project Leader
September 1998

Acronyms and abbreviations

ACP	Annual Contingency Plan (Japan)
ACRS	Arms control and regional security (Middle East)
ADC	Acquisition Deliberative Committee (South Korea)
ADD	Agency for Defense Development (South Korea)
ADIP	Association of Defense Industry Promotion (South Korea)
AIP	Annual Implementation Plan (Japan)
ALH	Advanced Light Helicopter (India)
AMRAAM	Advanced medium-range air-to-air missile
AMS	Academy of Military Science (China)
APC	Armoured personnel carrier
ARPA	Advanced Research Projects Agency (Japan)
ASDF	Air Self-Defense Force (Japan)
ASEAN	Association of South-East Asian Nations
ATBM	Anti-tactical ballistic missile
AWACS	Airborne warning and control system
BoB	Bureau of the Budget (Thailand)
CAG	Comptroller and Auditor General (India)
CAMS	China Association for Military Sciences
CAPUMIT	China Association for the Peaceful Use of Military Industrial Technology
CBW	Chemical and biological weapons
CCPA	Cabinet Committee on Political Affairs (India)
CDP	Committee on Defence Planning (India)
CDPP	Central Directorate of Policy Planning (South Korea)
CDSP	Central Directorate of Strategic Planning (South Korea)
CDSTIC	China Defence Science and Technology Information Centre
CGDA	Controller General of Defence Accounts (India)
CIA	Central Intelligence Agency (USA)
CIISS	China Institute for International Strategic Studies
CMC	Central Military Commission (China)
COCOM	Coordinating Committee on Multilateral Export Controls
COSC	Chiefs of Staff Committee (India)
COSTIND	Commission of Science, Technology and Industry for National Defence (China)
CPC	Communist Party of China
CPIF	Cost plus incentive fee
CPO	Central Procurement Office (Japan)
DARPA	Defense Advanced Research Projects Agency (Japan)
DCC	Defence Committee of the Cabinet (India)

DDP&S	Department of Defence Production and Supplies (India)
DDR&D	Department of Defence Research and Development (India)
DFIC	Defense Force Improvement Committee (South Korea)
DGAQA	Directorate General Aeronautical Quality Assurance (India)
DGQA	Directorate General of Quality Assurance (India)
DMC	Defence Minister's Committee (India)
DPA	Defense Procurement Agency (South Korea)
DPAA	Defense Product Assurance Agency (South Korea)
DPC	Defense Production Committee (Japan)
DPS	Defence Planning Staff (India)
DPSU	Defence public-sector undertaking (India)
DRDO	Defence Research and Development Organisation (India)
DSO	Defence Science Organisation (India)
EADC	Expanded ADC (South Korea)
EEZ	Exclusive economic zone
FMF	Foreign Military Financing (USA)
FMS	Foreign Military Sales (USA)
FS-X	Fighter support experimental aircraft
FY	Fiscal year
GDP	Gross domestic product
GLD	General Logistics Department (China)
GNP	Gross national product
GPD	General Political Department (China)
GSDF	Ground Self-Defense Force (Japan)
GSEPC	General Staff Equipment Policy Committee (India)
HGS	Headquarters of the General Staff (China)
IAF	Israel Air Force
IAI	Israel Aircraft Industries
ICBM	Intercontinental ballistic missile
ICTAF	Interdisciplinary Center of Technological Assessment and Forecasting (Israel)
IDF	Israel Defense Forces
IGMDP	Integrated Guided Missile Development Programme (India)
IMI	Israel Military Industries
ISEPC	Inter-service Equipment Policy Committee (India)
JCS	Joint Chiefs of Staff (South Korea)
JDA	Japan Defense Agency
JIC	Joint Intelligence Committee (India)
JLTDE	Joint Long-Term Defense Estimate (Japan)
JMTDE	Joint Mid-Term Defense Estimate (Japan)
JSC	Joint Strategic Council (South Korea)
JSP	Joint Strategy Plan (South Korea)
KFP	Korean Fighter Program
KIDA	Korea Institute for Defense Analyses
LCA	Light Combat Aircraft (India)

LDP	Liberal Democratic Party (Japan)
MAFAT	Agency for Research and Development (Israel)
MAF'CHASH	Israel Defense Forces' combined ground forces command
MANHAR	Agency for Procurement (Israel)
MBT	Main battle tank
MEA	Ministry of External Affairs (India)
MHA	Ministry of Home Affairs (India)
MITI	Ministry of International Trade and Industry (Japan)
MK	Member of Knesset (Israel)
MMBI	Ministry of Machine Building and Industry (China)
MND	Ministry of National Defence (China)
MND	Ministry of National Defense (South Korea)
MNDP	Mid-Term National Defense Plan (South Korea)
MoD	Ministry of Defence (India, Thailand)
MoD	Ministry of Defense (Israel)
MoF	Ministry of Finance (Japan)
MoFA	Ministry of Foreign Affairs (Japan)
MP	Member of Parliament
MSDF	Maritime Self-Defense Force (Japan)
MTCE	Mid-Term Capability Estimate (Japan)
MTCR	Missile Technology Control Regime
MTDP	Mid-Term Defense Program (Japan)
NDC	National Defense Council (Japan)
NDPMS	National Defense Planning and Management System (South Korea)
NDPO	National Defense Program Outline (Japan)
NDU	National Defence University (China)
NEACC	Near East Arms Coordinating Committee
NESDB	National Economic and Social Development Board (Thailand)
NIDS	National Institute for Defense Studies (Japan)
NIDS	National Institute of Defence Studies (Thailand)
NORINCO	China North Industries Corporation
NPC	National People's Congress (China)
NPT	Non-Proliferation Treaty (1968)
NSC	National Security Council (India, Thailand)
O&M	Operations and maintenance
PNC	Price Negotiating Committee (India)
PLA	People's Liberation Army (China)
PLAAF	People's Liberation Army Air Force (China)
PLAN	People's Liberation Army Navy (China)
PRC	People's Republic of China
R&D	Research and development
ROC	Required operational capability
RPV	Remotely piloted vehicle

RTA	Royal Thai Army
RTAF	Royal Thai Air Force
RTN	Royal Thai Navy
RWSAM	Regulations on Weapon System Acquisition and Management
S&T	Science and technology
SC	Security Council (Japan)
SDF	Self-Defense Forces (Japan)
SLOC	Sea line of communication
SPC	State Planning Commission (China)
SPO	Special Projects Office (Israel)
STC	State Trading Corporation
STEC	State Test and Evaluation Committee (China)
T&E	Testing and evaluation
TA	Technology assessment
TMD	Theatre missile defence
TRDI	Technology Research & Development Institute (Japan)
UAV	Unmanned airborne vehicle

Conventions in tables

$	US dollars
. .	Not available or not applicable
–	Nil or a negligible amount
b.	billion
m.	million

1. Introduction

Ravinder Pal Singh

I. Background

The analysis of decisions taken by national leaders and officials is a difficult undertaking. It is an even more difficult task to analyse the effects of such decisions on national, regional or global security, particularly in the light of such factors as the escalating pace of change in technology and politico-security uncertainties. Any study of national security decision-making processes tends to arouse both apprehension and suspicion among the officials involved. Official sensitivities tend to be further heightened when arms procurement decision-making processes are scrutinized.

Among the primary factors limiting the flow of information on security and arms procurement is the assumption in many countries that the military should be the final arbiter of what should be public knowledge. The role played by the military must be viewed in the wider context of all public services, as depicted in figure 1.1. Because the degree of autonomy of the military largely depends on the quality of civilian control, professionalism in national security debates must be developed in order to promote choices and decisions which are in the public interest and the interests of national security in the broadest sense.

The global information age not only allows a greater degree of intrusion but also encourages the development of liberalizing trends which question the established political culture. An increased flow of information makes for an informed public debate and broader participation in security opinion making. While the opportunities generated by globalization may erode the autonomy of national élites in implementing security decisions, this can have the beneficial effect of reducing the monopoly of entrenched interests over information about security decision making. The critical task is to harness the opportunities and use increasing access to information to address the organizational and intellectual barriers to building accountability in public policy making.

II. The rationale for this study

Most of the studies of arms procurement decision making focus on the processes operating in the USA and in a few West European countries.[1] Although

[1] The following are among the major studies of US and West European arms procurement: Hébert, J.-P., *Stratégie française et industrie d'armement* [French strategy and the arms industry] (Fondation pour les études de défense nationale: Paris, 1991); British House of Commons, Select Committee on Defence, *Defence Procurement: (1) Acquisition of Support Vehicles; (2) Appointment of the new Chief of Defence Procurement* (Her Majesty's Stationery Office: London, 1996); US General Accounting Office, *Defense*

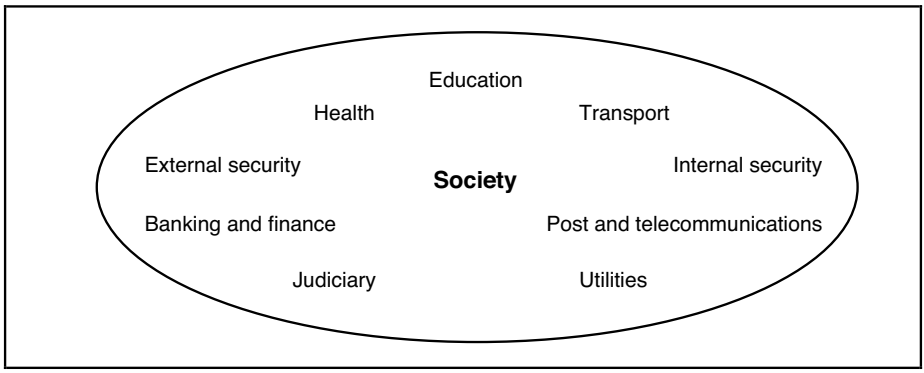

Figure 1.1. A sample of the essential public services required by society
Source: Prepared by the author.

some reports describe arms procurement decision making in the major recipient countries, a comprehensive analysis is needed to understand how and why countries buy major weapon systems. Most of the studies in this area have been done by Western analysts, who may not be best suited to present an adequate account of the perspective of the recipients. In recognition of the need to examine the demand-side factors which influence arms procurement, the SIPRI Project on Arms Procurement Decision Making was initiated in 1993.

The SIPRI project builds up its data and information through an interdisciplinary network of experts in the individual countries concerned. This can promote an understanding of diverse and often competing perspectives and thus facilitate the attempts of the research community to offer innovative concepts for developing arms procurement restraints.

The primary rationale for this study is the attempt to understand the barriers to the promotion of accountability in the decision-making processes. The project examines the ways in which national arms procurement processes, even though they involve sensitive security issues and complex weapon systems, can become more responsive to the broader objectives of security and public accountability. An underlying assumption is that advancing the debate on the need for public accountability will contribute to the objectives of arms procurement restraint and, indirectly, to the broader aims of promoting a stable and

Acquisition Infrastructure: Changes in RDT&E Laboratories and Centers (US Government Printing Office: Washington, DC, 1996); Kirkpatrick, D., *Choose Your Weapon: Combine Operational Effectiveness and Investment Appraisal (COIEA) and its Role in UK Defence* (Royal United Services Institute for Defence Studies: London, 1996); US General Accounting Office, *Weapons Acquisition: Better Use of Limited DOD Acquisition Funding Would Reduce Costs* (US Government Printing Office: Washington, DC, 1997); Markowski, S. *et al.*, *The Economics of Offsets: Defence Procurement and Countertrade* (Harwood: Amsterdam, 1996); Gregory, W. H., *The Defense Procurement Mess*, A Twentieth Century Fund Essay (Lexington Books: Lexington, Mass., 1989); McNaugher, T. L., *New Weapons, Old Politics: America's Military Procurement Muddle* (Brookings Institution: Washington, DC, 1989); *Defence Procurement: Trends and Developments*, Whitehall Paper Series (Royal United Services Institute for Defence Studies: London, 1993); and Collins, J. M., *US Defense Planning: A Critique* (Westview: Boulder, Colo., 1982).

durable peace. Furthermore, it is assumed that an examination of the tension between the public's 'right to know' and the military's interpretation of confidentiality based on an exclusive 'need to know' will provide lessons for other areas of public policy making in which the ruling élite controls and manipulates public information.

The content of information on arms procurement varies according to the political culture, the level of democratization and the relative influence of the military in the national decision-making processes in each country. Arms procurement decisions which depend on the relatively narrow focus of military security considerations tend to neglect the public interest and society's priorities. The lack of legislative or independent oversight allows security concerns to be presented in terms of personal and/or constituency interests. Professionalization of oversight is therefore necessary to address problems associated with arms procurement or other public-interest decisions. It is hoped that this study will contribute to an understanding of the range and diversity of interests that influence the demand-side factors in arms procurement decisions. Arms procurement policies and processes could better reflect national priorities by encouraging institutional accountability and embodying checks, balances and restraints.

Waste, fraud and abuse of power in the policy-making process reinforce secrecy. Professional security assessments and the implementation of decisions need to made accountable to the public, and diverse and dissenting considerations should be integrated into a review process.

In order to maintain military confidentiality where it is genuinely needed, it is possible to control the flow of information in accordance with different requirements. Operationally sensitive information on military functions provided to the political leadership and the military and civilian bureaucracies can be supplemented by appropriately structured information to facilitate oversight by parliamentary committees on defence affairs. The amount of information available to the public can be adjusted on the basis of the need to enhance public scrutiny of security decision-making procedures.

There is a noticeable tendency in the international security literature to use the terms 'transparency' and 'accountability' interchangeably. Accountability is here taken to mean the obligation of decision makers to answer to the public for their decisions. The objective of accountability in defence policy making and arms procurement is to allow an assessment to be made in the domestic debate of whether the government is competently considering the broader interests of security of society. For this, public understanding of the decision-making processes is needed. However, the requirements of public accountability are quite different from the requirements of transparency as understood in the international arms control literature and in such forums as the Conference on Transparency in Conventional Arms Transfers of the Conference on Disarmament (CD).

While some major powers may believe that transparency in arms procurement decision making would provide the solutions to certain arms control problems,

in the major arms-recipient countries it is a common assumption that transparency facilitates intrusiveness, which can in turn increase vulnerability. These countries often voice strong objections against the promotion of transparency, even though their silent majorities believe that accountability will serve the public interest.

III. The scope, method and conduct of the study

The scope of this study is limited to the decision-making processes relating to arms procurement by the state through both domestic production and the international arms trade, focusing on the procurement of major conventional weapon systems.[2]

The study sets out to build up knowledge about the dynamics of arms procurement processes in countries where these issues are under-investigated and where publicly available information on the subject is inadequate. Contributions were sought from national experts in diverse disciplines since they are assumed to be better able to identify strengths, weaknesses and opportunities, and to add value to the debate on the problems in their regions.

The contributors were asked to address specific questions in assigned topics. Some were not able to discuss certain aspects either because the skills and capacities to address such issues publicly have not been fully developed in their countries or because there was insufficient information or expertise.

The contributors based their work primarily on information in open sources but were also encouraged to draw from their own experience. They were also invited to address other areas or aspects that they considered important.

Method

This study examines arms procurement decision-making processes in six major arms-recipient countries: China, India, Israel, Japan, the Republic of Korea (South Korea) and Thailand. The criteria for selecting these countries included such considerations as: (*a*) their significance in their respective regions, based on their relative economic potential, size and population; (*b*) their significance as recipients of conventional arms in the past decade and significant changes made or being made in their arms procurement policies; and (*c*) the inadequacy of published research on their arms procurement decision-making processes.[3]

[2] Major conventional weapon systems are defined as: aircraft; armoured vehicles; artillery; guidance and radar systems; missiles; and warships. For further detail, see Wezeman, P. D. and Wezeman, S. T., 'Transfers of major conventional weapons', *SIPRI Yearbook 1998: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1998), pp. 369–70.

[3] Many other countries could have been included in this study using these criteria. Among the principal candidates were Argentina, Brazil, Chile, Egypt, Greece, Indonesia, Iran, Iraq, Malaysia, Pakistan, Poland, the Democratic People's Republic of Korea (North Korea), Romania, Saudi Arabia, South Africa, Taiwan, Turkey and Ukraine. In the second phase of the project, studies are being conducted on Argentina, Chile, Greece, Malaysia, Poland, South Africa and Taiwan.

Table 1.1. Four major themes of this study

Military and politico-security issues
• Effects of threat perceptions, security concepts and operational doctrines on force planning
• Influence of foreign and security policies on arms procurement
• Relationships between national security, military security and military capability objectives
• Determinants of recipient dependence on a single source or a predominant arms supplier and the effects on political autonomy and foreign and domestic policy
Budget, financial planning and audit issues
• Arms procurement budget planning processes, methods for costing, pricing and tendering, and offset policies
• Balancing arms procurement with national socio-economic imperatives
• Methodologies for military audit in terms of the performance, operability and serviceability of the selected system
Techno-industrial issues
• Influence of equipment modernization, building a national defence industry, and the perspective of defence industry organizations
• Procedures for technology assessment (TA)
• Emerging trends in weapon system research and development
• Range and level of participation of national and international private-sector industry in the national defence industrial base
Organizational behaviour and public-interest issues
• Influence of domestic considerations and élite motivations on choice of equipment or sources
• Institutionalization of decision-making processes based on principles of good governance, accountability and legislative oversight
• Characteristics of procurement procedures in terms of the organizational behaviour of the structures at the top levels
• Sociology of national decision-making behaviour, including the predominant attitudes or cultural codes that shape decisions

Source: Compiled by the author.

In order to understand the rationale of different interest groups and constituencies that have or should play a role in arms procurement decision making, the country studies examined four themes representing different kinds of security that can either cooperate or compete for influence in decision making: (*a*) military and politico-security; (*b*) budget and financial; (*c*) techno-industrial; and (*d*) organizational and public interest (see table 1.1).[4] These four areas of interest were then broken down into 15 topics using an interdisciplinary approach. Diverse perspectives were essential to show the complexity and dissenting viewpoints characterizing decision-making behaviour. The topics were then presented as sets of questions to be addressed.[5]

The first phase of the project defined the purpose of this study and preliminary hypotheses. Because little information was available in the major recipient countries, the project developed a combination of approaches. By its

[4] The term 'security policy' is used in this book in the broadest sense, to include defence policy, economic security, aspects of foreign policy, etc.

[5] For a presentation of the questions guiding the preparation of the workshop papers, see annexe A.

nature, the subject required a broad, in-depth analysis of many political, military, economic, technical, industrial, organizational and cultural variables. While the resulting country studies are uneven as regards detail, the lack of detail in some areas also constitutes a finding: namely, that the standard of research on security issues that is available to the public and its elected representatives and consequently the quality of the public debate are also uneven. These are the aspects that need to be further developed in these countries.

The research

The research was conducted in tiers: topics were selected and research questionnaires were prepared; primary papers were written by national experts and discussed at workshops; researchers drew on these papers and wrote country studies; these studies were reviewed; and the final chapters were scrutinized by the volume editor.

Experts on the topics specified in the research questionnaire were identified with the help of local research institutes, researchers and national experts in different disciplines and specializations both within and outside government. These experts were invited to participate in the study as contributors of working papers, which they presented at workshops in their countries. They included political leaders; serving or retired officials in the military and ministries of defence, finance and foreign affairs; functionaries in the military R&D and production organizations from government or industry; government auditors; and representatives of national procurement agencies.[6] Other important actors in the decision-making processes also participated. These included legislators in the oversight bodies, representatives of the media, and constitutional and international legal experts.

To gain an even broader understanding, papers were commissioned from economists and sociologists. The 60 workshop papers, deposited in the SIPRI Library, are the primary source of data for the country chapters, supplemented by published material and government reports.[7] In the absence of adequate published material, interviews were also conducted in order to benefit from the personal insight and experience of individuals in these countries.

The workshop papers analysed the role and functions of the different agencies and organizations in three sections. The first section of each paper provided a general description of the national arms procurement policy-making processes and the procedure as seen from the point of view of the participant or the organization he or she represents. While highlighting declared government policies and statements, the participants were also asked to describe the specific role and function of their organization in the arms procurement process, the role of other participating organizations, their relative influence and the relevance of other external factors or actors. The second section was an account of the

[6] For a list of the contributors to this study, see annexe C.
[7] Abstracts of the workshop papers commissioned for this book are included in annexe B.

contributor's own perspective and a prescription for an 'ideal type' of decision-making structure and process for that country. Any political or national characteristics which have a particular bearing on the way arms procurement decisions are made were identified. In the third section contributors analysed the differences between the actual process and the ideal type. They were invited to elaborate on the reasons for the differences, review the barriers and recommend measures for building public accountability in arms procurement decision-making processes.

The research was complemented by input from a wider group of experts during the workshops and interviews.

A researcher selected for each country was invited to write a country study on the basis of submissions of other workshop participants as well as his or her own commissioned research. The country researcher evaluated the general descriptions of the decision-making structures given in the first section and analysed the different interests involved. The country studies in chapters 2–7 were developed from the workshop papers and other secondary research materials.

To guide the project and to facilitate access to the appropriate levels of the government agencies and to specialists, a country adviser in each country was asked to provide a broader judgement and balance in the selection of paper contributors and to review the country study. The country adviser was a senior person who also facilitated the organization of the workshop and coordinated the in-country reviews.

The review process for each country study included the soliciting of two or three reviews in the country, internal reviews by the Project Leader and SIPRI researchers, and external reviews by one or two experts who independently and anonymously provided comments.

The entire pool of experts consulted forms a substantial network for providing professional resources to national publics, legislatures and opinion makers. The network is also of great potential use to the international research community specializing in one or more of the themes under study in this project. One added benefit of the project that was not envisaged at the early stages is the horizontal networking which developed between participants from different countries.

Despite changes during 1998 in some of the organizations, and other changes following the economic crisis in Asia, the cut-off date for new information was 31 December 1997.

* * *

This study is by no means exhaustive. The possibilities for procurement restraint in individual countries must be continuously monitored and explored in ever greater depth, in spite of the sensitive nature of the subject in many of them. In this regard, the significant base of expertise identified by the project could be engaged as a resource and could test established assumptions for the development of confidence-building initiatives.

2. China

Chinese Country Study Group[*]

I. Introduction

National security decisions leading to arms procurement are considered confidential in most, if not all, countries. Nevertheless, a modern national military establishment requires that arms procurement decision-making processes be based on considerations of military strategy, threat assessment, the defence budget, military accounting and auditing, testing and evaluation, military industrial production, and so on. Arms procurement involves various departments and agencies, and the policies on confidentiality of different departments undermine a balanced analysis of the processes in their entirety. A rational and coordinated arms procurement decision-making process will increase a nation's military deterrence and security capabilities.

This chapter argues that modern arms procurement requires trade-offs among different considerations and interests, involving a balance between military transparency and confidentiality and between economic development and defence capability. Although a certain degree of military transparency can help in building up mutual confidence between China and its neighbours, China must also protect the confidentiality of its arms procurement decisions. In a similar manner, constraining the defence budget can save capital for economic development, but the military cannot be modernized without major investment. It is strategically important for China to maintain a balance between these competing interests.

Section II of this chapter outlines the current Chinese arms procurement decision-making process, including the participants and their roles. Section III examines economic and industrial issues and their influence on Chinese military modernization. It deals with the defence budget in relation to threat assessment and allocations in the defence budget for arms procurement. Also examined are the balances between military and economic modernization, between arms imports and domestic production, and between military and civilian production. Section IV introduces the principles and criteria influencing Chinese arms procurement and military production, providing an overview of the priorities of Chinese military modernization.

[*] This chapter was compiled by the editor with the help of research assistant Inger Buxton and on the basis of a preliminary draft by Yan Xuetong. The editor would like to thank the experts who contributed the papers which formed the basis of the chapter. See annexe C for the biographical details of the contributors. The editor also extends his gratitude to Bates Gill, Wang Shaoguang and Andrew Yang for their useful reviews of this chapter.

Finally, section V argues that China will continue to adjust its policy to improve the balance between conflicting requirements. The principle of maintaining a balance implies that the level of Chinese arms procurement will not increase dramatically. Until 2010, it is projected that it will remain moderate and will lag far behind that of Japan, Russia and the USA, both in terms of the quality of the items procured and in monetary value. However, given the size of the People's Liberation Army (PLA), Chinese arms procurement in terms of volume is likely to remain high.

II. The arms procurement decision-making process

The Chinese politico-military hierarchy can be described as operating in three political arenas: the Communist Party, the executive and the legislative.

1. The Communist Party of China (CPC) and the CPC Central Committee are the overarching structures. The highest functionaries of the Central Committee are the members of the Political Bureau (Politburo), whose top leaders make up the core of the Chinese leadership as members of the Standing Committee. The Central Committee represents a high level of interaction between the party and the military.[1]

2. The executive has two parts—the State Council and the Central Military Commission (CMC). The CMC has two components—the CMC of the CPC and the CMC of the People's Republic of China (PRC). Although these are made up of the same members and called by the same name, the former deals with party–military relations and the latter with defence policy making and executive functions relating to the PLA.[2] The President of the People's Republic of China is the Chairman of the CMC and General Secretary of the CPC. The State Council is headed by the Prime Minister and is responsible for the Ministry of Foreign Affairs and the Ministry of National Defence (MND).[3]

3. In the legislative arena, a number of committees of the National People's Congress (NPC) monitor laws relating to most of the functions of the State Council. Although there is a Foreign Affairs Committee, there is no committee to oversee the military.

The Chinese arms procurement decision-making process is complex, ambiguous and non-linear, which makes graphic presentation difficult. Decisions are the result of consultations between subordinate and superior units and among different agencies. Two aspects are described below: the participants in and the stages of the process.

[1] The 15th Central Committee of the CPC, held in Sep. 1997, was attended by 191 members and 151 alternate members. Of these, 22 members and 2 alternate members were voted into the Political Bureau. The Standing Committee at the top of the hierarchy is composed of only 7 members. *South China Morning Post*, 20 Sep. 1997; and *China Daily* (Beijing), 20 Sep. 1997.

[2] China Handbook Editorial Committee, *China Handbook Series: Politics* (Foreign Languages Press: Beijing, 1985), p. 125.

[3] *China Directory 1997* (Radiopress: Tokyo, 1996), pp. 4, 38, 41, 149 (in English).

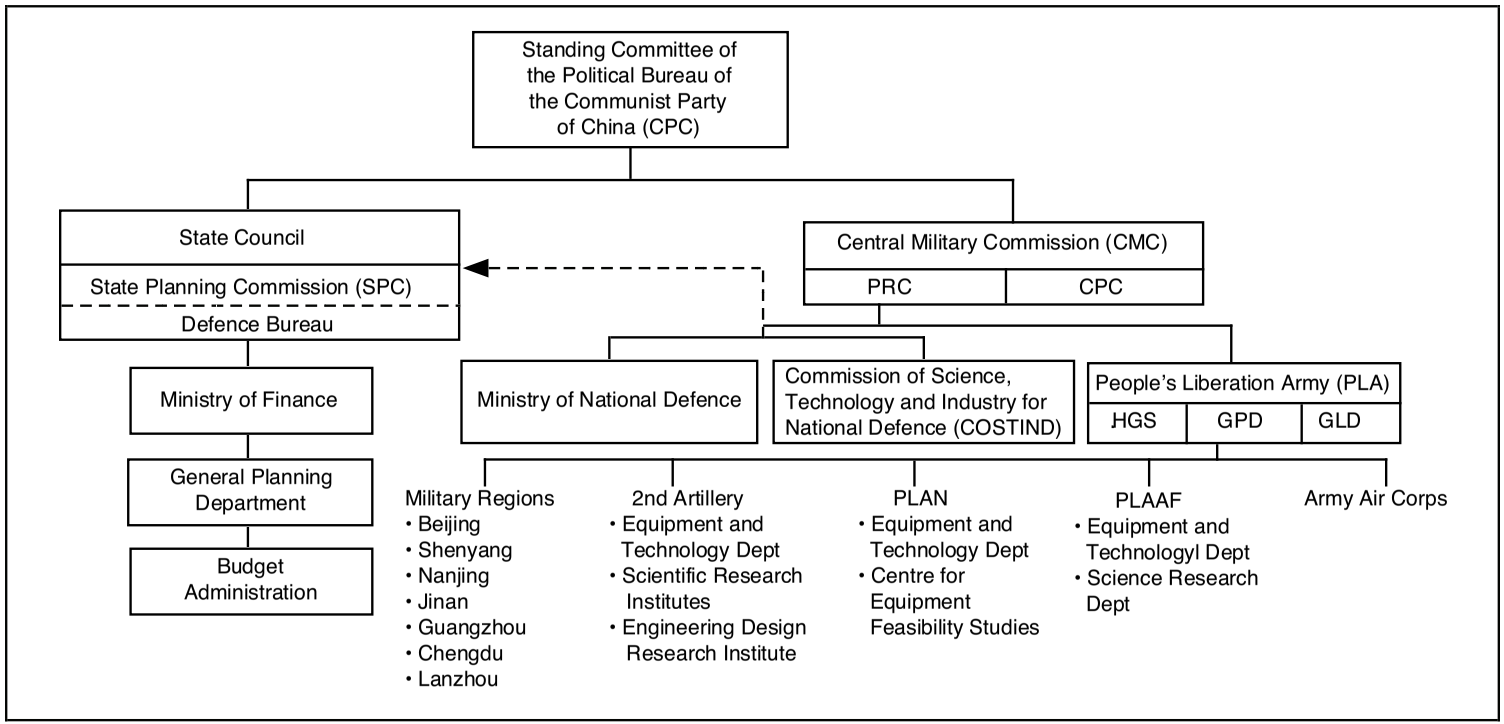

Figure 2.1. High-level organizations in Chinese arms procurement decision making

Notes: PRC = People's Republic of China; HGS = Headquarters of the General Staff; GPD = General Political Department; GLD = General Logistics Department; PLAN = People's Liberation Army Navy; PLAAF = People's Liberation Army Air Force.

Sources: China Directory 1997 (Radiopress: Tokyo, 1996), pp. 158–59 (in English); and *Directory of PRC Military Personalities* (US Consulate General; Hong Kong, Oct. 1995), p. vi.

The actors

The Chinese military and civilian official agencies are part of a highly hierarchical and disciplined system in which various organizations involved in arms procurement make their recommendations to their superior levels. The different recommendations of the lower-level organizations are studied and combined to form comprehensive proposals at successively higher levels. A hierarchical structure consisting of five tiers can be identified.

At the top are the CMC and the State Council, which function under the Standing Committee of the CPC. The CMC is responsible for formulating military strategy according to the national security objectives of the CPC's Standing Committee. Its responsibilities also include long-term defence planning and force structure planning in the context of future threats and economic constraints. In the case of domestic arms production, the CMC makes initial deliberations before coordinating with the State Council.[4] Their joint recommendations are then submitted to the Politburo's Standing Committee for a final decision. The Minister of National Defence, as one of the Vice-Chairmen of the CMC, also serves on the State Council. Unlike the ministries of defence in other countries, in China the MND provides a high-level point of contact between foreign policy makers and the military executive, which in this case is the PLA. The MND is also responsible for coordination between the research and development (R&D) and industrial establishments and the PLA for development and manufacture of weapon systems. The various elements in the high-level organizations that are involved in Chinese arms procurement decision making are shown in figure 2.1.

The second tier is the PLA. It consists of three general departments: the Headquarters of the General Staff (HGS), the General Political Department (GPD) and the General Logistics Department (GLD).[5] They function as advisory organizations and executive bodies of the PLA and their main responsibilities involve ensuring the implementation of the strategic direction with respect to operations, arms procurement, and other general and specific policies as directed by the CMC.[6] The PLA Navy (PLAN), the Air Force (PLAAF) and the Second Artillery (responsible for the strategic rocket forces) are not independent entities as in other countries but report to the CMC through the PLA.[7]

[4] Deng Liqun, Ma Hong and Wu Heng (eds), *China Today: Defence Science and Technology*, vol. 1 (National Defence Industry Press: Beijing, 1993), pp. 33–37.

[5] The term General Staff Department (GSD) is often used in Western literature to describe the functions of the HGS. In this study the term HGS is used. For discussions of successive levels of hierarchy, see also Chai Benliang, 'Development and reform issues of China defence, science, technology and industry', SIPRI Arms Procurement Decision Making Project, Working Paper no. 5 (1995), p. 10.

[6] Ku Guisheng and Zhan Wei, 'National defence policy and arms procurement budget', SIPRI Arms Procurement Decision Making Project, Working Paper no. 2 (1995), p. 2.

[7] The armed services, comprising the artillery, armoured forces, engineers and anti-chemical weapon troops, make up over two-thirds of the ground forces of the PLA, indicating an emphasis on equipment-intensive forces. Hua Chun, Chang Hung and Tu Hsueh-neng, [Arms of service have become ground force's principal force: interviewing Major General Xiao Zhentang, Director of Arms Department of General Staff Headquarters], *Wen Wei Po* (Hong Kong), 5 Sep. 1997, p. A5, in 'China: General on PLA

The Equipment and Technology Departments of the PLAAF, PLAN and the seven Military Area Commands of the PLA develop their arms procurement requirements on the basis of operational and technical assessments provided by their scientific research institutes.

The third tier consists of the equipment departments of the armed services and other defence agencies, including the test and evaluation ranges and *matériel* commands, which develop weapon systems and implement defence R&D programmes.[8]

While the first three tiers mainly deal with decision making, analysis and planning, the last two deal with manufacturing and R&D. The fourth tier consists of major military industrial corporations and defence prime contractors, which are responsible for the implementation of military contracts. The fifth is made up of numerous defence manufacturers and R&D institutes which carry out defence R&D and production projects and programmes under contract. This tier also includes operational user services, which conduct trials and field tests and report the shortcomings of weapons under development.[9] Previously, military R&D and production were conducted by serially numbered Ministries of Machine Building and Industry (MMBI). However, with the introduction of market reforms in the late 1970s, these ministries were reorganized and converted into corporations with more specialized subsidiaries replacing erstwhile departments. The corporations, which are engaged in both defence and civilian industrial production, function under the State Council. (The term 'military industry' is used here to identify industries under the direct control of the CMC; 'defence industry' describes the industries under the State Council.) The research academies, which were attached to each of these ministries, have been redesignated as research institutes.[10] Appendix 2A lists examples of Chinese military manufacturing and trading entities controlled by three major structures: the CMC, the State Council and the Commission of Science, Technology and Industry for National Defence (COSTIND).

The leading organization responsible for arms procurement is the Headquarters of the General Staff of the PLA (see figure 2.2). It is in charge of the operations of the PLAN, the PLAAF, the Second Artillery and the seven Military Area Commands. The staff of the Operations, Equipment and Specialized Arms Departments of the HGS are responsible for drafting operational plans and the requirements for arms procurement.[11]

technical arms', Foreign Broadcast Information Service, *Daily Report–China (FBIS-CHI)*, FBIS-CHI-97-248, 9 Sep. 1997.

[8] *China Directory 1997* (note 3), pp. 158–59. Over the past few years the Equipment Department of the HGS has been referred to as the Equipment and Technology Department. *Directory of PRC Military Personalities* (US Consulate General: Hong Kong, Oct. 1995), p. vi.

[9] Deng Liqun, Ma Hong and Wu Heng (note 4), pp. 46–47.

[10] Frankenstein, J. and Gill, B., 'Current and future challenges facing Chinese defence industries', *China Quarterly*, no. 146 (June 1996), p. 401; and *China Directory 1997* (note 3), pp. 80–81.

[11] The Equipment Department—also called the Armament Department—is the key department responsible for arms procurement functions and coordination. As shown in figure 2.2 there is also an Armament Department in the GLD, which is presumably responsible for holding weapons and equipment stocks. In Apr. 1998, the Equipment Department of the HGS became part of a new General Equipment Department in the PLA.

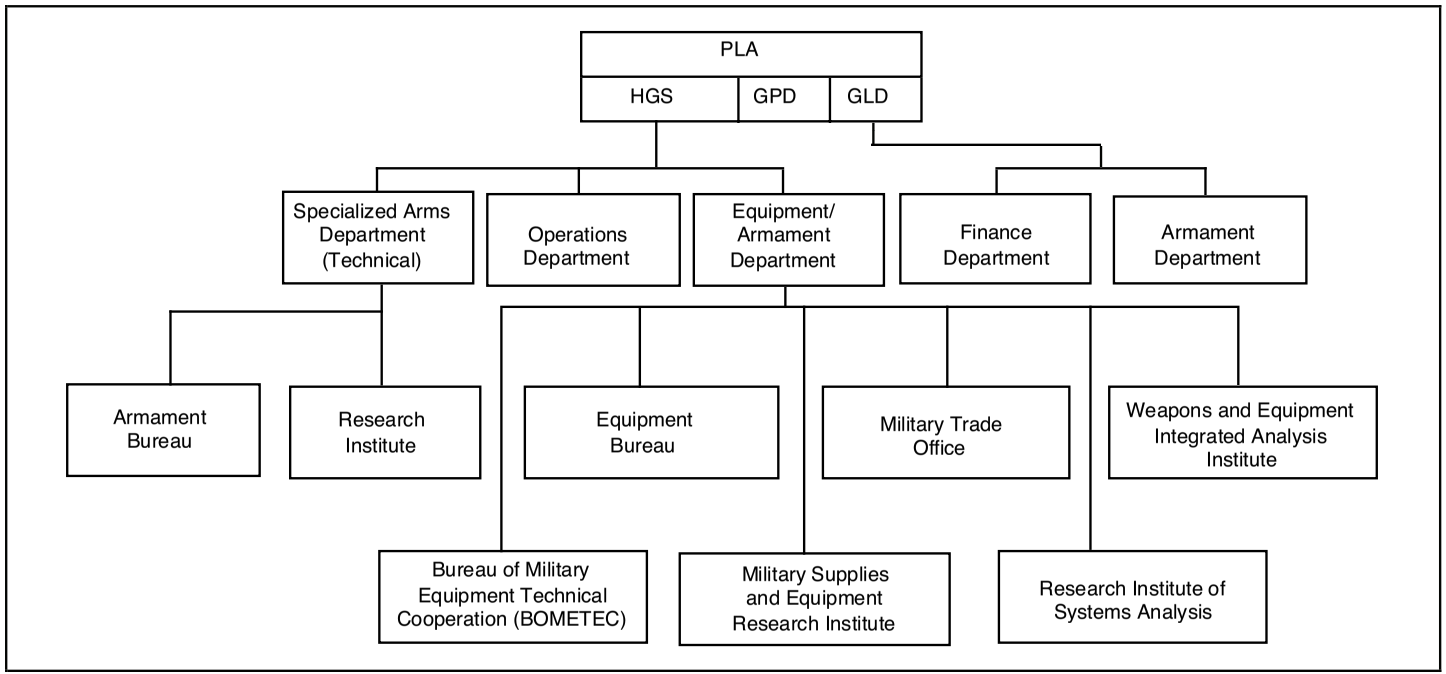

Figure 2.2. Organization of arms procurement bureaux and institutes in the PLA

Notes: PLA = People's Liberation Army; HGS = Headquarters of the General Staff; GPD = General Political Department; GLD = General Logistics Department. In Apr. 1998 a major reform of the Chinese military was announced and a General Equipment Department was established in the PLA to incorporate the former Equipment/Armament Department of the HGS.

Sources: *China Directory 1997* (Radiopress: Tokyo, 1996, in English); Ku Guisheng and Zhan Wei, 'National defence policy and the arms procurement budget', SIPRI Arms Procurement Decision Making Project, Working Paper no. 2 (1995), p. 23; and Ling Ruyong, 'Procurement auditing of weapon systems', SIPRI Arms Procurement Decision Making Project, Working Paper no. 7 (1995), p. 10.

On the basis of mid- and long-term weapon development programmes, the armed services formulate plans for arms procurement according to the type, specifications and quality of weapons and equipment required.[12] The Departments of Equipment and Technology of each of the armed services then work out proposals for new weapons, defining their purpose, main combat performance and technical specifications, and providing planning schedules and budget estimates. These are based on studies covering operational, technological and financial aspects. The plans are then sent to the HGS for coordination. While doing this, each of the armed services has to compromise between operational requirements and technical and financial feasibility.[13]

COSTIND enjoys ministerial status and is accountable to both the CMC and the State Council.[14] Established to facilitate overall planning of science and technology for national defence, it coordinates conventional military R&D and the space and nuclear programmes (as between R&D establishments under the CMC and those under the State Council). After the HGS has designated a weapon for procurement, COSTIND coordinates the required R&D with the research academies and establishments and the various manufacturing entities and is responsible for weapon upgrading, technology testing, design, type approval, trial production, test batch processing, and so on. It is also responsible for outlining principles, policies, priorities, targets and courses for the development of defence science, technology and industry.[15]

The decision-making activities, information flow and interaction at the different levels in the process are managed through an information-management and decision-support system which is analogous to the planning, programming and budgeting system in the USA.

In addition to the bodies directly involved in arms procurement, the development of new weapons is based on a nationwide network of industries and research institutes, which requires cooperation between the military and civilian sectors. For example, the technologies for nuclear bombs, guided missiles and nuclear-powered submarines were developed with contributions from both the civilian and the military sectors with different production specializations and R&D capabilities. The Chinese Academy of Sciences and a number of universities and colleges are also organized in a nationwide network and their scientific and technological strengths combined with the engineering training given at the technical universities.[16]

[12] Luo Fengbiao, 'Development of defence science, technology and industries in China', SIPRI Arms Procurement Decision Making Project, Working Paper no. 8 (1995), p. 4.

[13] Luo Fengbiao (note 12), p. 7.

[14] Ku Guisheng and Zhan Wei (note 6), p. 3. To aid the development of China's missile and aircraft industry, the State Council and the CMC decided in Apr. 1956 to set up a Commission of Aviation Industry in the MND, which was redesignated as the Commission of Science and Technology for National Defence (COSTND) in Sep. 1958. In May 1958, the CMC established the Fifth Department in the MND to integrate and strengthen planning and R&D of weapons and equipment in the PLA. The 2 were merged in Apr. 1959, to avoid duplication of functions, along with the Scientific Research Section of the Equipment Planning Department of GSD. Deng Liqun, Ma Hong and Wu Heng (note 4), pp. 33–35.

[15] Luo Fengbiao (note 12), p. 7.

[16] Luo Fengbiao (note 12), p. 4.

Over 900 factories, R&D institutes, universities and colleges located in 20 provinces have participated in developing more than 80 000 kinds of military product in different industrial sectors, such as metallurgy, chemicals, light building materials, petroleum and machine building. These products mainly include new materials, electronic and machinery products, special equipment and optical products, as well as components of weapon systems.

Threat assessment

Arms procurement decision making involves a continuous process of threat assessment and goal setting, in accordance with modern operational doctrines and principles. Among the usual priority operational principles are: (*a*) a rapid and flexible response capability (only with this can the armed forces implement changes in operational directives); (*b*) winning the battle as quickly as possible; (*c*) attacking the key links of the enemy; and (*d*) obtaining electromagnetic and information expertise.[17]

Threat assessment in China involves three stages. First, various intelligence and research organizations collect information about the capabilities and military potential of foreign countries. This mainly includes information on diverse elements of national power including political, economic, military, technological, psychological and moral factors, the strategic intentions of potential adversaries and their deployment plans. Second, the information is carefully processed and systematically analysed to determine its accuracy and application and the reliability of the source. This is done by the intelligence agencies of the HGS and by the MND. Research and analysis conducted by other related institutions shown in figure 2.3 are also incorporated into the assessment as and when required.[18] The third stage involves consultations, analysis and assessment of intelligence data. This is done by the research organizations and concerned experts at joint meetings on specific topics in order to assess the accuracy of the information and the threat potential. These meetings usually result in suggestions to the appropriate policy-making body on national defence policies.

Research institutes that conduct international and security studies in China can be divided into two categories. The first consists of those which conduct political or strategic studies for the ministries under the State Council: these include the China Institute for Contemporary International Relations and the Ministry of Foreign Affairs' Institute for International Studies. The second category are institutes, including the Academy of Military Science (AMS) and the National Defence University (NDU), which have a military security orientation and report to the CMC. Founded in 1958, the AMS is a research institute for military theory in the PLA. It has 500 full-time researchers recruited from officers in combat units, graduates from the PLA's colleges and PhDs from

[17] Ku Guisheng and Zhan Wei (note 6), pp. 10–11.
[18] Ku Guisheng and Zhan Wei (note 6), pp. 11–12.

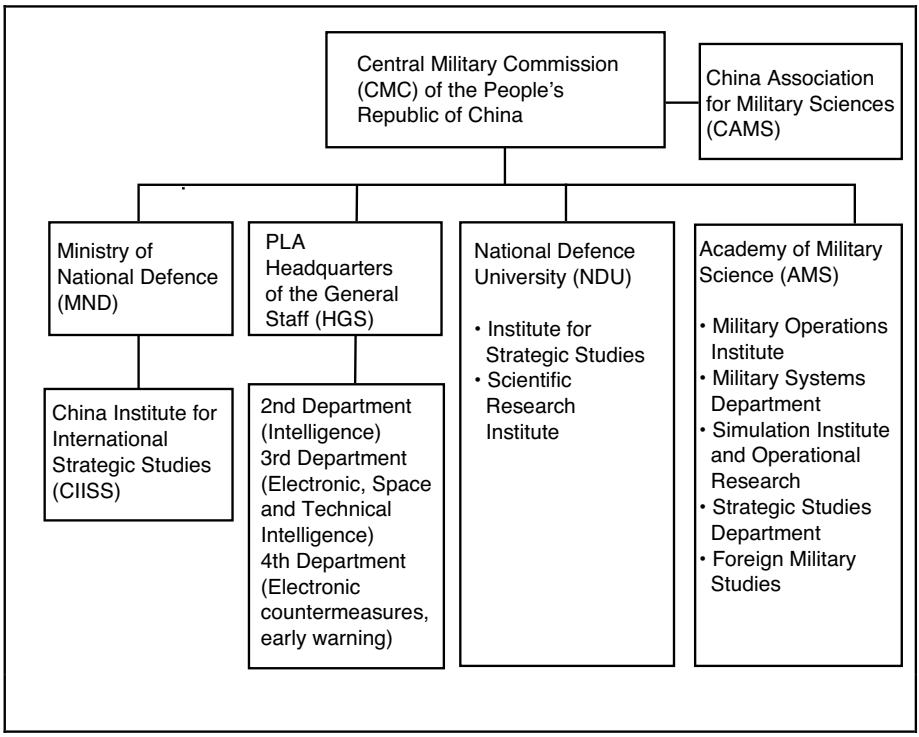

Figure 2.3. The research and information establishments of China's Central Military Commission

Sources: Swaine, M. D., *The Role of the Chinese Military in National Security Policy Making* (RAND: Santa Monica, Calif., 1996), p. 5; *China Directory 1997* (Radiopress: Tokyo, 1996), pp. 152–53, 176 (in English); and Information brochure about the Academy of Military Science, Beijing, 1994.

civilian universities and is the main planning and coordination establishment for military research in China. It also provides the China Association for Military Sciences (CAMS) with administrative support. The CAMS, established in 1991, can be considered China's most influential think-tank on military affairs. Its members include senior generals of the CMC and of the PLA. The NDU was established in December 1985 from the former Military, Political and Logistics Academies and is the senior military institution of the PLA at which senior officers can study developments in military science, theories and strategies for national defence modernization. Annual meetings are held to discuss the sources and types of threat and to analyse countermeasures to such assessed threats.[19] Research at the China Institute for International Strategic Studies

[19] Xiao Xianshe, *Research of Military Forecasts* (National Defense University Press: Beijing, 1990), pp. 100–104; and Ku Guisheng and Zhan Wei (note 6), pp. 3–4. The Academy of Military Science includes the Military Operations Institute, the Simulation Institute, a Military Systems Department and a Strategic Studies Department. *Directory of PRC Military Personalities* (note 8), pp. 61–62; and Interviews

(CIISS), which functions under the MND, is largely done by former military attachés and some civilian experts.

In the early 1980s, the threat perceptions expressed by Chinese political leaders indicated that the military threats to Chinese security were receding. In a talk given in 1983, Deng Xiaoping told leading members of the Central Committee of the CPC, 'War is not going to break out, so there is no need to fear it and no problem of risk. We have been worried about the possibility of war and have had to be on the alert every year. I think we overdid it. I don't think there will be war for at least the next ten years'.[20] This threat assessment at the highest level resulted in China reducing its military manpower unilaterally by 1 million and sharp cuts in military expenditure in 1985 and 1986.[21] After the collapse of the Soviet Union in 1991, the direct military threat posed to China on its western border receded.

China and Russia have developed military cooperation and agreed not to target each other with strategic nuclear weapons,[22] and this is the likely policy for the foreseeable future. High-level exchanges between the two countries' leaders since 1994, many bilateral agreements and the border agreements between China and Kazakhstan, Kyrgyzstan, Russia and Tajikistan have also generated confidence. Although a Sino-US strategic understanding broke down in 1989, the USA and China still avoid military confrontation. During a summit meeting between Chinese President Jiang Zemin and US President Bill Clinton in Seattle in 1993, the former communicated, that as long as the USA and Russia do not intend to invade China, its leaders have confidence in China's security. In 1992, the report of the 14th Party Congress stated: 'The People's Republic of China has cemented good-neighbour relations with surrounding countries since its founding . . . For a long time to come, it will be possible to secure a peaceful international environment and avert a new world war'.[23]

Two schools of thought about the national defence concept are apparent. The first argues that in the new international environment national defence should be interpreted in a broader sense to include not only military threats or wars but also threats from the economic, scientific, technological, political and cultural spheres. The second views national defence in a more narrow sense, referring to the need to modernize the armed forces, including weapons and equipment, defence science and technology, the defence industry and installations. It also refers to the need to update the training and education system for both officers and soldiers, for example, through providing advanced technical education for commanders in information-based warfare.[24]

by the editor with Maj.-Gen. Sun Bailin, Deputy Director, Department of Research Guidance, Academy of Military Science, Apr. 1994.

[20] *Selected Works of Deng Xiaoping*, vol. 3 (Foreign Languages Press: Beijing, 1994), p. 35.

[21] *Zhongguo Waijiao Gailan 1987* [Outline of Chinese foreign affairs 1987] (World Knowledge Press: Beijing, 1987), p. 398. A large number of troops have since been employed in the paramilitary forces.

[22] 'Zhong E Lianhe Shengming' [Sino-Russian Joint Statement], *Renmin Ribao*, 5 Sep. 1994.

[23] Jiang Zemin, 'Accelerating reform and opening-up', *Beijing Review*, 26 Oct.–1 Nov. 1992, p. 26.

[24] Shi Zhongcai, [An elementary discussion on the maturity of modern military personnel], *Guofang*, 15 May 1996, pp. 11–13, in 'China: discussion on developing personnel for modern war', FBIS-CHI-96-240, 13 Dec. 1996; and Cheng Bingwen, [Let training lean close to information warfare], *Jiefangjun Bao*,

Setting the five-year and annual defence budget plans

The Chinese defence budget is drafted concurrently with and derived from the national budget, which is prepared by the Ministry of Finance.

The coordination work for drafting the five-year defence budget is done by the Defence Bureau at the State Planning Commission (SPC), which functions under the State Council. This is initiated one to two years before the next five-year plan begins. According to arms procurement requirements provided by the HGS, the long-term (five-year) draft plans for military expenditure are submitted by the Finance Department of the GLD to the Defence Bureau, which holds intensive consultations with the Ministry of Finance and other concerned departments and agencies. After a general consensus has been reached the long-term defence budget plan is sent to the Politburo and the State Council for examination and finally to the NPC for approval.[25]

The annual defence budgets are based on the approved five-year plans. The actual process of annual defence budgeting starts when the PLAN, the PLAAF, the Military Area Commands and the Second Artillery formulate their own annual budgets and submit these to the Finance Department of the GLD. The GLD balances these budget plans in keeping with the defence strategy and the army development guidelines issued by the CMC. Finally, the annual defence budget is submitted to the CMC for approval.[26] It consists of the overall military expenditure and the budgets for departments at different levels, the various Military Area Commands and the services. There are three kinds of funds for arms procurement: (*a*) funds for earmarked procurement programmes; (*b*) 'constrained funds' for specific categories of expenditure (the departmental heads have a certain latitude with this category); and (*c*) discretionary funds.

Following approval of annual arms procurement budgets by the CMC, if the weapons are to be developed within China, orders are sent out to the relevant military services and the research projects are carried out by R&D institutions and industrial corporations.

Arms procurement planning

The HGS formulated seven five-year Weapons and Equipment Development and Procurement Plans between 1953 and 1987 and there is a long-term development plan under implementation for 1987–2000. Guided by the five-year plans and the annual defence budget, the HGS also drafts an annual arms procurement plan. This provides a detailed list of orders to defence industrial sectors, the contracts being coordinated by the MND. In the 1990s China has

12 Nov. 1996, p. 6, in 'PRC: column on training for information warfare', FBIS-CHI-96-230, 29 Nov. 1996.

[25] Ku Guisheng, 'National defence budgeting procedure and price reforms of military products', SIPRI Arms Procurement Decision Making Project, Working Paper no. 3 (1996), pp. 1–2.

[26] Ku Guisheng (note 25), p. 2.

developed a system involving a three-year rolling plan for arms procurement. This plan links annual procurement plans closer to long-term plans.[27]

In turn, based on the annual arms procurement plan, an allocation and supply plan is made based on the directives to the armed services and the Military Area Commands.[28]

A major reform in arms procurement is the emphasis placed on long-term planning. In 1986, a development strategy study programme was launched—'China Defence Science and Technology in the Year 2000'—as part of the state development strategy study project 'China in the Year 2000'. It was an inter-disciplinary and inter-organizational study, completed in 1989, and dealing with strategic guidelines and objectives, emphasizing the development of defence science and technology to the year 2000 and the policies to be adopted. This programme has improved the quality of long-term planning.[29]

Defence R&D and production

The R&D process has undergone several changes since the early 1980s with the launching of the general policy of reform and 'opening up to the outside'. Faced with a limited defence budget and resources, defence planners and analysts gradually came to understand the importance of improving the procedure for arms procurement with the aid of scientific tools and techniques. In the 1950s the application of scientific management to military administration was under-developed. In the case of the Chinese aviation industry, the practice since the 1960s has been to divide the process into: (*a*) conceptual studies; (*b*) system development and validation; (*c*) technical design and prototype evaluation; (*d*) engineering development; and (*e*) production and deployment. However, these stages were not mandated by state directives or military standards, which meant that they were not followed strictly and were sometimes neglected. Scientific management and decision making for procurement of major weapon systems has gradually improved since the early 1980s.[30]

In 1987 a government directive mandated that the defence R&D process should have five stages (see figure 2.4).[31]

1. *Feasibility study (concept design)*. The operational users (military staff) and technical R&D institutes analyse and formulate the tactical–technical specification document (TTSD), which is then submitted for approval first to the HGS and the CMC and second to the SPC. The analysis includes: (*a*) operational tasks and mission parameters; (*b*) main tactical–technical performance

[27] Ku Guisheng and Zhan Wei (note 6), p. 20.
[28] Ku Guisheng and Zhan Wei (note 6), p. 19.
[29] Chai Benliang (note 5), p. 12.
[30] Wang Laoson, 'Suggestions to improve the R&D process of aircraft systems', *Aviation High Technology and Systems Engineering* (Aviation Industry Publishing House: Beijing, 1991), p. 268.
[31] Wang Laoson (note 30).

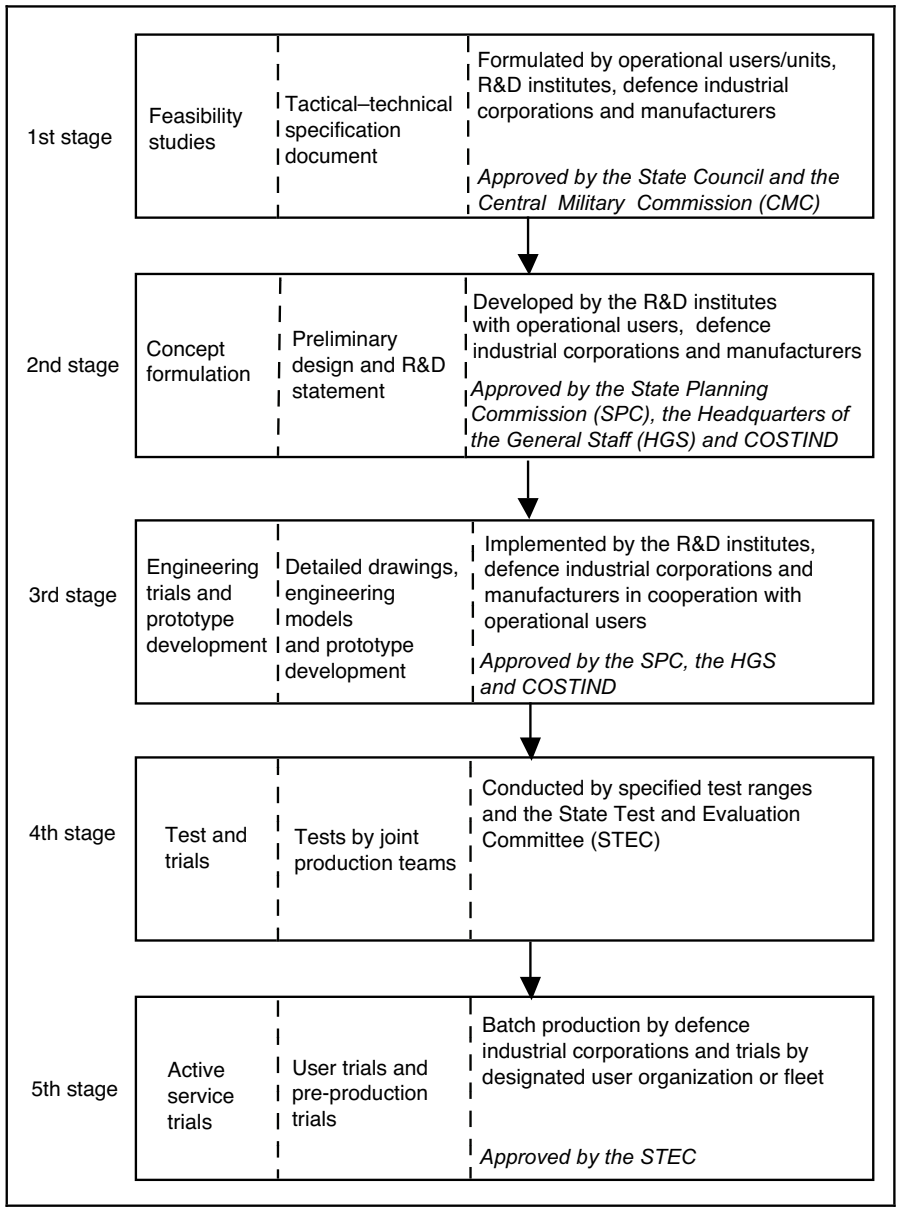

Figure 2.4. Stages in the Chinese military R&D process

Source: Adapted from Ling Ruyong, 'Procurement auditing of weapon systems', SIPRI Arms Procurement Decision Making Project, Working Paper no. 7 (1995), p. 10.

and operational requirements; (*c*) weapon system composition and preliminary requirements of main assemblies; and (*d*) indigenous R&D capabilities. The final feasibility study covers: (*a*) roles, functions and missions of the equipment

in future operations and analysis of operational employment; (*b*) present status of weapon development trends and comparative analysis of weapons in the international market and the proposed indigenous development; (*c*) a tactical–technical performance assessment and feasibility analysis of indigenous development; (*d*) the R&D cycle and expected costs; (*e*) grouping of weapons and equipment; and (*f*) a proposal for design and engineering implementation.

2. *Concept formulation*. The approved TTSD is transformed into a preliminary design and R&D statement by R&D institutes together with the user services, under the auspices of industrial corporations and military headquarters. The R&D statement must provide: (*a*) the main tactical–technical performance requirements and operational requirements; (*b*) a proposed list of manufacturers; (*c*) schedules for all sub-phases in the R&D process; (*d*) estimation of R&D costs and production costs, size of trial production run, and so on; (*e*) arrangements for trial production and tests; and (*f*) the availability of R&D funds and the budget. As concept formulation is more comprehensive and detailed than the feasibility study, it is carried out jointly by the user services and the industrial authorities. If there are differences of opinion between the two parties, these are re-examined by the user services and finally decided on by the CMC.[32]

3. *Engineering*. This involves engineering trials and prototype development through coordination between R&D institutes, users and manufacturers.

4. *Test and trials*. This involves testing and evaluation by the State Test and Evaluation Committee (STEC), which is under the CMC. The STEC is responsible for issuing approvals for design, prototype development and manufacturing.

5. *Active service trial*. After approval by the STEC, industrial manufacturers organize batch production. The systems are tested by the designated user organization. The final products are tested and evaluated by the STEC again. If the project is not a major one, the test and evaluation are carried out by a secondary committee under the STEC, composed of members of the HGS, the military user service, the defence industries and certain ministries.

The standards for each stage are included in the contracts with the R&D enterprises, which are awarded through competitive bidding.[33] The entire process is coordinated by COSTIND. Appendix 2B presents a case study that describes the division of responsibility and stages involved in the development of a new weapon system.

In the case of projects for upgrading weapon systems or making improvements in the maintenance of weapon systems, joint research groups are formed to facilitate R&D work. These projects are led by the user service and focus on the improvement of weapons in service, the operation of weapons and the working conditions of the crews. A Chief Designer for technical systems and a

[32] Luo Fengbiao (note 12), pp. 11–12.

[33] Ling Ruyong, 'Procurement auditing of weapon systems', SIPRI Arms Procurement Decision Making Project, Working Paper no. 7 (1995), pp. 3–5.

Chief Administrative Director are appointed. The Chief Designer and Deputy Chief Designers of subsystems have technical responsibility and are in charge of the Design Department and the Chief Engineer's Office. The Chief Administrative Director organizes the work and is in charge of solving problems related to following schedules, improving support conditions and quality. To facilitate this work, an on-site Command Department is set up, with the participation of representatives from the armed forces and production and R&D units. To ensure that quality is high and that deadlines are kept, joint meetings and brainstorming sessions, joint inspections, joint installations and commissioning are organized, either in-house or on-site. These methods are also used in the case of private and joint venture enterprises.[34]

When weapons and related technology are imported a different procedure is followed. After approval by the State Council and the CMC, panels are formed by the HGS and industrial and R&D authorities to conduct feasibility studies, in which the technical performance specifications, quality, training and software of the various international offers are extensively compared. The domestic production facilities, technical capacity, and availability of materials and components are examined and financial analyses are conducted to assess whether the complete equipment or some components of the weapon system can be made indigenously. The requirements of time needed for local development, production of spare parts and components and the possibilities of substitution or other sources in the event of embargoes and sanctions are also studied carefully.

Each phase of the Chinese arms procurement decision-making process is managed by a different department, with different perspectives and priorities. Consequently, many problems arise in coordination between the departments. Since the Chinese arms procurement system is essentially hierarchical, horizontal coordination between different sectors is very difficult. There is a strong awareness in China regarding the importance of system management techniques in the defence industry; however, departmental alignments impede the full application of these techniques to defence R&D.[35]

Contracting

Arms procurement contracts are signed between the user services, the developers and the manufacturers. The contracts define the performance specifications of the equipment, time schedules, price or development budgets, risks, confidentiality provisions, responsibilities for developing or purchasing special equipment, and so on.[36]

Production of weapon systems through contracting is one of the reforms of the Chinese arms procurement decision-making process which were started in the mid-1980s. Military contracts are awarded through competitive bidding or through selection by way of comparisons and assessments of the industrial

[34] Luo Fengbiao (note 12), pp. 8–9.
[35] Chai Benliang (note 5), p. 16.
[36] Luo Fengbiao (note 12), p. 8.

entities concerned. Those awarded contracts are designated as prime contractors while other entities may serve as subcontractors.[37] Although state-owned non-military production enterprises, private enterprises and joint ventures are not the main contractors for military products, they nevertheless receive large military orders. After China adopted reforms and policies of opening up, many of these enterprises began to produce parts of weapon systems or even complete items of equipment.

The new contracting system for military orders is still not perfect. Problems with pricing, scheduling, quality control, and so on have arisen to varying degrees. The regulations on pricing have yet to be properly reflected in contracts and in the awarding of contracts. A procurement system for defence science, technology and industry needs to be established so that the placing of orders, the provision of *matériel*, product delivery, economic compensation and penalties for default can be regulated and supported legally. The costs of arms development have become a contentious issue, especially when the prices of *matériel*, equipment and so on have increased and fluctuated.[38] However, as the market economy is just being established in China, there is still a long way to go before the price system can reflect the actual value of military products.[39]

Criteria for costing and pricing

A critical aspect of contracting is the pricing system. The Chinese economy has, to a great extent, opened up to market forces since 1978. Although the prices of about 90 per cent of civilian products are adjusted by the market, the prices of military products are still administered by the government. The current formula for setting the prices of military production is 'planned cost plus 5 per cent'. The planned costs include charges for raw materials, fuel and power, salaries and allowances, special-purpose tools, loss and waste, quality control, workshop management and enterprise management.

In July 1993 China adopted rules of business finance and business accounting norms, so as to conform to international statistical standards and to facilitate compatibility between the Chinese and international accounting systems. This new approach encouraged reforms in the calculation of costs and prices of military products. It also encouraged factories to compete for military orders, which they had previously been reluctant to do, since military products gave lower profit margins than comparable civilian products.

According to the new accounting system, the 'planned cost' of military products is to be replaced by the 'production cost'. However, this practice is still not widespread. For example, the PLAN has adopted a price formula similar to that of the US Navy, that is, a fixed price plus an incentive.[40] The new accounting system mainly covers four items—direct materials, direct salaries, other direct

[37] Luo Fengbiao (note 12), p. 8.
[38] Luo Fengbiao (note 12), p. 19.
[39] Ku Guisheng (note 25), p. 7.
[40] Luo Fengbiao (note 12), p. 19.

expenses and production expenses.[41] Management and sales overheads are not included in production costs but will be deducted from profits: this will include salaries and allowances for workshop administrators, expenses for administration, and depreciation and maintenance of buildings and installations used for workshop administration. Costs of technology transfer, R&D, design, testing and assessments will be put under production expenses. The depreciation rate for fixed assets has been raised from 3 to 7 per cent.[42] The production cost accounting system reflects the actual cost of military products more accurately than the planned cost system. However, it will take a relatively long time to implement the new accounting system in all the military production enterprises.

The implementation of price reforms for military products requires several steps. First, the scale and structure of military production need to be adjusted to balance supply and demand. At present, the domestic demand for military products is less than 10 per cent of the production capacities reserved for the military. Second, fixed expenditure must be apportioned for maintaining military lines of production: production capacities surpass peacetime demand, but have to be maintained to meet a surge in demand or unexpected wars. Third, the price reform system must be able to handle the sharp increase in the price of military products. Owing to the increase in the prices of raw materials, spare parts and other items, the producers of military products have asked for an 82 per cent increase in their prices.[43] If prices of military products increase to that extent, the defence budget will not be able to cover the development of new weapons. Fourth, profit margins on military products need to be adjusted in order to encourage the maintenance of military production lines.

There are two different opinions about the profit rate of military products. One view favours maintaining the current profit rate, that is, 5 per cent of the cost. Three reasons are given to support this view: (*a*) the fixed assets of military enterprises are invested by the state and the state also supplies them with operating funds; (*b*) there is less investment risk for military production because the production cost is reimbursed by the state; and (*c*) the limited budget allocated for arms procurement cannot accommodate a sharp rise in the prices of military products.

The other view contends that the profit rate of military products should be the same as, or somewhat higher than, the average profit rate for civilian goods. This suggestion is based on two arguments: (*a*) that military enterprises are responsible for their profits and losses so that they will seek a higher profit rate than the average; and (*b*) a lower profit rate will undermine their research and production efforts. Proponents of this view recommend that the price formula for military products should be:

[41] Liu Ping, 'Jungong Shengchan Hetong Guanli' [Management of military product contracts], *Junshi Jingji Yanjiu*, no. 3 (1994); and Ku Guisheng (note 25), p. 9.

[42] Ku Guisheng (note 25), pp. 9–10.

[43] Ku Guisheng, 'Junpin Jiage Bianhua' [Price changes of military goods], *Shichang Jingji Yanjiv*, no. 2 (1992).

$$Pr = (C+E)(1+Pt)$$

where *Pr* is the price of military products, *C* is the production cost, *E* is the allowance for management expenses (to include sales and finance expenses) and *Pt* is the average profit.[44]

Evaluation and auditing in weapon development

To ensure that quality requirements are met, tests should be done at each stage of the weapon development process. If rigorous testing in the form of design approval, type manufacturing approval and acceptance trials is carried out, the operational and technical standards of a product are assured. Auditing authorities within COSTIND carry out the auditing functions. However, arms procurement auditing should assess the financial burden of a weapon system through its entire service life. Experience shows that only by adopting a life-cycle method can the performance and cost requirements be met, demands for additional funding be avoided, quality be ensured, life cycles be prolonged and new products of high-quality performance for improving the next generation of equipment be proposed.

Prototype design approval—the technical model

Prototype design approval tests are divided into two categories: (*a*) 'proving' range tests designed to examine the product's technical performance; and (*b*) field force trials which examine the product's operational performance. The standards and requirements to be met for prototype design approval include the requirements of standardization and serial production, that product assemblies are complete, and that there are reliable supplies for all assemblies, spare parts, components and new materials needed for producing the equipment.

Type design approval—the engineering or demonstration model

In order to qualify for type design approval, the following requirements must be met: (*a*) all key technical problems of the product must have been solved and the solutions demonstrated through a process of necessary testing; (*b*) testing of the product's designed characteristics must have been done to show that technical performance and operational requirements have been met; and (*c*) all technical drawings and documents needed for type design approval tests must have been completed.

[44] Ku Guisheng (note 25), p. 14. Another perspective on this 2nd approach suggests that price estimates could include profit rates and contract amounts. These include allowances for the costs of raw materials, fuel and power, wages, overheads and special charges. Engineering costs are estimated by adding up the costs of each component that goes into the complete weapon system to obtain a total sum. R&D entities relevant to the proposed weapon system carry out costing under the leadership of COSTIND. Ling Ruyong (note 33), pp. 7, 14.

Product manufacturing approval—the pre-production model

The standards and requirements that must be satisfied for product manufacturing approval include: (*a*) that quality is stable, in the interests of large batch production; (*b*) that the requirements for type design approval have been met; (*c*) that operational requirements are satisfactorily demonstrated through testing by the user services and field forces; (*d*) that all technical documents that are needed for manufacturing and acceptance have been completed; and (*e*) that all assemblies, spare parts, components and new materials can be supplied on time. In order to apply for product manufacturing approval, the trials of a product and its production requirements are evaluated by the manufacturer under the supervision of a responsible body in accordance with the requirements for type manufacturing approval. Field trials and operational trials of the product are to be conducted by the user services according to their trials programme, and thereafter type manufacturing approval tests must be completed if necessary.[45]

Cost-effectiveness analysis

An analysis of cost-effectiveness should be conducted at each stage of the arms procurement decision-making process in order to ensure that actual expenditure does not exceed the funds budgeted.

Analysis of cost-effectiveness is likely to become a normative requirement in arms procurement decisions in China. It has been applied in linking the feasibility studies with acceptance trials and tests in some cases. However, the application of the analysis needs to be extended to all stages of procurement. The analysis of cost-effectiveness and life-cycle costs for weapon systems is generally conducted by the systems engineering institutes (centres or departments) established in the relevant PLA armed services and defence enterprises. As the weapon system can be assigned several different missions, it is not always feasible to synthesize the different effectiveness measures into a single effectiveness index.[46]

The cost-effectiveness evaluation is completed before the process of selecting the weapon system begins, and only one of the proposals is required to be submitted to the HGS, COSTIND and the SPC for their decision. The basic steps to be completed at this stage include: (*a*) determining the objectives of the cost-effectiveness analysis; (*b*) constructing and selecting alternatives; and (*c*) analysing the effectiveness of alternatives, including inherent capability, reliability, maintainability, durability, survivability, safety and human factors. An assessment of the quantitative relationship between total costs and the effectiveness index of the weapon system in terms of the probability of it being

[45] Ling Ruyong (note 33), pp. 5–6. The institutes or organizations responsible for the field tests and operational trials of a new product generally include specified test ranges or trial troops/fleets which provide test fields, suites or platforms, environmental support, such as safety measures, and engineering entities which prepare and operate their products, including providing test instruments and engineers.

[46] Ling Ruyong (note 33), pp. 5–8.

used for several different missions must also be undertaken. A decision is then made to continue to implement, revise or abandon the plan.

The estimates of the life-cycle costs are based on: (*a*) R&D, including costs paid for R&D as well as a part of supporting costs, namely, feasibility and concept formulation, design and trial production, and tests and evaluation; (*b*) purchase costs, including auxiliary equipment, installation, training and support, and so on; (*c*) operational costs, which are paid for operating and supporting the equipment during its commission in peacetime or wartime, including operating costs, maintenance costs, support costs and technical upgrading costs; and (*d*) the costs of decommissioning.[47]

III. The domestic context

This section examines the harmonization of the Chinese defence budget with the security situation and economic modernization. The principles guiding arms procurement decisions in peacetime are based on the availability of financial resources and the requirements of national security. Before the 1980s, there were five periods of dramatic increase in China's defence budget: 1951–53, 1959, 1962–66, 1969–71 and 1978–79.[48] During these five peak periods, China was involved in military conflicts with the USA, Taiwan, India, the Soviet Union and Viet Nam, respectively. Although the historical record indicates that China increases its arms procurement whenever it feels that its security interests are compromised, in this context a rise of nearly 90 per cent in Chinese military expenditure between 1990 and 1994 remains to be explained.[49]

Allocation of the defence budget

The level of transparency and accuracy of the official Chinese defence budget is often questioned on the assumption that there are hidden expenditures for military projects. Because the ways in which defence budgets are defined vary between countries, and because arms procurement expenditure is related to many sectors of civilian production, countries sometimes exclude various aspects of military-related projects from the defence budget. In the data released by the State Statistical Bureau on Chinese defence expenditure, items like the military's academic research and infrastructure projects are not included in the defence budget.[50]

Generally speaking, Chinese arms procurement takes up less than one-third of the defence budget. Before the 1970s, it accounted for less than 30 per cent, and since then it has increased to 30–32 per cent. For an overview of the Chinese

[47] Ling Ruyong (note 33), pp. 12–14. Another source claims that life-cycle costs (including expenditure on research, production, maintenance and demobilization) are in practice not yet being used in costing weapon production in China. Ku Guisheng (note 25), pp. 15–16.

[48] *Statistical Yearbook of China 1993* (Statistics Press: Beijing, 1993), p. 223.

[49] Ku Guisheng (note 25), p. 18.

[50] Ku Guisheng (note 25), p. 6–7.

Table 2.1. The Chinese defence budget, 1953–80
All figures are percentages.

	1953–57	1958–62	1963–65	1966–70	1971–75	1976–80
Personnel	38.77	41.40	36.67	33.66	27.81	23.48
Administration and public affairs	10.26	12.30	10.45	9.75	10.49	11.69
Maintenance	7.74	12.20	11.40	9.05	9.45	11.88
Arms procurement	28.22	15.53	21.79	24.39	31.28	30.75
Fuel	1.92	3.32	3.67	6.10	6.41	7.77
Construction	12.11	8.83	8.39	12.45	9.95	9.06
R&D	..	..	..	0.67	2.22	1.10
War-readiness	..	..	1.31	3.00	1.46	0.96
Miscellaneous	1.25	4.99	5.56	0.96	0.93	3.31

Source: Zhang Zhenlong, *Jundui Jingjixue* [Military force economics] (China Price Press: Beijing, 1993), pp. 105–108.

defence budget between 1953 and 1980, see table 2.1. In 1994, China's expenditure on national defence totalled 55.071 billion yuan ($6.4 billion).[51] Of this amount, 34.09 per cent (18.774 billion yuan, or $2.2 billion) was spent on personnel, administration and public affairs; 34.22 per cent (18.845 billion yuan, or $2.2 billion) on maintenance of facilities, fuel, military construction and war-readiness; and 31.69 per cent (17.452 billion yuan, or $2 billion) on R&D, maintenance and weapons procurement. Thus, maintenance costs absorbed the largest share of military expenditure.[52]

Balancing military and economic modernization[53]

The foremost principle influencing Chinese arms procurement decision making is the balance between economic development and military modernization. It involves several important aspects.

First, China regards a strong and solid economy as the foundation for military modernization. At a talk organized by the CMC in 1984 Deng Xiaoping said: 'The air force, the navy and the Commission in charge of Science, Technology and Industry for National Defence (COSTIND) should divert some of their resources to foster the development of the economy'.[54] In a meeting of the CMC in 1985, Deng persuaded the military to be patient and tolerant in accepting a limited defence budget and to postpone the modernization plans. He said: 'The four modernizations should be achieved in order of priority. Only

[51] Based on the 1994 exchange rate (period average) of 8.6 yuan = $1. International Monetary Fund, *International Financial Statistics Yearbook 1997* (IMF: Washington, DC, 1997).

[52] 'China issues White Paper on arms', *China Daily*, 17 Nov. 1995. In addition to living costs and normal activities of the personnel, nearly 3.7 billion yuan ($429 million) is spent on social welfare.

[53] On military modernization, see section IV in this chapter.

[54] *Selected Works of Deng Xiaoping* (note 20), p. 105.

when we have a good economic foundation will it be possible for us to modernize the army's equipment'.[55]

Second, military modernization should not jeopardize the favourable international conditions for the country's economic development. Chinese leaders have reiterated that China's development needs a peaceful international environment, and any heightened tensions either in East Asia or in the Asia–Pacific region would undermine China's economic and political prospects. General Liu Huaqing, Vice-Chairman of the CMC, stressed this point again during his meeting with the visiting US–Pacific Commander on 27 April 1995.[56]

Some of the questions currently facing the military and civilian leadership concern: how the relationship between military modernization and economic development should be handled; how arms procurement should be balanced with economic investment; finding the ideal method of transferring military technology to civilian production so as to contribute to the national economy in a positive way; and how arms procurement can be commercialized in such a way as to strengthen China's military modernization rather than undermine it.

The Chinese leaders consider that the development of defence science and technology and weapon systems involves an analysis of factors influencing requirements, feasibility and the environment. The requirements depend on the strategies for national development, defence development, defence science and technology, and weapon systems development and are closely related to the accepted military strategy. Feasibility refers to the capabilities of the national economy and military technology. The environment refers to forecasts of future wars and emerging military technologies.[57]

For some time China tried to develop its own approach to arms procurement, seeking to balance a poor economy and heavy pressure from national security concerns. In July 1980, Marshal Nie Rongzhen, who was then in charge of the national defence industry, wrote to General Liu Huaqing, then Deputy Chief of the General Staff, about ways of approaching arms procurement decisions with regard to China's circumstances. He suggested that the approach to be taken should entail solving problems continuously as they appear with regard to China's unique conditions of geographical diversity and technological backwardness. This reality prevents China from acquiring modern military equipment in the same way as newly industrializing countries or entering the arms race like the developed nations. General Liu emphasized that China should be equipped with just enough military capability to deter aggression from powerful enemies while saving critical funds for improving the quality of weapons and equipment as quickly as possible.[58]

In order to modernize the PLA's equipment at low cost, China developed some basic principles of arms procurement. They are summarized as techno-

[55] *Selected Works of Deng Xiaoping* (note 20), p. 133. The 4 modernizations in agriculture, industry, science and technology and national defence were instituted by Deng Xiaoping in Dec. 1978.

[56] *Renmin Ribao* (overseas edn), 28 Apr. 1995.

[57] Luo Fengbiao (note 12), pp. 5–6.

[58] Han Huaizhi (ed.), *China Today: The Military Affairs of the Chinese Army*, vol. 2 (Chinese Social Science Press: Beijing, 1989), p. 121.

logical superiority, appropriate technology, efficient performance, low cost and ease of handling and maintenance.

Based on these principles, four basic elements of arms procurement policy can be discerned. The first is to reduce quantity and improve quality. In this regard, the PLA will gradually replace its obsolete arms with advanced systems. As the unit costs of advanced weaponry will be higher, the replacement programme will reduce the volume of weapon holdings. In terms of defence R&D, China is concentrating its limited resources on projects of new and high-technology research on a small scale. The second element is to concentrate on developing critical items such as electronic equipment and precision-guided weapons. The third is to deepen reform and improve management of arms procurement. The fourth element is to supplement domestic military production with arms procurement from abroad.[59]

Conversion

In order to maintain a balance between military and economic modernization, China has adopted a policy of combining military and civilian production which aims at preserving essential military industrial assets when they are used for civilian production and to support military products with earnings from civilian production.[60]

After 1978 China made economic development a top priority, which resulted in a sharp fall in military orders. In order to use the surplus capacity in defence production fully, military and civilian production were combined, resulting in the conversion of some defence industrial units to civilian production, on the one hand, and the awarding of military contracts to civilian industries, on the other. The general strategy is to use surplus capacities and manpower in military R&D and defence production enterprises for civilian products while keeping small units of the key technical workforce employed on defence products so that essential R&D projects and production for national defence do not come to a standstill.[61]

The Sixth Five-Year Plan (1981–85) proposed that the defence industry should produce 18 categories and 275 kinds of civilian product.[62] These were mainly machinery for the light industries and textile industries, domestic electrical appliances, motor cars and motorcycles, ships, offshore platforms, electric power machinery, aircraft and satellites for civilian use, automation instrumentation, machinery for the chemical industry, building materials and computers.

[59] Based on Luo Fengbiao (note 12), p. 20; and Chai Benliang (note 5).
[60] Interviews by the volume editor with Chai Benliang and Ling Ruyong, Beijing, Dec. 1995.
[61] Luo Fengbiao (note 12), p. 14.
[62] Luo Fengbiao (note 12), pp. 14–15. E.g., the Wuxi Sonar Works diverted a sizeable portion of its technical force into the development of medical instruments and achieved success in both domestic and overseas markets, while continuing the development of new sonar equipment. The torpedo plant continued with its torpedo production in the older workshops while developing tobacco machinery in the newly built facilities.

Since the 1980s, COSTIND has organized defence 'sci-tech' industrial units to sign cooperation agreements with provincial and municipal enterprises and institutions on developing civilian products and transfer of technologies. In March 1986 the State Council approved China's first high-technology R&D Programme, which aimed at integrating military and civilian applications in dual-use technology areas such as biotechnology, information technology, space, automation, energy and advanced materials.[63]

In 1989 China established a Civilian Applications of Military Technology Liaison Group composed of representatives from the SPC, the State Scientific and Technological Commission and COSTIND. In this group COSTIND is represented by the China Association for the Peaceful Use of Military Industrial Technology (CAPUMIT). In provinces and municipalities with concentrations of defence enterprises, leading groups have been established to coordinate conversion from military to civilian production, facilitating such transfers in national, regional and industrial development plans. Some of the government departments formerly in charge of military production have already been changed into general corporations within their respective trades.[64]

During the Sixth (1981–85) and Seventh (1986–90) Five-Year Plans, China invested approximately 4 billion yuan ($1.2 billion)[65] in projects to convert defence industries to civilian production. During the Eighth Five-Year Plan (1991–95), an additional 10 billion yuan ($1.8 billion) were invested.[66] Defence industrial enterprises enjoy the same preferential policies that the state applies to other industries to encourage reform of enterprise management and use of the contract pricing system. As the contracts stipulate, enterprises are to pay a part of their profits to the government in addition to taxes. The remaining profits from civilian goods production will be used to expand production of such goods.[67] The China Industrial and Commercial Bank annually provides special credits for conversion of military technologies to civilian use.[68]

The process of conversion from military to civilian production has been facilitated by a number of initiatives such as: (*a*) changing the traditional concepts of information control to marketing of science and technology information; (*b*) opening up the technology market, with the China Defence Science and Technology Information Centre (CDSTIC) organizing trade fairs; (*c*) disseminating information on the commercialization of defence technologies through the weekly newspaper 'China defence industry' published (in Chinese) by the CDSTIC with the support of the Technological Base Bureau of COSTIND; (*d*) building up specialized networks in defence science and technology and

[63] Luo Fengbiao (note 12), p. 17.

[64] 'China issues White Paper on arms' (note 52). The Ministry of Machine Building and Industry and the Ministry of Electronics Industry still retain characteristics of government ownership; however, they have many commercially owned subsidiaries.

[65] The figure is based on the 1986 exchange rate (period average). *International Financial Statistics Yearbook 1997* (note 51).

[66] China issues White Paper on arms' (note 52). The figure is based on the 1991 exchange rate (period average). *International Financial Statistics Yearbook 1997* (note 51).

[67] 'China issues White Paper on arms' (note 52).

[68] Luo Fengbiao (note 12), p. 17.

industry; (*e*) building up databases to include information on defence factories and institutes, transferable technologies, civilian products and machinery; and (*f*) focusing on popularizing key technological achievements.[69] There has been significant funding and support for studies and research on conversion from the China National Natural Science Foundation, which was set up in 1982.[70]

As a result of the new national industrial policy, roughly 450 production lines are now operating in the defence industry producing civilian consumer goods. The output value of civilian products manufactured by the defence industry has been increasing at an annual average rate of 20 per cent, and in 1994 it represented approximately 80 per cent of the total output value of the defence industry as opposed to only 8 per cent in 1979.[71] The output of civilian goods and technologies from the China Aerospace Corporation accounts for 70 per cent of its gross industrial output.[72] Conversion initiatives have been most successful in the electronics industry. In 1979–85 the output value of civilian products increased by 42 times and in 1990 was estimated as 90 per cent.[73] Joint ventures between Chinese and foreign enterprises in dual-use technology are seen as an important approach to technology acquisition and upgrading. In 1984–92 the China North Industries Corporation (NORINCO) established 70 joint ventures with foreign companies, in which dual-use products accounted for 60 per cent of production.[74]

In December 1990 COSTIND drew up a national Critical Technologies Plan (1991–95), which was revised and published in 1993.[75] Technology-intensive defence industries have thus become the mainstay of the modernization of the national economy. Their advantages in human resources, technology, management and facilities obtained through R&D on military products have been useful in providing qualified staff, technology, equipment and products to other civilian industries in the state sector.[76]

In addition, new technologies imported or developed domestically for civilian products, such as gyro-compasses, computers, diesel engines, microprocessor control and monitoring systems and industrial robots, are transferred to military applications after modification. This contributes to the upgrading of research in both the civilian and the military sectors. For example, computers for civilian

[69] Shi Xianqing, 'Information on military conversion', and Wang Shouyun, 'Conversion, dual-use and transfer of technology', Papers presented to the Conference on Restructuring the Military Industry: Conversion for the Development of the Civilian Economy, jointly organized by the China Association for the Peaceful Use of Military Industrial Technology (CAPUMIT) and the United Nations Department of Development Support and Management Services (UNDDSMS), Hong Kong, 1993.

[70] Hu Jian, 'The role of the China National Natural Science Foundation in conversion', Conference on Restructuring the Military Industry (note 69).

[71] Luo Fengbiao (note 12), p. 17.

[72] Wang Maochang, Paper on 'Transfer of military industrial technology for civilian production', Conference on Restructuring the Military Industry (note 69).

[73] Shen Shuiyan, 'The conversion experience of the Chinese electronic industry', Conference on Restructuring the Military Industry (note 69).

[74] Gu Wei, 'Sino-foreign joint venture and cooperation: an important approach to military conversion', Conference on Restructuring the Military Industry (note 69).

[75] Wang Shouyun (note 69).

[76] Luo Fengbiao (note 12), p. 5.

use, after being adapted for use on board warships, have been upgraded significantly in precision and failure rates have been reduced.[77]

The defence conversion initiatives undertaken since the end of the 1970s have resulted in a remarkable increase in labour productivity in four defence industrial sectors—aeronautics, electronics, ordnance and shipbuilding.[78] However, notwithstanding the impressive social and economic benefits of conversion of defence enterprises, the transfer of China's R&D achievements to the civilian industrial sector remains unsatisfactory. The main reason for this is the inadequate infrastructure, such as technological information networks, technology transfer markets and sources of venture capital. The transfer of military technologies to civilian use requires the joint participation of military and civilian personnel. It is, therefore, more complex than technological innovation.

In the conceptual phases of new, high-technology defence development projects, the possibilities of developing dual-use technologies are examined.[79]

The balance between imports and domestic production

Two domestic factors determine Chinese military modernization: (*a*) China is reducing the numbers of its active troops from the former 3 million; and (*b*) with its growing economy and foreign exchange reserves, the possibilities of qualitatively improving domestic military production in technological terms can be realized in the foreseeable future. Nevertheless, as Chinese R&D and industrial capabilities cannot quickly produce sophisticated arms, China must continue to import foreign arms in order to accelerate the pace of military modernization and to meet emergent security requirements. For example, French SA-342 and US UH-60 helicopters have been imported to build up the Army Air Corps, whose units are mostly under the Chengdu Military Region responsible for the Sino-Indian border.[80]

Self-reliance is the first principle adopted by the Chinese Government to maintain a balance between imports of foreign arms and domestic military production. Dependence on foreign arms suppliers is considered a political handicap since, in the eventuality of a crisis, China could become subject to foreign political influence or embargo.

China has already experienced the insecurities of arms dependence with the Soviet Union in the late 1950s and with the USA in the 1990s. Its experience with the Soviet Union vividly illustrates the disadvantages of importing manufacturing capabilities without acquiring design and production technology domestically. After the Soviet Union began withdrawing its experts from China in 1958, the Chinese defence industry was severely undermined. China's experience with the USA also conveyed the unreliability of foreign military agree-

[77] Luo Fengbiao (note 12), p. 17.
[78] Chai Benliang (note 5), p. 16.
[79] Chai Benliang (note 5), p. 17.
[80] Fan Wei, 'Arms procurement and national development in P. R. China', SIPRI Arms Procurement Decision Making Project, Working Paper no. 6 (1995), p. 14.

ments. In the 1980s, China sent representatives of the PLAN and the China State Shipbuilding Corporation to the USA to purchase marine gas turbines and decided to import those produced by the General Electric Company. However, the political tensions between China and the USA after the 1989 Tiananmen Square incident disrupted this contract[81] as well as the agreement to upgrade Chinese aircraft. The USA's annulment of these contracts caused delays in the modernization of the PLAN and the PLAAF.

To develop its indigenous capacity and approach its goal of self-reliance, China has tried to avoid purchasing many finished weapon systems and has focused instead on obtaining production technology through licensing agreements. Only a small number of weapon systems, their key components, test equipment and production know-how are imported. Related technologies are absorbed and upgraded to meet local requirements with the help of local R&D.

A second principle for maintaining a balance between arms imports and domestic production is to indigenize imported military technology. Consequently, China's arms import policies prioritize the import of production lines, combined with other measures: (*a*) importing complete weapon systems; (*b*) importing broken-down kits to be assembled; (*c*) importing parts that have been planned for production in China but are still not indigenized; (*d*) assembling weapons with indigenous parts; and (*e*) provisionally importing some parts for which it is not viable financially to construct new production lines.[82]

Requests for procurement of foreign arms or military technology are raised by the HGS. If the request to import a weapon system can be afforded within the budget, it is included in the proposals of the SPC and the Ministry of Foreign Trade and Economic Cooperation, and sent to the CMC and the State Council for approval. Thereafter, joint groups of experts from the PLA, manufacturing enterprises and R&D institutions are formed to study the technical performance, specifications, quality and ease of supply of the items to be imported, the training they would require and software needed.[83] These feasibility studies are guided by three principles:

[81] Luo Fengbiao (note 12), pp. 12–13.

[82] Luo Fengbiao (note 12), p. 12. In order to upgrade the propulsion system of 1 type of guided-missile destroyer by adopting the combined diesel engines or gas (CODOG) propulsion system, the whole system, including the gas turbines, diesel engines, 'reduction gears', shafts and controllable pitch propellers, was to be purchased from abroad and then indigenized in China step by step. Teams sent by the PLAN, the China State Shipbuilding Corporation and other authorities visited Germany, Sweden, the UK and the USA many times and finally decided on purchasing the naval gas turbines from the General Electric Company in the USA; the diesel engines and control and monitoring system from Motoren- und Turbinen-Union Friedrichshafen GmbH (MTU) of Germany; the gearboxes from Renk of Germany; and the controllable pitch propellers from KaMeWa of Sweden. MTU acted as prime contractor for the whole system. The working drawings for installation on board were done by the Ship Design Institute of the shipbuilding industry. The whole project was carried out through the concerted efforts of the end-user, builder, designer and foreign supplier. The China State Shipbuilding Corporation has since bought the production know-how of the controllable pitch propellers from KaMeWa and the diesel engines from MTU. However, the anticipated cooperation for the production of naval gas turbines with the US companies was disrupted for political reasons. Luo Fengbiao (note 12), pp. 12–13.

[83] Luo Fengbiao (note 12), pp. 11–13.

1. The production of arms under licence from foreign suppliers should include an element of domestic production in terms of technology, materials and components.
2. It should be possible to indigenize the parts or components of the imported equipment in a specified period of time. The possibility of indigenization is given special consideration since China cannot afford large amounts of military imports.
3. The technology of the imported weapons or equipment should be advanced but available at reasonable prices.

On the basis of these principles, the user services can either import the required technology or equipment through their own trading companies[84] or entrust the order to a trading company of the manufacturing industry under the State Council[85] or the Technology Import and Export Corporation and Machinery Technology Import and Export Corporation of the Ministry of Foreign Trade and Economic Cooperation.[86]

In addition to the import of foreign arms and equipment, China has tried to upgrade its arms through technological cooperation with foreign countries. According to incomplete statistics, China sent about 480 military delegations (or groups) to 55 countries for the purpose of learning about weapon and equipment technology or to establish cooperation on arms or military procurement during the period 1979–87.[87] Like other nations, China attaches great importance to attracting foreign investment. With an increased inflow of capital, facilities for R&D and production can be modernized, products upgraded and competitiveness improved quickly. This is also very important for defence enterprises, since they are now opening up to foreign cooperation in the civilian sectors. According to one report, joint ventures in the electronics industry hold a strategic position in the Chinese economic build-up, and nearly 500 joint ventures with foreign companies have used $4.6 billion up to 1994.[88] Although private and joint-venture enterprises still do not represent a large sector, they have boosted their position very fast since the introduction of economic reforms in China.[89]

[84] The Equipment Technical Department of the GSD or the HGS has a Bureau of Military Equipment and Technical Cooperation (BOMETEC) and a Military Trade Office. The trading companies are Polytechnologies Inc.; China Electronic Systems and Engineering Company (CESEC); Ping He Electronics (military technology trading); and China Zhihua Corporation (communications equipment, computers, image processing and navigation equipment). Holberton, S. and Walker, T., 'The generals' big business offensive', *Financial Times*, 28 Nov. 1994, p. 13.

[85] E.g., the North Industries Corporation (NORINCO), the China Shipbuilding Trading Company (CSTC) and the China Electronics Industry Corporation (CHINATRON).

[86] Luo Fengbiao (note 12), pp. 11–12.

[87] Han Huaizhi (note 58), p. 111.

[88] Luo Fengbiao (note 12), p. 18. Some joint ventures have become subcontractors for developing parts for military products, as in the case of bearings produced for military use.

[89] Luo Fengbiao (note 12), p. 9.

IV. Factors influencing arms procurement

Security issues

Sino-US relations

Generally speaking, China's security environment improved after the collapse of the Soviet Union, but there are grounds for long-term security concern. The USA is increasingly at odds with China over a host of security issues from arms sales to Taiwan to the proliferation of weapons of mass destruction. After the cold war the USA dramatically reduced its military presence in Europe while maintaining its military strength in the Pacific and East Asia regions.

Incidents such as the blocking of the Chinese cargo ship *Yinhe* (Galaxy) in the Persian Gulf for more than 20 days on suspicion of carrying chemical weapon precursors to Iran in 1992, the tracking of Chinese nuclear submarines in the Yellow Sea by the US aircraft-carrier *Kitty Hawk* in 1994, and the presence of US aircraft-carriers in the Taiwan Straits in March 1996 make the Chinese leadership wary and suspicious of US policy towards China, making it the foremost security issue influencing arms procurement by the PLA. Since it is difficult to predict whether the USA will shift its Chinese policy from one of engagement to confrontation, the Chinese believe that the US strategy could be to delay China's economic modernization by forcing China to divert its investment to the military production sector, as this strategy was assumed to be effective on the Soviet Union during the cold war.[90]

A US policy of confrontation towards China will drive it to strengthen its arms procurement from other military powers, such as Russia. During Prime Minister Li Peng's visit to Moscow in June 1995, China and Russia issued a joint communiqué on the development of military technology cooperation.[91] However, if the USA resumes a strategic relationship with China like that pursued in the 1980s, China may resume arms cooperation with the USA.

The Taiwan issue

After consolidating his power in Taiwan in the 1996 election, President Lee Teng-hui launched a diplomatic campaign to gain greater international recognition. As a consequence, separatism has gained momentum in Taiwan.[92] If Taiwan declares its independence, mainland China may resort to military force.

The initiatives of the Taiwanese leadership towards independence from the mainland are largely based on two assumptions—the expectation of US military involvement in a possible war in the Taiwan Straits and a continuation of the

[90] Yan Xuetong, 'China's security and military transparency', SIPRI Arms Procurement Decision Making Project, Working Paper no. 4 (1996), p. 2.

[91] 'Zhong E Lianhe Gongbao' [Sino-Russian joint communiqué], *Renmin Ribao*, 28 June 1995.

[92] In a survey by the Taiwan authorities in 1994, 12.4% of respondents were firm separatists, 32.1% favoured independence or permanent separation and 27.4% favoured reunification. Hu Zhiquiang, 'Ziang Taiwan shuo "Yes"' [To say 'yes' for Taiwan], *Zhongyiang Ribao* (international edn), 21 Sep. 1994.

large arms supplies from the USA and Western Europe. According to a Hong Kong newspaper, one of President Lee Teng-hui's advisers revealed the belief of Taiwanese leaders that the USA would take appropriate action against China if a war broke out in the Taiwan Straits.[93] After 1991, Taiwan increased its arms imports, mainly from the USA. By the end of this century, Taiwan aims to possess around 340 sophisticated fighter aircraft, including 150 F-16s, 60 Mirage 2000-5s and 130 Ching-kuo indigenous defence fighters. In contrast it should be noted that the mainstay aircraft of the PLA are the out-of-date J-7 and J-8.[94] The PLAAF will not be able to introduce the J-10, an advanced combat aircraft, by the end of this century. In the past few years, Taiwan has leased naval equipment from the USA, such as frigates, landing ships and mine-sweepers. It is also constructing seven improved Perry Class frigates and importing six Lafayette Class frigates.[95]

Faced with such a situation, the PLA needs to upgrade the arms and equipment of the PLAN and the PLAAF in order to prevent military conflicts in the Taiwan Straits. The only way to prevent Taiwan from becoming independent is to maintain mainland China's military advantage over Taiwan. During his inspection of a military manoeuvre in December 1995, Jiang Zemin, the Chairman of the CMC, observed that: '[w]e must emphasize naval building and speed up modernization of the navy in order to ensure our maritime security and push for national reunification'.[96]

Economic security

Since the end of the cold war, economic security has become a major aspect of Chinese security. Economic security differs from territorial security. It extends beyond a country's border and is more difficult to ensure. The emerging problems associated with economic security also have an impact on Chinese arms procurement. China must balance the competing demands of development strategies or requirements for national development with the development of national defence and military technology. These requirements are pursued by synthesizing the capabilities of national economic and technological power—a responsibility which is in the general domain of the State Council working through the State Planning, Economic, Science and Technology, and Education Commissions, as well as the Ministry for Foreign Affairs, the HGS and COSTIND. In this way the broader development of military strategy, technology and arms procurement is harmonized with national development strategy. This process requires the joint approval of the CMC and the State Council.[97]

[93] 'Taiwan Guji Ta Zaudau Jingong Shi Hui Tedao Zhichi' [Taiwan expecting support when it is attacked], *Dongfang Kuaixun*, 24 Aug. 1995.

[94] 'Zhongguo Fazhan Xingxing Junyong Faiji' [China developing new military aircraft], *Renmin Ribao* (overseas edn), 2 Dec. 1988.

[95] Swaine, M. D., 'The modernization of the Chinese People's Liberation Army: prospects and implications for Northeast Asia', *NBR Analysis*, no. 3 (Oct. 1994), p. 15.

[96] 'Jiang Zhuxi Shicha Haijun Budui Guankan Haishang Yanxi' [Chairman Jiang inspects navy and watches manoeuvre], *Renmin Ribao*, 19 Oct. 1995.

[97] Luo Fengbiao (note 12), pp. 5, 6.

China's economy is becoming increasingly integrated into the world economy. Exports increased to 19.5 per cent of gross national product (GNP) in 1992, from 6 per cent in 1980[98] and the increasing globalization of the Chinese economy will further increase overseas trade. Because about 85 per cent of its foreign trade is transported by sea,[99] it is logical that China's maritime security concerns derive from the need to protect the sea lines of communication and offshore resources.

In 1992 China declared that its Law on its Territorial Waters and Contiguous Areas—its interpretation of the 'continental prolongation principle' of the 1982 UN Convention on the Law of the Sea—supports its claim to the Spratly/Nanshan Islands.[100] In the face of increasing demand and depleted oil reserves, pressure has increased for access to the oil believed to be in the South China Sea. China became a net oil importer in 1994, and its gross oil imports may approach 1 million barrels per day by the turn of the century. The quality of Chinese iron ore is low and its steel industry increasingly relies on imported iron ore from Australia and Latin America. To maintain durable high growth in the economy, China must secure its sources of energy supply and steel production; therefore, maritime routes are vital to the Chinese economy.[101]

Military modernization

Faced with such economic security concerns, China needs to modernize its military, especially the PLAN.

> . . . turning the PLA into a strong, modernized, revolutionary regular army and constantly increasing our defence capabilities, so as to provide powerful protection for the reform, the opening up and economic development . . . Thus it will be ready to perform even better the sacred mission of defending China's interests, its sovereignty over its territory, territorial waters and air space, and its maritime rights and of safeguarding the unity and security of the motherland.[102]

Chinese military equipment is far behind the systems of other major military establishments in terms of quality. By Western standards, the PLA remains a large, manpower-intensive force without sufficient transport, artillery and armour: thus it is not well prepared for large-scale mobile warfare.[103] In technology it lags behind the advanced countries' armies by 20–30 years.[104] It is at least 15 years behind Russia and 40 years behind the USA. Japan has a decisive

[98] *1993 Zhongguo Duiwai Jingji Maoyi Nianjian* [1993 China foreign economy and trade yearbook] (China Social Sciences Press: Beijing, 1993), p. 440.

[99] 'China adopts a new stance', *Jane's Defence Weekly*, 26 Feb. 1994, p. 19.

[100] Fan Wei (note 80), p. 7.

[101] Yan Xuetong (note 90), pp. 3, 5, 7.

[102] Report of the 14th National Party Congress, 1992, Jian Zemin, 'Accelerating reform and opening-up', *Beijing Review*, 26 Oct.–1 Nov. 1992, p. 26.

[103] Godwin, P. H. B., 'Military technology and doctrine in Chinese military planning: compensating for obsolescence', and Friedman, N., 'Chinese military capacity: industrial and operational weaknesses', ed. E. Arnett, SIPRI, *Military Capacity and the Risk of War: China, India, Pakistan and Iran* (Oxford University Press: Oxford, 1997).

[104] Yan Xuetong (note 90), p. 25.

edge over the PLA in terms of the quality of its naval weapons and supporting systems.[105] Without upgrading its military technological capabilities it will be difficult for China to win local wars in the future.

Emerging technologies are rapidly giving impetus to a revolution in weapons. This has widened the gap between the performances of different countries' weapons and the qualitative differences in military power. The concept of a high-technology arms race greatly influenced Chinese studies of imported arms after the Persian Gulf War of 1991. Faced with the prospect of such an arms race, China's priorities are to develop advanced weapons with the capability of medium- or long-range force projection. This involves developing capabilities in areas such as mobility and rapid reaction, and a technologically advanced and quality-driven defence industry. Arms are imported according to the need to build rapid-reaction forces capable of carrying out military operations in a high-technology local war. The PLA was previously trained to fight a major people's war against foreign invasion. The technological gap is expressed in the battlefield context in terms of gaps in information, space, time and precision.[106]

Since the end of the cold war, the view has been widely held in Chinese military circles that, in order to ensure the security of the country's economic achievements, the PLA must commit itself to keeping the enemy outside China's territory. This strategy is called *Jiji Fangyu* (active defence). The kind of conflicts China might expect to be involved in after the cold war are most probably local wars involving high-technology weapons and systems. The PLA must acquire the capability to win this type of war.[107]

The security rationale for modernizing and building up a blue-water navy goes back to the mid-1970s, when engagements between lighter Chinese naval vessels and larger South Vietnamese destroyers provided a new level of operational experience for the PLAN. In the mid-1980s Chinese security advisers suggested that the country's defence potential should be extended up to the 'First Island Chain' ranging from the Kurile Islands in the north to Taiwan, the Philippines and Indonesia in the south. Consequently, the PLAN Academic Guide Committee and the Naval Military Academic Institute recommended a three-stage naval development plan. The first stage (1996–2019) calls for the development of large surface combatant vessels and nuclear attack submarines. During the second (2020–39), plans call for the procurement of two or three light aircraft-carriers to become a major force in the western Pacific. By the third stage (from the mid-21st century onwards) the PLAN expects to be counted as a major sea power.[108]

[105] Morgan, J. R., 'Porpoises among the whales: small navies in Asia and the Pacific', *East–West Center Special Report*, no. 2 (Mar. 1994), p. 30.

[106] Chen Xiaogong, CIISS and Liu Xige, Foundation for International Strategy Research, *International Strategic Studies* (China Institute for International Strategic Studies: Beijing), no. 2 (June 1993), p. 4.

[107] Yan Xuetong, 'China's post-cold war security strategy', *Contemporary International Relations*, no. 5 (1995), p. 8.

[108] Jun Zhan, 'China goes to the blue waters: the navy, seapower mentality and the South China Sea', *Journal of Strategic Studies*, vol. 17, no. 3 (Sep. 1994), pp. 188–89.

China is likely to find it difficult to carry out broadly-based research in emerging high-technology weapons. A more realistic approach could be to invest steadily in basic and applied research projects in a few dual-use high-technology areas which would widen the spectrum of investment channels available not only from military and civilian enterprises but also from new high-technology enterprises, including foreign companies.[109] As demands for PLA modernization will be large, it is likely that high-technology weapon systems will be developed for select units and formations only until economic modernization catches up with military modernization.

Limited resources

Arms procurement is basically constrained by limited economic resources. The figures for gross domestic product (GDP) and GDP per capita bear witness to this.[110] By way of comparison, in 1994 China's military expenditure was only 2.2 per cent of that of the USA and 14 per cent of that of Japan.[111]

Although higher expenditure on defence R&D will improve the operational capability of the PLA, investments in economic development will generate better returns and indirect benefits for the defence industry. During the Seventh Five-Year Plan (1986–90), China invested 600 million yuan ($174 million)[112] to launch 11 civilian-purpose satellites, gaining a direct economic return of 4.3 billion yuan ($1.2 billion).[113] In contrast, in the military telecommunications area, an investment of several billion yuan is required to establish a telecommunications network linking the capitals of all the provinces and autonomous regions in China.

A key problem in releasing resources for arms procurement is already being addressed by reducing the manpower of the PLA.

Transparency in arms procurement

In 1995 China for the first time issued a White Paper on its security policies.[114] This has encouraged scientists and experts to discuss the reforms in the defence industry, and some specialized newspapers and periodicals have published articles on the arms procurement debate.[115] The White Paper outlines the broad

[109] Chai Benliang (note 5), pp. 14–15.

[110] In 1995 China's GDP was $700 billion, while its GDP per capita was $570. These figures were 10% and 2%, respectively, of the GDP and GDP per capita of the USA. *International Financial Statistics Yearbook 1997* (note 51).

[111] 'Shishi Shengyu Xiongbian' [Facts beat eloquence], *Renmin Ribao*, 28 July 1995.

[112] The US$ figures are based on the 1986 period average exchange rate. *International Financial Statistics Yearbook 1997* (note 51).

[113] Lu Fengxian, 'On values of development of space technology from successful launch of Australian satellite', *China Space*, no. 6 (1993), pp. 3–6.

[114] *China: Arms Control and Disarmament* (Information Office of the State Council of the People's Republic of China: Beijing, Nov. 1995) (in English).

[115] These periodicals include *Zhongguo Jungong Bao* [China military industry news], *Jungong Kancha* [Review of military industry] and *Binggong Xuebao* [Arms industry magazine].

features of Chinese security policy. These include reductions in its military manpower, defence spending, conversion, technology export controls and arms control commitments.

Arms procurement-related information is currently available in a variety of domestic publications including newspapers and periodicals, 'business news' issued by the various defence industrial enterprises and special publications about military developments.[116] These publications provide basic information from various forums to the society as a whole.

The question of transparency in arms procurement has been addressed through Chinese participation in the debate on the development of the UN Register of Conventional Arms and its reports to the UN Register on its exports and imports of conventional arms. China supports the enactment of appropriate and practicable transparency measures as they foster international trust, guard against conflict and serve to ease international tensions. As far as transfers of high technology with military applications are concerned, the Chinese view is that there is a need to abolish the biased and discriminatory technology export controls set up by a minority of the leading developed countries, and to guarantee developing countries their legitimate right to exploit high technology for economic development and for the maintenance of defence capability.[117]

V. Conclusions

The pace of modernization of the PLA's arms will be greatly determined by the economic development and the security situation of the country. Weapons and equipment will be modernized while China pursues economic development, but economic priorities may constrain modernization. Arms procurement will be maintained at current levels if the Taiwanese leaders restrain their efforts for independence. However, should Taiwan attempt independence, the PLA could be driven to accelerate its arms procurement plans. In 1995, not long after Lee Teng-hui's visit to the USA, Jiang Zemin told senior Chinese veterans: 'We need to strengthen our defence construction and military building, concerning the complex international environment, the maintenance of national unity and the protection of economic construction . . . we must improve the weapons and equipment of our troops, enhance military quality and increase defence operational capability'.[118]

[116] These include *Jiefangun Bao* [Liberation Army daily]; *Zhongguo Bao* [Defence industries weekly]; and *Junzhuanming Bao* [Defence conversion news]. Business news is carried by various defence industry periodicals such as *Junshi Jingji Yanjiu* [Military economic studies monthly] published by the Military Economic Academy in Wuhan; *Xiandai wugi* [Modern armaments]; editions on military developments in *Dangdai Zhongguo Congshu* [Series of *China Today*] *Zhongguo Junshi Baikequanshu* [Chinese military encyclopedia]; and *Zhongguo Junshi Nianjian* [Chinese military yearbook] published by the Academy of Military Science Press and National Military Standards.

[117] Sha Zukang, 'China and transparency in armaments', *Disarmament: A Periodic Review by the United Nations*, vol. 17 (1994), p. 139.

[118] 'Jiang Zemin Tongzhi de Jianghua' [Comrade Jiang Zemin's speech], *Renmin Ribao*, 26 Aug. 1995.

Chinese arms procurement policies will continue to emphasize improvement of domestic military production, especially high-technology weapon development. During a visit to Hubei Province in 1994, Vice-Chairman of the CPC Liu Huaqing observed that:

> to push up our defence science, technology and industry with high technology and gear up our military modernization . . . the defence industry must closely follow the rapid development of the state-of-the-art technology in the world and effectively combine domestic and imported technology and equipment, continuously improving our defence industry to provide better service to the strategic guideline of 'active defence'.[119]

The military part of China's defence industry will shrink through conversion to civilian production, but some initiatives to improve defence science, technology and industry, especially through R&D, will be stepped up. It is evident that closer cooperation between China's and Russia's defence industries will play a significant role in improving the capability of China's military production, especially in terms of advanced military technology. As regards arms imports, China will continue to prioritize sophisticated weapon technology.

It is important to remember China's unique characteristics. In terms of population, GNP and military power, it is far ahead of other developing countries. It is expected that the economic development priorities will be maintained for at least another 15 years with China keeping to its current guidelines concerning arms procurement priorities. Thus, China is likely to increase its arms procurement from abroad steadily but not dramatically, and will fundamentally rely on the improvement of the domestic defence industry.

According to the late Deng Xiaoping, a world war is not likely to occur in the foreseeable future—a judgement without which China cannot devote itself wholeheartedly to the four modernizations, let alone the reforms and policies necessary to build up the PLA. It was this thinking that shaped the changes in the mid-1980s in China's national defence build-up and the plans for qualitative enhancement of the military that were formulated in 1992.[120]

[119] 'Yikao Gaoxin Jishu Jiakuai Guofang Xiandaihua' [Speeding up defence modernization with high technology], *Xinhua Meiri Dianxun*, 21 May 1994.

[120] Chen Xiaogong and Liu Xige (note 106), pp. 2–3.

Appendix 2A. China's military R&D, manufacturing and trading*

Central Military Commission (CMC)

PLA Headquarters of the General Staff (HGS)
Bureau of Military Equipment and Technology Cooperation (BOMETEC)
Huitong Corporation (Group)
China Electronic Systems Engineering Company (CESEC)—*communications and electronics technology and equipment*
Pinghe Electronics Company Limited—*military technology*
China Zhihua Corporation Limited—*communications equipment, computers, image processing equipment and navigation equipment*

PLA General Political Department (GDP)
Kaili Corporation or Carrie Enterprises—*communications equipment and publications*
Tiancheng Corporation (Group)

PLA General Logistics Department (GLD)
China Xinxing Corporation (Group)—*food, clothing, construction materials, fuels, vehicles and boats*
San Jiu or 999 Enterprise Group—*pharmaceuticals*

PLA Air Force (PLAAF)
Lantian (Blue Sky) Industrial Corporation
Tianma Enterprises
China United Airlines
China Anda Aviation

PLA Navy
Songhai Corporation

Strategic Rocket Forces or 2nd Artillery
Shanhaidan Enterprises Group

People's Armed Police (PAP)
(For day-to-day functions, the PAP comes under the Ministry of Public Security)
Jingan Equipment Import–Export Corporation—*small arms and riot-control, security and fire-fighting equipment*
China Anhua Development Corporation

* This appendix is based on: US Defense Intelligence Agency, 'China's defense–industrial trading organisations', Defense Intelligence Reference Document PC-1921-57-95 (1995); Deng Liqun, Ma Hong and Wu Heng (eds), *China Today: Defence Science and Technology*, vol. 1 (National Defence Industry Press: Beijing, 1993), pp. 46–47; Holberton, S. and Walker, T., 'The generals' big business offensive', *Financial Times*, 28 Nov. 1994, p. 13; *China Directory 1997* (Radiopress: Tokyo, 1996), pp. 80–81 (in English); Deng Liqun, Ma Hong and Wu Heng (eds), *China Today: Defence Science and Technology*, vol. 1 (National Defence Industry Press: Beijing, 1993), pp. 34–39; and Foreign Broadcast Information Service, *Daily Report–China (FBIS-CHI)*.

State Council

Ministry of Machine Building (former 1st Ministry of Machine Building and Industry, MMBI)
(Only some sections of this ministry are defence-related)
Military Production Department
Automobile Industry Department

China National Nuclear Corporation (CNNC) (former 2nd MMBI)
China Nuclear Energy Industry Corporation (CNEIC)—*nuclear technology*
China ZhongYuan Engineering Corporation (CZEC)—*international cooperation of the Chinese nuclear industry*
China Nuclear Instrumentation and Equipment Corporation (CNIEC)—*fire control systems and precision instruments*
China Nuclear Equipment and Materials Corporation (CNEMC)
China Rainbow Development Corporation—*nuclear power development*
China Isotope Corporation

Aviation Industries Corporation of China (AVIC) (former 3rd MMBI)
China National Aero-Technology Import and Export Corporation (CATIC)—*aircraft and remotely piloted vehicles*
China National Aero-Engine Corporation
China National Aero-Equipment Corporation
Xian Aircraft Company (XAC)—*aero-engines*
Nanchang Aircraft Manufacturing Company (NAMC)—*cruise missiles*
China Helicopter Company
Harbin Aircraft Manufacturing Company—*helicopters, light aircraft*
Northwest Industry University—*miniature turbojet engine for use in cruise missiles and pilotless aircraft*
Shaanxi Aircraft Company
Chendu Aircraft Industrial Corporation—*fighter aircraft*

Ministry of Electronics Industry (MEI) (former 4th MMBI)
China Electronics Industries Corporation (CEIC)
China National Electronic Import-Export Corporation (CEIEC)—*cryptographic systems, radars, mine-detection equipment, fibre and laser optics and communications technology*

China North Industries Corporation (NORINCO) (former 5th MMBI)
—*armoured vehicles, artillery, infantry weapons, small arms, ammunition and radars (also motorcycles, mini-vans, mini-cars, heavy trucks, engineering machinery, chemicals, telescopes, electronic goods)*
China General Industrial Materials and Equipment Corporation—*armoured vehicles and trucks*
China Yanxing National Corporation
China North Optics and Equipment Corporation
China Ordnance Industry Corporation

China State Shipbuilding Corporation (former 6th MMBI)
China Shipbuilding Trading Company Limited—*naval ships and craft*
Nuclear Submarine Building Plant (NSBP)
Dalian Shipyard
Qingdao Shipyard
Guangzhou Shipyard

China Aerospace Corporation (CASC) (former 7th MMBI)

China Academy of Launch Vehicle Technology (CALT) or the former 1st Academy or the Beijing Wanyuan Industry Corporation (BWYIC)—*space launch vehicles, mission analysis and interface coordination*

China Chang Feng Mechanics and Electronics Technology Academy or the former 2nd Academy—*spacecraft and components*

Hai Ying (Sea Eagle) Electro-Mechanical Technology Academy of China or the former 3rd Academy

Hexi Chemical Corporation or the former 4th Academy

Chinese Academy of Space Technology (CAST) or the former 5th Academy—*satellites and recoverable payloads*

China Space Civil and Building Engineering Design and Research Institute (CSCBI) or the former 7th Academy

Shanghai Academy of Spaceflight Technology or the Shanghai Bureau of Astronautics (SHBOA) or the former 8th Academy—*first and second stages of space launch vehicles and altitude control, guidance and stabilization systems*

China Academy of Basic Technology for Space Electronics or the former 9th Academy

Xichang Satellite Launch Centre

China Great Wall Industry Corporation (CGWIC)—*space launch services, Long March launchers, space technology and equipment and prime contractor for space services*

China National Precision Machinery Import and Export Corporation (CPMIEC)—*missiles, rocket engines, radars, precision machinery, optical instruments, medical equipment, household electrical appliances, tools and fixtures*

China Jiangnan Space Industries Group Company

Sichuan Aerospace Industry Corporation

China Sanjian Space Group

Shaanxi Linganan Machinery Company

Yunnan Space Industry Corporation

China Astronautics Industrial Supply and Marketing Corporation

Feihuan Corporation

Beijing Tongha Measuring Instruments Corporation

Commission of Science, Technology and Industry for National Defence (COSTIND)

Xinshidai (New Era) Development Corporation—*scientific cooperation and exchanges, exhibitions and advanced technology tactical missiles*

Yuanwang (Group) Corporation

Galaxy New Technology Corporation—*super computers*

China Defence Science and Technology Information Center (CDSTIC)

China Association for the Peaceful Use of Military Industrial Technology (CAPUMIT)

Xiaofeng Technology and Equipment Corporation—*computers, test equipment, robotics and advanced technology*

Appendix 2B. The development of coastal minesweepers by the PLAN in the 1980s*

In 1976, the PLAN anti-mine equipment programme was approved to develop a new generation of coastal minesweepers, substituting for two existing types. The tactical–technical performance requirements for the new type were set through a feasibility study conducted by a special research team consisting of representatives from operational fleets, the Shipbuilding Corporation and the Navy Material Commands. On the basis of manufacturing and peacetime operational experience with the two existing types and for combat effectiveness, the minesweeper should be able to: (*a*) operate generally in offshore and harbour areas in high seas with good seaworthiness; (*b*) manoeuvre while performing minesweeping; and (*c*) use various physical principles—acoustic, magnetic, mechanic, and so on.

Next, the concept formulation stage was initiated with the establishment of an R&D Engineering Team of professional engineers from the Shanghai Naval Architecture Institute, the Shipboard Auxiliary Machinery Institute and the Hubei Underwater Weapon R&D Center, among others. After several years of effort, some key technology objectives were formulated concerning, for example, magnetic signature reduction, the use of composite alloys and materials for ship hulls, and the power generation and propulsor systems.

These technical objectives were realized through prototype testing that ensured type design approval. The vessel was constructed in 1984–87. After commissioning, it completed a full minesweeping test in 1988 and training exercises.

No further vessels were built.

Between May 1989 and May 1990 a comprehensive Review and Improvement Study was conducted, which resulted in several reports and documents on technical innovation for the construction of future vessels.

The military representatives deployed by the Navy's Materials Department, which functions under the Logistics Department, had carried out auditing at all major stages of procurement, together with officers sent by the China State Shipbuilding Corporation.

Figure 2B.1 shows the working relationships and the division of responsibility among various organizations involved in development of a warship.

* This appendix is based on: US Defense Intelligence Agency, 'China's defense–industrial trading organisations', Defense Intelligence Reference Document PC-1921-57-95 (1995); Deng Liqun, Ma Hong and Wu Heng (eds), *China Today: Defence Science and Technology*, vol. 1 (National Defence Industry Press: Beijing, 1993), pp. 46–47; Holberton, S. and Walker, T., 'The generals' big business offensive', *Financial Times*, 28 Nov. 1994, p. 13; *China Directory 1997* (Radiopress: Tokyo, 1996), pp. 80–81 (in English); Deng Liqun, Ma Hong and Wu Heng (eds), *China Today: Defence Science and Technology*, vol. 1 (National Defence Industry Press: Beijing, 1993), pp. 34–39; and Foreign Broadcast Information Service, *Daily Report–China (FBIS-CHI)*.

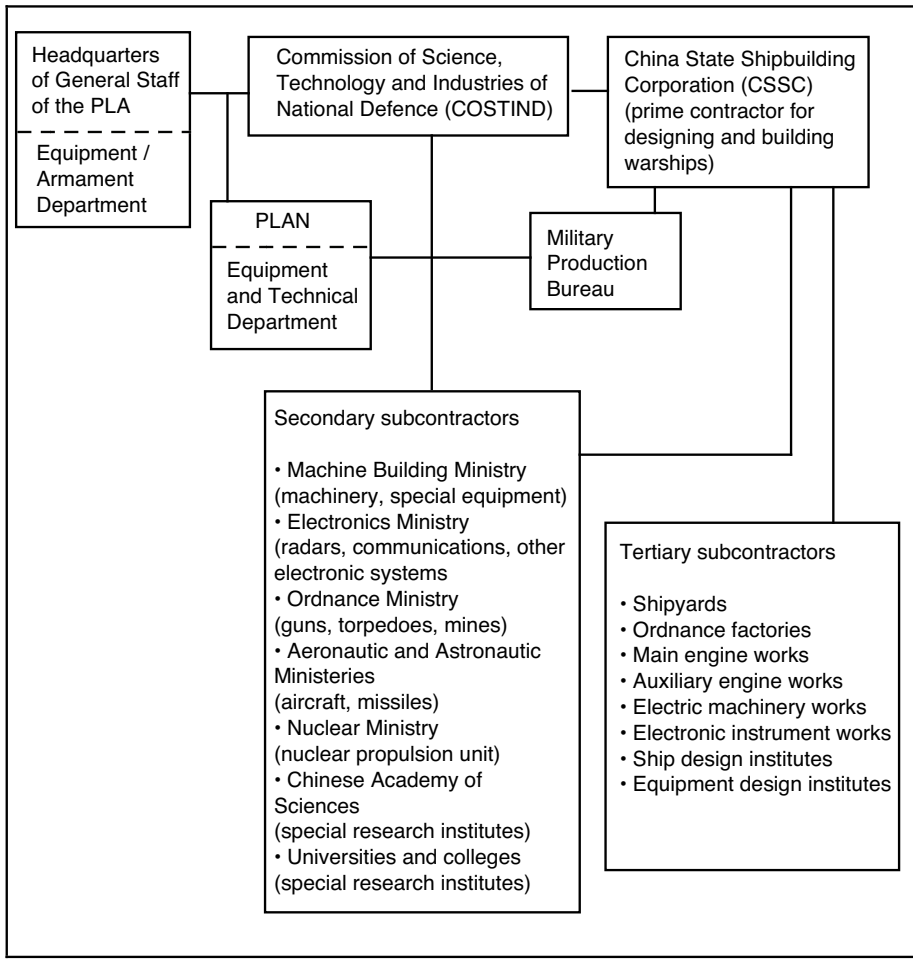

Figure 2B.1. Organizations involved in the development of a warship

Notes: PLA = People's Liberation Army; PLAN = People's Liberation Army Navy.

Source: Compiled by the authors.

3. India

Ravinder Pal Singh[*]

I. Introduction

Although India's democratic institutions include a vibrant free press, its effectiveness is limited by a number of factors. Standards of academic research in certain aspects of national security studies are constrained by the low salience given to defence studies and a relative lack of public information. Lack of interest in defence issues in the lower house of the Indian Parliament (the Lok Sabha) perhaps stems from their low electoral value. The situation is thus one of an under-informed yet vocal society.

Although departmental responsibilities and procedures at the lower levels are well defined, ambiguities remain about how the arms procurement policy-making process integrates the functions of the Government's different security bureaucracies. The process does, however, illustrate the general state of public policy making in India.

The complex range of issues and factors that influence decisions requires a multi-dimensional examination, and no comprehensive studies or collated primary sources at the national level exist. This chapter is based on the informed opinion of Indian experts from diverse backgrounds and organizations and on Indian publications and public sources. Despite strong public interest in the accountability of the official decision-making processes, a traditional reticence among Indian officials and competition over 'turf' hampered this study. However, some senior officials, both in active service and retired, participated in the workshop held to review the papers on which this chapter is based.

[*] The author would like to thank A. P. Venkateswaran, former Foreign Secretary of India, who supervised the research in India, and the experts who contributed the papers which formed the basis of the chapter. Annexe C lists all these contributors. In addition, the following experts participated in the workshop held in New Delhi on 1 July 1995: G. K. Arora, former Secretary, Ministry of Finance; Maj.-Gen. D. Banerjee, Deputy Director, Institute for Defence Studies and Analyses (IDSA); Capt. U. Bhaskar, Senior Fellow, IDSA; A. Deo, formerly of the Ministry of External Affairs; S. C. Kashyap, former Secretary General, Parliament of India; I. Malhotra, senior journalist; Brig. V. K. Nair (ret.); Vice-Admiral K. K. Nayyar, former Vice-Chief of Naval Staff; Lt-Gen. V. R. Raghavan (ret.), former Director-General of Military Operations; R. Ramachandran, journalist, *Economic Times*; K. Santhanam, Chief Adviser, Defence Research and Development Organisation (DRDO); V. Siddartha, DRDO; A. V. Singh, Joint Secretary, Ministry of Defence; Air Commander N. B. Singh (ret.), United Services Institution of India (USI); N. N. Vohra, former Defence Secretary; and M. Zuberi, Jawahar Lal Nehru University. The author also thanks K. Subrahmanyan, former Director, IDSA, for reviewing the country study.

Section II of this chapter describes the current arms procurement decision-making process in India as it is intended to function and section III examines one special case—the arms transfer relationship with the former Soviet Union and Russia. Section IV examines the inherent problems in the process and the difficulties of harmonizing the military's security requirements with public interest priorities. Section V presents conclusions and recommendations, and suggests how to separate the legitimate needs of confidentiality from the equally legitimate needs of public accountability in these sensitive areas.

This chapter is confined to the decision-making processes at government (executive) and user (armed service) levels as they relate to the procurement of major conventional arms through domestic production and by import.[1]

II. The arms procurement decision-making process

The history of Indian arms procurement can be roughly divided into three phases: (*a*) from independence in 1947 until the early to mid-1960s; (*b*) from the mid-1960s, that is, after the 1962 Sino-Indian and 1965 India–Pakistan conflicts, until the mid-1980s; and (*c*) from the mid-1980s to the present day. The first phase was characterized by off-the-shelf procurement by import, predominantly from France and the UK. During the second phase efforts were made to build up domestic defence production, mostly through assembly under licence from the Soviet Union and the UK. The current phase started with large purchases by Prime Minister Rajiv Gandhi's Government (1984–89), while gradual improvements were made in research and development (R&D) and systems integration for in-country assembly of weapons. If the life cycles of major weapon systems are considered to be some 20–25 years, it can be assumed that India will undertake a major arms replacement exercise beginning in the middle of the next decade.

The 1987–88 parliamentary inquiry, following allegations of bribes paid by the Swedish howitzer supplier Bofors to secure a major contract, exposed the inner workings of the Indian Army's formal arms procurement process. The inquiry investigated the process by which the army imported weapon systems but did not cover indigenous development and production.[2] Much ambiguity still surrounds the procedures for procurement of domestically produced weapons by all three armed services, as well as those for the import of arms by the Indian Air Force and Navy.

[1] Major conventional arms are defined as: aircraft; armoured vehicles; artillery; guidance and radar systems; missiles; and warships. For further detail, see Wezeman, P. D. and Wezeman, S. T., 'Transfers of major conventional weapons', *SIPRI Yearbook 1998: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1998), pp. 369–70.

[2] India, Lok Sabha, *Report of the Joint Committee of the Indian Parliament to Inquire into the Bofors Contract, Eighth Lok Sabha* (Lok Sabha Secretariat: New Delhi, Apr. 1988).

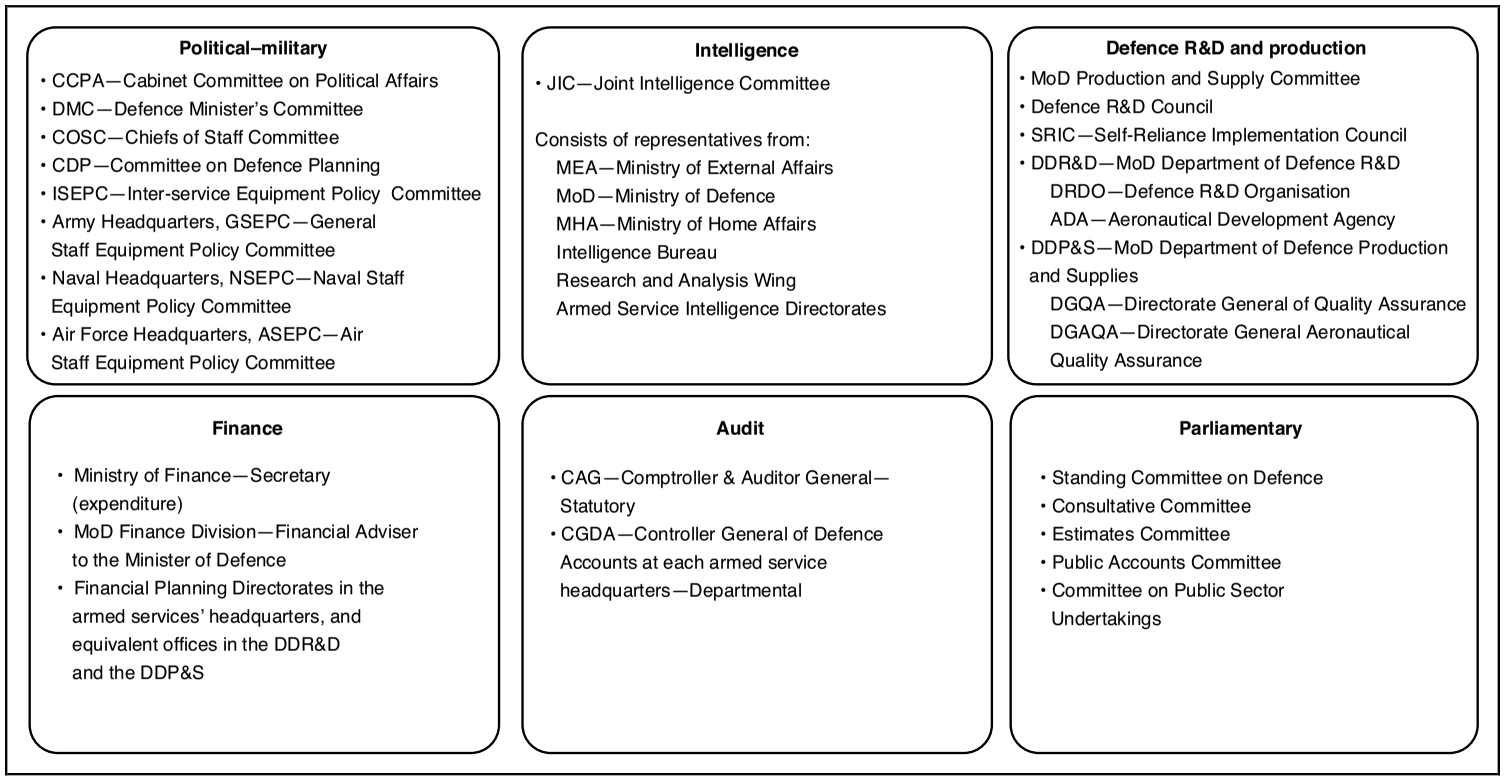

Figure 3.1. Organizations involved in the Indian arms procurement and review process, 1997

Source: Compiled by the author.

The actors[3]

This section describes some of the many organizations and actors involved in the national security decision-making process. Figure 3.1. shows these organizations clustered into six functional groups. Organizational lines of control may span two or three of these. Although the figure is based on public sources up to and including 1997, this study has revealed that many of the organizations are in fact defunct or fail to perform the tasks they were designed for.

Within two months of Independence, the Defence Committee of the Cabinet (DCC) was established as the supreme security decision-making body. It was presided over by the Prime Minister with the service chiefs of the army, air force and navy attending. This arrangement allowed the military's unfiltered advice to be directly available to the Prime Minister in isolation from other national concerns. At that time arms procurement programmes mainly involved purchases from abroad, although some efforts were made to initiate domestic weapon production in the late 1950s.[4]

After a number of reorganizations and changes of name, the DCC was redesignated as the Cabinet Committee on Political Affairs (CCPA) in 1971.[5] The CCPA is an omnibus policy-making body concerned with the entire range of political and security issues. It is headed by the Prime Minister and includes the Ministers of Defence, Home Affairs, Finance and External Affairs, while other senior ministers are invited to participate from time to time. Direct military input to the committee has been diluted by the exclusion of the three service chiefs, who attend only when invited to render advice.

To synchronize defence with the wider aspects of development, a Planning Cell was set up at the Ministry of Defence (MoD) in November 1965. This body, intended to facilitate mid- and long-term defence planning and to maintain constant liaison with the National Planning Commission (an independent body responsible for socio-economic planning) and other ministries in order to integrate defence planning with overall economic planning, has not functioned as intended.[6]

[3] This section is based on various reports including: India, Lok Sabha, Estimates Committee, *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy*, 19th Report (Lok Sabha Secretariat: New Delhi, Aug. 1992), pp. 4–13; Prasanan, R., 'Chinks in the armour', *The Week* (Cochin), 26 Sep. 1993; Malik, V. P., 'Defence planning system in India', *Amrita Bazar Patrika* (Calcutta), 19 and 21 Dec. 1990 (in English); Sinha, S. K., *Higher Defence Organisation in India*, USI National Security Lecture no. 10 (United Services Institution of India: New Delhi, 1991), pp. 23–27; Nand Kishore, *NDC Journal*, vol. 14 (Nov. 1992), pp. 83–84; *Report of the Comptroller and Auditor General of India for the Year Ended 31 Mar. 1992,* no. 8 (New Delhi, 1993); and Government of India, *Defence Services Estimates 1994/95* (Government of India Press: New Delhi, 1995), pp. 91–94.

[4] Rao, P. V. R., *India's Defence Policy and Organisation Since Independence*, USI National Security Lecture (United Services Institution of India: [New Delhi], 1977), p. 32; and Kumaran, P. K., 'Military auditing in Indian arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 18 (1995), pp. 1–3.

[5] Pai Panandikar, V. A. and Mehra, A., *The Indian Cabinet: A Study in Governance* (Konark Publishers: Delhi, 1996), p. 181.

[6] Malik (note 3); and Interview by the author with Lt-Gen. V. R. Raghavan (ret.), 30 May 1996.

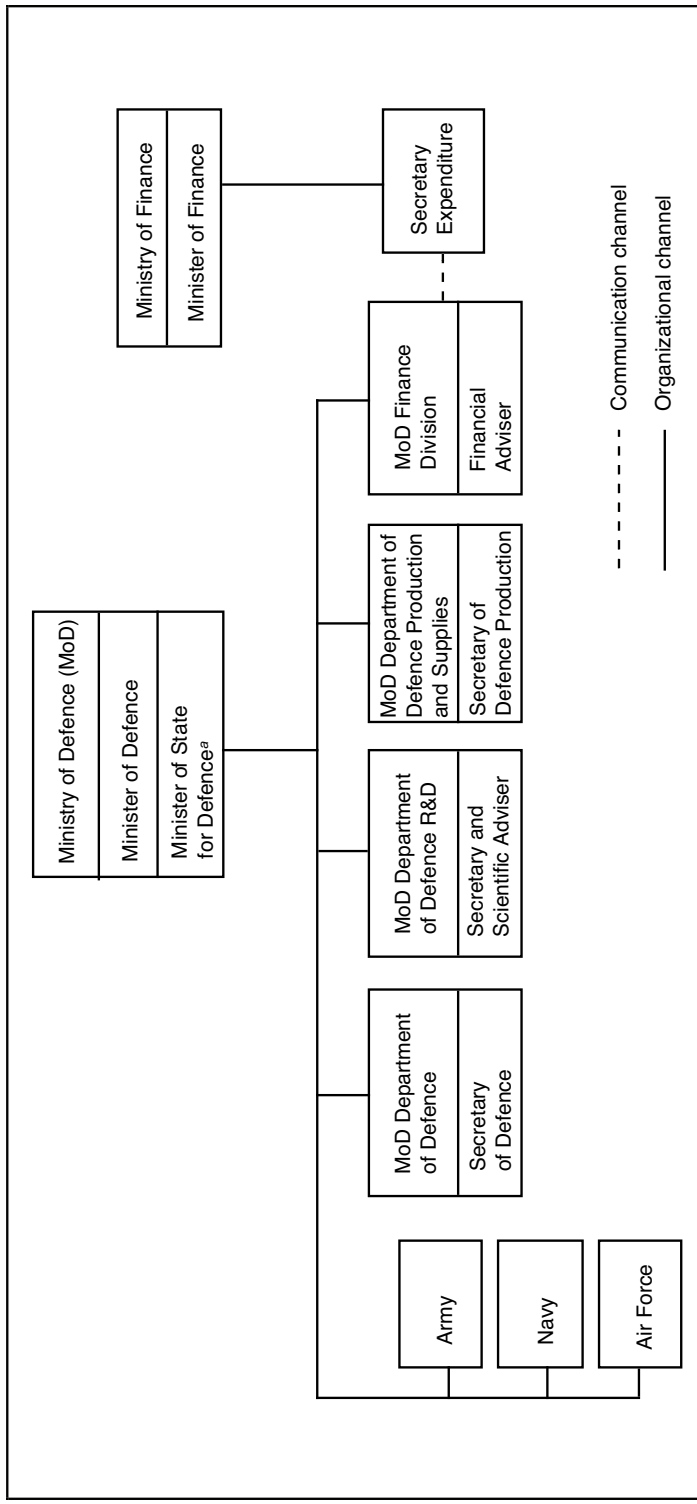

Figure 3.2. The arms procurement decision-making process in the Indian Ministry of Defence

[a] The Minister of State for Defence at times functions as the Minister of State for Defence Production.

Source: Compiled by the author.

The MoD consists of three main departments and a finance division (see figure 3.2). The Department of Defence is headed by the Secretary of Defence and has the task of coordinating the activities of the other MoD departments and of the three armed services. The Department of Defence Production and Supplies (DDP&S) is headed by a secretary and deals with matters related to defence production and indigenization. The Department of Defence Research and Development (DDR&D) is headed by a secretary who is also Scientific Adviser to the Defence Minister. Its responsibilities include R&D planning and advising the Defence Minister on scientific aspects of military equipment. The Financial Adviser to the Defence Minister presides over the MoD's Finance Division. Among other things, he is responsible for ensuring financial control over defence budget proposals.

Several committees and advisory bodies are engaged in the defence planning process. The Defence Minister's Committee (DMC) is chaired by the Defence Minister and includes the Minister of State for Defence Production, the chiefs of the armed services, the Secretaries of Defence, Defence Production and Defence R&D, and the Financial Adviser to the Defence Minister. However, it has effectively been replaced by the Defence Minister's weekly ('morning') meetings, which have no formal agenda but provide a forum for discussion and for monitoring progress.[7] The MoD Production and Supply Committee deals with matters relating to import substitution, domestic arms production and the operation of the ordnance factories,[8] and approval of major projects before they are submitted to the CCPA for financial approval.[9] It is chaired by the Defence Minister and has the same membership as the DMC. The Defence Minister also chairs the Defence R&D Council, which formulates and reviews R&D programmes and considers R&D budget proposals with organizations dealing with scientific R&D. Its composition is the same as that of the DMC with the addition of the Directors-General of the Council for Scientific and Industrial Research and the Armed Forces Medical Services.[10]

The Chiefs of Staff Committee (COSC), comprising the three service chiefs and chaired by the one with the longest tenure, provides a direct channel for conveying professional military advice to the Defence Minister and the Prime Minister. The COSC coordinates broad military aims and strategies, which are later approved by the Defence Minister.

The Committee on Defence Planning (CDP), created in 1978, is chaired by the Cabinet Secretary and includes the Prime Minister's Secretary; the three service chiefs; the Secretaries of Defence, Finance, External Affairs, Defence Production and the National Planning Commission; and the Financial Adviser to the Defence Minister.[11] It is responsible for such defence planning matters as: (*a*) periodic review of long-term intelligence assessments of geo-strategic

[7] Sinha (note 3), pp. 26–28.
[8] Government of India (note 3), p. 91.
[9] Natarajan, V. C. and Chakraborty, A. K., *Defence Reporting in India: The Communication Gap* (Trishul Publications: Noida, 1995), p. 125.
[10] Natarajan and Chakraborty (note 9), p. 127.
[11] Malik (note 3).

developments with a bearing on national security; (*b*) review of national defence objectives in order to recommend priorities and develop a long-term framework for defence planning; and (*c*) the balancing of competing interests in the economic, technological, foreign policy and defence fields in order to optimize the national defence effort.

Threat assessment and defence planning

The 1962 border war with China aroused India's awareness, and systematic defence planning began with the introduction of five-year defence plans in the mid-1960s. The first (for fiscal years (FYs) 1964/65–1968/69) proposed the building of a defence production base in order gradually to reduce external dependence. The MoD Planning Cell draws up the five-year defence plan for approval by the Defence Minister and the CCPA. The annual plans of each of the armed services are to be based on this plan. Long-term plans with a 15- to 20-year time-frame, called perspective plans, are drafted by the armed services.

The Joint Intelligence Committee (JIC) in the Cabinet Secretariat carries out external and internal threat assessments on the basis of inputs from the Intelligence Bureau, the Research and Analysis Wing, and the independent assessments of the directorates of intelligence at the armed services' respective headquarters.[12] The JIC processes information to meet the needs of different levels of decision making. Assessments of the political and the security environments are also made by the Ministries of External Affairs and Defence, but inter-ministerial coordination of foreign and defence policies at functional levels has not been developed into a formalized working relationship.

In 1986 the Government set up the Defence Planning Staff (DPS)—a multi-disciplinary body consisting of representatives from the three armed services, the Ministries of Defence, Finance and External Affairs, and the Defence Research and Development Organisation (DRDO). The DPS provides inputs to the COSC on a variety of issues related to defence planning including: (*a*) international and regional security affairs; (*b*) defence policy; (*c*) weapons and equipment; and (*d*) financial planning.[13] Its staff of 12 formulate military objectives and concepts for combined operations, joint training, joint logistics and management, and interact closely with the government departments dealing with defence R&D, defence production, industry and finance. It provides guidelines to the armed service headquarters for formulating their draft plans and projections, and prepares a draft integrated plan in consultation with the armed services, the DRDO and the DDP&S. It also coordinates the perspective planning of the three branches of the armed services.

The COSC coordinates broad military objectives and strategies and forwards its recommendations to the MoD. After its advice to the MoD on military strategy has been accepted, each of the armed services plans its own force levels

[12] Rao (note 4), pp. 25–30; Malik (note 3); and Chari, P. R., 'Defence policy formulation: the Indian experience', *Indian Defence Review*, vol. 11, no. 1 (Jan.–Mar. 1996), p. 27.
[13] Rao (note 4).

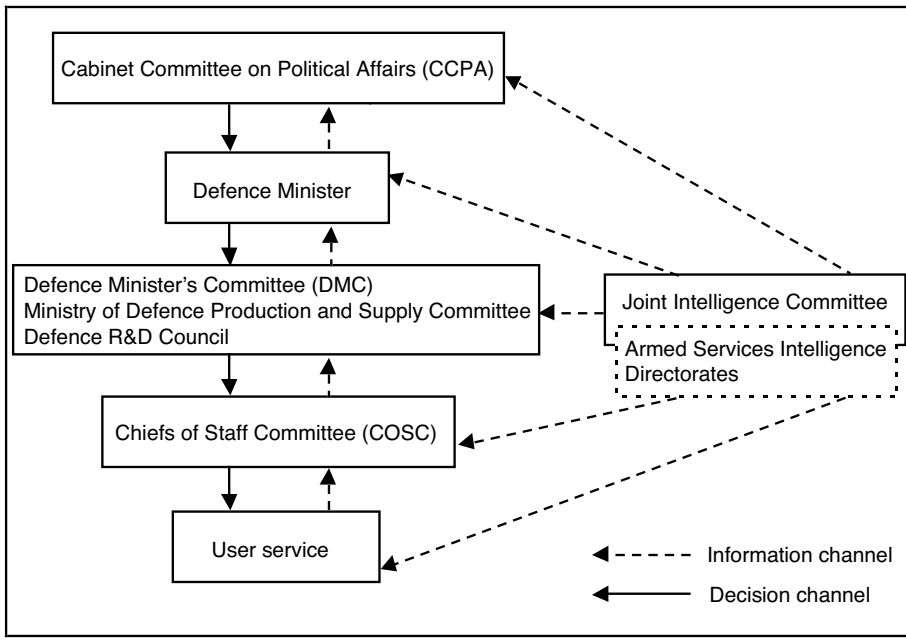

Figure 3.3. Information and decision channels in the Indian arms procurement decision-making process

Source: Compiled by the author.

and related weapons and equipment procurement. Figure 3.3 shows the channels of information and decision making in the arms procurement process.

The role of the military in the arms procurement process

Although each service has established its own procurement procedures, it is difficult to present an accurate description of the division of responsibilities within the services owing to the scarcity of officially published information. How far the armed services follow the prescribed procedures depends on individuals at the highest levels of national decision making and their attitudes to public accountability.

The arms procurement process in the Indian Army[14]

The 1987–88 parliamentary inquiry into the Bofors contract exposed the inner workings of the Indian Army's formal arms procurement process. It is reasonable to presume that the navy and the air force follow similar procedures.

[14] This section is largely based on *Report of the Joint Committee of the Indian Parliament to Inquire into the Bofors Contract* (note 2).

The formal process in the Indian Army for assessing the requirements of and procuring major weapon systems starts with the preparation of a Philosophy Paper, which identifies the characteristics and advantages of new weapon systems in broad terms. Based on the Army Perspective Planning Department's perspective plans for force modernization, the philosophy papers assess: (*a*) threats and relative force levels; (*b*) operational concepts; (*c*) emerging technologies and relative effectiveness of new systems compared with current equipment; (*d*) rate of obsolescence and useful service life of existing weapon systems; and (*e*) related issues.

The next step involves the General Staff Equipment Policy Committee (GSEPC). Chaired by the Vice- or Deputy Chief of the Indian Army, it includes representatives of the MoD, the DDR&D, the DDP&S, the Finance Division of the MoD and other agencies. The GSEPC formalizes weapon and equipment requirements in policy statements based on data from the army's directorates of military operations, staff duties, and weapons and equipment. These policy statements serve as guidelines and are forwarded to the DRDO for comments as to the feasibility of indigenous development. On the basis of the Philosophy Paper and the DRDO's assessment, the MoD then examines the feasibility of indigenously developing or importing a system. If import is the option chosen, defence attachés at Indian embassies abroad are asked to identify potential suppliers, who are then asked to present proposals.[15] These proposals are sent to the DRDO, the DDP&S and the Finance Division of the MoD for comments. Depending on the amount of foreign exchange involved, the Financial Adviser to the Defence Minister or the Secretary of Expenditure at the Ministry of Finance must approve the transfer.

The MoD either gives its approval for trial evaluations of the weapon system in India or sends its study teams abroad. Trials are usually conducted on a 'no cost, no commitment' basis. The communication channels of the MoD in the arms procurement decision-making process are shown in figure 3.3.

The technical aspects of the proposals are examined by a Technical Evaluation and Negotiating Committee against the requirements identified by the armed forces. If this committee finds the proposals technically acceptable they are forwarded to the Price Negotiating Committee (PNC) for commercial negotiations. Both are MoD committees,[16] but the PNC also has a representative from the Ministry of Finance and can invite revised quotations from the competing firms during the negotiations.[17]

Contracts for purchase may include an agreement for or commitment to licensed production, which is signed by the DDP&S. Corresponding credit agreements can also be negotiated simultaneously. Financial authority for pro-

[15] Bedi, R., 'Doing business between the lines', *Jane's Defence Weekly*, 11 Dec. 1993, p. 28.

[16] *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy* (note 3), pp. 9–10.

[17] Other issues discussed by the PNC, which also includes legal experts, are the financing arrangements; payment terms; range and cost of spares and components; cost of technology for licensed manufacture; and repair and overhaul arrangements. Jafa, V. S., 'Arms procurement budget planning process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 12 (1995), p. 12.

curement up to rupees (Rs) 200 million ($5.5 million)[18] rests with the Secretary of Defence, for amounts up to Rs 500 million ($13.7 million) with the Defence Minister and for amounts above that with the CCPA.

For common user systems, the Inter-Service Equipment and Policy Committee (ISEPC) coordinates the requirements of the three services.

Defence R&D

The Defence Science Organisation (DSO) was set up in May 1948 with the appointment of a scientific adviser to the Defence Minister. It was expanded and reorganized by merging a number of service and technical institutions and renamed the Defence Research and Development Organisation in 1958 with a network of nine laboratories. However, the DRDO had no separate budget and functioned as a division of the MoD Department of Defence Production. In 1980 defence R&D became the responsibility of a separate MoD Department of Defence Research and Development.[19] These changes were part of efforts to broaden the indigenous production base for defence equipment.

The DDR&D oversees the work of the DRDO, which currently has a network of 50 laboratories and establishments, and that of the Aeronautical Development Agency (ADA), established to develop the Light Combat Aircraft (LCA). It also cooperates with 70 academic research institutions, 50 national science and technology centres and 150 companies in the public and private sectors. R&D is also carried out at select universities under a grant-in-aid scheme.[20]

The DDR&D has prepared a 15-year perspective plan up to the year 2000, linked with those of the armed services.[21] In 1997 two high-powered councils—the Self-Reliance Implementation Council and the Joint Planning Council—were set up by the MoD to identify key areas for indigenization, monitor important projects and ensure timely implementation.[22] The DRDO has also initiated a 10-year self-reliance plan, to be completed in FY 2004/2005, which aims to raise self-reliance in defence procurement from 30 to 70 per cent using a three-pronged approach: (*a*) indigenization of vital spare parts; (*b*) upgrading of existing systems and equipment life-extension programmes; and (*c*) indigenous design and development of high-technology weapon systems.[23]

[18] At the 1997 average exchange rate of Rs 36.313 = $1. International Monetary Fund, *International Financial Statistics,* Mar. 1998.

[19] Jaiswal, N. K., 'Growth of military operational research in India', *Defence Science Journal,* vol. 44, no. 3 (July 1994), pp. 215–16; *Report of the Comptroller and Auditor General of India for the Year Ended 31 Mar. 1994,* no. 8 (New Delhi, 1995), p. 206; Sen, S. K., 'Some aspects of India's defence industrialisation', *USI Journal*, vol. 124, no. 516 (Apr.–June 1994), p. 157; and Indian Ministry of Defence, *Annual Report 1996/97* (MoD: New Delhi, 1997), p. 9.

[20] Indian Ministry of Defence, *Annual Report 1993/94* (MoD: New Delhi, 1994), p. 33.

[21] It is not clear whether this is a one-off plan or the beginning of a user–developer coordination process. India, Lok Sabha, Standing Committee on Defence, *Ministry of Defence: Defence Research and Development—Major Projects*, *Fifth Report, 1995/96* (Lok Sabha Secretariat: New Delhi, Aug. 1995), p. 5.

[22] 'Councils set up to implement defense projects', *Deccan Herald*, 25 Apr. 1997.

[23] Kalra, D. V., 'Building national arms industrial capacities', SIPRI Arms Procurement Decision Making Project, Working Paper no. 10 (1995), p. 11; and Kalam, A., 'Combating the technology control

After nomination of the DRDO laboratories which are to carry out R&D up to the prototype stage, the next steps are generally: (*a*) concept definition; (*b*) feasibility studies; (*c*) project definition; (*d*) approval from the competent financial authority; (*e*) development of a full-scale engineering model; and (*f*) development of a prototype. (They do not necessarily follow one after the other in this order.) Throughout the process there is a dialogue between the user service and the DRDO on performance specifications, costs and time-frame.

At the prototype stage, defence public-sector undertakings (DPSUs) or ordnance factories are designated to set up production facilities and different organizations conduct successive levels of trials: (*a*) technical evaluation trials; (*b*) user trials; (*c*) user-cum-technical trials; (*d*) confirmation trials; and (*e*) maintenance evaluation trials.[24] After trials the prototype is either frozen as a pre-production model or chosen as a technology demonstrator.[25] DRDO representatives are associated with the field and user trials, conducted in different types of terrain by the user service, and maintenance evaluation trials are conducted by the Directorate-General of Electrical and Mechanical Engineers. Their reports are processed by the Directorate of Weapons and Equipment in the army and equivalent directorates in the navy or air force.

The procedure followed in budgeting for an indigenously developed system depends upon its technical complexity. If the user service is allowed to proceed and develop the equipment selected, the most common arrangement is a 'cost-plus' contract.[26] If the DRDO is asked to develop the product, either it or the user service meets the development costs or they are shared.[27] Projects which arise from the user services are called staff projects. The DRDO also has a budget to develop and fund technology competence-building projects to meet the future needs of the armed services on its own initiative.[28] The successful Agni and Prithvi ballistic missile projects began as exploratory DRDO initiatives without formal qualitative requirements from the user services.

regimes', USI National Security Lecture (United Services Institution of India: Madras, Dec. 1996). The DRDO plans to raise the indigenization levels to 70% if its current share of around 5% of the defence budget is doubled by the year 2000. *Ministry of Defence*: *Defence Research and Development—Major Projects* (note 21), p. 6. Even though it has taken almost 4 decades of DRDO service for India to achieve a military technology indigenization level of 30%, there has been no debate on how it will ensure that the level of indigenous production increases to 70%.

[24] Mago, K., Presentation at the Army–Industry Partnership Seminar, New Delhi, 15 Sep. 1995.

[25] This term is apparently misconstrued in the Indian public debate, as is evident from reports relating to the Agni missile. 'Further Agni tests to be carried out soon', *Financial Express*, 27 Nov. 1994; 'Successful missile tests a milestone for defence services', *Times of India*, 26 Dec. 1994; and 'Induction of Prithvi under consideration', *Times of India,* 17 May 1995. Even if a technology demonstrator does not go into production, technology upgrading work may continue to improve the performance and reliability of components and sub-systems. According to another interpretation, 'technology demonstration research aims to verify not only the effectiveness of advanced technology that has high technology risks, but also feasibility of such technology as a weapon system. Consequently, prototype products are developed using such technology but not on the assumption that specific equipment will be developed for actual use'. *Defense of Japan 1996* (Japan Defense Agency: Tokyo, July 1996), p. 113.

[26] In cost-plus contracts, the developers receive the audited costs plus a negotiated fixed fee as a profit.

[27] Jafa (note 17), p. 11.

[28] Ghosh, A. K., *India's Defence Budget and Expenditure Management in a Wider Context* (Lancer Publications: New Delhi, 1996), p. 304.

The Secretary of the DDR&D is also head of the DRDO and Scientific Adviser to the Defence Minister. Combining advisory and head-of-line functions in the same person defies sound organizational principles. The advisory function for R&D quality control is carried out by representatives of the user services, but as neither technology quality assurance nor evaluation are carried out by non-MoD/DRDO experts another organizational principle, that of providing external checks and balances, is neglected.

The defence industrial base

By the end of World War II some 16 ordnance factories had been built in India, and after independence another 23 were added to the Ordnance Factories organization, which was later placed under the MoD. These factories were restructured into an Ordnance Factories Board in 1979. They produce a wide range of defence products, but in 1996 only three were involved in producing tanks and combat vehicles and five produced a range of ordnance equipment such as artillery guns.[29] In addition, the MoD has eight DPSUs, structured to operate flexibly with decentralized management and sufficient operational autonomy to utilize the defence technological base for a wider and diversified range of applications.[30] The organizations involved in India's defence R&D and production are listed in appendix 3A.

Ordnance factories were among the first institutions in India to introduce cost accounting practices. Product costs were used for accounting but not for management decisions.[31] In 1987 ordnance factories were given a separate heading in the defence budget in the expectation that they should function more like commercial production units. Until recently, as both the ordnance factories and DPSUs were monopoly suppliers to the armed forces, the cost factor was not a major consideration. This generated indifference to cost considerations among the armed forces and inefficiencies in the production organizations.[32]

In 1991 the Government's Industrial Policy Resolution reserved only the final assembly of lethal weapon systems for the public sector, and the manufacture of components, assemblies and sub-assemblies was opened up to the private sector.

In building the Indian defence industrial base, planners imitated the Soviet-style state arms-manufacturing sector, whose Russian inheritors have been struggling to become competitive in the international market since 1991. The Indian armed forces procure 250 per cent more from the public sector than from the private sector, in contrast with the more successful defence industrial bases in countries where the primary contribution to defence procurement is made by the private sector. A survey of the top 500 Indian companies indicates that only

[29] India, Ministry of Defence, *Annual Report* (MoD: New Delhi), various years.

[30] Ahuja, G. S., 'Defence industrial, technological & economic bases', SIPRI Arms Procurement Decision Making Project, Working Paper no. 15 (1995), pp. 3–4.

[31] Jafa (note 17), p. 9.

[32] Jafa (note 17), p. 10.

30 of them have been involved in defence contracts. Most Indian defence contractors are small and medium-scale enterprises engaged as ancillary producers.[33]

Quality-assurance functions are carried out by the Directorate-General of Quality Assurance (DGQA) for all equipment purchased by the Indian Army and Navy, either through import or through domestic production. Quality assurance of specialized air and aeronautical equipment for the air force is done by the Directorate-General Aeronautical Quality Assurance (DGAQA), and of certain missile systems by the Missile Systems Quality Assurance Agency (MSQAA) set up in 1992. The DGQA has controllers responsible for armaments, vehicles, electronics and warship projects and who conduct inspections relating to arms procurement.[34] Although the DGQA and the DGAQA are independent of the user services, the R&D organizations and the production organizations, they both function under the Secretary of the DDP&S and cannot be considered entirely autonomous in their channels of reporting.

In the absence of a single authority which can oversee development, production and induction programmes of various arms procurement projects and coordinate the user services, the DRDO and the DDP&S, specially constituted committees or authorities, usually headed by a senior member of the user service involved, oversee the progress of major projects.[35] Despite the risk of neglect, inefficiency, waste, fraud and misuse of public funds in procurement via domestic production, legislative oversight has not reached this area of government policy and decision making. Arms procurement through domestic R&D and production has a single developer, a single buyer and a sole funder in the Indian Government. Thus, the accountability loop is effectively closed.

The budget and audit processes

The defence budget planning process involves the Financial Planning Directorate of each armed service, the Finance Division of the MoD and the Ministry of Finance. Discussions start in October every year and the budget is presented to Parliament by the Minister of Finance at the end of February. After making allocations for salaries, other mandatory expenditures and commitments made earlier, the armed service headquarters provide financial data for the draft arms procurement budget. The impact of a tight financial situation is primarily felt on the budget for arms procurement and other expenditures which could be put off to a later date. Funds for arms procurement are listed under the capital

[33] Defence purchases from the private sector are small—some Rs 12.25 billion (*c*. $390 million in FY 1993/94 at the 1994 average exchange rate) compared to those from the ordnance factories—Rs 19.88 billion (*c*. $633 million)—and the DPSUs—Rs 22.19 billion ($707 million) in the same year. Ahuja (note 30), pp. 4–5. Current rates of exchange from International Monetary Fund, *International Financial Statistics Yearbook 1997* (IMF: Washington, DC, 1997).

[34] India, Ministry of Defence, *Annual Report 1995/96* (MoD: New Delhi, 1996), p. 53; and Discussion papers from the Army–Industry Partnership Seminar, New Delhi, 14–15 Sep. 1995.

[35] Sen, S. K., 'Decision making on India's defence technology and industrial base: implications of changes for R&D policies and prospects', SIPRI Arms Procurement Decision Making Project, Working Paper no. 13 (1995), p. 7.

account; expenditure on operations and maintenance is under the revenue account.[36]

The structure of the Indian defence budget has not changed for six decades. It provides information by simple expenditure heads but does not permit analysis of the true functional cost of the different elements of defence.[37] In the revenue account demands are listed under four headings—army, navy, air force and ordnance factories—mainly for salaries, transport, stores and miscellaneous expenditure. Expenditure under the capital account is for estates, aircraft and aero-engines, heavy and medium vehicles, other equipment, construction, naval fleets and dockyards. Nor does the capital account reflect the costs of making a weapon system fully operational over its entire life cycle, and it is difficult to distinguish between programmes and objectives of expenditure or to detect waste. The armed services are reported to be sensitive about a more detailed breakdown of the budget.[38]

Each armed service headquarters bases its projections of arms procurement expenditure on: (*a*) current expenditure and existing force levels; (*b*) proposed changes in force levels; and (*c*) replacement or upgrading of weapon systems. On the basis of these estimates the MoD Finance Division and the armed service financial planning directorates decide priorities and assess the financial resources likely to be available. After the MoD has approved the projections and the budget forecast has been discussed with the Ministry of Finance, the final figures are incorporated in the annual general budget presented to the parliament.

In the case of imported weapon systems, the Ministry of Finance mainly deals with the evaluation of costs, the question whether these can be met within the approved budget, issues such as credit, funding and payment arrangements, and proposed counter-trade or offset options.[39] India has not developed a formal policy on offsets, as its experience suggests that they increase the sales price of the weapon systems, reduce the competitiveness of the DPSUs using offsets, and mean long lead times, labour strikes and so on.[40] The main agencies designated for counter-trade are the State Trading Corporation and the Minerals and Metals Trading Corporation, while responsibility for policy making resides with the DDP&S. These giant state agencies have been nominated on the

[36] Ghosh (note 28), p. 103. For a detailed analysis of the Indian defence budget, see Government of India (note 3), pp. 93–97; Jafa (note 17); and Ghosh (note 28), pp. 35–55.

[37] On the distinction, see Kennedy, G., *Defence Economics* (Duckworth: London, 1983), pp. 91–116.

[38] Ghosh (note 28), pp. 103, 259; and Interview by the author with N. N. Vohra (former Defence Secretary), 28 May 1996. However, different versions of each other's opinions are put forward by civil servants and the military. A former lieutenant-general believes that greater detail should be introduced and more information made available about procurement plans. Singh, V. K., 'Budgeting for defence: a rational approach', *Indian Defence Review,* vol. 11, no. 3 (July–Sep. 1996), pp. 35–37.

[39] On offsets, see Udis, B. and Maskus, K. E., 'Offsets as industrial policy: lessons from aerospace', *Defence Economics*, vol. 2, no. 2 (1990), pp. 151–64, quoted in Hartley, K. and Sandler, T., *The Economics of Defence* (Cambridge University Press: Cambridge, 1995), p. 240. Counter-trade is a form of offset.

[40] Ghosh (note 28), p. 346; and Comments by V. S. Jafa, former Financial Adviser, MoD, at the CPR–SIPRI workshop, New Delhi, 1 July 1995.

assumption that other agencies have no experience in this area.[41] They prioritize trade promotion and not long-term advanced technology capacity building[42]—the aim of the offset policies of many countries.

The parliamentary Standing Committee on Defence examines the draft budget before commending it to the lower house of the Parliament for approval. Outlays are approved for one year at a time. Funding for longer contractual commitments is not constrained by the parliamentary process as long as the MoD takes responsibility to meet commitments from the budgets allocated for future years.[43]

A former lieutenant-general suggests that both perspective and five-year plans should be subject to parliamentary approval to ensure consistency between financial and defence planning and to reinforce civilian control of the armed forces by the elected representatives.[44]

The financial adviser in the MoD is also responsible for the audit of defence expenditure for each armed service through the offices of the Controller General of Defence Accounts (CGDA). In addition to these departmental audits, statutory audit functions are carried out by the Office of the Comptroller and Auditor General of India (CAG), a constitutionally mandated autonomous authority which presents publicly available audit reports to the president under Article 151 of the constitution. The parliamentary Public Accounts Committee examines the effectiveness of defence expenditure with the assistance of the CAG. However, the CAG primarily examines financial weaknesses and difficulties in production and maintenance of weapon systems. It does not assess the value for money of chosen weapon systems or the decision-making processes. Neither does it analyse recurring problems and systemic limitations.

Legislative oversight

The Parliament's main means of influencing defence policy making (and indirectly arms procurement) is through its role in the drafting of the annual budget during debates in the whole house and through its various committees. Although parliamentary standing committees have the right to demand information, it is still possible for the Government to deny it on grounds of national security. In this case, the speaker of the lower house can ask the MoD to justify

[41] Jafa (note 17), p. 13; and US International Trade Commission (USITC), *Assessment of the Effects of Barter and Countertrade Transactions on US Industries* (USITC: Washington, DC, Oct. 1985).

[42] In the case of the Bofors deal for the sale of the 155-mm howitzer to India, the State Trading Corporation sold a substantial part of the Rs 8000 million offsets (over half the total contract value) in the form of traditional commodities like cashew nuts, castor oil and rice, which benefited neither the Indian defence industry nor other advanced technology sectors. *Report of the Comptroller and Auditor General,* no. 12 (New Delhi, 1990), pp. 9–13. However, the direct offsets which were part of the Indian Airlines contract for purchase of the Airbus 320, whereby Hindustan Aeronautics Ltd provided some components to Airbus Industrie, did provide technological benefits. Such differences further illustrate the lack of a coordinated national offset policy. Jafa (note 17), p. 13.

[43] Jafa (note 17), pp. 4–5.

[44] Singh (note 38).

the withholding of information and give a ruling.[45] According to Jaswant Singh, Chairman of the Estimates Committee in 1991–92, the Indian Parliament has no constitutional right to demand documents or subpoena witnesses for evidence, and the Government and Civil Service thwart most of its efforts to elicit information. As a result, parliamentary scrutiny of procurement decisions is negligible.[46]

The Estimates Committee examines budget estimates, but with the present budget structure it is difficult to check specific procurement projects. The Public Accounts Committee examines how the money has been spent, primarily on the basis of the CAG's reports. The Committee on Public Sector Undertakings examines the performance of the DPSUs that manufacture weapon systems. Members of these committees are elected by the Lok Sabha or nominated by the speaker in proportion to the parties' representation in the Parliament. Their meetings are held behind closed doors and there are no public hearings. In 1992 the parliamentary Standing Committee on Defence was established to exercise legislative oversight of defence policies and decision making.[47] However, either because of lack of interest, owing to the perceived low electoral value of defence procurement issues,[48] or because of the frequent (annual) change in the membership of the committees, few Indian parliamentarians specialize in defence matters.[49]

III. The Indo-Soviet arms transfer relationship

Until the 1962 Sino-Indian border conflict, India's military inventory was primarily based on Western equipment.[50] After two years of successive failures to acquire and licence-manufacture the British Lightning or the US F-104 Starfighter, six MiG-21 combat aircraft were transferred to India by the USSR in 1964 in a deal to manufacture this model under licence. These experiences, combined with failures to procure US naval equipment and borrow three British

[45] Interview by the author with S. C. Kashyap, former Secretary-General, Indian Parliament, 30 May 1996; and Kamath, P. M., 'Foreign policy making in India: need for committee system to strengthen the role of parliament', *Strategic Analysis*, May 1987, p. 232.

[46] Singh, J., 'Legislative oversight in arms procurement decision making processes', SIPRI Arms Procurement Decision Making Project, Working Paper no. 14 (1995), pp. 6–7; and Jaswant Singh, communication with the author, 3 May 1995.

[47] Singh (note 46), p. 6.

[48] 'Unfortunately in India's case, little political benefit seems to accrue from expertise in this field. Defence (issues) are not of a very high priority when it comes to catching votes.' Communication of the author with Jaswant Singh, 3 May 1995. The Standing Committee on Defence had 44 members to consider the MoD grant request for FY 1995/96. Attendance levels were: 20 members on 4 Apr., 25 on 10 Apr., 20 on 12 Apr. and 20 on 19 Apr. The total time in session was 12 hours and 20 minutes. Apart from the chairman, only 7 members attended all the sessions.

[49] Even the Minister of State for Defence, who is a Member of Parliament, rarely takes the initiative to critically examine the organizations and methods. Sen (note 19), p. 164. There is less and less interest among MPs in specializing, not only in defence matters but also in other areas of policy. Interview by the author with S. C. Kashyap, 30 May 1996.

[50] The Soviet Union sold India 24 Mi-4 helicopters, 26 Il-14 medium transport aircraft and 8 An-12 medium transport aircraft before 1962. Achutan, N. S., *Soviet Arms Transfer Policy in South Asia (1955–1981): The Politics of International Arms Transfers* (Lancer International: New Delhi, 1988), p. 161.

Daring Class destroyers, left Indian decision makers doubtful of the reliability of Western sources of supply.

While the Sino-Soviet rift allowed India and the USSR to broaden their military industrial linkages, there were impediments: (*a*) the Western orientation of the Indian civil and military bureaucracies; (*b*) lack of information in the defence establishment on the suitability of Soviet equipment; (*c*) the language barrier and the interpretation of operational, technical and maintenance manuals; and (*d*) problems of mixed inventories.[51] India's conflicts with China in 1962 and Pakistan in 1965, however, were followed by extensive purchases of Soviet equipment by all three Indian armed services and by 1989 the dependency on Soviet-origin equipment was estimated at 70 per cent.[52]

The experience with Soviet weapons has been mixed. They were found to be comparatively rugged and, because of the Soviet policy of upgrading subsequent generations, easy to adapt and maintain. The perceived low risk of embargoes or of denial of technologies and spare parts, together with easy credit and barter arrangements, low price and competitive performance, led to the Indian preference for weapons of Soviet origin.

Until the collapse of the USSR spare parts and accessories were readily available under preferential terms, but they were highly priced. Soviet secrecy made access to technical information difficult and the agreements contained restrictive end-use clauses, prohibiting re-exports and upgrades.[53] Soviet equipment was available at 'political prices', with low interest rates on deferred repayment schedules, whereas Western suppliers demanded advance payment. By reducing cash-flow problems and interfering less with India's development expenditure, the Soviet terms were more acceptable to India's financial bureaucracies.[54]

The collapse of the USSR meant the end of friendship prices. By 1995 India's accumulated debt was estimated at approximately Rs 240 billion ($7.4 billion).[55] To compound its debt repayment problem, its trade with Russia fell from Rs 52.5 billion ($2.3 billion) in FY 1990/91 to Rs 25 billion ($800 million) in 1993/94 and may continue to decline in view of the competition from China and of shipping and transport bottlenecks.[56]

[51] Chari, P. R., 'India's weapons acquisition decision-making process and Indo-Soviet military cooperation', SIPRI Arms Procurement Decision Making Project, Working Paper no. 19 (1995), p. 5.

[52] Singh, R. P., 'Indo–Soviet military co-operation', *Strategic Analysis* (New Delhi), Dec. 1990, pp. 1081–83.

[53] Chari (note 51), pp. 9–11.

[54] Kumaran (note 4), p. 4. Credits were available for 10 years at an annual interest rate of 2% and were renegotiated in the 1980s with a 17-year repayment schedule at an annual interest rate of 2.5%. The Soviet Union was moreover willing to barter and accept payment in rupees.

[55] Chari (note 51), p. 11. At the 1995 average exchange rate of Rs 32.427 = $1. International Monetary Fund, *International Financial Statistics Yearbook 1997* (note 33). Rs 24 000 crores need to be paid in 10 years.

[56] Gidadhbuli, R. G., 'Russia's economic relations with China', *Economic and Political Weekly* (Mumbai), 17 June 1995, pp. 1426–27. Current rates of exchange from International Monetary Fund, *International Financial Statistics Yearbook 1997* (note 33). Apparently, expenditure for aircraft purchased earlier from the Soviet Union is restricting the availability of funds for purchases. Singh, J., 'The air force is getting lean, but not mean enough', *Times of India*, 31 Aug. 1996, p. 11.

In current Russian arms export policies, commercial considerations override political considerations.[57] India's arms procurement linkages with Russia are marked by pragmatism and mutual interest—India's need for arms and spare parts on the one hand and the attractions of a large Indian market on the other.[58]

Even during the heyday of Soviet–Indian technology transfers, Indian defence R&D scientists felt they had better access to their Western counterparts than to Soviet scientists.[59] Soviet experts doubted India's capabilities to absorb advanced technology. The Soviet military industrial bureaucracies interpreted technology transfer agreements rather rigidly and Indian scientists had access only to those drawings and specifications which the suppliers considered necessary for the assembly or sub-assembly of a specific system.[60] As Soviet suppliers did not answer queries even remotely connected with design or development, Indian engineers came not to expect major technology gains from Soviet licences for the assembly of weapon systems in India.[61]

Military technological self-reliance

Indian arms procurement policy in the 1970s and 1980s focused on the transfer of knowledge for developing skills in the operation and maintenance of weapon systems and for the assembly of weapon systems from semi- or completely knocked-down kits. Commenting on Soviet and other licences for the manufacture of a diverse range of land, air and naval systems from the mid-1960s onwards, a former head of the DRDO has stated that 'most defence production in India was under licence, which neither led to capacities to design nor develop advanced manufacturing techniques; licences for assembly of weapon systems simply followed one another in boring succession'.[62] The Secretary of Defence R&D considers that it was mostly fabrication skills that were transferred to India by Soviet and Western suppliers in the name of technology

[57] Sergounin, A. A. and Subbotin, S. V., 'Indo–Russian military cooperation', SIPRI Arms Procurement Decision Making Project, Working Paper no. 20 (1995), p. 5. In Nov. 1994 Russia is believed to have offered Su-27 aircraft to Pakistan for $35 million per item.

[58] Sergounin and Subbotin (note 57), pp. 2–3. Russian defence industrialists, however, are reported to be dissatisfied with the payment system for transactions with India and other buyers in the developing world. According to one account, Russian enterprises receive about 8–10% of revenue in cash while more than two-thirds or even up to full payment can be in the form of barter (consumer goods or even food). Russian arms industry leaders point out that bartering arms for consumer goods does not help in restructuring the industry or in the development of production. These conditions should change with improvements on the Russian domestic market.

[59] Sen (note 35), p. 1; and Kumar, D., 'Sukhoi-30s will be stationed in Pune', *Times of India*, 24 Dec. 1996, p. 8. For the first time, Russian agencies have agreed to permit the DRDO to participate in an R&D project, involving the co-development of electronic equipment which will be compatible with the Indian LCA.

[60] E.g., design drawings for sub-assembly were available, but no design drawings, technical documents or manufacturing details for components. This hampered indigenization of weapon systems. Joshi, S. G. and Pandian, P. N., 'Procedure for indigenization versus indigenous development of critical components', Proceedings of the Army–Industry Partnership Seminar, New Delhi, 14–15 Sep. 1995, p. 410.

[61] Sen (note 35), p. 12. India has received licences to manufacture MiG-21 and MiG-27 combat aircraft, T-72 tanks, BMP-2 armoured infantry fighting vehicles and Tarantul Class fast attack craft.

[62] Arunachalam, V. S., 'The acquisitions game: an analysis of the demand side of the trade', *Harvard International Review*, winter 1994/95, p. 73.

transfer.[63] India's apparent failure to capitalize on its long connection with the USSR to develop indigenous weapon design and R&D capabilities probably stems from a lack of Indian initiatives to graduate beyond manufacturing capabilities and from Soviet reluctance to encourage Indian autonomy in R&D. Some DRDO staff suggest that the Indian military's preference for imported weapons has also compounded the problems of domestic production.[64]

It is not clear to what extent the experience and skills gained by India through licensed manufacture of generations of Soviet equipment contributed to the design and R&D of the Arjun tank, the Advanced Light Helicopter (ALH), the LCA or the Type 15 destroyer. Most of these include major assemblies or components of Western design and origin, using standards that are closer to Indian engineering standards than are Russian standards, so that the sourcing of components from the Indian industry is presumably easier and the indigenization of equipment of Russian origin problematic.[65] Even the potential for developing India's R&D capacities with Russian cooperation is uncertain since Russia joined the Wassenaar Arrangement in 1996.[66]

A country cannot achieve self-reliance in defence production alone, without building up competitive technological capacities in the national engineering sector.[67] It remains to be investigated whether the aspiration of self-reliance was purely rhetoric to make the Soviet arms connection palatable, or whether the Soviet option was chosen in the absence of comparable options from the West.

IV. Deficiencies in the process

The problems in the Indian defence procurement decision-making system can be divided into four groups: (*a*) the lack of integrated, long-term planning; (*b*) deficiencies in the defence organizations themselves; (*c*) the absence of independent oversight or scrutiny; and (*d*) behavioural factors.

[63] Paper by A. P. J. Abdul Kalam, presented at the Army–Industry Partnership Seminar, New Delhi, 14–15 Sep. 1995, p. 4.

[64] Arunachalam (note 62), p. 73.

[65] Obsolete Russian components and the non-availability of designs and drawings for the manufacture of sub-systems have also contributed to difficulties in indigenization, as illustrated by the need for Yugoslav assistance in upgrading T-72 engines. Joshi and Pandian (note 60), p. 409; and Interview by the author with V. S. Jafa, May 1996.

[66] After the experience of the aborted Glavkosmos/Indian Space Research Organisation deal for the transfer of cryogenic engines, India's caution is natural. For a description of the Wassenaar Arrangement, see Anthony, I., Eckstein, S. and Zanders, J. P., 'Multilateral military-related export control measures', *SIPRI Yearbook 1997*: *Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1997), pp. 345–48.

[67] High-technology exports by the Indian engineering industry to technology-competitive markets in the OECD countries would be an indicator. The sectors for comparison could include micro-electronics, advanced materials and design, computers and telecommunications, sensors, opto-electronics, aerospace, marine systems, precision engineering and production technologies.

Long-term integrated planning

The broader elements of defence planning are supposed to be part of national development planning. However, the interface between defence and development policies and planning has not functioned effectively, nor has that with broader security planning.

India has no comprehensive policy document that gives long-term direction to national security priorities. A formal defence policy document to guide the development of long-term integrated planning has even been explained as unnecessary by the MoD in view of the defence policy debates in the Indian Parliament, the MoD annual reports and even the operational directives issued by the Secretary of Defence to the chiefs of staff.[68] In fact, these directives are traditionally drafted by the three chiefs and forwarded for approval to the MoD, which routinely approves and returns the documents.[69]

The defence planning mechanisms in place are only partially effective. The seventh five-year defence plan, to have been effective from 1986 onwards, was approved too late to be of any use, and the eighth was never approved.[70] The Defence Minister's morning meetings deal with routine issues rather than long-term policy forecasting. The fact that the annual budgets do not include financial commitments for more than one year ahead further hampers the coherent planning of arms procurement. Operational priorities are therefore tailored to match weapon systems which match available financial resources.[71] It is difficult to prioritize R&D projects with long gestation periods and difficult for the DDP&S to scale defence production entities in anticipation of a production order. The term 'ad hoc planning', to describe the Indian arms procurement and security planning processes, abounds in the Indian media.[72]

The military tends to focus on scenario-based planning rather than long-term capacity building. This has inbuilt limitations when it comes to dealing with unexpected situations. Plans are, for example, easily upset by factors outside national control, resulting in reactive responses to other countries' acquisition of new capacities. The Hank Brown Amendment passed by the US Senate in 1995, allowing a one-time transfer of arms to Pakistan, energized the arms pur-

[68] *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy* (note 3), pp. 2–3. The Standing Committee on Defence has asked the Government to examine the feasibility of preparing a formal national defence policy document to be placed before Parliament. 'Decide on Agni introduction soon, parliamentary panel tells Government', *Times of India*, 11 Mar. 1996, p. 1.

[69] The operational directives have often remained without approval for long periods, while older versions remained in use. Chari (note 12), p. 28. According to Maj.-Gen. Afsir Karim, the degree of integration between the army, the navy and the air force is not enough to avoid waste and duplication in procurement. Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

[70] Ghosh (note 28), p. 214.

[71] *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy* (note 3), p. 9. At a meeting in the Defence Minister's Office attended by the 3 chiefs of the armed services in 1993, the Minister of Finance suggested reductions of Rs 5000 million (*c.* $160 million at the time) in defence spending to meet other requirements. He listened to the difficulties of the 3 chiefs, went back to his office and reduced the defence budget as he had intended nevertheless. Bahri, S. K. (Lt-Gen.), 'Chinks in armour', *The Statesman* (New Delhi), 27 Feb. 1996.

[72] The term was frequently used to characterize the defence policy-making process by experts participating in the SIPRI Arms Procurement Decision Making Workshop, New Delhi, July 1995.

chase lobbies in India.[73] As one observer noted, '[the] . . . demands for fresh imports to match [the] capability acquired by Pakistan through [the] recent $360 million package would generate procurement proposals without doubt'.[74]

The tendency of security bureaucracies to exclude the military from gaining broader external security policy experience further restricts the military's understanding of security alternatives. Perspective planning by the armed services is also handicapped by the absence of specialized research capabilities and long-term forecasting methods.

Formally, the CDP and the COSC provide the basic structures for integrated planning. While the former is made up of the three service chiefs and civil servants, the latter only comprises the service chiefs, and the level of coordination between them is difficult to ascertain. The DPS, which reports to the COSC, draws on expertise from the armed services, the Finance Division of the MoD, the Ministry of External Affairs (MEA) and the DRDO, but has been unable to initiate a process of integrated planning at the government level owing to inter-service rivalry, lack of trust and organizational inertia.[75] Furthermore, defence planning appears to have been constrained by changes in the head of the DPS six times in as many years.[76] As a result, the MoD combines disparate plans of the three armed services as the five-year defence plan.

Over the years there have been repeated demands in India, primarily from the security community, for a National Security Council (NSC) for integrated planning. These demands were met by the Janata Dal Government in August 1990,[77] but as its advocates were unable to articulate how or why an NSC would be more efficient than existing processes the NSC was abandoned within a year by the Congress Government.[78] The functions and organizational efficiencies that an NSC could bring to bear on security decision making have not been adequately analysed.

[73] 'Brown Amendment may force review of defence policy', *Times of India*, 31 Oct 1995, p. 1. For the Hank Brown Amendment to the Foreign Assistance Act, see 'Brown Amendment no. 2708 (Senate, September 20, 1995)', *Congressional Record*, p. S13984, URL<http://thomas.loc.gov/cgi-bin>, version current on 9 Oct. 1997.

[74] Kalra (note 23), p. 7. See also Dixit, A., 'India's military hardware troubles: replenishment is a short term answer', *Pacific Defence Review*, Annual reference section 1996, p. 10.

[75] Ministry of Defence (note 20). No method has been developed to take advantage of opportunities for economies or interoperability when similar equipment is required by different services. Cariappa, K. C. (Air Vice-Marshal, ret.), 'Inter-service weapons system commonality', *The Pioneer* (New Delhi), 22 Aug. 1996.

[76] 'Parliamentary committee echoes defence experts', *The Statesman* (New Delhi), 31 Mar. 1996. According to a former Chief of the Army Staff, the DPS 'never got off the ground'. Sundarji, K., 'National policy and security strategy', *The Hindu*, 13 Dec. 1996, p. 10.

[77] Notification no. 50/4/18/18-TS, *Government of India Gazette*, 24 Aug. 1990.

[78] 'Plan for NSC abandoned', *Hindustan Times*, 28 Oct. 1991. A revivial of the NSC has been opposed by the Ministry of External Affairs, which is concerned about losing its influence in foreign policy making, and by the Ministry of Home Affairs, which argues that the value of the NSC to the existing process would be doubtful. 'Idea of National Security Council has few takers in MEA', *Times of India*, 12 July 1996, p. 6; and 'National Security Council: no answer to Purulia', *Indian Express*, 12 July 1996.

Organizational deficiencies

Major deficiencies in the monitoring and review mechanisms of the organizations involved obstruct the development of an efficient, regulated decision-making process. A number of them do not perform the functions in the arms procurement process for which they were established. For example, the COSC works on the basis of consensus and shies away from contentious issues, to the detriment of integrated defence planning and coordinated arms procurement. While the DPS does not integrate threat assessments with major arms procurement plans that could affect all three armed services, the ISEPC does not function as intended, if at all.[79]

The limitations of the military in building capacities and expertise for long-term planning stem mainly from frequent job rotation, and inconsistencies and uncertainties inevitably remain in the planning processes.

Lack of inter-ministerial or inter-agency coordination

Planning units have been established in the MoD Department of Defence Production and the DRDO, but no systematic interaction between these organizations and the perspective planning directorates at the armed services' headquarters has been formalized.[80]

The fact that the armed services formulate the 15-year perspective plans and the annual plans while the MoD formulates the 5-year plans indicates planning inconsistencies and obstructs the development of linkages between the armed forces' philosophy papers and defence policy priorities.[81] How coordination between the annual defence plans, the long-term perspective plans and the committee-inspired philosophy papers is handled is unclear.

Threat assessment and planning by the three services are largely independent of each other.[82] The difficulty of integrating their plans clearly increases the likelihood of different threat perceptions developing between them, allows lobbies to develop in the ministries and in the media to promote their own points of view, and creates inter-service rivalries. Political threat assessments, meanwhile, are carried out by the MEA and the JIC,[83] but routines for reporting them are not formalized. According to a former Foreign Secretary, formal MEA assessments are not considered in the course of the military's threat assess-

[79] Interviews by the author with K. Subrahmanyam, Lt-Gen. V. R. Raghavan (ret.) and P. R. Chari, May 1996.

[80] Malik (note 3).

[81] The Government acknowledges such limitations. 'The absence of clearly defined national security objectives/military aims, leads to proposals being examined on a somewhat general basis. Similarly in the absence of clarity in long-term financial commitment, proposals/cases having financial implications cannot be decided in an optimal manner.' *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy* (note 3), p. 9.

[82] Interview by the author with K. Subrahmanyam, 29 May 1996.

[83] Chari (note 12), p. 27.

ments.[84] (A counter-criticism is that MEA representatives do not participate in meetings on threat assessment.[85])

The framing of a common capital budget by the MoD leads to an implicit assumption that it coordinates priorities between the three armed services. However, at present there is no approved five-year plan to administer the capital budget, nor is there any formal mechanism for determining priorities between projects that cut across organizational lines.[86] Nor does the present financial information management system function as a coordination tool, but rather as a rough tool of expenditure control. The present budget system is not equipped to provide information on the costs of carrying out a job, nor does it provide opportunities for better management of financial resources.

Coordination between the MoD and different ministries and specialized agencies is also underdeveloped in terms of financial and techno-industrial resource sharing, security analyses, technology and political risk assessment. At the DDP&S, the Directorate of Planning and Coordination provides a link between the production organizations, the user services and the R&D organizations. However, at the level of the MoD policy monitoring requires sub-optimal planning,[87] analysis, coordination and review at various levels involving the user services, the developer (the DRDO), manufacturers in the public and private sectors, and the academic community.[88] The point of contact between the equipment development organizations—that is, the DRDO and the user services—for review of major projects is high, at the level of vice-chief of staff of each service.[89]

As no single authority oversees R&D on and the production and procurement of weapon systems, the MoD is expected to coordinate the perspectives of the armed services, the DRDO and the DDP&S.[90] The limitations of interdepartmental coordination are exemplified by the process of defining user requirements for a specific project. The relevant R&D agency identifies: (*a*) its current technological levels and potential capabilities in relation to the proposed system; and (*b*) the technologies available through import. Using this input, the armed services draft their requirements for the proposed weapon system, drawing on their own experience as well as their perceptions of the future battlefield. The draft requirements are then discussed with the DRDO, which may either

[84] Interviews by the author with A. P. Venkateswaran, July 1995.

[85] Interview by the author with P. R. Chari, May 1996.

[86] Ghosh (note 28), p. 104.

[87] Sub-optimization in systems analysis implies breaking up decision making into component parts or sub-problems. By analysing smaller sub-problems, greater attention can be paid to detail.

[88] Lack of coordination between them is illustrated by the decision in 1997 (for political rather than industrial reasons) to reverse the divestiture of certain DPSUs. 'Four defence PSUs withdrawn from Disinvestment Commission', *The Hindu*, 12 Nov. 1997, p. 52. The divestitures had begun in the early 1990s at Bharat Electronics Ltd and Bharat Earth Movers Ltd. Comments by A. V. Singh, Joint Secretary of the DDP&S, MoD, at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

[89] Comments at the CPR–SIPRI workshop, New Delhi, 1 July 1995; and Ministry of Defence (note 19), p. 53.

[90] Where the Defence Minister is responsible for other important functions, the coordination function is likely to be weak. A Defence Minister's Equipment and Policy-Making Committee exists, but it is not known whether it has ever met. Madhok, V. K., 'Flaws in defence', *Indian Express*, 9 Sep. 1993.

accept or change certain technical features or performance parameters of the proposed system. In practice, the armed services have found that the DRDO does not accurately define the indigenous technological capacities for the development of equipment for fear that the armed forces will choose to import the system.[91]

The DRDO has started to take initiatives for collaboration with private companies, but this has yet to be institutionalized and processes of civil–military technology and industrial integration have not yet been developed.[92] The absence of transparent procedures also prevents interaction between the private sector and the defence public sector, hampering the mutual benefits that could be gained from such interaction.

Export controls are sometimes officially blamed for difficulties in obtaining critical components when coordination at home is actually at fault. Considerable ambiguity remains in this regard,[93] but a number of sub-systems and critical components are being procured from the member countries of the Wassenaar Arrangement for major weapon systems under development, including the LCA, the ALH, the Arjun tank, Howaldtswerke-Deutsche Werft (HDW) submarines and fire-finder radars.[94] India in fact imports technologies and components from the USA and other Wassenaar Arrangement members on a large scale. Export licences are granted to programmes whose mission profiles have been accepted by the technology-exporting countries. The progress of the Integrated Guided Missile Development Programme (IGMDP) has, however, been affected by the tightening of the Missile Technology Control Regime (MTCR) and subsequent export controls.[95] The methods used to address potential missile proliferation in India include a stringent process of verification and confirmation before licences are issued to India, prevention of the re-export

[91] Singh, H. (Lt-Gen.), 'The second coming of the Arjun', *The Tribune* (Chandigarh), 29 Mar. 1996.

[92] A noticeable change has also been observed in the LCA and Integrated Guided Missile Development (IGMD) projects where attempts to integrate civil and military capabilities have been made. The changes in management methods in these two projects are indicative of problems with the coordination of defence R&D and production.

[93] Official reports give contradictory accounts of the effects of export control. One report of the Standing Committee on Defence on major DRDO projects states that vital technologies are being deliberately and unjustifiably denied to India, but the MoD annual report for 1995/96 states that progress in the development of state-of-the-art systems is not affected by export control regimes. *Ministry of Defence: Defence Research and Development—Major Projects* (note 21), p. 3; Ministry of Defence (note 34), p. 53; and Kalam, A., *Jansatta*, 6 Dec. 1995, p. 6.

[94] The LCA has a General Electric turbo-fan engine; the fly-by-wire flight control system has been developed by Lockheed Martin; British Aerospace and Wright Patterson are providing flight control law consultancy; Alenia of Italy provided technical consultancy for the carbon-fibre composite wing; Ericsson of Sweden was involved in the development of pulse doppler multi-mode radar; and Dassault provided design software packages. Other foreign components included actuators, generators, fuel pumps, ring laser gyros, and components for head-up and multi-functional display. Mama, H., 'LCA fighter drives India's aerospace industry', *Interavia,* Dec. 1996, p. 15; and Bedi, R., 'The eagle has landed', *Indian Express*, 1 Nov. 1996. On the Wassenaar Arrangement, see note 66.

[95] The MTCR was established in 1987 as an instrument for nuclear non-proliferation policy. For a description of the regime, see Anthony, Eckstein and Zanders (note 66), pp. 354–59. 'Of late there have been very disturbing trends. Some of the companies who are doing R&D or even limited manufacturing, have been put on what is called the watchlists of certain governments.' Comments by K. Santhanam at the CPR–SIPRI Workshop, New Delhi, 1 July 1995, p. 21.

of technologies of US origin from third countries, and the placing of Indian companies on the 'watch list' of potential proliferators.[96]

Difficulties in integrating broader expertise and scattered skills in a formalized manner at the MoD level indicate another systemic deficiency. The main barriers are a lack of political will and inadequate knowledge of defence matters among the political leaders and a lack of staff continuity among the civilian bureaucracy in the MoD.[97] However, civil servants in the MoD do bring a broader sensitivity to society's priorities to the decision-making process.

India's failure to develop interdisciplinary and inter-ministerial processes could be the result of deeply ingrained attitudes to controlling information on the part of tradition-minded officials—an attitude which works against the interests of the society they are meant to serve and instead leads to a convergence of interests between the defence R&D community and the military. For example, an R&D agency is expected to conduct technology forecasting on the basis of an assessment of operational scenarios and tactical requirements, but the work being carried out by the DRDO in this area is described as perfunctory.[98]

The issue of rationalizing roles and missions to avoid duplication also remains unaddressed.

Failures of project management and cost control

Cost overruns in the development of major weapon systems in India have been attributed to inaccurate estimates, inflation, changes in the proposed production volumes, and a lack of competence among the military staff to formulate technical specifications and qualitative requirements. Variations in the prices of components and programme delays owing to unforeseen problems associated with the learning process, such as gaining the necessary technical skills and project management experience, have also affected costs. Time overruns, which often add to the costs, have arisen from mid-programme budget constraints, exchange-rate variations and project redefinition. Major programmes can be delayed because of weaknesses in systems integration skills and attempts by the

[96] Ministry of Defence (note 19), p. 55; 'More bullying', *Hindustan Times*, 26 May 1997, p. 11; and 'India protests export curbs on Bharat Electronics', *Times of India*, 17 June 1997, p. 20. According to a notification from the US Department of Commerce, export licences from US companies will require more careful scrutiny in the cases of the Bhaba Atomic Research Centre (Trombay), the Indira Gandhi Centre for Atomic Research (Kalpakkam) and India Rare Earths Ltd. *Washington File*, US Information Service, 30 June 1997, URL <http://www.usis.usemb.se/wireless/100/eur116.htm>.

[97] Address by O. P. Mehra (former Chief of the Indian Air Force) in Sinha (note 3), pp. 61–63.

[98] Sen (note 19), p. 165. According to a DRDO representative, 'technology assessment is conducted on an ad hoc basis depending upon the competence of technical teams'. Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995. The discussion at the workshop indicated a lack of capacity for conducting long-term technology assessment in an institutionalized manner either in the DRDO or within the armed services. The Centre for Aeronautical Systems Studies and Analysis, Bangalore, carries out aircraft systems analysis and the Institute for Systems Studies and Analysis, New Delhi, carries out ground weapon systems analysis, computerized war games and operational research for force structure planning. Jaiswal, N. K., 'Growth of military operational research in India', *Defence Science Journal*, vol. 44, no. 3 (July 1994), pp. 215–19.

armed services to demand unrealistic and at times unproven technical specifications.[99]

The DRDO maintains that it has an extensive review system of committees, boards of management and governing bodies, but the fact that it had to close almost two-thirds of its projects in 1989 raises questions about the effectiveness of this system.[100] Perhaps DRDO productivity is affected by the time taken up by panels and review committees, or perhaps such mechanisms only work on paper for rubber-stamping decisions already made at the leadership level.

It is not uncommon for manufacturers to intentionally under-assess project costs in order to ensure approval. The defence R&D community also understates development costs in order to forestall pressures to import.[101] Advanced engineering expertise in the armed services, the MoD and its Finance Division is clearly inadequate to enable them to question understated projections.[102] Monitoring by legislative committees could reduce some of the project management problems.

Oversight and legislative scrutiny

In the Indian Parliament, participation in, influence on and even examination of long-term arms procurement planning are non-existent. The lack of published policy documents is a major weakness. According to Jaswant Singh, the Parliament has never appointed a defence commission or sought independent professional advice.[103] The absence of parliamentary supervision results in such absurdities as a five-year defence plan with no corresponding financial commitment.[104] Depending on the time available, the Parliament occasionally debates defence matters, but always focuses on immediate issues. The actual shaping of the defence budget takes place outside the Parliament among political leaders, civilian bureaucrats and military advisers. Members of the Standing Committee on Defence have even criticized the United Front Government's

[99] E.g., the costs of the Integrated Guided Missile Development Programme (IGMDP) almost doubled in 7 years, those for the LCA nearly tripled in 10 years and those for the Arjun tank increased by 18 times in 13 years. *Ministry of Defence: Defence Research and Development—Major Projects* (note 21), pp. 11–12. For a study of time and cost overruns in the case of the Arjun tank, see Jha, P. S., 'India's arms procurement system: secrecy versus accountability', SIPRI Arms Procurement Decision Making Project, Working Paper no. 16 (1995), pp. 6–12.

[100] The report of the Standing Committee on Defence in Jan. 1994 noted that, as a result of the rigorous review of projects conducted over 4 months, the DRDO had closed down 618 of 989 projects in 1989. *Ministry of Defence: Defence Research and Development—Major Projects* (note 21), pp. 7–8.

[101] Nand Kishore (note 3), p. 87. The original allocation for the Arjun tank was Rs 155 million ($19 million at the 1974 rate of exchange) in 1974. It was increased to Rs 565 million ($72 million) in 1980 and to Rs 2800 million ($216 million) in 1987. The escalation is explained by an increase in the number of prototypes (from 12 to 42), inflation and deteriorating exchange rates. In the case of the LCA, Rs 5600 million ($560 million) were sanctioned in 1983 for the development of 6 flying prototypes. (Current rates of exchange from International Monetary Fund, *International Financial Statistics Yearbook* (IMF: Washington, DC, various years).) The cost for only 2 technology demonstrator aircraft escalated to Rs 21 880 million (*c.* $700 million) in 1993. *Ministry of Defence: Defence Research and Development—Major Projects* (note 21), pp. 18–19.

[102] Subrahmanyam, K., 'Defence R&D management', *Economic Times* (New Delhi), 2 Nov. 1995.

[103] Singh (note 46), pp. 10–11.

[104] Singh (note 46), pp. 10–11; and Jafa (note 17) p. 8.

'secretiveness' in not apprising them of defence policy. However, when a former chairman of the Standing Committee became a cabinet minister in the United Front Government in 1996, he was unable to improve the availability of information because of the attitude of his civil servants.[105]

There is very little evidence of parliamentary involvement in Indian defence technology issues. This could be due to lack of interest in defence affairs or to the low electoral value of such committees, which is also indicated by the low attendance and participation at the hearings of the standing committee.[106] The Standing Committee on Defence has started to conduct hearings on the DRDO. However, the short term of service (one year) on parliamentary committees prevents Members of Parliament (MPs) from gaining knowledge and competence in specific security and technical fields. If and when professional expertise is sought by the committees, it is only available in the form of reports from government-funded think-tanks which do not wish to have their opinion seen as diverging from that of the establishment. The difficulty in finding independent professional opinion to facilitate quality inputs to legislative oversight remains one of the major weaknesses in the Indian parliamentary system.[107] If parliamentary committee hearings are to be a function of the Parliament at work, representatives of the accredited press should attend the meetings to prevent distorted or deliberate leaks.

S. C. Kashyap, a noted Indian constitutional expert, observes that:

> [besides the] accountability of the Government and of the administration to the elected representatives of the people, there is a more crucial aspect of the accountability of the legislators to the public at large. The question is what public mechanisms can be built to bring to account the executive and the legislators within the existing framework? The questions are perhaps most relevant to decision-making processes in the area of security concerns, defence policy formulations, arms manufacture and purchases etc.[108]

Kashyap believes that arms procurement is bound to remain an executive function which must be exercised in accordance with laws and policies laid down by the Parliament. He asks which laws have been enacted by the Indian Parliament with regard to obtaining information from the Government and whether its power to elicit information from the Government is being exercised.

Limited expertise in framing laws and exercising power could be attributed to the fact that many MPs in India today have lower educational standards and

[105] [Why this apathy towards defence?], *Navbharat Times*, 10 Dec. 1996 (in Hindi).

[106] Singh (note 46), p. 10. One member of the Rajya Sabha (the upper house of the Indian Parliament), states that because of lack of interest on the part of MPs the bureaucracy has acquired monopoly control over the MoD. Malkani, K. R., 'A positive approach to defence', *Indian Express*, 27 Dec. 1996. See also note 48.

[107] 'It is essential for the departmental committees to be serviced by competent staff. They should invariably take assistance of specialists during enquiries.' Kashyap, S. C., 'Standing Committee must learn to run', *Times of India*, 20 May 1995, p. 8. The Standing Committee on Defence has started to invite independent strategic analysts to give evidence at its hearings. Flory, K., 'Parliamentary committee echoes defence experts', *The Statesman* (New Delhi), 31 Mar. 1996. However, access to expert advice of specialized matters has not been institutionalized.

[108] S. C. Kashyap, communication with the author, 29 July 1995.

come from a wider range of social backgrounds than the members of India's first two parliaments, a greater number of whom had an understanding and knowledge of legislative processes. If this observation is supported by research, it could identify a major limitation in advancing the constitutional changes required for the democratization of Indian society—a deficiency which affects not only security policy monitoring but also the whole of public policy making.

This weakness is exacerbated by the fact that demands for accountability in the parliamentary committees are primarily made by members of the opposition, who are in a minority and cannot exercise critical oversight of their own accord. Furthermore, such demands may be based on personal, mundane or electoral considerations.

Information sharing carries an element of risk in countries with low national cohesion. The need to accept the integrity of MPs and develop a process of providing information on a need-to-know basis has not been accepted. The Government, made up of the parties in power, decides who needs to know and opposition MPs are seen in an adversarial context.

Weaknesses in legislative or multi-party oversight may, however, have serious security consequences. It is not unknown for groups around the leader to develop a certain political élitism over time and for one group to assume that it best understands the interests of the nation. The formation of such closed groups leads to conformity and similarity in thinking, which reinforces the closed circle of interaction. A lack of feedback (from the press) or professional oversight (by the Parliament) may reinforce confidence in the group's decision making and raise the threshold of resistance to contrary information:

> Members of the group fed each other with assessments and optimistic estimations . . . the outcome was the atmosphere of self-fulfilling discussions . . . perpetuating group members' self-confidence and sense of invulnerability. This led to baseless optimism and a willingness to take risks that were expressed in adoption of the Forward Policy, while placing exaggerated and unrealistic confidence in the ability of the concerned organizations [the Indian military] to execute such a policy containing such a high element of risk with success.[109]

Auditing

Legislative oversight functions are augmented by a professionally competent auditing organization in the form of the CAG. As an institution, the CAG recognizes that, while the judgement of professionals in weapon system selection should be respected, the factors, criteria and procedures used in the selection should be open to audit to justify the selection. These include: (*a*) the factors on which the decision was based; (*b*) the comparative financial assessment and cost data which determined the deal; (*c*) the reports and data on concomitant programmes for the induction of the weapon system, such as coord-

[109] Vertzberger, Y., 'Bureaucratic–organizational politics and information processing in a developing state', *International Studies Quarterly,* vol. 28, no. 2 (1984), p. 88.

ination between procurement planning actions; and (*d*) related infrastructure and planning actions.

While specific investigations into defective equipment are ordered, no systematic or standardized post-induction re-evaluation of weapon systems is carried out to compare the complete range of their capabilities with those accepted at the time of selection.[110] This limitation could also be the result of the CAG's lack of access to multi-disciplinary, professional expertise. Unlike other democratic countries, India has no external audit agency to monitor the work of the CAG, nor are its procedures open to inspection by the Indian Parliament. Neither the Parliament nor the Minister of Finance has the right of access to audit regulations, which were previously open to the public but are now classified. This undemocratic situation remains unchallenged in the Parliament: MPs accept it as a norm of public office.[111]

Behavioural factors

Emphasis on secrecy

The procedures and details of military expenditure are treated as confidential and information is not publicly available.

Secrecy appears to be sanctified by appeal to the national interest or national security. This helps the Government to withhold or release information according to its perception of its own interests. If MPs insist on obtaining information, they can be silenced by questioning their patriotism. A prevailing assumption among government officials is that a legislature of more than 500 MPs cannot maintain confidentiality and that politicians would not be able to resist the temptation to divulge government views on issues prematurely for their own political gains.[112] A traditional mind-set is evident in the failure of both the military and the civilian bureaucracies to realize that building public understanding and an information base would strengthen the decision-making processes and improve professional output. The avoidance of accountability has created an adversarial relationship between the public-interest institutions and interested public servants.

The reasons for an excessive emphasis on secrecy which shrouds national security issues are inadequately explained and inappropriately justified,[113] and this distorts the public understanding of even genuine needs for confidentiality. The military security establishment has been unable to devise a method of analysing, processing and disseminating information for the public to strengthen democratic institutions. Communication between government agencies, non-governmental organizations and individuals with expertise in technology

[110] Kumaran (note 4), pp. 13–23, 27.

[111] Joseph, K. P., 'Decline and fall of government audit', *Economic and Political Weekly* (Mumbai), Mar. 1994, p. 533.

[112] Kamath (note 45), pp. 228, 234, 238.

[113] Nayar, K. P., 'Élite motivation and domestic considerations in arms procurement decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 11 (1995), p. 2.

development and arms procurement has been a weak link in the process, resulting in compartmentalized thinking.

Essential details that would facilitate public monitoring of decision-making procedures and processes are available neither to the media nor to legislative bodies such as the Standing Committee on Defence. The professionalism of decision making remains unmonitored and unverified.[114] A culture of excessive secrecy has inhibited the development of an informed public debate on national security issues.[115] The media are relatively active but have no specialized analytical focus[116] and there are no routines through which they can acquire and synthesize disaggregated information on the decision-making structures. Their responsibility to inform the public, which would in fact help to build public confidence in decision makers, is ill-served by the distance maintained by the civilian and military bureaucracy. A process of constructive engagement in public concerns by the security bureaucracies through informed and educated defence correspondents would pay dividends in the long run. A small step in the right direction was taken with the establishment of a war correspondents' course, exposing journalists to the organizational structures, weapons and state of preparedness of the armed forces.[117] An informed public is a confident public, and a confident public understands and is tolerant of the limitations of the decision-making process.

Academic research suffers from similar limitations, as well as from a diversion of talent to more remunerative disciplines. There is an ongoing struggle between the desire to keep the public informed and the need to keep certain information confidential.[118]

Four damaging consequences of excessive confidentiality have been identified: (*a*) there is insufficient examination of the rationale for weapon system procurement; (*b*) there is a greater likelihood of corruption in arms procurement; (*c*) an inadequately analysed procurement policy leads to inefficiencies and can have unhealthy consequences for national security; and (*d*) opacity in decision-making processes damages public confidence in the armed forces, which are consequently subjected to needless controversies.[119] The military's professional credibility and objectivity of government decisions consequently suffer. The official argument is that decisions are made according to rules, but the public needs to know if the rules are archaic and irrelevant or whether parliamentary processes have made them effective.

[114] 'In practice, a huge gap exists between what is ideal and what is actually practised in the three arms of the defence services . . . the system defies scrutiny by any segment of the democratic polity.' Nayar (note 113), p. 7.

[115] *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy* (note 3), p. 29.

[116] Dinesh, K., 'Need for military–media interaction', *Indian Defence Review*, vol. 10, no. 3 (July–Sep. 1995), p. 72; and comments by Inder Malhotra at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

[117] Natarajan and Chakraborty (note 9), pp. 26, 67.

[118] The MoD usually says that it is in the public interest not to reveal information. Prasanan (note 3). A former Chief of Army Staff, Gen. K. Sundarji, says that politicians, bureaucrats, the armed forces and the media have aided and abetted a conspiracy of silence. 'Too much secrecy', *Times of India*, 14 Feb. 1991.

[119] Singh (note 46), p. 18.

There is, however, an undercurrent of opinion that suggests that excessive secrecy is becoming a liability and that there should be greater transparency with respect to financial and procurement procedures.[120] Experts have begun to suggest that some non-sensitive information could be treated as public.[121] Within the limits of military confidentiality, clear information about arms procurement processes for the legislative oversight bodies would permit a better public understanding of deviations from the formal procedures. According to Kaushal, 'the secrecy shrouding procurement, the protection given to loss-making resource-devouring defence production units and the atmosphere of secrecy that blankets defence in India creates a nest of corruption among bureaucracies, procurement agencies, and politicians'.[122] For example, although since 1985 the MoD has officially banned dealings with the agents of foreign suppliers by executive order, about 80 agents are reported to be involved in the transport and testing of systems and finalizing contracts.[123] An MoD proposal to ban arms sales agents by legislation was turned down as untenable. Although the DPSUs are in the public sector, they are exempt from the ban on dealing with foreign contractors and have gradually become importers as well as manufacturers of defence equipment.[124]

Cultural barriers to the flow of information are common in the Indian bureaucratic system. The pulls of caste and common social backgrounds are stronger than organizational loyalties and affect recruitment to the Civil Service.[125]

Personal relationships in professional communication

A prominent characteristic of the Indian style of political decision making is the emphasis on personal relationships and their influence on professional communication. Working relationships centre around factions and groups rather than institutions and professions. The electoral power struggle has been largely dependent upon caste and community. Social divisions, which form the basis of political voting blocs, create deep-rooted adversarial relationships. The attitude

[120] Jafa (note 17), p. 15; and Kaushal, N., *India's Defence Budget: Can it be Reduced?*, ACDIS Occasional Paper (Program in Arms Control, Disarmament and International Security, University of Illinois at Urbana–Champagne: Urbana, Ill., Feb. 1995), pp. 9–11. As in the Soviet defence industry, lack of transparency contributes to inefficiencies. Comments by G. K. Arora, former Secretary, Ministry of Finance, at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

[121] Jafa (note 17), p. 15.

[122] Kaushal (note 120), p. 10. According to retired Major-Gen. V. Saighal, the overstaffed and underperforming defence departments have institutionalized corruption on an awesome scale. Saighal, V., 'Downsizing for defence preparedness', *Economic Times* (New Delhi), 17 Feb. 1996.

[123] Bedi (note 15).

[124] Bedi, R., 'Back-door brokering', *Indian Express*, 17 Jan. 1997.

[125] Panini, M. N. and Kumar, V. R., 'The sociology of strategic decision making on national security issues in India', SIPRI Arms Procurement Decision Making Project, Working Paper no. 17 (1995), pp. 9, 12. On the influence of personal relationships in India, Paul Brass says: 'a state-level faction in Uttar Pradesh will have its inner core of followers personally attached to the leader in an emotional fashion. Journalistic accounts indicate similar factional manoeuvring at the national level and in other states'. H. Gould claims that, 'while Indian politicians have been able to transcend *jati* (caste) boundaries, the modernisation of their behaviour goes no further . . . having factions behave like *jatis* seems part of the natural order of things'. Both are paraphrased in Hoffman, S., 'Faction behaviour and culture codes: India and Japan', *Journal of Asian Studies,* Feb. 1981, pp. 235–36.

which politicians tend to display when voted into power reinforces the existing polarization in the public service. Despite attempts to establish secular institutions, Indian public administration has generally not been able to break free from traditional ways of thinking, moulded by caste and community.[126] Professional communication tends to develop among colleagues from the same cultural and social backgrounds, and professional relationships are based on personal trust rather than institutional norms or competence. Public servants spend a significant amount of time and energy in building contacts rather than on policy planning, monitoring and implementing decisions.[127] Personal contacts are weighed above delegation and decentralization.

Partly as a result, an extreme style of centralization and non-delegation of authority has been practised by several of India's prime ministers. General K. Sundarji, former Chief of Army Staff, believes that Prime Minister Jawahar Lal Nehru's personality restricted the growth of policy-making institutions: 'Nehru's taking over of policy making as a personal fiefdom did not permit the growth of [a] healthy tradition of consultations between ministries concerned with national security policies'. He goes on to say that 'bureaucracy functioned only as rapidly as Nehru could handle the vast amount of paper that crossed his desk', implying that the individuals on whom Nehru relied had a dominant influence on the information presented to him.[128] Major General D. K. Palit, Director of Military Operations during the 1962 Sino-Indian War, blames Nehru's leadership style for the breaches of procedure that crept into the MoD.[129] The view that issues pertaining to national security and international relations were too sensitive to be discussed in detail publicly meant that strategic decision making was confined to a select group in the Indian Government. Prime Minister Indira Gandhi's disregard for established procedures made formal national security structures difficult to operate,[130] while Rajiv Gandhi only sought the opinion of his few trusted advisers, and the centralization of decision making on national security matters was apparent during his rule as Prime Minister.[131]

This centralization of decision-making authority and the bypassing of official procedures became the norm. The Prime Minister's informal approval was

[126] Panini and Kumar (note 125), pp. 8, 12. The influence of astrologers and god-men on ministers is indicative of the influence of intuitive judgement on decision-making behaviour. Sehgal, R., 'Star struck in the capital', *Times of India*, 18 May 1997, p. 1.

[127] Panini and Kumar (note 125), pp. 10–11.

[128] Sundarji (note 76); and Vertzberger (note 109), p. 82.

[129] Panandikar and Mehra (note 5), p. 177.

[130] During Prime Minister Indira Gandhi's rule the locus of strategic decision making shifted to the Prime Minister's Office, which became a critical centre in the Government for processing important decisions as it informally took over many of the coordinating functions of the Cabinet Secretary and his influence declined. Panini and Kumar (note 125), p. 3; and Panandikar and Mehra (note 5), p. 183.

[131] In 1986 Prime Minister Rajiv Gandhi set up a Policy Advisory Committee, under the chairmanship of G. Parthasarthy, to take a long-term view of national security and foreign policy. Its members were his close confidants, including Arun Nehru, Minister of State for Home Affairs, and Arun Singh, then Minister of State for Defence. Sinha (note 3), p. 28. During his 5-year tenure, Rajiv Gandhi had 4 defence ministers, including himself for 16 months, and 6 ministers of external affairs, including himself for 22 months. Panandikar and Mehra (note 5), pp. 185–87.

required for a variety of decisions. The decision-making powers of the Prime Minister's Office have been further centralized through its direct access to the intelligence agencies. This has not only politicized the intelligence services but also generated uncertainty among top-level bureaucrats.[132]

Decision-making tends to be episodic, not only in the security field but also in the entire domain of public policy making. A lack of professional trust within governments and between governments and Parliament has inhibited decision making, monitoring and post-decision analysis at the highest levels. A similar pattern is evident in the style of arms procurement decision making. That defence policy and defence R&D management are determined by personal relationships can be observed at various levels of the decision-making hierarchy.[133] This relationship orientation was illustrated by the Westland helicopter purchase[134] and by the decision-making styles of certain service chiefs. Some spend more time redesigning uniforms than designing ways to build up the long-term capacities of their armed services. Under these circumstances, such moribund bodies as the ISEPC could provide greater continuity and consistency than a service chief driven by personal preferences.

Resistance to change

A traditional belief system and a negative attitude to dissenting professional opinion have been the bane of India's management of security. Vertzberger's observation that 'Indian decision makers' adherence to outdated perceptions and evaluations over painful and realistic revaluation of the situation leading to India's conflict with the Chinese'[135] is still valid today.

The question is whether this persists because specialized technical and management education is not yet sufficiently diffused through India's military and security bureaucracies, thus maintaining a traditional reliance on manpower as opposed to productivity based on technology. The Indian military's technical productivity is reflected by the poor levels of serviceability of its advanced equipment[136] and is much lower than in the user services of supplier countries. This hampers the development of indigenous equipment optimized for the Indian operational environment. More advanced technical education would better meet the wide-ranging requirements of development, production, testing

[132] Interview by the author with P. R. Chari, May 1996; and Natarajan and Chakraborty (note 9), p. 94. A recent ruling of the Supreme Court placed the central intelligence services under the control of an autonomous central vigilance commission.

[133] 'The decision making in prescribing staff requirements is highly personalized in this country. Often with changes in the leadership in an armed service, staff requirements tend to change with personal predilections of the decision maker.' Subrahmanyam, K., 'Defence R&D management', *Economic Times* (New Delhi), 2 Nov. 1995.

[134] The Westland sale was unprofessionally handled because of the strained relations between Rajiv Gandhi and British Prime Minister Margaret Thatcher. The helicopters were obsolete and unfit for use in the offshore oilfield work for which they were bought. Interview by the author with P. R. Chari, May 1996.

[135] Vertzberger (note 109, p. 77) quotes former senior Indian officials to support his observations.

[136] A survey of CAG reports over the years reveals low levels of maintenance and operational readiness of equipment. Dixit (note 74) estimates that the Indian Navy is only about 40% seaworthy.

and procurement of advanced weapon systems, as well as adapting or upgrading existing equipment or innovating. Poor user–developer interaction is a direct consequence and the armed services tend to change their quality requirements without regard to what is technically feasible.[137]

Outdated and inadequate management skills for planning, R&D and production were evident in the case of the import of Romanian AKM rifles.[138] A study by the Indian Institute of Management in Ahmedabad advises the Army Ordnance Corps to transform itself into a materials management organization in order to improve a procurement process characterized by long lead times, poor information systems and an over-stocked inventory encumbered by a multi-echelon organization.[139]

The generalist educational background of the military prevents it from keeping pace with technological change and the rapid reshaping of the user environment. It impairs interaction with technologists in R&D, production and maintenance agencies during the entire life cycle of weapon systems and reinforces reliance on procedures, limiting opportunities and ideas for innovation. In militaries with a technology-oriented organizational culture, qualitatively higher orders of productivity, technology absorption and adaptation are found.

According to observers of India's major technology projects, the record of the DRDO is one of failure rather than success.[140] Even though its work is applied research and demands engineering skills, it lacks engineers with advanced research backgrounds.[141] The fact that its ratio of auxiliary and administrative

[137] Because technical aspects were not properly understood, the army revised its qualitative requirements for the Arjun tank twice. *Ministry of Defence: Defence Research and Development—Major Projects* (note 21), p. 22. Performance requirements appear to be compiled by the staff of the armed forces from the best characteristics of weapon systems of the same category from different countries. Subrahmanyam, K., 'Defence R&D management', *Economic Times* (New Delhi), 2 Nov. 1995. According to Lt-Gen. Harwant Singh, the General Staff tends to pitch its qualitative requirements high, more or less in conformity with equipment in more modern armies, sometimes unrelated to South Asian battlefield conditions. On the other hand, the DRDO tends to make ambitious time estimates for the completion of R&D projects. Comments by Air Marshal K. D. Chadha at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

[138] Inaccurately reported in the Indian press as AK-47s. 100 000 AKMs were bought to fight the insurgencies in Kashmir and Punjab. 'Army buys one lakh Romanian AK-47s', *Indian Express*, 6 Aug. 1995. According to one report, ammunition for them had not still been bought in Dec. 1996. *The Tribune* (Chandigargh), 5 Dec. 1996. An Indian small-arms system, comprising a 5.56-mm calibre rifle, light machine-gun and carbine, was accepted for introduction in 1982, intended to be locally produced and to be completed in 1988. In May 1994 a contract to import 5.56-mm rifles was concluded as the 3 weapon systems were still at different stages of development. *Report of the Comptroller and Auditor General* (note 19), pp. 105–20. CAG reports describe many similar limitations in technology management. See, e.g., *Report of the Comptroller and Auditor General*, no. 9 (New Delhi, 1995), pp. 16–24, 81–82.

[139] Ghosh (note 28), p. 255.

[140] Jha (note 99), p. 5. According to Vice-Admiral K. K. Nayyar, 2 major factors contributing to the DRDO's weakness are its lack of performance and capability audit and an organizational attitude that fails to ensure accountability. On the other hand, the impractical demands on system performance and development schedules of the armed forces do not give the DRDO a fair chance to develop systems. Comments at the CPR–SIPRI workshop, New Delhi, 1 July 1995.

[141] A review of the education profile of one DRDO laboratory revealed that it should have been 80 : 20 engineers : natural scientists, whereas only 20% of the scientific staff had engineering degrees, 27% had degrees in mathematics and physical sciences, and 48% were considered unqualified for R&D work. *Report of the Comptroller and Auditor General* (note 19), pp. 219–20. The DRDO runs a postgraduate research and training scheme for electronics, mechanical engineering and allied disciplines to make up for the lack of engineers with advanced technical qualifications. Ministry of Defence (note 34), p. 57.

staff to engineers and scientists is more than four times that found in private-sector R&D organizations indicates that resources are not being used as effectively as they could be and that productivity could be higher.[142]

Lack of understanding of technology development processes and the resulting weakness of monitoring lie behind resistance to change and behind much waste and many mistakes. This was evident in the absence of a parliamentary debate on the DRDO's 10-year self-reliance plan (up to FY 2004/05) or on its consistency with the DDR&D 15-year perspective plan (up to the year 2000). Had there been a parliamentary assessment of the DRDO plan based on technicalities, public scrutiny might have focused on such questions as monitoring and evaluation, periodic review mechanisms, the feasibility of the plan in the light of such problems as technology obsolescence, the effects of new weapon systems emerging on the market, development lead times of 15–20 years or more, past levels of indigenization achieved by the DRDO, and the fact that the technology-generation cycles of components and sub-assemblies are becoming shorter than the life cycles of major weapon systems.

A survey of major weapon systems under development in India reveals that their R&D time in some cases will be nearly as long as their expected service life and that their rate of obsolescence will therefore be faster.[143] A number of factors account for this: (*a*) the armed forces pitch specifications beyond the horizon of technical feasibility; (*b*) the DRDO seizes the project and the funds allocated to it in the expectation that performance requirements will be reduced; and (*c*) there are difficulties arising from design problems, limited expertise and thinly spread technical and financial resources. Post-development problems include difficulties in converting prototypes into production models, lack of production facilities and financial constraints which between them raise unit costs and make indigenous models unaffordable.[144] It is a moot point whether a monopolistic agency can be internationally competitive if it enjoys autonomy in a country's technology assessment, development, quality assurance and evaluation.

Strong traditionalism and the lack of a broad base of advanced technical education in the armed forces handicap long-term security forecasting and are to a great extent responsible for the lack of associated capacities—in financial assessment, technology assessment, systems analysis and operational research.

[142] Auxiliary staff, such as technical assistants, surveyors and draughtsmen, are responsible for the maintenance of equipment and machinery and preparation of materials for experiments and tests, while administrative staff carry out clerical, messenger and janitorial functions. In 1992 there were 3.48 auxiliary and administrative personnel for each engineer in the DRDO. In the private sector the proportion was 0.84 and in the R&D sector overall 2.07. India, Ministry of Science and Technology, *R&D Statistics, 1992/93* (Ministry of Science and Technology: New Delhi, 1993).

[143] Kalra (note 23), p. 6. The LCA, Arjun tank and ALH have been on the drawing-boards, in R&D laboratories and on test tracks or flights for almost 2 decades.

[144] Ghosh (note 28), pp. 307–308. A senior DRDO official has said that 'the DRDO does not carry out detailed financial assessment because neither the organization has skills nor does it want to do that because the project would take longer than the lifetime of the equipment'. Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

However, national-level decision-making processes have shown a certain responsiveness in crisis situations.

V. Conclusions and recommendations

Long-term planning

The escalating costs and the rate of obsolescence of advanced weapon systems compel integrated defence planning and advanced technology capacity. Indian arms procurement decision-making processes have not yet incorporated long-term technology development or engineering capacity building into the national planning system. Pointing to isolated areas of achievement in India, A. P. J. Abdul Kalam observes: 'If we integrate the work done by various research institutions, we could set up a chain reaction to ensure speedier development'.[145]

One expert in the field maintains that 'arms procurement decision making involves a complex range of factors: although the process of defence allocations begins with taking into account national and societal needs, it gets diffused between the military users, the bureaucratic examination and political choice'.[146] It is nevertheless difficult to find evidence of structures, methods and capacities within the military organizations engaged in arms procurement that consider national and societal priorities before presenting the military's needs. Demands for public accountability are seen from the perspective of organizational interests as opposed to national and societal interests.

While government officials are constrained by the pressures of routine work, their horizon for conceptualizing, forecasting and defining policy alternatives is restricted by their short tenure in a particular job. Policy planning staff need years to mature their thinking in a particular specialization before it can develop into a well-grounded expertise—an approach which is antithetical to the way bureaucrats or military officers advance in their careers.

Accountability

For India's democratic processes to be made more stable, it needs to develop greater government accountability to the legislature and in turn to the people of India, thus developing public confidence in decision making. The parliamentary standing committees are suitable instruments to channel the Government's accountability and develop an objective public opinion on security issues.

An account of political organization during the conflict with China says that:

[145] A. P. J. Abdul Kalam, cited in a communication from M. Zuberi, 9 Dec. 1996.

[146] 'Involvement of all agencies concerned brings in checks and balances . . . and makes for increased accountability. Coupled with the need for confidentiality, it makes the description of the total process difficult.' Kalra (note 23), pp. 2–3. According to V. K. Nair (Brig., ret.), 'Instead of decrying lack of transparency, the problem of accountability needs to be addressed . . . adequate transparency needs to be introduced in the system to hold responsible authorities accountable . . . methods which as of now do not exist'. Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

Among parliament members, only a handful had the knowledge and experience to analyse and investigate the activities of the Indian Army. But even those few had neither the authority nor the ability, nor the necessary means to do any of that: the major policy makers kept them utterly in the dark. The annual report issued by the Ministry of Defence, for example, which was meant to describe the annual activities of that Ministry, really provided only the most insignificant information, while the parliamentary committee responsible for defence affairs, attached to the Ministry of Defence, had no formal status and hence was 'toothless'. Parliament therefore had no access to the proper information, nor was it able to call on involved officials to testify before it. As for the Indian press, newspaper editors could publish only what was given them by the authorities in the Ministry of Defence.[147]

Another observation from 1995 suggests how far the Indian Parliament has advanced towards this goal over the past three decades:

[Some] fundamental constitutional reforms are needed to make the system really representative, responsible and responsive (in other words more accountable to the people). However the tragedy is that the politicians (and bureaucrats) are sick even of the minimal accountability that lingers in the existing policy and they would like systematic changes only to do away with it in order to ensure greater and unhindered 'stability' of their governments.[148]

P. S. Jha, Press Adviser in the Prime Minister's Office in the Janata Dal Government in 1990, believes that legislative oversight is limited by the Government's frequent citing of the need for secrecy and by the absence of a secretariat for the Standing Committee on Defence to call in experts and commission studies. The situation is characterized by the view that the control of information is an instrument of power. 'Successive Indian governments have denied information to the citizens under the assumption that if shared, what in consequence is being shared is also power.'[149] According to Kashyap, the parliamentary committees examine and oversee implementation of policies by the administration, not what ministers have done.[150]

The Indian Parliament has not shown initiative in resolving the conflict between the public's need for information and the need for military confidentiality. Parliamentary committees are divided in their interest in seeking information and the members of the party in power and those in opposition appear to align themselves with their party instead of developing a professional attitude in their oversight functions and a constructive engagement with the Government.[151]

To improve the level of insight and understanding of security policies and to provide it with better information (in keeping with the genuine requirements of military confidentiality), the large, unwieldy Standing Committee on Defence,

[147] Vertzberger (note 109), p. 85.
[148] S. C. Kashyap, communication with the author, 29 July 1995.
[149] Singh (note 46), p. 9.
[150] Kashyap, S. C., *Economic and Political Weekly* (Mumbai), 6 Oct. 1990, pp. 2278–79.
[151] Interview by the author with S. C. Kashyap, 30 May 1996.

responsible for oversight of the MoD, could be restructured into smaller, more focused subcommittees specializing in such issues as: (*a*) security policy and threat assessment; (*b*) procurement, R&D and production/industrial issues; (*c*) human resources planning, education and training; (*d*) financial planning, budget and audit; (*e*) defence management; and (*f*) internal security. Small, efficient subcommittees would benefit the decision-making process as they could sharpen the executive's decisions against the test of wider judgement, pre-empt criticism, and share and exchange sensitive information in confidential hearings. At the same time they could communicate concerns to the national executive. It is understandable if the military and the R&D bureaucracy resist this approach because it takes time or breaches the requirements of confidentiality. As professionals they would prefer to retain an element of latitude in their planning and implementation. On the other hand, the likelihood of financial misadventure and waste of effort through technological or resource overreach would also be reduced.

Such a system of subcommittees would also provide a forum for various agencies of the executive to air their differences without lobbying with the media. It would help the public and its elected representatives to understand the complexities of such decisions, the level of uncertainties and the difficulties which the national executive has to face.

Some of the deficiencies of Indian security policy making and arms procurement decision making identified here could be addressed by developing a framework that facilitates access to diverse professional opinions in the political, defence, economic and technological fields. A higher level of professional expertise in the country at large would serve the parliamentary committees in examining policy alternatives and exercising oversight.

Notwithstanding the limitations in Indian arms procurement planning and implementation, the level of debate and freedom of the press offer a notable potential for improving accountability in the system. Improvements in the quality of professional analysis in the media and in the academic world will improve the public understanding of defence issues, which appears to be the main obstacle to developing an assertive legislative oversight.

In the present climate there is a tension between the need for efficiency, implying confidentiality in the interests of speedy decision making, on the one hand, and the requirements of accountability, implying oversight, balance or restraint, on the other. If the issue of accountability is to be raised in the context of the larger interests of society, a public debate must define the criteria for needs of confidentiality, taking into account the military's point of view. This debate has yet to take place in India.[152] It is important that national security does not become a standard argument for avoiding accountability for institutional waste, fraud, abuse, professional neglect or inefficiencies. An attitude of evasion and a proclivity for inaction result from the differing views of their

[152] The issue of the public's right to information was reflected in the manifesto of the Janata Dal Party in the 1996 parliamentary elections.

own accountability among the various committees of the executive and the legislature.

The military's requirements for confidentiality are legitimate so long as they relate to its plans and capabilities. It is with processes, procedures and methods that abuses creep into the system unless there is public accountability. The need, therefore, is to develop oversight and audit processes and skilled parliamentary subcommittees assisted by professional expertise.

The United Front Government in early 1997 proposed a Freedom of Information Act which would oblige the Government to provide information on all subjects—except matters of national security and foreign relations.[153] Its exclusion of procedures and processes relating to all the functions of the armed forces or the foreign services is inconsistent with the very objectives of the proposed legislation. It would be erroneous to assume that these two bureaucracies are innocent of waste, fraud, abuse or functional inefficiencies.

The challenge is to raise the level of trust between the Government and the public, represented by legislative oversight bodies which would seek to establish whether variations from the decision-making norms are exceptions and not normal practice, that there are no extra-constitutional incentives at play which bypass the process or misuse it through lobbies exaggerating threat perceptions,[154] and that the procedures and processes are reviewed to keep up with changes in technology and emerging threats. If the public or its elected representatives are unable to ask questions about the performance of security-related projects, the responsible government bodies lose not only public confidence but also their capacity to perform to their full potential. It is not suggested that sensitive issues be laid bare to public scrutiny, but a debate needs to be initiated to decide what is sensitive and why—a question which is relevant to all fields of public policy making and governance in India.

Auditing

Statutory auditing should cover the wider aspects of arms procurement decision making and the methods used for selection, negotiation, procurement, maintenance and operation of the equipment. Ideally, it should also examine the following questions related to arms procurement. Was the system necessary and what were the alternatives? What were the qualitative requirements? What should the delivery schedule have been? What kind of training and maintenance facilities were required? What support and maintenance facilities are available within the country? How many items should have been ordered? What are the differences between estimated and actual life-cycle costs? How did weapon performance compare with pre-procurement criteria? Was the operational and

[153] Singh, G., 'Freedom of Information Act proposed', *Times of India*, 23 Feb. 1997, p. 1.

[154] Air Marshal B. D. Jayal expresses concern for those who are lobbied, hoping—for the sake of India's security—that they will not be swayed by extraneous considerations. Jayal, B. D., 'IAF's ad hoc ways', *Times of India*, 9 July 1996, p. 10.

technological obsolescence materially different from that estimated at the start of the project?[155]

A comprehensive analysis of the programme and life-cycle costs of major weapon systems should be an essential element of the audit, and requires assessment by experts from different disciplines. The lack of such analysis means that the picture of the burden of the weapon systems on society is incomplete and cost–benefit assessments misleading.[156]

A way of addressing the limitations in monitoring major R&D programmes would be to set up R&D project-monitoring capacities in the user services or an independent R&D quality assurance authority, which should report to a cabinet-level authority independent of the DRDO. Such agencies should also produce mandatory annual reports giving reasons for time and cost overruns to statutory audit authorities and the legislative oversight bodies. In addition to monitoring agencies, expertise must be developed in systems analysis and financial and technology assessment, independent of the MoD. Currently, the Indian arms procurement process remains dependent on a monopolistic state R&D agency which controls both information and the quality of the end-product. Even a systematic process of long-term force design and procurement can have elements of uncertainty and delay, but it appears that the consistent pattern of time and cost overruns of almost all the major DRDO projects has still not been investigated.

Concluding remarks

This chapter might give an impression that the Indian security establishment has, over the years, not managed its arms procurement decisions in an efficient manner. It can be argued that, in measuring the military's cost–benefit ratios, India has acquired weapon systems which give it competitive returns in terms of combat power for its financial investments. However, this interpretation could be misleading in the absence of public data on the total costs of ownership of weapons and the true burden they place on society.

This study examines how far arms procurement decision making in India is accountable to the public. In this sense, taking into account India's democratic processes, its well-established statutory audit process, a free press and a liberal attitude to public inquiry, much more can be done to harmonize arms procurement decision making with the broader needs of security and public accountability.

[155] Kumaran (note 4), p. 12.

[156] E.g., a comprehensive financial assessment of the life-cycle costs of the Su-30 combat aircraft contract has never been made. Estimates vary between Rs 6300 crore [$1.73 million at the 1997 average rate of exchange] (*The Statesman* (New Delhi), 17 Mar. 1997) and Rs 7000 crore [$192 million] (*Times of India*, 8 Jan. 1997, p. 9). Current rates of exchange from *International Financial Statistics,* Mar. 1998, note 18. One crore = 10 million. The CAG does not engage consultants, so that it is difficult to achieve the desired levels of statutory audit. Joseph (note 111).

Appendix 3A. India's defence R&D and production establishments

R&D establishments

Aeronautics

Aerial Delivery Research and Development Establishment (ADRDE), Agra—*aerial delivery of items and parachute recovery systems*

Advanced Systems Integration and Evaluation Organisation (ASIEO), Bangalore—*weapon systems integration, flight testing and evaluation*

Aeronautical Development Establishment (ADE), Bangalore—*PTA, fly-by-wire control system for the LCA and electronic countermeasure equipment*

Centre for Airborne Systems (CABS), Bangalore—*airborne systems and development of the airborne surveillance platform*

Gas Turbine Research Establishment (GTRE), Bangalore—*aero-engines, military turbines, development of the Kaveri engine*

Armaments and combat vehicles

Combat Vehicles Research and Development Establishment (CVRDE), Avadi (Madras)—*combat vehicles*

Vehicle Research and Development Establishment (VRDE), Ahmednagar—*armaments and special-purpose vehicles, tank transporters and trailers*

Proof and Experimental Establishment (PEE), Balasore—*development of armaments and technical analysis of field gun*

Armament Research and Development Establishment (ARDE), Pune—*electromagnetic and liquid propulsion systems, armament instrumentation, multiple rocket-launcher system and mines*

Institute of Armament Technology (IAT), Pune—*armament technology, materials development*

Computers and systems studies

Advanced Numerical Research and Analysis Group (ANURAG), Hyderabad—*computer hardware and software*

Centre for Artificial Intelligence and Robotics (CAIR), Bangalore—*artificial intelligence*

Centre for Aeronautical System Studies and Analyses (CASSA), Bangalore—*systems analyses of aeronautical projects*

Defence Institute of Work Study (DIWS), Mussoorie—*study of work techniques*

Institute for Systems Studies and Analyses (ISSA); Delhi—*operations research, systems analysis techniques and computer war games*

Scientific Analysis Group (SAG), Delhi—*theoretical analysis of scientific and technical problems relating to defence*

Electronics, instrumentation and communications

Electronics and Radar Development Establishment (LRDE), Bangalore—*radar systems, communications and electronic equipment*

Defence Research and Development Unit (DRDU), Calcutta—*communication and switching equipment*

Defence Electronics Application Laboratory (DEAL), Dehradun—*digital and satellite communications*
Instruments Research and Development Establishment (IRDE), Dehradun—*instrumentation for weapon systems and thermal imaging*
Defence Science Centre (DSC), Delhi—*gas dynamic laser and ring laser gyroscope*
Defence Electronics Research Laboratory (DERL), Hyderabad—*radar systems and advanced communications systems*
Microwave Tube Research and Development Centre (MTRDC), Bangalore—*advanced microwave tubes*

Engineering

Research and Development Establishment (Engineers), Pune—*development of bridges, trackways and mobility equipment*
Defence Terrain Research Laboratory (DTRL), Delhi—*research into combat effectiveness in diverse terrains*
Snow and Avalanches Study Establishment (SASE), Manali—*implications of snow and avalanches for military operations*

Explosives research and safety

Centre for Environment and Explosives Safety (CEES), Delhi—*storage and transport safety measures for hazardous materials and weapons*
Defence Institute of Fire Research (DIFR), Delhi—*fire detection and suppression research*
Explosives Research and Development Laboratory (ERDL), Pune—*high explosives, solid rocket propellants and high-energy polymers*

Life studies

Defence Bioengineering and Electromedical Laboratory (DEBEL), Bangalore—*biomedical engineering*
Defence Institute of Physiology and Allied Sciences (DIPAS), Delhi—*applied physiology and neurophysiology*
Defence Institute of Psychological Research (DIPR), Delhi—*psychological tests for aptitude and skills*
Institute of Nuclear Medicine and Allied Sciences (INMAS), Delhi—*advanced nuclear medicine therapy and biomedical research*
Defence Research and Development Establishment (DRDE), Gwalior—*studies in toxicology and development of antibodies against bacterial, viral and chemical agent poisoning*
Defence Agricultural Research and Development Laboratory (DARDL), Haldwani—*agricultural research in high-altitude areas*
Field Research Laboratory (FRL), Leh—*food technologies*
Defence Food Research Laboratory (DFRL), Mysore—*ready-to-eat nutritious food*
Defence Research Laboratory (DRL), Tezpur—*food technology*

Materials

Solid State Physics Laboratory (SSPL), Delhi—*solid-state materials and components*
Defence Metallurgical Research Laboratory (DMRL), Hyderabad—*composite armour, precision optical assemblies and artificial intelligence*
Defence Materials and Stores Research and Development Establishment (DMSRDE), Kanpur—*extreme cold-weather clothing and hydraulic fluid for submarines*
Defence Laboratory (DL), Jodhpur—*polymeric composites*

Missiles

Interim Test Range (ITR), Balashore—*provision of data for ballistic missiles*

Terminal Ballistics Research Laboratory (TBRL), Chandigarh—*ballistics of specialized weapon systems and missiles*
Defence Research and Development Laboratory (DRDL), Hyderabad—*design, development and quality control of missiles, and the IGMDP programme*
Research Centre Imarat (RCI), Hyderabad—*missile technology and training in missile technology*

Naval systems

Naval Chemical and Metallurgical Laboratory (NCML), Bombay—*naval systems chemical and metallurgical products*
Naval Physical and Oceanographical Laboratory (NPOL), Cochin—*naval sonar systems and signal processing*
Naval Science and Technological Laboratory (NSTL), Vishakapatnam—*naval technology, especially sonar systems*

Defence manufacturing entities

Defence public-sector undertakings (DPSUs)

1. Hindustan Aeronautics Ltd. The largest aeronautical complex in Southern Asia with 12 divisions—*design, development, manufacture, repair and overhaul of aircraft, helicopters, engines and related systems such as avionics, instruments and accessories*
2. Bharat Electronics Ltd. An electronics manufacturing organization—*design, development and manufacture of advanced radar for military and civilian use, communications equipment, and optical and opto-electronic equipment*
3. Bharat Earth Movers Ltd—*production of mining, construction and railway equipment, and products relevant to core sectors such as steel, coal and power*
4. Mazagon Docks Ltd—*production of warships, submarines, missile boats, destroyers, frigates, corvettes and patrol vessels of up to 6000 tons and merchant ships up to 27 000 dead weight tonnage (DWT) including well platforms for oil and natural gas extraction*
5. Garden Reach Shipbuilders & Engineers Ltd.—*production of warships and auxiliary vessels, ship-borne equipment, portable steel bridges, diesel engines, marine sewage treatment plants, and repair and overhaul of ships*
6. Goa Shipyard Ltd—*design, construction and repair of ships for the navy and the coastguard*
7. Bharat Dynamics Ltd—*prime agency for manufacture of the Prithvi, Trishul, Akash and Nag missiles; also manufactures small arms for the police and paramilitary forces*
8. Mishra Dhatu Nigam Ltd—*development and production of advanced materials and special alloys for the aeronautical, space, defence, atomic energy and engineering industries*

Ordnance Factories

39 ordnance factories operating under the Ordnance Factories Board are divided into five functional divisions:
1. Materials and components: 10 factories
2. Weapons, vehicles and equipment: 10 factories
3. Ammunition and explosives: 10 factories
4. Armoured vehicles: 4 factories
5. Ordnance equipment group: 5 factories

Sources: Roy-Chaudhury, R., 'Defence research and development in India', *Asian Strategic Review 1994/95* (Institute for Defence Studies and Analyses: New Delhi, 1995), pp. 251–55; and *Report of the Comptroller and Auditor General of India for the year ended 31 Mar. 1992,* no. 8 (New Delhi, 1993), p. 94.

4. Israel

Gerald Steinberg[*]

I. Introduction

The Israeli security environment is very complex and, in many ways, unique. The long history of intense conflict, the difficulties encountered with respect to weapon procurement (both imports and indigenous production), the unprecedented role of US military assistance ($1.8 billion annually over the period 1991–95) and other factors all contribute to this complexity.

In other respects, however, the Israeli decision-making structure has much in common with those of industrialized states and democratic systems. This chapter shows that the arms procurement decision-making processes in Israel are strongly influenced by interest groups and domestic political considerations. Although some institutional checks and balances exist—as in the form of the State Comptroller, legislative oversight and the press—hitherto their roles have been quite limited.

Given the perceived importance of and emphasis on secrecy in national security matters, the balance between accountability and confidentiality in the decision-making process is particularly important in the Israeli case. Some aggregate budget data regarding procurement are published in official documents, such as the annual reports of the Bank of Israel and the budget presented to the Knesset, and the unclassified reports of the State Comptroller often provide more detailed information on selected procurement-related issues. However, there are no unclassified White Papers, and few other public documents provide more specific and systematic information on the arms procurement decision-making process. Generally, there is very little public controversy over arms procurement in Israel. While there are often intense conflicts regarding procurement priorities and allocations within the military, these conflicts rarely spill over into the public sphere.

This research project coincides with major changes in the decision-making environment for defence procurement in Israel. The combination of the changes

[*] The author expresses his thanks to Zvi Tropp, former Economic Adviser, Ministry of Defense, for guiding the research for this project in Israel. He also thanks the experts who contributed the papers which formed the basis of the chapter. See annexe C for the biographical details of the contributors. In addition to these contributors, the following experts participated in the workshop held at Bar-Ilan University, Ramat Gan, on 9 Jan. 1995: Gen. (in reserve) Zvi Alon; Imri Tov, Economic Adviser, Ministry of Defense; Pinhas Zussman, Faculty of Agricultural Economics, School of Agriculture, Hebrew University, Rehovot; Benzion Zilberfarb, Dean of Social Sciences and Head of the Center for Defense Economics and Peace, Bar-Ilan University; Efraim Inbar, Director, Begin–Sadat (BESA) Center for Strategic Studies, Bar-Ilan University; and Eliyahu Kanovsky, Department of Economics, Bar-Ilan University.

in the international environment and the region since the end of the cold war and the beginning of the Middle East peace process has altered the strategic and political frameworks for arms procurement. Conditions for the defence industry have also changed significantly. Domestic arms procurement and export markets have declined steadily. As a result, the defence industry and decision making concerning domestic production of weapon systems are under intense scrutiny.

Background to Israeli arms procurement

From the establishment of the state of Israel in 1948 until the early 1980s, Israeli weapon procurement was characterized by a high level of uncertainty. Most of the major arms-supplying countries preferred to sell to the Arab states, and Israel lacked the political and economic resources to purchase weapons from a variety of suppliers. However, Israeli diplomatic and military activities led to purchases from Czechoslovakia (with the approval of the Soviet Union) between 1949 and 1951. France became Israel's primary supplier between 1955 and 1967. In both cases, however, political changes led to an abrupt halt in arms transfers to Israel. The USA began to sell arms to Israel on a regular basis in the late 1960s, but at the beginning this relationship was also viewed as unreliable. Periodic reassessments of US policy, embargoes and attempts to use arms supplies to gain political concessions characterized this relationship until the end of the 1980s.[1]

This uncertainty and insecurity with respect to external sources of weapons, as well as a sophisticated technological infrastructure, led the Israeli leadership to embark on the development of a broadly based indigenous arms production capability. This began with upgrades and improvements to imported weapon platforms.[2] In the 1950s, the local production of weapons was restricted to ammunition, small arms and the Uzi sub-machine-gun (1952). In the 1970s, Israel developed and began to produce the Kfir combat aircraft, various air-to-air missiles, fast patrol boats, the Merkava (Chariot) main battle tank (MBT) and other major weapon systems. This was accompanied by a massive growth in the size of the domestic defence industry, in terms of both employment and investment.[3] In this period, the defence sector accounted for over 20 per cent of total industrial employment and was a leading component of national export policy.[4] In the view of major decision makers, such as Shimon Peres, who

[1] See, e.g., Ben-Zvi, A., *The United States and Israel: The Limits of the Special Relationship* (Columbia University Press: New York, 1993).

[2] A detailed technical history of the Israeli defence industry is contained in Evron, Y., [The defence industry in Israel] (Ministry of Defense: Tel Aviv) [no date]; Mardor, M., [Rafael] (Ministry of Defense: Tel Aviv, 1981); Reiser, S., *The Israeli Arms Industry* (Holmes and Meier: New York, 1989); and Peres, S., *David's Sling* (Weidenfeld and Nicolson: London, 1970).

[3] Steinberg, G., 'Israel', eds M. Leitenberg and N. Ball, *The Structure of the Defense Industry: An International Survey* (Croom Helm: London, 1983); and Mintz, A., [The military–industrial complex: the American idea and the Israeli reality], *Medinah, Mimshal Veyachasim Beinleumim*, spring 1987, p. 17.

[4] Steinberg, G., 'Israel: high technology roulette', eds M. Brzoska and T. Ohlson, SIPRI, *Arms Production in the Third World* (Taylor & Francis: London, 1986), p. 172.

served as Prime Minister and Minister of Defense, and Moshe Arens, who also served as Minister of Defense, the Israel Defense Forces' (IDF) procurement of major weapon systems was to become increasingly based on locally designed and produced systems.

However, since 1985 the environment for arms procurement decision making has changed radically. In contrast to the grandiose dreams of the 1960s and 1970s, almost all major platforms, including combat aircraft, naval ships and armoured vehicles (with the exception of the locally made Merkava MBT), are now imported, mostly from the United States.

These radical changes in procurement policy can be attributed to two major factors. First, it became clear that Israel did not have the economic resources to maintain such a large and diverse indigenous defence production capability. In 1987 the Israeli Government ended the Lavi fighter aircraft project. Expected increases in export earnings did not occur (in part owing to the end of the cold war), and levels of employment in the primary defence firms fell radically. As a result, local defence production has been increasingly focused on specific technologically advanced systems and components, while reliance on imports for most platforms and other weapons has increased.[5]

During this period, the relationship with the USA stabilized, and the level of insecurity with respect to weapon imports decreased significantly. A repetition of the 1967 scenario, when the major arms supplier (France) suddenly halted its weapon deliveries, seemed increasingly unlikely. The terms of annual US military assistance have also contributed to the decline in orders from local firms. Most of the military aid ($1.4 billion out of $1.8 billion annually) is in the form of Foreign Military Financing (FMF) grant assistance that must be spent to purchase weapons and services from US firms. As a result, Israeli firms making these products stopped receiving orders from the IDF, and this contributed significantly to the crisis in the Israeli defence industry.

These trends are reinforced by changes in the political environment. Since the initiation of the Middle East peace process in 1991 and the reduction of Israel's political and economic isolation, the possibility of purchasing weapons from other suppliers has increased. Germany is building two diesel-powered submarines for the Israeli Navy, and France, the UK and other European states have also expressed interest in weapon sales and cooperative projects.[6]

As a result of these factors, the arms procurement decision-making process in Israel is changing rapidly. The size of the defence budget and the level of subsidies provided to the defence industry are subject to intense debate. In addition, there are questions regarding the future and the level of US military and economic assistance. (The USA provides a total of $3 billion in aid annually,

[5] Klieman, A. and Pedatzur, R., Jaffee Center for Strategic Studies, Tel Aviv University, *Rearming Israel: Defense Procurement through the 1990s*, JCSS Studies no. 17 (Jerusalem Post/Westview Press: Jerusalem/Boulder, Colo., 1991).

[6] In 1995 the UK signed a general agreement for the purchase of military equipment from Ta'as (formerly IMI) with an option for future orders.

including $1.2 billion in economic assistance, which balances the annual Israeli debt repayment to the USA.)

At the same time, changes in the regional security environment have led to discussions about the threat and the type of weapons that are necessary for the next century. While the peace process has achieved some marked successes, including the 1993 Declaration of Principles between Israel and the Palestinians and the 1994 Israel–Jordan Peace Treaty, the military threats have not disappeared. Since the 1991 Persian Gulf War, the probability of conventional attack has decreased, while long-term threats involving ballistic missiles and chemical and biological weapons from Syria and Iran have grown.[7] Syria maintains a major arms procurement programme, and Iraq could be a long-term threat once sanctions are lifted and the military is built up again. Terrorism also continues, particularly from Iranian-supported groups such as Hezbollah, operating from southern Lebanon, and other Islamic fundamentalist groups.[8] Threats, the history of arms procurement, economic factors, and Israeli political and bureaucratic institutions all influence the decision-making process.

II. The arms procurement decision-making process

It is difficult and potentially misleading to present a single formal and functional description of Israeli decision making for weapon procurement. As Yehuda Ben-Meir and other analysts have pointed out, government decision making tends to be ad hoc and highly complex, particularly as regards indigenous development and production.[9] The processes in the cases of the Kfir and Lavi aircraft, the Merkava tank, the Arrow (Hetz) anti-tactical ballistic missile (ATBM), the Ofeq satellite and other major platforms and weapons were influenced by specific individuals and structures. However, a number of common factors and processes link these and other cases.

In general, four basic models of decision making can be used to explain and analyse procurement decision making in Israel. These include: (*a*) rational actor models (most useful in analysing the process in the IDF and, to a lesser degree, the Ministry of Defense, the MoD); (*b*) organizational models, standard operating procedures and related factors (useful for studying the roles of the IDF and the MoD); (*c*) interest group models, to explain the relationship between the defence industry and the MoD; and (*d*) political models, for analysing the role

[7] Shoham, D., [Chemical weapons in Egypt and Syria: development, capability, and safeguards] (Begin–Sadat (BESA) Center for Strategic Studies, Bar-Ilan University: Tel Aviv, 1995); and Shapir, Y., 'Proliferation of nonconventional weapons in the Middle East', eds S. Gazit and Z. Eytan, Jaffee Center for Strategic Studies, Tel Aviv University, *The Middle East Military Balance 1993–1994* (Jerusalem Post/Westview Press: Jerusalem/Boulder, Colo., 1994).

[8] For an analysis of the impact of the changing threat environment on IDF missions, see Steinberg, G., 'Israeli security in the context of the peace process', *Security Dialogue*, vol. 25, no. 1 (Mar. 1994); and Cohen, S., 'The peace process and its impact on the development of a "slimmer and smarter" Israel Defense Force', *Israel Affairs*, vol. 1, no. 4 (summer 1995).

[9] Ben-Meir, Y., Jaffee Center for Strategic Studies, Tel Aviv University, *National Security Decision Making: The Israeli Case* (Jerusalem Post/Westview Press: Jerusalem/Boulder, Colo., 1986).

of the Cabinet, the Knesset and the press. The discussion that follows draws on these models in different degrees.

In general, the basic decision-making structure for the procurement of major weapon systems involves the heads of the services, the General Staff of the IDF, the MoD (usually the Minister of Defense, the Director-General and the Economic Adviser), the Ministry of Finance and the Prime Minister. In the case of indigenous production the relevant firms and worker groups are also involved.

For relatively routine procurement (such as tanks, armoured personnel carriers or tactical missiles) that does not involve research and development (R&D) or local production of expensive and complex new systems, the process is relatively straightforward and constant and can be described in terms of the rational actor model.[10] The basic elements in these decisions include threat assessment, definition of operative requirements and assessment of options. In larger technology-intensive R&D and procurement decisions, bureaucratic and institutional factors become increasingly important.

Three major actors dominate the Israeli defence establishment: the MoD, the IDF and the defence industry—both private and state-owned (see figure 4.1).

The MoD is the most powerful ministry and dominates all other government bodies in defence issues. Israel's first Prime Minister and Minister of Defense, David Ben-Gurion, set the precedent for the MoD's power within the national security establishment.[11]

In addition to the Minister of Defense, the Director-General of the MoD generally plays an important role in arms procurement decision making. In recent years, he has been a former military officer. Within the MoD, the Director of the Agency for Procurement (MANHAR), which has a major procurement mission in New York, the Director of the Agency for Research and Development (MAPHAT) and the assistant to the Minister of Defense for industry all play major roles in the arms procurement decision-making process. MANHAR is responsible for placing orders and purchasing goods from funds provided by US military assistance.[12]

The IDF is the second major institutional decision maker. As a military organization it has a clearly defined and hierarchical structure for decision making and planning. The General Staff, which consists of officers from the different services (who, however, in contrast to the US Joint Chiefs of Staff, are not assigned to represent those services), is responsible for procurement, training and force structure. The IDF's Planning Division is a relatively large office, with significant analytical capabilities, and it plays a major role in many aspects of decision making. Its staff of military officers from the different services has taken on increased functions in terms of long-term and operational planning.

[10] Weber, M., *Theory of Social and Economic Organization* (Oxford University Press: New York, 1947), p. 329.

[11] Greenberg, Y., [The Ministry of Defense and the General Staff: the debate over control of the defence budget, 1949–67], *Medina V'Mimshal*, no. 38 (1993).

[12] Klieman and Pedatzur (note 5), p. 108.

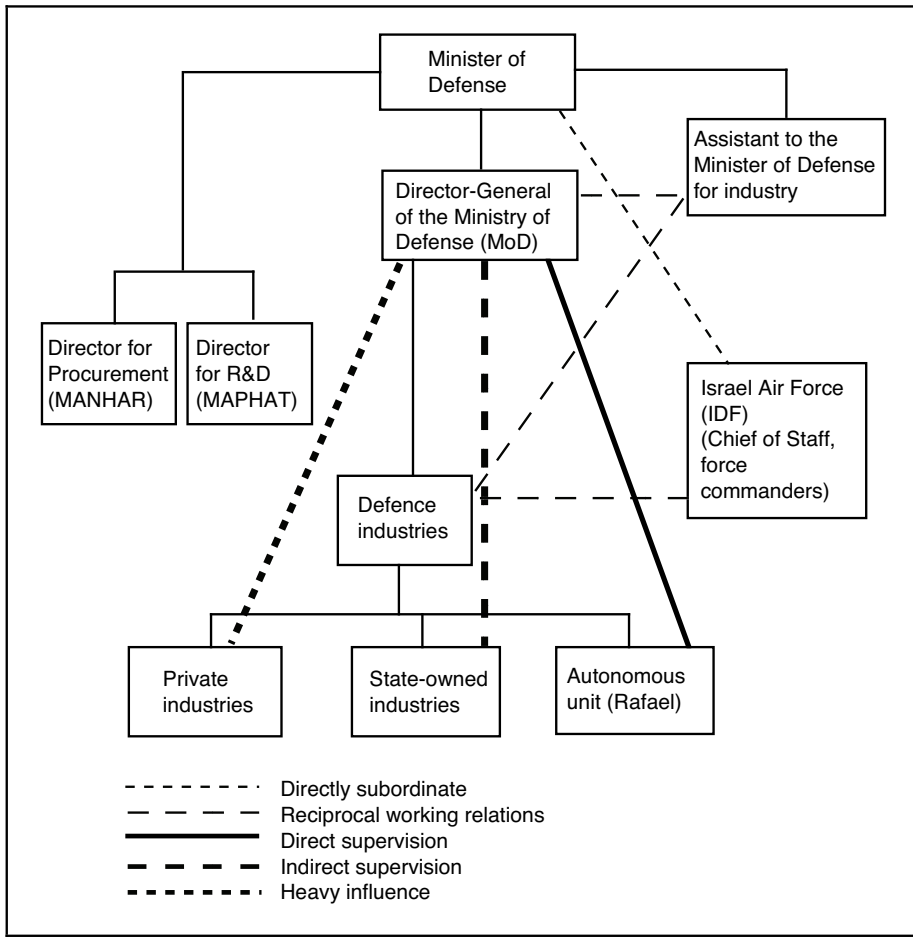

Figure 4.1. Major actors in the Israeli defence establishment

Source: Klieman, A. and Pedatzur, R., Jaffee Center for Strategic Studies, *Rearming Israel: Defense Procurement through the 1990s*, JCSS Studies no. 17 (Jerusalem Post/Westview Press: Jerusalem/Boulder, Colo., 1991), p. 108.

According to former IDF officials, the greater resources of the IDF in planning and assessment give the military a great deal of independence in presenting its needs and priorities and incorporating them in budget requests and official planning documents. In contrast, although the MoD technically controls the IDF, it has limited planning resources and thus usually follows the recommendations of the IDF in formal decision and planning documents.

The last of the triad is the defence industrial sector, consisting of state-owned firms and private industry. The former includes three key organizations: Israel Aircraft Industries (IAI), founded in 1951; Ta'as (formerly Israeli Military Industries, IMI); and Rafael, the national armaments development agency,

which has both production and R&D functions. Together these firms develop and produce a significant proportion of Israeli weapons and technology, including the Merkava MBT and tactical missiles. They produce upgrade packages for US and Russian combat aircraft, including avionics, electronics, radars and communication systems, and are major contractors in the development of advanced technologies such as the Arrow ATBM system. They are important components of the arms procurement decision-making process (see section VI in this chapter).

The three state-owned firms are controlled by the MoD. Rafael is formally a sub-unit of the MoD, under its direct control and budget, while IAI and Ta'as are operated by directorates appointed by the MoD. The status of Ta'as changed from that of a unit of the MoD to that of a firm in 1990,[13] and in 1995 the Israeli Government formally decided to change Rafael's status to match that of IAI and Ta'as. As of November 1997 this had not been implemented because of objections of the employees, who fear that it will lead to more lay-offs and reduced remuneration. Privately owned firms have played a less significant role historically, but since the mid-1980s their share of the market has increased. Major firms in this group include Elbit, El-Op and Tadiran, as well as over 100 smaller firms.

Historically, in arms procurement decision making the military leadership has given highest priority to short-term threats, emphasizing off-the-shelf weapon purchases, operations and maintenance (O&M), and upgrading. The General Staff and individual service heads have afforded high priority to ready access to weapons and less priority to long-term threat scenarios and R&D, involving a high degree of uncertainty. In contrast, the MoD has tended to reverse these emphases, giving priority to R&D and responses to long-term threats.

For the most part, this conflict of interests between shorter-term development of upgrades, on the one hand, and longer-term platform development programmes, on the other, was resolved by the early 1990s. After the cancellation of the Lavi project and the end of local production of missile boats, a large proportion of local production was focused on design of sub-systems for platforms procured from the USA, such as the avionics on the F-15 fighter aircraft and electronics and other systems for the Saar missile-armed fast attack craft. The R&D process for such systems involves far less investment and, therefore, less risk than the development of major platforms. In this sense, the development and production of 'mini' remotely piloted vehicles (RPVs) and unmanned airborne vehicles (UAVs) in Israel should be seen as similar to sub-system development in terms of the relatively smaller scale of investment and risk, as compared to full-scale platforms. Although the Arrow ATBM system is an exception, in that it is a major platform involving significant investment and

[13] The transition was analysed in a report by the State Comptroller (June 1994). The report charged that the management of Ta'as and the DG of the MoD had concealed information regarding the losses of the firm in 1985–91, thereby interfering with the transition process and related transfer of funds between the Treasury and the MoD. A judicial investigation is under way and could lead to charges against the people involved. Sadeh, S., [Ta'as and government firm authority developing general privatization], *Ha'aretz*, 21 Dec. 1995, p. 4c.

risk, the major portion of the R&D costs are borne by the US Government. For precisely the reasons cited above, the General Staff has indicated reservations regarding funding of production and deployment of this system.

As the economic importance of the Israeli defence industrial sector has grown, decision making in this area has increasingly come to encompass related factors. These include employment, regional development (particularly in the peripheral and undeveloped areas of the country), development and maintenance of the industrial infrastructure and export income. For purchases financed from the Israeli defence budget, not by US aid, local producers are given preference and may charge up to 15 per cent above the equivalent cost of similar imported systems.[14]

III. Threat assessment and Israeli security planning[15]

Israel's procurement policies are closely linked to perceptions of the military threat posed by the Arab and Islamic states in the Middle East. While all states and military establishments base their military posture, organization, training and weapon procurement on particular short- and long-term threat environments, the Israeli situation is unique. From its inception, Israel has remained under acute existential threat and in a state of belligerency. During this period, it has had to defend itself on multiple and sometimes simultaneous fronts.

The overall strategic approach, initially developed four decades ago, is still considered valid, although in the 1990s some of its elements have changed in response to changes in technology, economics and political conditions.[16] Israel has been faced with multiple armies consisting of large standing forces. Planners have had to develop a relatively powerful and multifaceted capability, while at the same time leaving resources for economic development and the absorption of immigrants.

In response, Israeli strategy has been based on three key components: (*a*) a large and powerful standing air force and an advanced intelligence capability; (*b*) limited standing ground forces (177 500); and (*c*) large armour and infantry reserve forces (427 000).[17] The reserve units are able to respond to a short-notice call-up, if the situation warrants, in order to confront much larger standing enemy forces.

[14] Additionally, under MoD regulation 40.06, a producer located in a development zone can receive a contract if its bid is up to 15% above the bid of non-development zone firms, but these discounts cannot be combined. Tropp, Z., 'Economic aspects in military procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 26 (1995).

[15] This section is based in part on Meron, M., 'Threat perceptions in Israel's strategic environment and their impact on the decision-making process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 21 (1995).

[16] Lanir, Z., *Israeli Security Planning in the 1980s: Its Politics and Economics* (Praeger: New York, 1983).

[17] Kam, E. and Eytan, Z., Jaffee Center for Strategic Studies, Tel Aviv University, *The Middle East Military Balance 1994–1995* (Jerusalem Post/Westview Press: Jerusalem/Boulder, Colo., 1996), p. 249. The figures are based on unofficial estimates for 1997.

In addition, Israeli doctrine and strategy are based on rapid war termination. The very nature of the Israeli force structure, based on reserve units, requires rapid and decisive victories. Long battles or wars of attrition that keep reserve units in service for long periods are too costly for the civilian economy.

Doctrine and procurement in the air force and combined ground forces

The small geographic size and lack of strategic depth of Israel are additional factors in strategic planning and procurement policies. Because the country does not have manoeuvring room, strategy emphasizes shifting a conflict on to enemy territory and has led to an emphasis on air power. The Israeli Air Force (IAF) is the primary element in strategic planning, and procurement policies emphasize advanced technology, including the platforms, computers, navigational equipment and air-to-air missile systems. Such systems are very costly, in terms of both purchase and maintenance, and resources are limited.

As a result, Israeli decision makers have emphasized flexibility in procuring multi-role systems and refrained from acquiring single-purpose weapons. For example, Israel has invested few resources in dedicated anti-aircraft weapons (aircraft or missiles). This is not the result of a limited threat of air attack, but rather because anti-aircraft weapons are designed as single-purpose systems.

The same factors govern decisions on the procurement of armoured vehicles. The IDF's combined ground forces command (MAF'CHASH) was created in the 1980s from previously independent units (armoured corps, artillery and infantry).[18] It stresses two factors: mobility and fire-power. Armoured units require limited manpower and are designed to bring about a rapid victory. Rather than acquiring large numbers of anti-tank units (self-propelled and stationary) for defensive roles, the IDF uses tanks both as primary defensive and as offensive weapons.

Changing threat assessments and procurement

Despite the Arab–Israeli negotiations and the peace process, Israel is still required to maintain a formidable military capability for the foreseeable future. There is consensus in Israel that the gradual progress in the peace process, while important, will not allow for a significant decline in military readiness for the foreseeable future. Even if the negotiations with Syria succeed, a high level of uncertainty will continue. As noted above, the threat from more distant states (for example, Iran, Iraq and Libya) is growing.

Indeed, the peace process and withdrawal from designated territories could increase defence requirements and the resources devoted to arms procurement.

[18] The decision to create a combined ground forces command was largely based on the lessons of the 1973 Arab–Israeli War and on the realization that these various elements needed to be carefully coordinated in order to fight effectively in modern war. In addition to creating a unified command structure, this reorganization led to joint training and procurement policies that reflected the balanced requirements of the combined branch, rather than the priorities of each of the individual units. Their integration is still considered incomplete.

Israeli analysts and policy makers are concerned about the implications of the continued modernization of the Egyptian military, including the procurement and upgrading of MBTs and combat aircraft. The nature of any agreement with Syria and the degree to which any agreement is accompanied by a thinning out of the Syrian forces between Damascus and the Israeli border will also have a major impact on threat assessments and resulting arms procurement policies.

Long-term planning

Like those of the advanced industrial states, the Israeli military uses long-term planning to assess trends and likely requirements beyond the immediate 12-month period on which the budget cycle is based. Early efforts to develop and implement multi-year planning and budget documents in the 1980s had little impact on the arms procurement decision-making process, as noted in reports by the State Comptroller (see in particular section VII of this chapter). In 1991, a new multi-year planning process was implemented and the five-year plan, known under the general name of Merkam, has been updated annually since then. Merkam documents are classified but some elements are released to the press. The preparation of these documents is the responsibility of the IDF's Planning Division and is based on general policy goals and threat assessments formulated by the MoD and the IDF Intelligence Branch, as well as economic factors and assessments. Changes in threat assessments, economic conditions or the regional security environment generally lead to changes in the planning guidelines. The five-year plan includes general procurement guidelines as well as specific plans for procurement of particularly costly systems, such as combat aircraft. This plan and the annual budgets are formally presented to the office of the IDF Chief of Staff and the cabinet for approval.

In this process, the key variables are the perceived changes in the balance of power and threats in the region, the supply of weapons and technology, and political developments. The growth of the perceived long-term threat, particularly from Iran, is reflected in the growing emphasis on weapons R&D and technology designed for future scenarios involving more distant opponents and new weapons. For example, the Merkam 2000 programme includes the purchase of the long-range F-15I aircraft as the IAF's future primary combat platform, modernization of the F-15 and F-16 aircraft in the IAF inventory and the specifications to be used in choosing the next generation of combat aircraft.[19] The Arrow ATBM system and military space assets, such as Ofeq reconnaissance satellites, are also designed to respond to these long-term and long-distance threats.

[19] Ben, A., *Ha'aretz*, 3 Dec. 1995, p. 2A.

Technology evaluation[20]

In the early 1960s, then US Secretary of Defense Robert McNamara sought to revolutionize defence procurement in the USA, bringing in professional analysts to prepare technical cost–benefit analyses of variables, limitations and options to present to decision makers. Although these techniques and their implementation have been widely criticized and revised, the fundamental approach has not changed.

This approach, based on the general theory of rational decision making, can be summarized in three basic stages: (*a*) threat analysis and the definition of requirements; (*b*) responses to these requirements; and (*c*) evaluation of options and choice. This evaluation procedure is shown in figure 4.2.

The first stage, focusing on threat analysis, begins with intelligence data, summarized periodically by the head of Military Intelligence. This stage defines the short-and long-term threats and potential responses, filtered through the established strategic and tactical frameworks.

In the second stage, options are defined and evaluated, focusing on technological opportunities and quantitative as well as organizational factors. Some procurement options will take advantage of more advanced technology, at the expense of numbers. The 'quality versus quantity' dilemma must be considered in any procurement decision-making process, and this methodology seeks to systematize this analysis. Each possible option is based on a package including the platform, weaponry, ammunition, support equipment and logistics.

The options derived in the second stage are examined and compared with respect to operations and tactics, logistics and sustainability, economics (initial costs and life-cycle costs) and accessibility of the technology. On this basis, options are rank-ordered and decisions are made. For new weapons or components, the R&D and production processes are periodically examined and tested against initial assumptions, and, when necessary, decisions are revised.

This procedure explicitly seeks to exclude political and other non-rational factors. It is highly abstract and cannot be implemented in its pure form. It also assumes 'complete information', when in reality procurement decisions take place under conditions of great uncertainty. Despite the efforts of Military Intelligence, no one can know how political, military, technological and economic variables are likely to develop over a period of 5 or 10 years, and in an increasing number of cases even longer.

In an effort to limit the effects of this uncertainty, various techniques are used, including the Delphi method and decision tree analysis. In the Delphi method a group of experts is questioned, usually remotely, in an iterative process. In each round, participants are given information about the responses of other participants, in an effort to reach a consensus. This method has been used

[20] This section is based in part on Sharan, Y. and Naaman, D., 'Technology assessment and methods in procurement procedures', SIPRI Arms Procurement Decision Making Project, Working Paper no. 25 (1995).

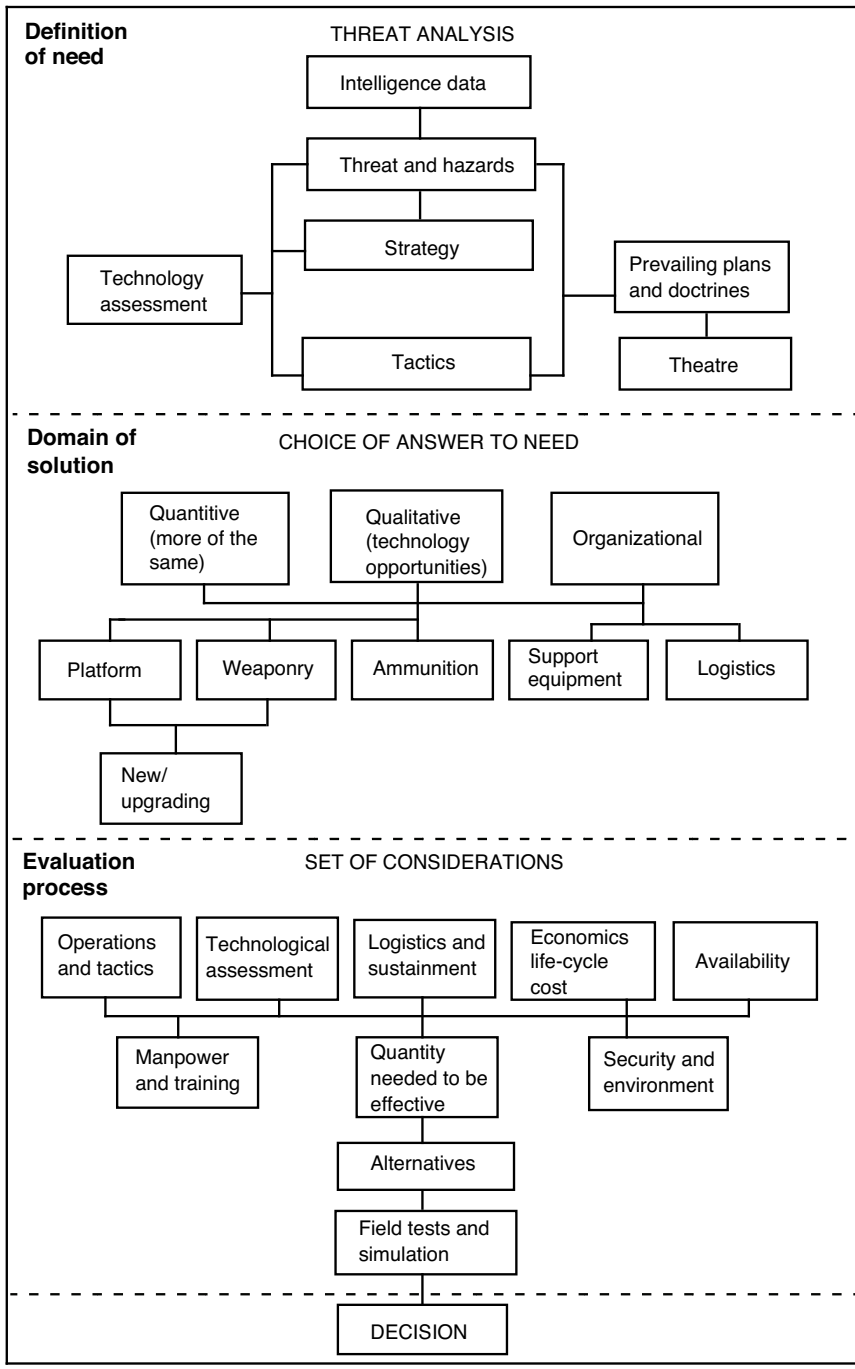

Figure 4.2. Military technology evaluation procedure in Israel

Source: Sharan, Y. and Naaman, D., 'Technology assessment and methods in procurement procedures', SIPRI Arms Procurement Decision Making Project, Working Paper no. 25 (1995).

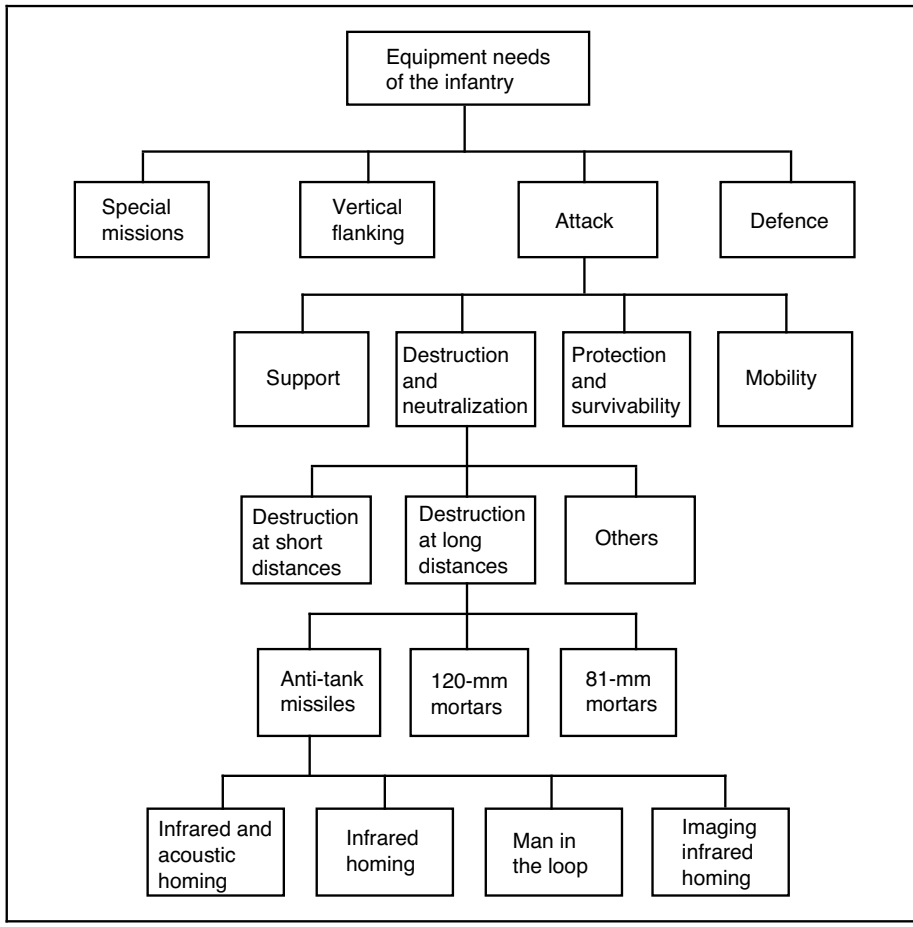

Figure 4.3. Evaluation of the equipment needs of the Israeli infantry based on decision tree analysis

Source: Sharan, Y. and Naaman, D., 'Technology assessment and methods in procurement procedures', SIPRI Arms Procurement Decision Making Project, Working Paper no. 25 (1995), pp. 13–14.

by the Interdisciplinary Center of Technological Assessment and Forecasting at the University of Tel Aviv (ICTAF). A similar but less structured 'brainstorming' approach has also been suggested for reducing the impact of uncertainty in decision making.

The decision tree analysis method is used to assess the overall potential and utility of technologies under consideration. It involves breaking down a particular decision to the lowest level of analysis. For each option, the different possible outcomes are assessed and the probabilities of each path are estimated. Strategic attributes and values for each outcome are assigned by the IDF and

the MoD. Tactical attributes of weapons are based on evaluations provided by field commanders. Figure 4.3 demonstrates the decision tree analysis method by showing the steps for the evaluation of the equipment needs of the infantry.

IV. External influences on arms procurement

Israel's unique security situation and the high level of defence industrial dependence on the USA compel its leaders to harmonize security policies and strategy with foreign policy concerns and objectives.

The relationship with the United States

Until 1966, the USA refused to sell weapons to Israel and a de facto arms embargo was in effect, with the notable exception of the sale of Hawk air-defence missile batteries in 1962.[21] However, in the 1970s the USA became Israel's main source of weapons.

The supply of weapons was accompanied by a steady growth in loans and grants (see table 4.1). After the 1973 Yom Kippur War, this increased. In 1985 the 30- to 40-year loans were converted to grants, and since then the annual amount has been fixed at $1.8 current million, all of which is spent on military procurement and weapon system R&D. This amount has remained constant and has not been adjusted for inflation, so that the purchasing power of the military assistance has declined steadily. In this period, the USA and Israel also signed a series of memoranda of understanding and in the 1980s the military relationship was formalized. In 1994, US FMF grant assistance constituted 30 per cent of the Israeli defence budget—a substantial portion by any measure.[22]

After the 1991 Persian Gulf War, Israel received additional weapons from the US inventory, valued at over $2 billion. These included 71 aircraft and helicopters, 12 of which were used for spare parts.[23]

Influence of US aid on Israel's arms procurement decision making

Since 1973, US military aid has been the single most important element in the Israeli defence budget and over the years it has affected procurement decision making in a number of ways. It has created a conflict between the Israeli military establishment (the MoD and IDF), which views it as 'an unmitigated benefit',[24] and the economists in the Ministry of Finance, who are concerned

[21] Ben-Zvi (note 1); and Spiegel, S., *The Other Arab–Israeli Conflict* (University of Chicago Press: Chicago, Ill., 1985).

[22] Government of Israel, *Ikaray HaTakziv* [Fundamentals of the budget] (Government Printing Office: Jerusalem, 1994), p. 63.

[23] Government of Israel (note 22), p. 70.

[24] Halperin, D., 'The impact of American military aid on decision making in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 32 (1995).

Table 4.1. US military aid to Israel, 1949–95[a]

Figures are in current US $m.

Year	Loan	Grant	Year	Loan	Grant
1949	–	–	1973	307.5	–
1950	–	–	1974	982.7	1 500.0
1951	–	–	1975	200.0	100.0
1952	–	–	1976	750.0	750.0
1953	–	–	TQ	100.0	100.0
1954	–	–	1977	500.0	500.0
1955	–	–	1978	500.0	500.0
1956	–	–	1979	2 700.0	1 300.0
1957	–	–	1980	500.0	500.0
1958	–	–	1981	900.0	500.0
1959	0.4	–	1982	850.0	550.0
1960	0.5	–	1983	950.0	750.0
1961	[b]	–	1984	850.0	850.0
1962	13.2	–	1985	–	1 400.0
1963	13.3	–	1986	–	1 722.6
1964	–	–	1987	–	1 800.0
1965	12.9	–	1988	–	1 800.0
1966	90.0	–	1989	–	1 800.0
1967	7.0	–	1990	–	1 792.3
1968	25.0	–	1991	–	1 800.0
1969	85.0	–	1992	–	1 800.0
1970	30.0	–	1993	–	1 800.0
1971	545.0	–	1994	–	1 800.0
1972	300.0	–	1995	–	1 800.0
			Total	**11 212.5**	**27 214.9**

[a] US fiscal years. Figures include guarantees for commercial loans.

[b] < $100 000.

TQ = Transition quarter (the US fiscal year changed from July–June to Oct.–Sep.).

Sources: 1949–94, Clyde, M. R., 'Israel: US foreign assistance', *CRS Issue Brief*, Congressional Research Service, Library of Congress, updated 24 Feb. 1994, p. 13; 1995, Transcript from the 1995 Israeli State Budget.

about the costs of repayment and the negative impact on the domestic defence industry.[25]

The military has gradually gained confidence in the reliability and stability of the US–Israeli relationship and the continued availability of weapons. The Israeli Government's decision to cancel the Lavi fighter aircraft programme in

[25] In the late 1970s, the interest rate on US loans exceeded 15%, but this did not affect Israeli Government borrowing or MoD policies. However, the MoD did question the costs of troop redeployment in the Sinai following the 1979 Egyptian–Israeli Peace Treaty, which was being financed by loans. Pressure from the Ministry of Finance led the Israeli Government to seek to change part of the loans to a grant for this purpose. In 1982, a major debate broke out between the MoD and the Ministry of Finance over this issue. The MoD strongly opposed the restructuring, despite the economic costs of continued loan repayment.

1987 marked a major turning-point and a recognition that Israel could not achieve independence and that the USA would continue to be a reliable source. Israel is classified as a non-NATO US ally and is granted access to many advanced US weapon systems, excluding strategic weapons and technologies whose transfer is prohibited by international supplier regimes such as the Missile Technology Control Regime (MTCR).[26] This has also affected Israel's strategic doctrine to a significant degree. Since 1968, the IAF has relied increasingly on US combat aircraft, including the A-4 Skyhawk (from the late 1960s to the early 1980s), the F-4 Phantom (late 1960s to the present), the F-15 and the F-16 (1980s to the present).

While most US funding is earmarked for the purchase of US-manufactured weapons, a smaller amount has been designated to be spent on locally manufactured weapons and R&D. In 1977 this amount totalled $107 million; in 1987 it was $450 million.[27] The initial amount was earmarked for the development of the Merkava. At the time Israel was having difficulty obtaining a modern tank, following the British decision not to sell the Chieftain (after Israeli participation in the design of this tank) and the US rejection of Israeli requests to acquire the M-60.[28] These difficulties illustrate the problems Israel had in securing a reliable supplier for primary weapon platforms. In the early 1980s, the USA earmarked assistance for the development (but not production) of the Lavi fighter aircraft, and since the late 1980s the USA has supported the development and testing of the Arrow ATBM defence system.

One important limitation of the US aid package is the high level of inflexibility that it creates in the planning for specific local R&D projects. The Lavi project is a prominent example. R&D on the aircraft began in the late 1970s and was cancelled in 1987 by the Israeli Cabinet. During much of the R&D phase, both the military and the MoD questioned the importance and priority of this single project. However, one of the major reasons for the continuation of the programme was that US funding had been designated explicitly and exclusively for the Lavi. Cancellation would not have made those funds available for any other R&D or procurement programme, and many thousands of jobs would have been lost. It was only after the USA changed the terms of funding to allow for its application to other Israeli R&D programmes that the Lavi was cancelled and some money was made available for other programmes.

The Arrow ATBM project is similar. Approximately 80 per cent of the money has come from the USA and funding is allocated explicitly for this project and no other. This is a clear case of economic factors, determined in large part by

[26] In 1995, the Israeli press reported that Israel was interested in obtaining US Tomahawk cruise missiles. However, the transfer of cruise missiles and related technologies is banned under the MTCR, which was established in 1987 as an instrument for nuclear non-proliferation policy. Israel has accepted the terms of the MTCR, but its application to join this suppliers' framework has been consistently rejected.

[27] Clyde, M. R., 'Israel: US foreign assistance', CRS Issue Brief, Congressional Reference Service, Library of Congress, 24 Feb. 1994.

[28] Crossman, R., *The Diaries of a Cabinet Minister*, vol. 3 (Holt, Rinehart and Winston: New York, 1977); and *Military Technology and Economics*, vol. 4, no. 20 (1980), p. 34.

political relations, influencing military procurement choices and processes and, in the case of the Arrow, strategic capabilities.

The US-designated funds have been used primarily for the procurement of advanced weapon platforms, technology components and other sophisticated military equipment. In contrast, an increasing share of local currency resources is required to finance the initial deployment of these systems, including the preparation of appropriate technical infrastructure, familiarization and training and, at later stages, O&M costs.

In the early 1990s, the USA agreed to allow Israel to convert up to 20 per cent of FMF grant assistance into local currency to purchase items from the indigenous defence industry, without the exclusive designation of a specific weapon project or development programme. In addition, local industry has been boosted by the offset and 'buy back' arrangements that provide substantial export orders. In this way the USA has become one of Israel's primary export markets, with hundreds of millions of dollars in orders annually.

International and regional arms control initiatives[29]

Until the 1990s, international arms control initiatives were seen either as irrelevant or, at worst, as an impediment to stability and security in the Middle East in general and Israel in particular. Because of Israel's isolation from the international community and the factors discussed above, its decision makers generally had no incentive to support such initiatives.

This view was reinforced by experience with regional arms control efforts. In August 1949, France, the UK and the USA announced a coordinated effort to 'regulate the flow of arms' to the region. The Tripartite Declaration was formalized in May 1950 and led to the establishment of the Near East Arms Coordinating Committee (NEACC). From the Israeli perspective, this effort was a failure. The declaration included significant loopholes, including the recognition that all states 'need to maintain a certain level of armed forces to assure their internal security and their legitimate self-defence'. The appropriate level for each state was open to interpretation, and this was exploited by both suppliers and recipients. All three major powers provided weapons to their Arab clients, as did the USSR. In reality, the major effect of the declaration was to prevent Israel from obtaining weapons.[30]

However, with the global and regional changes that began in the early 1990s, Israeli policies in this area have changed to some degree. Israel has participated in the multilateral Arms Control and Regional Security (ACRS) negotiations. Arms control units have been created in the Ministry of Foreign Affairs and the MoD, and these units, as well as other arms of the Government, have become

[29] This section is based in part on Steinberg, G., 'The influence of foreign policy and international agreements on arms procurement decision making in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 24 (1995).

[30] Steinberg, G., 'Arms control in the Middle East', ed. R. Deran Burns, *Encyclopedia of Arms Control and Disarmament*, vol. 1 (Charles Scribner's Sons: New York, 1993), pp. 169–86.

active in many of these forums. Israel has recently offered to open some defence industry plants for inspection by Arab delegations.

Israel has also submitted annual reports to the United Nations Register of Conventional Arms, in contrast to most other Middle Eastern nations.[31] The effects on Israeli procurement policy appear to be marginal. Most major weapon platforms imported by Israel come from the USA, which practises a policy of openness.[32]

There has been some discussion of the extension of the UN Register to include countries' total holdings and domestic defence production. From the Israeli perspective, transparency in these areas has greater security implications than has the reporting of the export and import of major weapon systems. Unilateral transparency regarding holdings and indigenous production would provide potential enemies with potentially significant information, and the security risks could be formidable. If the other major states in the region (Egypt, Iraq, Jordan, Saudi Arabia and Syria) were to participate in such an expanded register and provide reliable and verifiable information on holdings, Israel might be inclined to do the same in the context of regional confidence- and security-building measures.[33] However, without this symmetry and reciprocity, and while the present threat environment remains, the prospects of such a change in policy are unlikely.

V. Procurement budgeting[34]

The state budgeting cycle is relatively short—usually no longer than six months—and incremental, based on previous allocations with small changes in most cases. The budget is approved by the Government and the Knesset. Before the 1967 Arab–Israeli War the military share in the state budget averaged 23 per cent; after the 1973 Yom Kippur War it reached a peak of 40 per cent.[35] Since then, the share has gradually decreased to 31 per cent by the end of the 1970s, 21 per cent a decade later and 17 per cent on average at the beginning of the 1990s.[36] By any measure, this is a very large allocation to defence compared to those of advanced industrial states.

[31] Chalmers, M. and Greene, O., *Taking Stock: The UN Register After Two Years,* Bradford Arms Register Studies no. 5 (Westview Press: Boulder, Colo., 1995), p. 45; and Wezeman, P. D. and Wezeman, S. T., 'The trade in major conventional weapons', *SIPRI Yearbook 1998: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1998), pp. 312–14.

[32] Wagenmakers, H., 'The UN Register of Conventional Arms: a new instrument for cooperative security', *Arms Control Today*, Apr. 1993; United Nations Register of Conventional Arms, *Composite Tables of Replies of Governments*, 20 June 1994; *Moving Toward Transparency: An Evaluation of the United Nations Register of Conventional Arms* (British–American Security Information Council: Washington, DC, Nov. 1993); and *UN Arms Register Implementation Continues: Expert's Panel Cautions About Change* (British–American Security Information Council: Washington, DC, 16 May 1994).

[33] *Non-Proliferation Review*, vol. 2, no. 1 (fall 1994), pp. 106–11.

[34] This section is based in part on Lifshitz, Y., 'Budgeting for defence and development of the domestic military–industrial base', SIPRI Arms Procurement Decision Making Project, Working Paper no. 30 (1995).

[35] Lifshitz (note 34), p. 4.

[36] Lifshitz (note 34), p. 4.

Table 4.2. The Israeli defence budget by category, 1989–94
Figures are in current US $m.[a]

	1989	1990	1991	1992	1993	1994
Manpower	2 208	2 491	2 687	2 758	2 610	2 997
Local purchases[b]	2 262	2 541	2 519	2 790	2 547	2 623
Direct defence imports	1 483	1 853	2 223	1 911	2 632	1 865
Total defence expenditure	**5 953**	**6 885**	**7 429**	**7 459**	**7 789**	**7 485**

[a] The figures have been converted from current Israeli shekels into current $ million using IMF yearly average exchange rates.

[b] Construction, operational costs, training, equipment, weapons and R&D.

Sources: Bank of Israel Annual Report 1991 (Bank of Israel: Jerusalem, 1992), p. 323; and *Bank of Israel Annual Report 1994* (Bank of Israel: Jerusalem, 1995), p. 234.

The budget process for defence and arms procurement differs sharply from that used in other sectors, where the Ministry of Finance and Prime Minister's Office determine budget shares and the representatives of the various ministries do not have a dominant role in the decision-making processes. In the case of defence budget decisions, senior representatives of the IDF and MoD are active participants in the cabinet meetings at which budgets are discussed. This provides the military with a unique opportunity to exert direct influence on arms procurement allocations. The role of the Ministry of Finance is very limited.

After the Government approves the defence budget, it is discussed by a special Knesset committee composed of members from the standing committees on security and foreign affairs and on finance. As in other areas under its jurisdiction, the activities of this special committee are confidential. The results which are brought to the full Knesset for approval are encompassed in a few aggregate figures, and there is little public debate on the defence budget or procurement decisions.

Trends in the defence budget and infrastructure development

The defence budget is divided into three basic categories: (*a*) manpower costs (salaries and benefits); (*b*) local purchases (construction, operational costs, training, equipment, weapons and R&D); and (*c*) imports of major weapon systems. In the early 1980s, approximately 55 per cent of the budget was allocated to the first two categories.[37] In the 1990s the share of local expenditure has increased to 70–75 per cent, while that of weapon imports has decreased. As table 4.2 illustrates, there are some statistical fluctuations, particularly with respect to direct defence imports, reflecting the fact that the value of weapon deliveries from the USA in a given 12-month period changes depending on the delivery schedule and other non-substantive factors.

[37] Neubach, A., 'The defence burden and the Israeli economy', eds Z. Offer and A. Kober, *The Price of Power* (Ministry of Defense: Tel Aviv, 1984), p. 48.

In general, the Israeli military is relatively technology- and capital- or weapon-intensive in comparison with those of the advanced industrial states. As a percentage of the total defence budget, Israel devotes less resources to manpower and personnel costs than most countries and relatively more to procurement of weapons and other equipment.[38] Between one-quarter and one-third of defence expenditure is allocated to weapon imports and an additional amount goes to purchases of weapons from domestic production. In comparison, the USA devotes approximately 25 per cent of its defence budget to equipment purchases. Most NATO countries allocate smaller proportions of their budgets to equipment.[39]

This allocation of resources reflects in part the relatively large numbers of conscripts as a percentage of the armed forces personnel, which lowers personnel costs. More importantly, the relatively large share of the defence budget devoted to weapon procurement and R&D reflects the Israeli military doctrine and the emphasis on technology and fire-power. By any measure, weapon procurement is a key aspect both of Israeli strategy and of the defence budget.

Pricing and costing methodologies[40]

Three major approaches to 'cost plus' budgeting of defence R&D are used in Israel: (*a*) the engineering approach; (*b*) the analogical approach; and (*c*) the parametric approach.

The engineering approach seeks to break down project costs into components and sub-assemblies and to assess the cost of each segment. This method is useful primarily for weapon systems for which the development process has been completed and the specifications are well defined.

In the analogical approach, estimates of the cost of a new weapon system are based on the prices of similar existing systems, such as previous generations of the same weapons. In Israel, this approach is used for initial decision making and in long-term planning, but not for contracting.

The parametric approach is based on statistical analysis (primarily regressions) of data on the performance and costs of systems and sub-assemblies. For each performance parameter (range, fire-power, speed, weight and so on), a cost is calculated based on the statistical analysis of data indicating the cost of such capabilities in existing systems. The estimates of the cost of the Lavi were based on a combination of engineering and parametric analysis, using data regarding aircraft development in the USA.

The cost estimates for the Lavi were strongly criticized by the State Comptroller. Defenders of the estimates, such as Zvi Tropp, former Economic Adviser in the MoD, argue that in Israel the average final cost of new systems is

[38] International Institute for Strategic Studies, *The Military Balance 1996–1997* (Oxford University Press: Oxford, 1997), p. 40.

[39] NATO, Financial and economic data relating to NATO defence: defence expenditures of NATO countries 1975–97, Press release M-DPC-2(97)147, 2 Dec. 1997, p. 7.

[40] This section is based on Tropp (note 14).

180 per cent of the original forecast, as compared to 240 per cent in the USA. Tropp also notes that the deviation in both cases is, in part, a result of design changes and technological improvements added during the R&D process. The engineering and parametric analysis were deemed to be the best available guidelines for estimating costs under these circumstances.

These methodologies are important in contracts based on 'cost plus fixed fee' and 'cost plus incentive fee' (CPIF) methods. In CPIF-based development, the contract provides an incentive to the producer to keep costs down. If actual costs are lower than target costs as specified in the contract, the producer and customer share the savings, but in case of an overrun, the profits decrease. The formula for the profit is:

$$P = P0 + a(B–C) \text{ such that } P \geq 0$$

where: P = profit; $P0$ = target contractual profit; B = target cost of production; C = actual cost of production; and a = the share of the supplier in cost savings.

VI. Influence of the defence industry

The concept of a military–industrial complex, which was developed in the USA, has been used widely to analyse the links between the military, the political leadership and the defence industry.[41] In Israel the military is a dominant political force, and the close links between the political leadership, many of whom are retired senior officers, the current military leadership, and the heads of the defence companies (who are also often drawn from the military) have created powerful interest groups which have a significant impact on arms procurement decision making.[42]

The political system and the structure of the defence industry distinguish the Israeli situation from that of the USA. In Israel, the electoral system and the Knesset are based on a single national constituency; as a result, the type of local pressures to channel contracts and funding to local industries that is found in the USA is absent in Israel.[43] In addition, while the US system is based on privately owned weapon industries, in Israel the dominant firms are state-owned and under the control of the MoD.

Defence industrial considerations

The defence budget, military procurement and the status of the defence industry are also closely linked to long-term industrial development. Between 1966 and

[41] In his farewell address in Jan. 1961, President Dwight D. Eisenhower warned of the power of the 'military–industrial–technological complex'. See also Mills, C. W., *The Power Elite* (Oxford University Press: Oxford, 1956); and Melman, S., *Pentagon Capitalism* (McGraw Hill: New York, 1970).

[42] See, e.g., Mintz, A., 'The military–industrial complex: the Israeli case', *Journal of Strategic Studies*, vol. 6, no. 3 (1983), pp. 103–27; and Mintz, A., 'An empirical study of military–industrial linkages in Israel', *Armed Forces and Society*, vol. 12, no. 1 (1985) pp. 9–27.

[43] The development of regional primary elections among some parties in Israel in the 1990s may lead to a change in this situation.

Table 4.3. The Israeli defence industry: sales and exports, 1980–95

Year	Total sales (US $b.)	Exports (US $b.)	Exports as share of total sales (%)
1980	. .	0.67	. .
1983	. .	0.73	. .
1988	1.3	0.78	*60.1*
1990	1.6	0.93	*59.2*
1992	1.6	0.82	*52.1*
1993	1.7	0.94	*56.6*
1995	(2.0)	1.20	. .

Notes: The difference between total sales and exports is the amount of procurement from domestic production. The percentages may not correspond exactly to the figures because of the conventions of rounding.

Sources: 1995 exports: *Ha'aretz*, 6 Feb. 1996; other data: Ortasse, M., 'The Israeli defence industry and exports', SIPRI Arms Procurement Decision Making Project, Working Paper no. 22 (1995).

1993, procurement from domestic production grew by a factor of 4.4 (in constant prices). The share of domestic defence purchases in gross domestic product (GDP) grew from 3 per cent in the mid-1960s to 12 per cent in the mid-1970s and levelled off at 4 per cent at the beginning of the 1990s.[44]

The rapid expansion of the Israeli defence industry began after the 1967 Arab–Israeli War and France's unilateral severing of the cooperation link with Israel. It followed two years of economic depression, with relatively high rates of unemployment and non-utilized industrial capacity. The defence industry developed rapidly in the mid-1970s, following an increase in demand for domestic production and related services. Rapid growth continued until the end of the 1980s as a result of rising exports and total sales, as shown in table 4.3. The defence industry was instrumental in returning full employment to the economy and in accelerating economic growth. From 1966 to 1975, the defence industry absorbed 60 per cent of the new employees in the manufacturing sector.[45]

In addition to its general contribution to full employment and economic growth, the defence industry also significantly influenced the direction of economic development by considerably enlarging the share of high-technology and science-based industries in the economy. A substantial investment in defence R&D and the development of high-technology industries was necessary in order to generate spin-offs in the civilian industrial sector. In parallel, defence exports grew rapidly and, in the mid-1980s, accounted for 25 per cent of total industrial exports.[46] Defence exports also paved the way for civilian industrial exports by penetrating new markets and attracting potential customers.

[44] Lifshitz (note 34), p. 8.
[45] Lifshitz (note 34), p. 14.
[46] Lifshitz (note 34), p. 15.

Traditionally, within the defence establishment there have been two conflicting approaches to the issue of procurement from domestic production. Civilian officials in the MoD have generally sought to use allocations from the military budget for the development of the domestic defence industry. This group, led by Shimon Peres, who served as Director-General of the MoD in the 1950s, has given very high priority to the development of a high degree of independence. From this perspective, the development of local industry in Israel was to be led by the defence sector, which would bring in technology, develop production and managerial skills, and create jobs. In contrast, the military leadership emphasized current readiness (O&M, war reserves and so on) and consequently preferred proven weapon systems from abroad to local and technologically uncertain R&D projects. In general, the first approach was dominant in the 1960s and 1970s, while the second (military) perspective dominated during the 1980s and 1990s.

In contrast to most other sectors in the defence budget, the shares of procurement from domestic production and R&D are the subjects of some debate and controversy. R&D, which is funded through the central defence budget (rather than being allocated to the individual services and divisions, as in the case of many other defence budget sectors), was reduced by 43 per cent between 1985 and 1994.[47] Decisions on the future of projects and technological centres have been taken without consideration of the long-term impact on the military and economic technological infrastructure. Zeev Bonen claims that the reduction of the military R&D budget has 'endangered core military R&D competencies and caused great difficulties in the nurturing of new, innovative ideas'.[48]

Similar debates have taken place in connection with 'make or buy' decisions and attempts to introduce internal market mechanisms in the defence industrial sector. In the early stages, because of limited capacity in the relatively undeveloped industrial sector, special units in the armed forces (Heyl Hatachzoka—military logistics—and Heyl HaHimush—military ordnance) were created to undertake upgrading of weapon systems, maintenance of heavy vehicles and ammunition, and, in some cases, assembly and production of complete weapons and platforms. (These units are like ordnance manufacturing groups in other military forces.) At first, the funding for these units was centrally budgeted in the overall IDF allocation; the various military 'consumers' considered these services to be free goods. Later, in order to improve budgetary efficiency, they were organized as independent profit centres and the costs of goods and services were allocated to the military services.

Thus, the defence industry continued to constitute an important economic factor in procurement decision making, despite the steady availability of weapon systems from the USA. In addition, the defence industrial sector has become an important source of domestic political pressure in the decision-making process.

[47] [State Comptroller's report], no. 44 (Office of the State Comptroller: Jerusalem, 1994), pp. 1028–30.
[48] Bonen, Z., 'The Israeli defence industry', SIPRI Arms Procurement Decision Making Project, Working Paper no. 27 (1995).

Defence industrial interest groups[49]

As analysts such as Mintz and Etzioni-Halevy have noted, Israel lacks the separation between the government/political élite and the military élite commonly found in Western democracies.[50]

However, there are significant divisions within the military élite and, with respect to arms procurement decision making, this group cannot be viewed as a united entity with common interests and perceptions. There are sharp differences in policy, ideology, political affiliation and institutional interests. In some cases, the different institutional objectives of the MoD and the IDF lead to conflict over priorities with respect to specific procurement decisions. In the early 1960s Minister of Defense Pinhas Lavon argued against the position of then MoD Director-General Peres, who favoured the indigenous production of weapon platforms in all areas. Between the mid-1970s and 1987 (the end of the Lavi project), Yitzhak Rabin took the same view as Lavon, in opposition to Peres.[51]

The state-owned defence companies can also be analysed in terms of interest group models. Their workforce is large, they have a great deal of political leverage and they represent a powerful lobby. According to government statistics, more than half of employment in the defence industry is accounted for by IAI, Rafael and Ta'as.[52] (In the 1980s they accounted for 40 per cent of the workforce in the large state industrial sector.[53]) Being state-owned, they are less concerned with profits than with maintaining employment, budgets and influence.[54] Their influence is based on four factors: (*a*) an extensive network of personal alliances between industry, military officers and high-ranking defence personnel; (*b*) the size of the industry; (*c*) government and MoD control of the defence industry, which provides the managers with direct access to key decision makers and has allowed them to avoid substantial reorganization to date; and (*d*) control over information relating to production costs.[55]

[49] This section is based in part on Pinkus, A., 'Domestic considerations, élite motivations, the bureaucracy and the political culture of arms acquisitions in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 23 (1995).

[50] Mintz, A., 'The military–industrial complex: the Israeli case' (note 42), pp. 103–27; and Etzioni-Halevy, E., 'Civil–military relations and democracy: the case of the military–political élites' connection in Israel', *Armed Forces and Society*, vol. 22, no. 3 (summer 1996), pp. 401–18. For additional analysis of this issue, see Lissak, M., 'Paradoxes of Israeli civil–military relations: an introduction', *Journal of Strategic Studies*, vol. 6, no. 3 (Sep. 1983), pp. 1–12; and Peri, Y., 'Civilian control during a protracted war', ed. E. Kraus, *Politics and Society in Israel* (Transaction Publishers: New Brunswick, N.J., 1989).

[51] Mintz (note 3), p. 15. Yitzhak Rabin was Prime Minister between 1974 and 1977 and returned to office as Minister of Defense in 1985.

[52] In 1996, *c.* 20 000 persons were employed in these 3 companies. SIPRI arms industry database.

[53] Mintz (note 3), p. 17.

[54] Sadeh, S., 'The restructuring process in the Israeli defense industries', in *The Israeli Defense Industry*, Begin–Sadat (BESA) Center for Strategic Studies, Studies in National Security no. 9 (Bar-Ilan University, Ramat Gan, 1995), pp. 15–29 (in Hebrew).

[55] Klieman and Pedatzur (note 5), p. 125; and Pedatzur, R. and Weisblum, C., 'The decision-making process and public awareness', SIPRI Arms Procurement Decision Making Project, Working Paper no. 29 (1995), p. 2.

Historically, the major state-owned firms have been given preference in funding and contracts over privately owned companies. In the late 1980s the sales and revenues of the three major state-owned companies began to decline, leading to reduced employment[56] and initiating a crisis in this sector that has continued. The end of the cold war and other external factors also led to reduced arms exports and efforts to reorganize the firms.[57] However, the employees have sought to win more contracts and state subsidies through demonstrations and lobbying. The extent of subsidization of the industry before 1994 is shown in table 4.4.

In Israel, as in the USA and other Western nations, senior officers and their former commanders or colleagues who have established new careers in politics or as executives within the defence industry maintain close contact, forming an Israeli 'military–industrial élite'. This social network includes the state-owned defence companies, the MoD, and the privately owned arms manufacturers in Israel and the USA.[58] For example, when General Dan Shomron finished his term as IDF Chief of Staff, he was appointed Chairman of Ta'as despite his lack of business experience. The Board of Directors included four other former generals, and many attribute the crisis in Ta'as to the failures of these individuals.[59]

Since the mid-1980s, the MoD and major defence companies have also taken an interest in the conversion of defence industrial units to civilian production. Conversion is particularly noticeable and relatively successful in the area of electronics and communications. In addition, relaxations in the application of export controls regarding Central European countries have created opportunities for exports or collaboration in various areas.[60] Some private firms, such as Elbit and Tadiran, which began primarily as defence suppliers, are now largely oriented towards the civilian sector (although since 1992 Elbit has increased its role in military production, including military exports). IAI has also maintained a significant role in civilian production (civilian aircraft, such as the Astra and related services): in 1995 approximately 30 per cent of its sales were in the civilian sector.[61] In contrast, the efforts of Ta'as and Rafael to enter the civilian market have been unsuccessful.

[56] In IAI the number of employees declined from 20 000 in 1987 to 13 000 in 1995. Sadeh, S., [IAI will miss forecast], *Ha'aretz*, 3 Nov. 1995, p. 1c; and Sadeh (note 54), pp. 15–29.

[57] Sköns, E. and Gill, B., 'Arms production', *SIPRI Yearbook 1996: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1996), pp. 448–49.

[58] Etzioni-Halevy (note 50), pp. 401–18.

[59] According to the State Comptroller, despite the heavy losses, Ta'as expanded its workforce during this period and did not provide accurate financial records to the MoD. 'The request of the financial comptroller of the defence ministry to Ta'as for substantive answers and statistics on the basis of real assessments was not answered.' [State Comptroller's report], no. 44 (note 47). In 1995, Shomron was replaced by Yaacov Lifshitz, an economist and former Director-General of the Ministry of Finance. Gen. (reserve) Yanosh Ben Gal, who had served as head of the Northern Command, was appointed to head the IAI Board of Directors in 1995.

[60] Bonen, Z., 'The Israeli defence industry: past and future', *RUSI Journal*, June 1994, pp. 56–59.

[61] Despite the interest in defence conversion among West European and North American analysts, conversion is economically and politically complex and its practicality is limited. The defence production process and market are fundamentally different from the competitive civilian sector, requiring quite different management and economic structures, manufacturing techniques and R&D processes. This is as

Table 4.4. Subsidies for Israeli state-owned defence firms, 1991–94
Figures are in US $m.

	IAI	Ta'as	Rafael	Total
Budgeted transfers	535	376	35	**946**
Loan guarantees	200	76	–	**276**
Return of dividends, payments	30	35	–	**65**
Total	**765**	**487**	**35**	**1 287**

*Source*s: Sadeh, S., 'The restructuring process in the Israeli defense industries', in *The Israeli Defense Industry,* Begin–Sadat (BESA) Center for Strategic Studies, Studies in National Security no. 9 (Bar-Ilan University: Ramat Gan, 1995), pp. 24 (in Hebrew); and Office of the Economic Adviser, Ministry of Defense (Tel Aviv), personal communications.

The crisis in the defence sector has continued and a number of restructuring proposals have been outlined. The possible approaches to restructuring include privatization, combining the three firms into a single mega-firm, and the creation of smaller units based on integration and merger of the related operating sections of these companies. However, there is strong political resistance in the state-owned firms to restructuring.

In 1987 over 20 000 IAI workers organized mass demonstrations and civil disobedience in an effort to prevent the cancellation of the Lavi. While this failed, they did succeed in gaining pledges from the Government for replacement projects. Workers from Rafael and Ta'as blocked government plans to reduce the workforce of these firms. The employees of Israel Shipyards sought to prevent the government from privatizing this enterprise. In the 1992 elections, a leader of the IAI worker's organization (Yaakov Shefi) was elected as a Labor Party candidate for the Knesset. It is difficult for any government to ignore such large, powerful and well-organized institutions. Although there have been some reforms and reductions in force, these have been costly early-retirement and voluntary programmes, subsidized through special allocations.

VII. Checks and balances

The high level of confidentiality that is a central factor in Israel's military strategy has slowed the development of effective checks and balances on the decision-making processes and of the role of interest groups. In Israel, there are three major sources of external checks and balances on the military: the Knesset

true for Israel as for the USA, Canada and the countries of Western Europe. In the Israeli case, in particular, defence industries exist primarily to provide necessary military capabilities for national security requirements. This objective includes weapons that introduce an element of surprise on the battlefield (such as the electronic equipment and drones used to defeat the Syrian Air Force in 1982) and maintenance of an infrastructure to produce weapons not available to Israel from other sources, such as modern MBTs. Thus, the role of conversion is limited.

Committee on Foreign Affairs and Security, the State Comptroller and the press.

The Knesset Committee on Foreign Affairs and Security[62]

The Knesset Committee on Foreign Affairs and Security monitors the activities of the MoD and the IDF. For many years procurement issues were not a central focus, but this changed with the establishment of a special subcommittee on Israel's defence doctrine in 1986. Chaired by Member of Knesset (MK) Dan Meridor, the committee held more than 50 hearings, with testimony from officers from all the services of the IDF, former officers and civilians specializing in advanced technology. The Meridor Report was issued in 1987 and remains classified. It addressed the IDF decision-making process, the interaction between the political and military establishments, and the economic aspects of the force structure. The hearings and report coincided with a broad review of Israeli defence posture within the IDF, and the specific recommendations regarding procurement priorities were a factor in military decision making.

In the wake of the Meridor Report, the Subcommittee on Procurement and IDF Readiness was established.[63] The subcommittee sought to follow up on the Meridor Report, update it periodically and supervise the General Staff's procurement policy in the light of the strategic doctrine. It generally meets to receive and discuss biannual reports from the heads of the land, air and naval forces, defence R&D and the state-owned defence firms. In addition, ad hoc discussions are held on various topics such as computer systems in the military and new developments in the field of armour, anti-armour, and command and control systems. Each topic is prepared well in advance and the approval of the Minister of Defense is required before it is discussed. In 1995, a special committee was established to examine the impact, direct and indirect, of defence spending on the Israeli economy.

Since 1988 the Subcommittee on Procurement and IDF Readiness has held several hearings a year. The protocols constitute a unique, comprehensive (and highly classified) body of data on strategic issues and procurement. In addition, the subcommittee conducts one-day visits to military installations and defence industry facilities several times a year.

There is a high degree of coordination between the military and the subcommittee. A representative of the General Staff Planning Division participates in all meetings, providing continuity and communicating the policies and responses of the General Staff. The officials and officers range from commanding generals, heads of departments within the MoD and the Chief Scientist, to colonels or even captains in charge of specific programmes or sub-units. (Their presentations are approved by the Deputy Chief of Staff.)

[62] This section is based in part on Begin, Z. B., 'Parliamentary supervision of military procurement in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 28 (1995).

[63] The name of this committee has been changed several times but for the purposes of this study it is called the Subcommittee on Procurement and IDF Readiness throughout.

The subcommittee also plays a role in specific procurement issues. For example, in 1994 the IAF considered three US aircraft (the F-15E, F-16 and F-18) for its future front-line fixed-wing combat platform. There was no debate in the Knesset, but the subcommittee asked the IAF to explain the rationale of its choice (the F-15, redesignated the I model). When the decision to procure the US Apache attack helicopter was made, the IAF did not present an alternative, and the subcommittee initiated a closed hearing to discuss another possible option. MK Ze'ev B. Begin notes that the members of the subcommittee view the very fact that the discussion was held as an important contribution to the decision-making process. Similarly, when the Israeli Navy presented its decision to procure the Dolphin submarine, the subcommittee raised an alternative which was then considered.

The subcommittee's major contribution comes from its role in providing an independent body to which government and military officials must report and justify their procurement decisions. Minutes are taken, questions are asked and there is a follow-up discussion regarding implementation. In some cases the very fact that the subcommittee asks for a report compels the military to look into an issue in broader terms and to examine basic assumptions. With its professionalism and non-partisan nature (both unusual in the Israeli context), the subcommittee has gained a high level of respect among the Israeli Government and the military.

However, it has a number of significant limitations. First, it has only five members and, while this allows for efficient deliberations, resources and time are limited and the issues are complex. To compensate for the limited time of the committee members, experts can be used as permanent advisers. However, in the Knesset, resources for this task are almost non-existent. No budget has been allocated for professional staff members and, at best, the subcommittee has been able to get assistance on a voluntary basis. Second, the total secrecy which characterizes its activities is a significant limitation to its regulatory role. In Israel, as noted, there is almost no history of open, public discussion of major weapon procurement issues. Such discussion could be important in providing alternative analyses and information, thereby balancing the defence establishment, bureaucratic interests and organizational inertia. However, secrecy is seen as essential in maintaining the cooperation of the Minister of Defense, the IDF and other actors with the subcommittees. Not only are the contents of the meetings classified, but even the topics and the names of participating guests are generally not made public.

Minister of the Environment Yosi Sarid, who served as a member of the full committee, has charged that secrecy allows the committee to be manipulated by interest groups in the military and defence establishment.[64] In Sarid's view, as well as that of other analysts, including Pedatzur, the members of the committee tend to support the military and defence establishment and do not, in reality, serve as an independent check on its activities, including arms procurement

[64] Sarid, Y., [Fear of retribution in the General Staff], *Ha'aretz*, 15 Jan. 1987.

decision making. The Knesset did not have an impact in the case of the Lavi, and there is no independent assessment of the role of the Meridor Report or of the actions of the subcommittee. Neither the subcommittee nor the full committee has been effective in influencing policy with respect to the defence industry.

The State Comptroller[65]

The State Comptroller is responsible for auditing all aspects of public policy, including the defence sector, arms development and procurement. He reports to the Knesset and, in most cases, issues reports that are available to the public.[66] The analysis focuses principally on economic aspects of procurement or development,[67] the state-owned defence companies,[68] the allocation of US aid[69] and the multi-year budgeting process.[70]

In general, the power and independence of the defence bureaucracy have traditionally limited the role of the State Comptroller. However, since the late 1980s (and the crisis over the Lavi project) the scope and impact of the State Comptroller with respect to defence procurement have increased significantly.[71] Other indications of this increasing influence include the changes made in connection with the IDF's multi-year plan,[72] R&D, the decision-making process for the development of naval weapons,[73] the Merkava III tank, decision making with respect to US weapons such as the Apache helicopter and the F-16 combat aircraft, and the defence industry. Broader issues, such as the impact of changes in available technology in the post-cold war era and the impact of the political changes in the Middle East on force structures, are also addressed.[74] In examining specific decisions to procure from domestic production, the audit covers the prime contractor, project leadership, project administration—usually in the IDF, the Special Projects Office (SPO) or a specific military unit—and the role of management in production.[75]

Since the Lavi project was cancelled in 1987, audits have been increasingly conducted during procurement and development, rather than *ex post facto*. The analysis by the State Comptroller of the decision-making process in the case of

[65] This section is based in part on Ya'ari, A., 'The role of the auditor in the purchase, production and development of arms', SIPRI Arms Procurement Decision Making Project, Working Paper no. 31 (1995).

[66] Given the highly sensitive nature of military auditing in general, and procurement auditing in particular, many reports are kept secret for a specified period.

[67] Ya'ari, A., *Iyunim BiBikoret HaMedina* [Issues in state auditing] (Office of the State Comptroller: Jerusalem, 1995).

[68] [State Comptroller's report], no. 44 (note 47); and State Comptroller's Report, no. 45 (Office of the State Comptroller: Jerusalem, 1995).

[69] [State Comptroller's report], no. 45 (note 68).

[70] [State Comptroller's report], no. 44 (note 47).

[71] The State Comptroller's report on the Lavi influenced the government's decision to cancel this project. [State Comptroller's report], no. 37 (Office of the State Comptroller: Jerusalem, 1987).

[72] [State Comptroller's report], no. 38 (Office of the State Comptroller: Jerusalem 1988); and [State Comptroller's report], no. 44 (note 47).

[73] [State Comptroller's report], no. 38 (note 72).

[74] Havens, H. S., 'What we are and who we were', *Armed Forces Controller* (summer 1990).

[75] [State Comptroller's report], no. 42 (Office of the State Comptroller: Jerusalem, 1992), p. 1110; and [State Comptroller's report], no. 43 (Office of the State Comptroller: Jerusalem, 1993), p. 817.

Israel's naval procurement programme took place during the debate within the defence establishment. In contrast to the report on the Lavi, this report remained mainly classified (a small part was published) and was designed to influence the internal debate only.

In a general sense the impact of the auditing process on decision making for defence procurement in Israel is still limited, but growing. Despite the exceptions noted above, the investigations and reports by the State Comptroller are often 'after the fact' and ineffective in changing decision-making procedures or challenging powerful interest groups and bureaucratic structures. The 'intrusion' of the auditors is still resisted by military commanders and political leaders, such as the Minister of Defense. In many cases, the reports of the State Comptroller are published and given prominent coverage in the press, but the power relationships involving the MoD, the IDF and defence firms are not affected. For example, a number of reports on the management and economic problems of IMI/Ta'as were published over a five-year period, but the evidence indicates that they did not change the decision-making process.

The role of the press

In any democratic system, the press is important in stimulating public debate about and oversight of government decision making in general and major defence procurement decisions in particular. However, the degree of transparency and accountability in Israel has always been limited by the emphasis on military secrecy which has been deemed necessary in national defence.

This is gradually changing as society in general is becoming more willing to criticize 'sacred cows', including the IDF and the defence establishment. This change has been marked by 'the gradual erosion in the domestic public status of the IDF itself': the armed services 'have increasingly become objects of more mature public scrutiny' and 'operational deficiencies have been subjected to intense press coverage'.[76] The press has played an increasingly important role in developing greater openness and accountability regarding weapon procurement, particularly since the Lavi debate. The Arrow programme has been discussed in significant detail in the press. The crisis in the defence industry has also been covered in great detail, and a higher proportion of the reports of the State Comptroller are now published.[77] These reports are covered extensively in the press, and the combination of the State Comptroller and the press constitutes an increasingly important external check on defence procurement decision making. Journalists such as Zeev Schiff and Alouf Benn of *Ha'aretz* and Ron Ben-Yishi have become increasingly critical of the decision-making processes. In many cases they have access to key decision makers, and their reports are widely read.

[76] Cohen, S. A., 'The Israel defense forces (IDF): from a "people's army" to a professional military—causes and implications', *Armed Forces and Society*, vol. 21, no. 2 (winter 1995), p. 241.

[77] See, e.g., discussion of Ta'as in [State Comptroller's report], no. 45 (note 68); and Sadeh, S., [1441 accidents in Ta'as in 1992–94], *Ha'aretz*, 18 Jan. 1996, p. 1.

In contrast, procurement decisions on imported weapon systems (largely from the USA) are not generally discussed until the decisions have been announced. The internal debates regarding offsets and the implications of certain purchases (such as the decision to acquire F-15 fighter aircraft instead of a larger number of less expensive aircraft) are rarely discussed in the press. Exceptions occur when leaks from participants in the internal debates within the IDF or the MoD are published and lead to wider discussion and analysis. However, any system of review that relies on sporadic leaks from the press to provide external review and public debate cannot be considered reliable.

Failures of accountability

Public debate may be limited before major procurement decisions are made, but a number of controversial decisions have led to debate after the fact and to scrutiny of the MoD's and the IDF's dealings with the defence industry. These cases have involved many sectors of Israeli society and provoked a re-examination of the way FMF funds from the USA and local budget allocations are being spent.

Three specific cases provide important examples of the failures in the procurement system: the Lavi aircraft, the 120-mm tank gun (which was to be mounted on the Merkava tank) and the Dotan Affair. These cases, in different ways, illustrate the roles and limitations of the MoD, the IDF and the defence industry. Public awareness has increased as a result of these much publicized debates, leading to greater scrutiny of new projects such as the Arrow.

The Lavi project

In the mid-1970s, production of combat aircraft became the core of IAI's activities. The number of employees grew to over 20 000, making IAI the largest industrial firm in Israel. During this period, IAI produced over 100 Kfir aircraft, based on the French Mirage V and powered by an engine of US manufacture. The technology was outdated and the Kfir never became the front-line combat aircraft of the IAF. When production of the Kfir ended, IAI needed to develop a follow-on project to preserve and expand its military aircraft production facilities and workforce. The initial design, known as the Arye, gained the support of Minister of Defense Peres (one of the founders of IAI) in the mid-1970s. In the early 1980s, the two-engine aircraft was replaced by a project to develop a lighter, less expensive single-engine system known as the Lavi.

The General Staff of the IDF was not enthusiastic about the development and production of an Israeli aircraft and favoured continued purchase of platforms from the USA, which was considered to be a reliable supplier. Israeli firms were seen as better suited to the development and production of electronics, avionics, fire control and weapon systems to be used by the platform. However, with the support of the Minister of Defense, Ezer Weizman (who had also served as the head of the IAF), and other key figures in the Government and

MoD, the proposal for the Lavi was approved by the Ministerial Committee on Defense and the Subcommittee on Procurement and IDF Readiness.

As noted above, most of the R&D costs were funded by earmarked US military assistance, and the project continued until August 1987. At that time, after the first test model had flown, the Israeli Government was faced with the decision to budget for procurement, and it became apparent that the costs were beyond Israel's resources. In addition the F-16 in particular was a better option in terms of costs and benefits.

At the same time, the State Comptroller issued an unprecedented public report that was highly critical of decision making in the case of the Lavi project. The report concluded that the MoD analysis did not take into account key variables, known at the time, which pointed to higher cost estimates, and stated that the price of the F-16 was exaggerated and that no efforts had been made to determine whether it might be obtained at a lower cost if a larger quantity were ordered. According to the State Comptroller: 'In almost every phase of the project, the absence of proper financial indicators was a key antecedent to a departure from original targets. Manipulated reports were presented to decision makers, and as a result only in 1985 was it brought to their attention that there was a deviation of 100 per cent from initial project costs. In hindsight it was revealed that the cost of the Lavi was $2 billion more than the F-16'.[78]

The State Comptroller also stressed the exclusion of other government bodies from decision making in regard to the Lavi project and the manipulative skills of the MoD. The MoD had created a Special Project Office to manage the Lavi programme, and this office acted as a powerful interest group in promoting the project. Its officials maintained control over information and decision making, and external actors, including those from the IDF and the MoD, were largely excluded. The Ministry of Finance was unable to assess the project independently or to challenge the MoD's monopoly of data as it lacked analysts specializing in defence issues. The Lavi was also designated a 'national project', which was justified in terms of expected benefits to national scientific and technological infrastructure and the creation of jobs in the high-technology sector. These expected benefits were never quantified, but the designation of a national project served as an additional barrier to detailed economic analysis by independent evaluators.

Given the direct links between the MoD and the large state-owned defence companies, these firms have access to information not available to their competitors or to other actors and government institutions. IAI's feasibility study, prepared in March 1980, had claimed that the Lavi would be up to 70 per cent cheaper than the F-16. The State Comptroller found that IAI had intentionally excluded factors such as delays in production and irregularities in the plane's weight. Most importantly, no independent analysis of these data was sought.[79]

[78] Klieman and Pedatzur (note 5), p. 2.
[79] Klieman and Pedatzur (note 5), p. 13.

In August 1987, after the cancellation of the Lavi, the Planning Division of the IDF presented a report to the Israeli Cabinet entitled 'Alternatives to the Lavi', which included a list of weapons deemed essential for the future. The IDF General Staff emphasized the need to channel funds formally allocated to the Lavi to alternative projects which were deemed vital to Israel's security. Although the Cabinet approved this proposal, it took no steps to monitor the implementation of these projects. In fact, the IDF redirected these special funds to the standard operations of the army. MK Eliahu Ben-Elissar, Chairman of the Knesset's Foreign Affairs and Security Committee, charged that the MoD misled the public by failing to implement the 'Lavi replacement' package. However, no investigation was sought by the Cabinet or by the Knesset.[80]

Pedatzur argues that the ongoing Arrow-2 ATBM project provides another example of the lack of checks and balances.[81] The development process is managed behind a tight screen of secrecy and is not subject to review. As in the case of the Lavi, the Arrow-2 programme is managed by a specially created SPO in the MoD, which provides a great deal of independence and control over decision making. A number of questions have been raised as to the effectiveness of the Arrow against incoming ballistic missiles, its efficiency against jamming and deception measures, and its costs.

Although there are many indicators of the IAF's lack of enthusiasm for this project, it has not been subject to external review.[82] Approximately 80 per cent of the R&D funding is provided by the USA and, as indicated above, FMF-funded projects are generally not subject to detailed examination within the Israeli defence establishment. However, public and parliamentary debate has grown since the Lavi case, as has the extent of discussion of this project in the press.

The 120-mm tank gun

In 1984, the Minister of Defense decided to proceed with production of a 120-mm cannon to be incorporated with the Merkava III with plans for its eventual export. IMI (now Ta'as) was the prime contractor. By 1990, the R&D costs had doubled from an initial estimate of $10.8 million in 1982–85 to $21.1 million.[83] The cost overruns caused the MoD to divert funds from higher-priority areas in an attempt to rescue the project. MoD funding doubled from 25 to 50 per cent of the total cost, while IMI investment fell to 50 per cent. (In the initial agreement IMI was to pay 82 per cent of the costs.)[84]

[80] Klieman and Pedatzur (note 5), pp. 95–96.

[81] Pedatzur, R., 'Evolving ballistic missile capabilities and theater missile defence: the Israeli predicament', *Security Studies*, vol. 3, no. 3 (spring 1994), pp. 521–71; Pedatzur, R., [The Arrow: possibility of a catastrophe], *Shishi*, 17 June 1994; and Pedatzur, R., [White elephant in the Minister of Defense's yard], *Ha'aretz*, 8 Jan. 1995.

[82] See note 80.

[83] [State Comptroller's report], no. 41 (Office of the State Comptroller: Jerusalem, 1991), p. 779–81.

[84] [State Comptroller's report], no. 41 (note 83).

In his report, the State Comptroller determined that the decision-making process was flawed from its inception and in many different ways.[85] The report charged that the IDF had failed to compare other options, that no independent analysis had been sought and that there was no assessment of IMI's ability to manage the project. The IDF unit directly in charge of overseeing the project had failed to follow MoD procurement regulations requiring a clear statement of operational specifications and formal contracts. Overall management responsibility was divided, contributing to the cost overruns.

Corruption: the 'Dotan Affair'

As noted above, the IAF plays a vital role in IDF strategic planning, and its commander has extraordinary autonomy in the arms procurement decision-making process. In the 1970s and 1980s, 70 per cent of the procurement budget was allocated to the IAF. Ezer Weizman has stated that 'the air force commander has tremendous authority. Once he has defined his needs for himself, he need only interpret them for the weapons developers'.[86] The IAF acts as the sole authority in assessing the cost and efficiency of various weapon systems and, in most cases, its evaluation is largely unchallenged by other professional bodies.[87] In addition, IAF decisions have a major impact on the various defence companies, particularly IAI.

Unregulated arms procurement decision making by the military as a whole, and the air force in particular, led to serious financial misappropriations in the mid-1980s. In addition, US FMF grant assistance, a large portion of which is used for IAF procurement, led to the creation of conditions in which IAF officers had direct access to large sums, with little external oversight. The growing role of Israeli firms as subcontractors to US defence firms in providing weapon systems to Israel under FMF grant assistance increased the problems of oversight and control.[88]

As a result, although the MoD signed contracts with US firms, it often had little means of evaluating the options or implementation. The MoD did not have the resources to exercise oversight over the US firms providing weapons through FMF assistance, and its ability to monitor the Israeli subcontractors was also limited.

In October 1990 Brigadier-General Rami Dotan, IAF Chief of Equipment and Acquisitions, was arrested and in 1991 he was convicted of accepting over $10 million in bribes in connection with air force procurement. In his sentencing statement, the judge described the improprieties committed by Dotan as 'having no precedent in their severity and magnitude in IDF history'.[89]

[85] [State Comptroller's report], no. 41 (note 83), p. 779–90.
[86] Klieman and Pedatzur (note 5), p. 114–17.
[87] [State Comptroller's report], no. 37 (note 71).
[88] Ben, A., [Fooling the Americans], *Ha'aretz*, 27 Mar. 1991.
[89] Harel, Z., [Dotan sentenced to a 13-year prison term and 5 years of probation], *Ha'aretz*, 28 Mar. 1991, p. 5a.

The MoD created a special committee (the Flomin Committee) to investigate the affair and to recommend measures to prevent similar abuses. The committee recommended the formation of a civilian professional assistance unit to advise the MoD in economic and technical matters. Its report stressed the need for cooperation between the IDF and MoD in procurement decision making, recommended the establishment of professional criteria for the evaluation of candidates for positions involving significant procurement roles, and proposed that a civilian police unit be incorporated into the military police for the sole purpose of investigating fraud in the IDF.[90]

In 1993 the State Comptroller reviewed the implementation of the recommendations of the Flomin Committee. It was found that almost a year and a half after the Flomin report was completed, the IDF had not implemented many of its fundamental recommendations.[91]

Although press coverage and the report of the State Comptroller did put some pressure on the military establishment to open arms procurement to greater external scrutiny, this pressure decreased over time, although additional cases continue to appear. In late 1996 another case of suspected corruption in military procurement surfaced, this time involving the purchase of Panther helicopters for the Israeli Navy. As in the Dotan case, this case was uncovered by US investigators looking into allegations of impropriety by senior personnel of the Eurocopter Corporation, the manufacturer of the Panther helicopter.[92]

VIII. Analysis and recommendations

The political, military, technological and economic changes since the late 1980s have affected the nature of arms procurement and the parameters of decision-making processes in Israel. However, the institutional checks and balances with respect to the defence industrial sector are relatively weak. Although the Subcommittee on Procurement and IDF Readiness of the Knesset's Foreign Affairs and Security Committee has examined many of the issues and there have been some analyses by academics,[93] no large-scale and detailed reorganization proposals have been presented. This reflects the structural and institutional limitations on policy reform in Israel,[94] particularly in the defence industrial sector.

The need for professional analysis

According to normative theory, policy reform in any sector should be based on the rational actor model of decision making. This approach is well known and

[90] [State Comptroller's report], no. 44 (note 47), pp. 992–93.
[91] [State Comptroller's report], no. 44 (note 47), p. 990.
[92] Barzilai, A., [Tat Aluf Eyal will be investigated with a lie detector in the case of the additional costs in the purchase of Panther helicopters for the navy], *Ha'aretz*, 27 Jan. 1997, p. 14a.
[93] Klieman and Pedatzur (note 5).
[94] See, e.g., Steinberg, G. and Bick, E., *Resisting Reform* (University Press of America: Lanham, Md., 1994).

can be viewed as the 'ideal type' of model.[95] In the area of military procurement, this model is based on threat assessment, alternative war scenarios, resource availability, prioritization, national economic development and the options for procurement policies to match these scenarios.

Normatively, professional analysts would play a major role in decision making. The structure of decision making would be designed to maximize efficiency, prevent waste and take account of the major global and regional political changes. These changes include the end of the cold war, the demise of the Soviet Union and the Arab–Israeli negotiations and agreements. The impact of precision-guided weapons and other technological changes and the rapidly increasing costs of such technology would also be factored into this analysis.

The IDF has made significant changes in personnel structures and reduced the size of the military, while increasing the emphasis on the professionalism of the standing army,[96] but there has been no similar coordinated effort to restructure arms procurement decision-making or the defence industry. As far as is known, there have been no detailed studies of possible mergers or reorganizations of the state-owned defence firms. Changes have been minimal, largely ad hoc and reactive. According to Emanuel Wald, who served as a staff officer in the IDF and wrote a very critical analysis of the Israeli military, 'the General Staff has for years carried on "preparatory meetings", during which sporadic and contradictory ad hoc decisions on weapons procurement and development are made. Meanwhile, the overall view and integrative, multi-year planning of force construction are neglected to the point where they do not exist at all . . . for over eight years, the IDF has had no written, comprehensive, and approved multi-year plan'.[97]

Although the IDF's multi-year planning process had an impact (pressure having been applied by the State Comptroller), much of the criticism is still valid. External analysts, independent of the government bureaucracies, are still exceedingly rare. The universities, which can and should play a central role in training independent professional analysts, have failed to develop public policy programmes and train analysts in general or in security policy making. Professor Yechezkel Dror of the Hebrew University, a leading academic who has served as a policy analyst and consultant for the Israeli Government, has advocated the creation of special programmes and institutions for professional policy makers.[98] As of late 1996, his proposals had not been implemented. A number of universities offer MA programmes in public policy and public administration whose graduates may in future improve the quality of decision making and external analysis in many areas, including defence procurement. Academic research groups such as the Begin–Sadat (BESA) Center for Strategic Studies and the Jaffee Center employ strategic analysts and they may also

[95] Dror, Y., *Public Policymaking Reexamined* (Chandler: San Francisco, Calif., 1968), p. 130.
[96] Cohen (note 76), p. 237.
[97] Wald, E., *The Wald Report: The Decline of Israeli National Security since 1967* (Westview Press: Boulder, Colo., 1992) [English translation of Hebrew original].
[98] Dror, Y., *Livnot Medina* (Akadamon: Jerusalem, 1989).

focus on arms procurement decisions in the future.[99] At the same time, without information and cooperation from the military and defence establishment (including the MoD), it will be difficult for external institutions to provide a detailed examination of arms procurement decision making.

The small number and limited nature of independent and professional bodies to evaluate critical procurement decisions impedes informed discussion. The defence establishment and the military censor control the flow of information in the arms procurement decision-making process and, even though the role of the censor is decreasing and there are occasional leaks, systematic analysis is limited. Various proposals for the establishment of external bodies to provide independent sources of information and analysis in areas of national security have been made. MK Begin drafted legislation to establish a National Security Council and, although this legislation was voted into law (as part of the Basic Law) and some efforts were made in this direction by the late Prime Minister Rabin in 1992, no council was ever set up. Such a council would provide checks and balances, but political resistance to independent bodies and to the loss of power they would cause among interest groups is still strong.

Attempts at reform

As a result of the inefficiency of and growing cost overruns in the development and production of new weapon systems within the IDF,[100] the MoD created the Sadan Committee in 1993 (named after a former Economic Adviser to the Minister of Defense.) A number of weapon systems, most notably the Merkava MBT and numerous sub-systems, are manufactured or assembled within the military. In a report entitled 'Make or Buy', this committee recommended transferring responsibility for weapon development from the military to the private sector and the setting of strict economic criteria for decisions on domestic weapon production.[101] While it is too early to assess the impact of this report on arms procurement, there is evidence that the recommendations are being implemented.

However, this study is an exception. No full-scale study of the procurement infrastructure has been conducted. This would require the personal involvement and initiative of the Minister of Defense. After the 1992 elections, then Prime Minister Rabin attempted to initiate sweeping reforms of the defence industrial sector. Like many other policies in this area, this decision was not taken on the

[99] The Begin–Sadat (BESA) Center for Strategic Studies and the Center for Defense Economics and Peace at Bar-Ilan University have sponsored a series of workshops and conferences on the Israeli defence industries and co-sponsored the Israeli contribution to the SIPRI study on defence procurement, including the research for this study.

[100] In the past decade, defence projects are estimated to have deviated by 70% from initial projections in terms of budget and 80% in terms of duration.

[101] Israel, Ministry of Defense, [Economic Adviser's report: make or buy?] (MoD: Tel Aviv, 1994). Note that this report did not consider the question whether to produce weapons domestically or to increase procurement from abroad and was confined to examining the internal production functions of the military services.

basis of detailed analysis or clear programmes. The general direction was towards privatization of some activities and further consolidation.

The numerous transfers of responsibility that took place in 1995 and 1996 and the lack of impact on the structure of the defence industry illustrate the difficulties the Israeli Government has faced in dealing with the problems in this sector. In December 1995, shortly after Rabin's assassination, the successor government under Shimon Peres created a new cabinet Ministry of Internal Security. In addition to responsibility for the police and civil defence, the Minister, Moshe Shahal, for whom this position was created, was given control over the defence industry. This decision was based on internal political factors (and reports that Shahal had demanded the addition of this sector to his portfolio to balance other cabinet shifts which had reduced the budget and number of high-level appointments in other areas). However, there was no impact on policies. Following the elections in May 1996, the new government under Benjamin Netanyahu transferred the responsibility for this sector to the newly created Ministry for Infrastructure, headed by Ariel Sharon. As of June 1997, this organizational shift had not resulted in changes in policies or structures with respect to the defence industry. The Government and individual ministers and ministries have been preoccupied with other issues and have also seen the reorganization of the defence industrial sector as politically costly. Changes such as privatization and the accompanying reductions in the workforce would be resisted by the employees.[102]

If the MoD does not do so, it is possible that the Knesset Subcommittee on Procurement and IDF Readiness could take the initiative. However, since it has limited staff resources it cannot be expected to support a broad analysis of the procurement infrastructure or to make detailed recommendations.

Transparency and accountability

Both public discussion and the quality and efficiency of decision making with respect to large-scale procurement decisions would be improved by the preparation and publication of defence White Papers or similar studies examining and comparing options and consequences. The decision-making process for procurement of combat aircraft since the start of the Lavi project in 1979 would have benefited from such external and professional analysis of options and comparative costs and benefits. That would, however, require some relaxation of the secrecy which surrounds defence-related decision making.

It is assumed here that, as in other countries, useful analyses and comparisons can be made without access to classified details of weapon systems or specific missions and deployments. The challenge for the Israeli Government and the military is to provide greater access to data without endangering national security.

[102] The obstacles to reform and organizational change are discussed in *The Israeli Defense Industry* (note 54), pp. 15–29.

Israel is a democratic state and its institutions, including the military and the MoD, are accountable to the public. As noted above, the State Comptroller and Knesset Committee on Foreign Affairs and Security exercise this oversight function. However, while the defence establishment in general is becoming increasingly open and public discussion and debate are growing, the closed nature of its arms procurement decision making and the small number of participants have contributed to several failures. The level of secrecy continues to limit discussion and open, public debate involving the decision makers themselves is still quite rare. For example, the future of the Arrow ATBM system and very costly military space projects are the subjects of some journalistic analyses, but there are no White Papers or public hearings.

Some actors and analysts argue that the nature of Israeli society itself constitutes a significant check on the military. A high proportion of men (estimated at 70–80 per cent) serve as conscripts, and many continue as professionals; the rest serve in reserve units for many years, participating in annual training exercises and related operations. A large percentage of eligible women are also called for compulsory military service at the age of 18. This gives them first-hand knowledge of major defence issues, allowing them to make judgements based on their personal experience and not necessarily consistent with the policies of the military establishment on procurement and related issues.

It would be misleading to claim that there is a great public demand for more openness or accountability in this area. The Israeli political system is already overloaded with complex and critical issues, including the risks and benefits of the peace process and of territorial withdrawal. Defence and national security questions are of major concern to the public, receive extensive coverage and are widely debated. Specific procurement issues are occasionally included in these debates, as in the case of the Lavi and Arrow projects, but the general tendency to support the IDF leadership and leave ultimate responsibility in the hands of the Chief of Staff and the Minister of Defense remains very strong.

For the general public, as well as the decision-making élite, the dominant perception of Israel is still that of a small country under siege. Initiatives to develop greater openness in the wider Middle East region could be one way of fostering confidence and modifying this perception. However, without reciprocity from the other countries in the region, a change in policy is unlikely.

Although the IDF is still largely independent, the prestige of the military has declined somewhat since the 1973 Yom Kippur and 1982 Lebanon wars. This and the reduction in threats to national survival resulting from the peace process have meant that the extent of confidentiality and the independence of the IDF have decreased. The tendency to ignore the existence of vested interests in the military and in the defence industry has declined, and it is increasingly difficult for these institutions to use confidentiality as protection from public scrutiny and accountability. As noted above, the State Comptroller has become increasingly critical. As external examination of decision making becomes more accepted, the demands for accountability in arms procurement will also grow.

However, decision making in the IDF and the MoD is highly centralized, particularly with respect to procurement of major weapon systems. Decision-making structures are usually based on small homogeneous groups. Broader involvement is not likely to be readily accepted. The obstacles to the implementation of rational decision-making processes and to decreasing the role of interest groups and external factors are most prominent with respect to the Israeli defence industry. Policy making in this sector continues to be ad hoc, generally in response to specific financial crises in the individual organizations.

IX. Conclusions

The framework developed for this SIPRI study includes the hypothesis 'that national arms procurement processes can become more responsive to the broader objectives of security and accountability'.[103] In the case of Israel, it is clear that deterrence and defence are the major objectives of national security policy and arms procurement decision making. At the same time, the broader objectives of security, including economic aspects, are increasingly important in defence decision making. Foreign policy factors continue to play a part, particularly relations with the USA. However, there are inefficiencies and distortions related to the power of various organizations and interest groups in the state-owned defence firms. The maintenance of the current structure has become an end in itself, rather than a means to achieve the objectives of national security. By reducing the impact and power of these interests, the arms procurement decision-making process can become more efficient and responsive.

With respect to accountability, the balance between the level of confidentiality necessary to meet national security requirements and the openness that increases public accountability is exceedingly delicate. Some officials continue to view a very high level of confidentiality as essential to national security and even survival. They see public accountability as a distant objective and a 'luxury' that only other states that do not face threats to their survival can afford. Although there is some change in the balance, as noted above, it is unrealistic to expect a fundamental change in the Israeli calculus on this issue for many years.

[103] Singh, R., 'Introduction to project participants', SIPRI Arms Procurement Decision Making Project (1994).

5. Japan

Masako Ikegami-Andersson[*]

I. Introduction

In spite of the relatively high value of Japan's arms procurement, very few comprehensive analyses of its arms procurement decision making have been published by Japanese scholars or experts, mainly because of a political culture of 'defence allergy' that is particular to Japan.[1] This was the first barrier that this study of Japanese arms procurement decision making had to overcome. The SIPRI project is the first ambitious attempt to mobilize Japanese experts, particularly from the Japan Defense Agency (JDA), its think-tanks and the defence industry, to provide information on the Japanese arms procurement decision-making process.

The post-World War II period witnessed a political and ideological controversy in Japan over the legality of the Self-Defense Forces (SDF). Left-wing parties such as the Japan Socialist Party (now renamed the Social Democratic Party) and the Communist Party claimed that the SDF were fully-fledged military forces and therefore against the spirit of Article 9 of the Japanese Constitution, according to which Japan renounced wars and recourse to armed force to resolve conflicts. For decades the dispatch of the SDF abroad was prohibited because it could have led to a revival of Japanese militarist sentiment.[2]

Domestic controversy over these issues led to a highly charged ideological debate between the conservative Liberal Democratic Party (LDP)-led governments of the years 1955–93 and the parties in opposition. Since security issues were so controversial, there was no forum for discussion of such matters in the Japanese Diet until 1991, when the House of Representatives finally established

[1] Two of the few works on Japanese defence decision making by Japanese scholars are: Hirose, K., *Kanryo to Gunjin* [Bureaucrats and military men] (Iwanami: Tokyo, 1989); and Muroyama, Y., *Nichibei Anpo Taisei* [Japanese–US security cooperation] (Yuhikaku: Tokyo, 1992).

[2] Under a coalition government, however, even former Prime Minister Tomiichi Murayama of the SDP clearly stated in 1994 that the SDF were constitutionally legal. Furthermore, the government did not regard the SDF's participation in UN peacekeeping operations as 'military actions'.

[*] The author wishes to thank Professor Hisao Iwashima for supervising the study in Japan. She would also like to thank the experts who contributed the papers which formed the basis of the chapter and source material. See annexe C for the biographical details of the contributors. This chapter is based largely on the papers presented at the workshop held in Tokyo in October 1994. The author also held follow-up interviews with some of the contributors in Tokyo in September 1995 and interviewed Kensuke Ebata in Stockholm in November 1995. The interviews were carried out with the support of the Grant-in-Aid for Scientific Research, the Japanese Ministry of Education and the Toyota Foundation.

the Standing Committee on Security. These circumstances led the JDA to develop a defensive and introvert posture in order to avoid being drawn into ideological conflicts, which in turn contributed to an attitude of excessive secrecy.

The JDA, which was established in 1954, does not have the status of an autonomous ministry. Its position is that of a secondary-level state agency in the overall national security bureaucracy. Many senior officials are seconded to the JDA from the Ministries of Foreign Affairs (MoFA), Finance (MoF), and International Trade and Industry (MITI) in key decision areas such as policy planning and arms procurement.[3] This organizational feature, derived from a legacy of militarism and foreign military occupation (1945–52),[4] has reduced the JDA's autonomy. Various political, ideological and bureaucratic constraints limit the JDA's influence in overall national security policy making.

In general, arms procurement decision making in Japan is well formulated, well organized, and run smoothly and precisely by a well-established bureaucracy. However, rationality and efficiency are only evident within a limited range of administrative procedures.[5] Just as sociologists distinguish between formal/informal or rational/irrational aspects of the same phenomenon, this chapter shows that Japanese arms procurement decision making has another side. It identifies some of its less well-known and less rational aspects.

The administrative aspects of defence planning (arms procurement and budgeting) and industrial activities (defence research and development (R&D) and production) are functionally coherent and thus conducive to creating an error-free system that can be called 'functionally rational'.[6] The Japanese arms procurement decision-making process appears to be so predictable, consistent and routine that it can take years for the defence structure to respond to significant changes in the politico-strategic environment. However, there are many factors in Japanese defence planning and procurement that could be described as irrational in terms of 'goal rationality'.[7] If goal rationality is taken as a

[3] Chinworth, M. W., *Inside Japan's Defense: Technology, Economics and Strategy* (Brassey's: Oxford, 1992), p. 2.

[4] During the period of occupation by the Allied powers (1945–52) Japan was totally demilitarized. During the Korean War (1950–53) the National Police Reserve Force was set up and then developed into the National Safety Force, a predecessor of the present SDF. The National Police Agency therefore took the top positions within the JDA until the 1970s. Johnson, C., *MITI and the Japanese Miracle: The Growth of Industrial Policy, 1925–1975* (Stanford University Press: Stanford, Calif., 1982).

[5] Here 'rationality' refers to being logical and to consistency of methods with goals.

[6] 'Functional rationality' is a sociological term deriving from Karl Mannheim. It describes actions functionally organized for a certain goal and a regularity in the system which makes it possible for an observer outside the system to predict how things will work. 'Rightness rationality' (*Richtigkeitsrationalität*), used by the sociologist Max Weber, also means logical coherence and predictability of a series of organized actions. This functional regularity and the predictability of organized actions are supposed to be peculiar to the modern era. In the pre-modern era the personal decisions of power holders, such as kings, directed a series of actions and there was no objective predictability in the decision-making process.

[7] The term 'goal rationality' derives from Max Weber's sociological notion that various actions and methods are organized in such a way as to achieve certain goals/values efficiently. In a modern nation-state, defence of the nation is supposed to be the responsibility 'of the nation (people), for the nation (people)': the legitimacy of the defence policy is thus based on public support and should therefore be controlled by the people through their elected representatives. Its instruments, such as the defence forces, should be responsible for guaranteeing the nation's/people's security.

paradigm, the methods of application of a nation's security policies should be monitored by elected representatives, and some aspects of Japanese arms procurement do not stand up to scrutiny in the broader context of the interests of society.

After the end of the cold war, Japan gradually started to re-examine its defence build-up in order to cope with the new international security circumstances. In August 1994 the Advisory Group on Defense Issues (an informal advisory group to the Prime Minister) presented a report proposing a new defence policy for the post-cold war era.[8] In December 1995 the cabinet of the coalition government (comprising the LDP, the Social Democratic Party and the Sakigake-Forerunner) approved a revised National Defense Program Outline (NDPO),[9] 20 years after the original NDPO was formulated. In the mid-1990s, Japan and the USA worked to reaffirm the 1960 Japanese–US Treaty of Mutual Cooperation and Security.[10] This means that some of the basic premises of the Japanese defence build-up are in transition.

Section II of this chapter describes the arms procurement decision-making processes within the JDA and deals with such issues as threat assessment and procurement planning. The way in which procurement and budget planning are coordinated within the JDA and the MoF and the nature of legislative oversight and public audit are presented in section III. In section IV the official procedures and the features of defence R&D and production and the competing options of domestic development and import are outlined. Section V identifies the political–social factors that undermine goal rationality and the professionalism of arms procurement decision-making, such as the lack of transparency of administrative procedures, the socio-cultural attitudes of the decision-making élite and low levels of public accountability. Section VI proposes some ideas as to how transparency and public accountability can be promoted in an effort to bridge the gap between functional rationality and goal irrationality in arms procurement in Japan.

II. The arms procurement decision-making process

The background to defence policy

In the post-war era, Japan's defence policy framework has been based on Article 9 of the Japanese Constitution, which stipulates that Japan renounces war as a sovereign right and the use of armed force as a means of settling disputes,[11] and the 1960 Japanese–US Treaty of Mutual Cooperation and Security.[12]

[8] *Boei Mondai Kondankai* (the Advisory Group on Defense Issues) is an advisory body attached to the Office of the Prime Minister. It was set up in Feb. 1992 and consists of 9 members, including former senior government officials (including former JDA top officials), scholars and industrialists.

[9] 'National Defense Program Outline in and after FY 1996', *Defense of Japan 1996* (Japan Defense Agency: Tokyo, 1996), pp. 276–84.

[10] See section II in this chapter.

[11] 'Aspiring sincerely to an international peace based on justice and order, the Japanese people forever renounce war as a sovereign right of the nation and the threat or use of force as means of settling inter-

The constitution implies that Japan should not become a military power and that its defence capacity is strictly limited to self-defence (*senshu-boei,* 'exclusively defence-oriented policy'), which means that the military force option cannot be exercised until an armed attack is initiated and that the scope and level of use of defence forces are to be kept to the minimum required for self-defence. This passive defence strategy thus prohibits first-strike capabilities in the form of strategic weapons such as intercontinental ballistic missiles (ICBMs) and long-range strategic bombers.

Given these strategic and operational constraints on the scale of its military forces, Japan's defence aims to build capabilities for deterring aggression.[13] The existence of US military bases and the 1960 security treaty are regarded as vital in maintaining such military deterrence.[14]

The Japanese Government considers that the constitution and the 1960 security treaty complement each other. According to the treaty, the SDF, consisting of three services—the Ground Self-Defense Force (GSDF), the Maritime Self-Defense Force (MSDF) and the Air Self-Defense Force (ASDF)—are to ensure security on the territory of Japan and on its sea lines of communication (SLOCs) while, for wider-area security, the SDF will cooperate with US forces by providing support such as military bases and logistic supply in Japan.[15] The USA consequently urged Japan to strengthen its military capabilities, which led to a rapid increase in Japan's defence budget, particularly in the 1980s.

Peacetime troop and equipment levels are determined in the NDPO. Japan's defence is based on maintaining a 'basic and standard defence capability' (*kibanteki boeiryoku*). In the event of large-scale aggression against which this capability is inadequate, Japan counts on the support of the US forces based in

national disputes. In order to accomplish the aim of the preceding paragraph, land, sea, and air forces, as well as other war potential, will never be maintained. The right of belligerency of the state will not be recognized.' Article 9 of the Japanese Constitution.

[12] In Sep. 1951 the Treaty of Peace with Japan (the San Francisco Treaty) and the Treaty of Security between Japan and the United States of America (the 'old security treaty') were signed, and both treaties took effect on 1 Apr. 1952. The 1951 security treaty was renewed in 1960. *Defense of Japan 1988* (Japan Defense Agency: Tokyo, 1988), p. 83.

[13] *Boei Handobukku 1994* [Defence handbook 1994] (Asakumo-shimbun: Tokyo, 1994), p. 439.

[14] Should Japan be attacked, the most feasible operational doctrine would involve a 'denial operation', i.e., joint efforts by the MSDF and the ASDF to deter aggression at sea and in the air. Shikata, T., 'Threat assessment in the Japanese arms procurement process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 33 (1995).

[15] On the one hand, the 1960 Japanese–US Treaty of Mutual Cooperation and Security states that 'each party recognizes that an armed attack against either party in the territories under the administration of Japan would be dangerous to its own peace and safety and declares that it would act to meet the common danger in accordance with its constitutional provisions and processes' (Article 5) and that 'For the purpose of contributing to the security of Japan and the maintenance of international peace and security in the Far East, the USA is granted the use of its land, air and naval forces of facilities and areas in Japan' (Article 6). On the other hand, Japan's *Basic Policy for National Defense,* adopted by the National Defense Council and approved by the cabinet in 1957, stipulates that the Japanese Government establishes the principles 'to develop progressively the effective defence capabilities necessary for self-defence, with regard to the nation's resources and the prevailing domestic situation'. *Defense of Japan 1988* (note 12), p. 76. Thus Japan has increased its own self-defence capability and simultaneously increased its burden sharing both financially and strategically. Some analysts suspect the actual function of the security treaty to be, paradoxically, 'Japan's unilateral obligation of supporting the US', because Japan supports a US military presence in the Far East, while basically having to defend its territory by itself. See, e.g., Muroyama (note 1).

Japan. It continues to provide host nation support to US forces on the assumption that its interests are best served by regional stability.

In 1981 then Japanese Prime Minister Zenko Suzuki stated at a summit meeting with US President Ronald Reagan that Japan would increase its defence capabilities, ensuring the security of its SLOCs from 200 to 1000 nautical miles. Since then the primary focus of Japanese–US security cooperation has been seen to shift from the defence of Japan's home territory to stability in the East Asian region.[16]

Another framework that defines Japan's strategic role is the relationship with the USA. At the Japanese–US summit meeting in April 1996, then Japanese Prime Minister Ryutaro Hashimoto and US President Bill Clinton issued the Japan–US Joint Declaration on a Security Alliance for the 21st Century, reaffirming their security cooperation as the cornerstone for maintaining stability for Asia–Pacific.[17] In September 1997, the US–Japan Subcommittee for Defense Cooperation presented a review of the 1978 Guidelines for US–Japan Defense Cooperation which superseded them.[18] The two governments set up a consultative machinery to study their defence cooperation in operations, intelligence and logistics.[19] The 1997 guidelines describe the arrangements for cooperation not only in the event of an armed attack against Japan but also in areas surrounding Japan. This implies that the 1960 security treaty, despite its bilateral nature, has gained a much broader function for security in the entire Asia–Pacific region.[20] This geopolitical broadening of Japanese–US cooperation has caused some concern that Japan may be drawn into third-country conflicts in the region. The new guidelines also deal with: intelligence sharing and cooperation in surveillance; minesweeping in Japanese and international waters; naval escort for inspection of foreign ships to enforce UN arms embargoes; search and rescue operations; provision of *matériel* (except arms and ammunition) and fuel to US forces; transport in Japan for personnel, *matériel* and fuel;

[16] Toshiyuki Shikata states clearly that there is little likelihood of aggression against Japanese territory itself in the short and intermediate term, and this signifies a 'giant step forward from the former concept of US–Japanese cooperation in Japan's territorial defence, to that of securing the stability of not only the Far East, but also the entire region of East Asia'. Shikata, T., *Japan's Security Strategy: Meeting the Needs of a New Era*, IIPS policy paper no. 145E (Institute for International Policy Studies: Tokyo, 1995). Shikata also states that, among Japanese strategists, a consensus seems to be emerging that 'the geographical coverage under Article 6 of the Japan–US security treaty will have to be expanded'. See also Sasae, K., International Institute for Strategic Studies, *Rethinking Japan–US Relations*, Adelphi Paper no. 292 (Brassey's: Oxford, 1994).

[17] *Defense of Japan 1996* (note 9), p. 67.

[18] US–Japan Subcommittee for Defense Cooperation, *Guidelines for US–Japan Defense Cooperation*, New York, 23 Sep. 1997, available at URL <http://www.defenselink.mil/>. Excerpts from the 1960 treaty are given in *Defense of Japan 1996* (note 9), pp. 260–61.

[19] *Defense of Japan 1988* (note 12), p. 267.

[20] Defence journalist Tetsuo Maeda points out that the 1978 guidelines essentially changed the character of Japanese–US security cooperation. In order to counter Soviet military expansion (particularly naval forces) in Asia–Pacific, the USA needed to level up the Japanese–US security treaty as a de facto military alliance to support US strategic operations in the region. This almost implied the 'revision of the 1960 Japan–US security treaty' from individual security to collective security. Maeda, T., *Jieitai ha Nani wo Shitekitaka?* [What has the SDF done?] (Chikuma-shobo: Tokyo, 1990), p. 228. This shift in focus is even clearer in the 1997 guidelines.

Table 5.1. The Japanese defence budget and its share of GNP, 1955–95
Figures are percentages.

Fiscal year	Ratio of defence budget to GNP	Ratio of defence budget to general account
1955	1.78	13.61
1965	1.07	8.24
1975	0.84	6.23
1985	0.997	5.98
1995	0.959	6.65

Note: Figures are based on original budgets in billion yen at current prices. Ratios of defence budgets are to gross national product (GNP) for fiscal years (FYs) 1955–95 and to gross domestic product (GDP) for FY 1995. All these figures are original estimates.

Source: Defense of Japan 1996 (Japan Defense Agency: Tokyo, 1996), p. 298.

and other rear area support, such as medical services, maintenance and communications support.[21]

International criticism, particularly from neighbouring Asian countries, has been directed at the inconsistencies between Japan's claim to have a primarily defensive posture, as expressed in its constitution, and its actual military capabilities in terms of the size of its defence budget and the scale of its modern weapon systems.

In November 1976 the Cabinet decided that 'for the time being the defence capability is to be based on the criterion that defence expenditures should not exceed 1 per cent of the GNP [gross national product] of each fiscal year'.[22] This ratio has not changed even after the end of the cold war (see table 5.1), implying that Japanese defence planning and budgeting may not necessarily relate to threat assessment. Even major weapon systems continue to be procured, particularly by the MSDF and ASDF, since Japan announced its commitment to defend its SLOCs out to 1000 nautical miles.

The basic framework for defence planning

The NDPO constitutes a very basic framework defining Japan's defence structure and provides guidelines for improving its defence capabilities. Its basic concept is that Japan should maintain a 'basic and standard defence force', which implies that it should possess a minimum defence capability as an independent country to avoid the development of a power vacuum in the region and to directly counter military threats to Japan.[23] This is interpreted to mean that

[21] Taoka, S., [New guidelines: what will happen to civil airports and hospitals], *AERA* (Tokyo), 6 Oct. 1997, p. 16 (in Japanese).

[22] *Defense of Japan 1988* (note 12), p. 151. The defence budget has remained at approximately 1% of GNP except in FYs 1987–89. *Boei Handobukku 1995* (note 13), p. 225.

[23] *Defense of Japan 1996* (note 9), p. 69.

Japan's defence forces should be of high quality, in order to function effectively in terms of the Japanese–US security cooperation.[24] The 1976 NDPO was formulated in the context of Japan's ratification of the 1968 Non-Proliferation Treaty (NPT), the limiting of the defence budget ceiling to 1 per cent of GNP and the strengthening of the Three Principles on Arms Export.[25]

In the past 20 years, Japan's security environment has undergone many changes. In the mid-1990s the Cabinet and the JDA started reviewing the previous NDPO with regard to: (*a*) changes in the international situation such as the end of the cold war, the outbreak of local conflicts rooted in religious and ethnic differences, and the proliferation of weapons of mass destruction; (*b*) increasing expectations of the SDF after the experience of national disasters such as the Kobe earthquake and the sarin gas attack on the Tokyo underground in 1995,[26] and participation in international peacekeeping operations in Cambodia, Mozambique and Zaire; and (*c*) other changes such as the rapid progress in technology, increasing financial constraints and a rapid decline of the proportion of young people in the population in Japan.[27]

The review work was mainly based on two reports: 'The modality of the security and defense capability of Japan: the outlook for the 21st century' and 'Basic idea of defense capability of Japan from now on'.[28] In August 1994 the Advisory Group on Defense Issues recommended that the JDA set up a Committee for National Defense Review under the JDA Director-General to draft the new NDPO. The JDA's draft NDPO progressed in consultation with the Security Council (SC), several ministries and the opposition parties, and was submitted to the Cabinet for approval in November 1995.[29] It basically follows the key concept of a basic defence force, acknowledging that unpredictability in the international situation and Japanese–US security cooperation will remain the core of its national and regional security planning. Nevertheless there were some significant changes in the 1995 NDPO. First, it gave even greater emphasis to the role of Japanese–US security cooperation, implying that the two countries' interests were inseparable in terms of regional security. Second, the

[24] The 1976 NDPO put greater emphasis on the quality and modernization of Japan's defence forces. Muroyama (note 1), pp. 338–39. For the text of the 1976 NDPO, see *Defense of Japan 1995* (Japan Defense Agency: Tokyo, 1995), pp. 265–70.

[25] The Three Principles on Arms Export were declared by then Prime Minister Eisaku Sato in 1967, prohibiting arms exports to: (*a*) communist-bloc countries; (*b*) countries to which arms exports are prohibited under UN resolutions; and (*c*) countries involved or likely to become involved in international conflicts. The government policy guidelines on arms control, which strengthened the Three Principles, were announced by then Prime Minister Takeo Miki in 1976. In addition to the terms of the Three Principles they (*a*) restrained arms exports to other areas, and (*b*) stipulated that equipment related to arms production and military technologies was to be treated in the same manner as arms. *Defense of Japan 1988* (note 12), p. 180.

[26] Japan's vulnerability to a state of emergency was disclosed at the time of the Kobe earthquake of Jan. 1995 when rescue work, including the dispatch of the SDF, was badly delayed. The experience called into question Japan's security capabilities.

[27] *Defense of Japan 1996* (note 9), pp. 69–71.

[28] Advisory Group on Defense Issues, 'The modality of the security and defense capability of Japan: the outlook for the 21st century', Unpublished paper, Tokyo, Aug. 1994 (in English); and Japan Defense Agency, Examining Committee on Defense Capability, 'Basic idea of defense capability of Japan from now on', Unpublished paper, Tokyo, 1994.

[29] *Asahi Shimbun*, 29 Nov. 1995.

role of Japan's defence capability was broadened to include response to large-scale disasters, such as natural disasters, terrorism, mass movements of refugees and 'contributions to a more stable security environment', such as UN peace-keeping operations and cooperation in arms control and disarmament.

The actors

The JDA is the main actor that initiates arms procurement planning. It consists of military staff from the SDF, who are primarily involved in military and strategic analysis, and civilian staff who coordinate with ministries such as the MoF, the MoFA and MITI from the early stages of arms procurement planning. The defence industry's involvement is particularly significant in defence R&D and production, in which the JDA and the industry collaborate both formally and informally. The Defense Production Committee (DPC) of Keidanren (the Japan Federation of Economic Organizations)[30] is one of the most influential industrial associations in Japan. Other important actors who have an informal influence on the arms procurement decision-making process are individual politicians and the USA through its diplomatic channels.

The JDA is not an autonomous actor in defence planning since it drafts the NDPO in consultation with the MoF, the MoFA and MITI. Based on the framework of the NDPO, details of defence planning are formulated by the Joint Staff Council of the JDA in the Joint Long-Term Defense Estimate (JLTDE). The assessment of the strength of the military forces of countries around Japan and their defence build-up provides the basic reference for planning and takes into account political, diplomatic, economic, military, societal and technological perspectives. This assessment includes two elements: (*a*) estimates of the quality of the future defence capability based on the emerging technologies and the weapon systems that will be most effective 20 years ahead; and (*b*) an outline of human and *matériel* resources.

On the basis of the JLTDE, the Joint Staff Council formulates the Joint Mid-Term Defense Estimate (JMTDE). Thereafter each service of the SDF formulates a Mid-Term Capability Estimate (MTCE) and a Mid-Term Defense Program (MTDP). The MTCE examines the present defence capability in each of their operational and logistic functions such as mobility, firepower and communications. It analyses the shortcomings and improvements required and assesses the various stages of defence capability to be achieved by the MTDP. The MTDP deals with specific operation doctrines, options and countermeasures in cases of emergency, budgetary outlines and procurement planning for major equipment during the five-year period under assessment. The stages of decision making for defence planning are shown in table 5.2.

[30] Founded in 1951, Keidanren is the largest business organization in Japan. The DPC has about 80 member companies, including all the major defence-related manufacturers, and it has been an influential lobbying group on defence procurement issues.

Table 5.2. Stages in the defence and arms procurement decision-making process in Japan

	Title of document	Body responsible for formulation	Focus of document
First stage	National Defense Program Outline (NDPO)	Formulated by the Japan Defense Agency (JDA), approved by the Security Council (SC) and the cabinet	• International situation • Defence concepts for preventing and countering aggression against Japan • Defence capabilities of the GSDF, ASDF and MSDF • Build-up of defence capabilities • Assessment of defence technology
Second stage	Joint Long-Term Defense Estimate (JLTDE)	Formulated by the JDA, approved by the SC and the cabinet Formulated every 5 years for a 10-year period. X+9 to X+19 years, X being the year the JLTDE is formulated. Reviewed if necessary	• Military considerations of the international security situation affecting Japan • Strategic situation around Japan • Military technology needs
Third stage	Joint Mid-Term Defense Estimate (JMTDE)	Formulated by the JDA, approved by the SC and the cabinet Formulated every 5 years for a 5-year period. X+3 to X+8 years, X being the year the JMTDE is formulated. Reviewed annually	• Assessment of new or emerging threats • Strategies in case of national emergencies • Force structure of the GSDF, ASDF and MSDF
Fourth stage	Mid-Term Capability Estimate (MTCE) Mid-Term Defense Program (MTDP)	Formulated by each Self Defense-Force (SDF), approved by the SC and the cabinet For a 5-year period	• Effectiveness of operational functions such as air defence, surveillance, communications etc. • Operational doctrine; procurement planning; budget outline; Responses to emergencies
Fifth stage	Annual Implementation Plan (AIP) Annual Contingency Plan (ACP)	Formulated by each SDF on approval of the MTCE and the MTDP	• Budgeting and allocation of resources • Training and operational readiness

Notes: GSDF = Ground Self-Defense Force; ASDF = Air Self-Defense Force; MSDF = Maritime Self-Defense Force.

Source: Compiled by the author, based on interviews with Gen. Toshiyuki Shikata.

Formerly the National Defense Council (NDC) was the top executive body for defence policy and decision making. Originally it was mainly responsible for defence budget planning and arms procurement, but in July 1986 it was reorganized into the SC. In addition to its previous tasks, the SC was charged with considering countermeasures in cases of serious emergencies.[31] It comprises the Prime Minister, the ministers of finance and foreign affairs, the Chief Cabinet Secretary, the Chairman of the National Public Safety Commission, and the Directors-General of the JDA and the Economic Planning Agency. Other relevant state ministers and the chairman of the Joint Staff Council are called in if necessary. The SC is called to discuss issues such as the basic principles of national defence, relevant industrial planning and SDF mobilization orders, and it has become more active following the post-cold war changes.

Together with the JDA, the MoFA is responsible for developing security policies in Japan. The MoFA is responsible for the assessment of the international environment and security policy in general, the JDA for formulating defence policies such as the NDPO. There is broadly based and institutionalized interaction between the two organizations. The MoFA Japan–US Security and National Security Policy Divisions cooperate closely with the JDA Defense Policy and International Policy Planning Divisions and a number of officials are cross-posted at various levels.[32] This helps to reduce perception and communication gaps between the two organizations. The organization of the relevant divisions of the JDA and the MoFA is shown in figure 5.1.

Once the MTDP has been approved by the Cabinet, each service of the SDF deliberates the arms procurement plan for a five-year period. It formulates an Annual Implementation Plan (AIP) for budgeting for each fiscal year as the Japanese budget is decided annually for one year at a time. Even when the five-year planning of the MTDP is approved by the Government, it is not always funded. Only when the fiscal budget has been approved by the Diet can each service of the SDF confirm its equipment and personnel holdings for the fiscal year.[33] Actual numbers of personnel and equipment are identified as the 'present defence capability actually possessed' (*genyu boeiryoku*), on the basis of which each SDF service formulates an Annual Contingency Plan (ACP) to deal with emergencies which may occur during the year. All training for defence readiness in the SDF is based on this ACP.

[31] Hirose (note 1), pp. 54–58; and *Defense of Japan 1988* (note 12), pp. 70–71. The NDC was reorganized into the SC after emergencies such as the MiG-25 incident in Sep. 1976 and the shooting down of Korean Air Lines flight 007 by a Soviet combat aircraft in Sep. 1983.

[32] As of June 1997, 14 JDA officials were posted in the MoFA and 4 MoFA officials in the JDA. Interview with Hideki Yamaji, Japanese Ministry of Foreign Affairs, June 1997.

[33] There may be a discrepancy between planned and actual defence capability. E.g., the SDF are rarely fully manned because of the difficulty of recruiting young people. Consequently, in FY 1995 the GSDF had only 84.0% of the permitted number of personnel, the MSDF 94.9% and the ASDF 93.7%. Total SDF forces numbered 239 637 in 1995, while the authorized number was 273 801, i.e., the number of personnel was 87.5% of full capacity. *Boei Hakusho 1995* [Defence of Japan 1995] (Japan Defense Agency: Tokyo, 1995), p. 360.

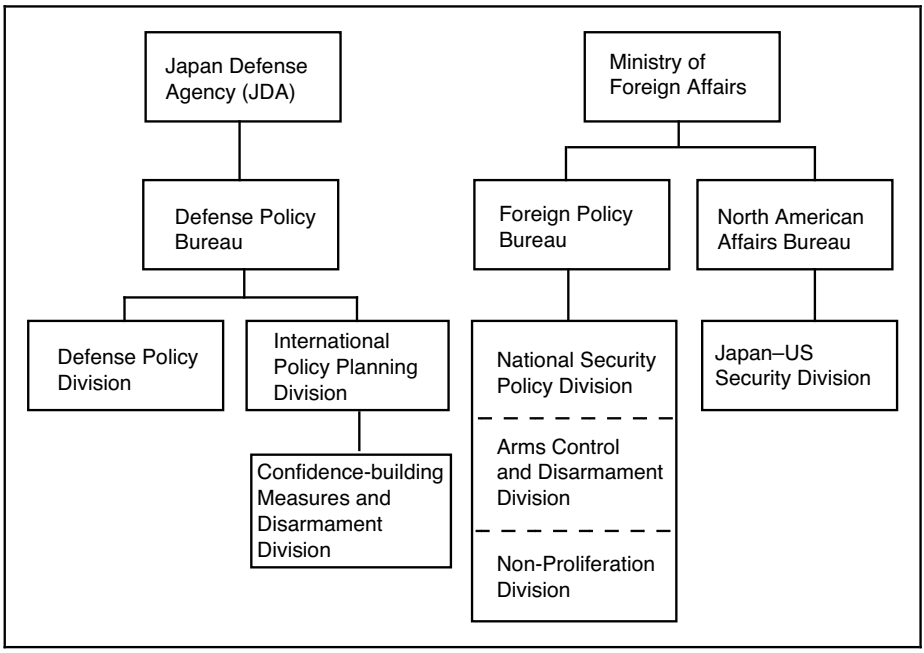

Figure 5.1. Coordination of foreign and security policy making in Japan

Source: The editor, on the basis of discussions at MoFA and the JDA in January 1996 and with MoFA staff in June 1997.

Threat assessment[34]

Although Japan was not directly threatened even during the cold war, threats to oil supplies are still a national security concern.[35] Japan's interests are so wide and its dependences so profound that its interests are best served by an international stability that cannot be maintained by the use of force. In this regard, threats to Japan continue to be potential (not actual) and multifaceted.

Interestingly, the absence of a specific military threat does not prevent Japan from modernizing its defence forces. The NDPO emphasizes the quality of defence capability in terms of equipment, and threat assessments by the JDA are based on estimations of the military forces of neighbouring countries in terms of weapon quantity and technological quality. Such information is collected through the intelligence division of the SDF and defence attachés abroad. Inevitably, arms procurement planning emphasizes advanced equipment.[36]

[34] This section is largely based on Kamata, S., 'Arms procurement procedures in Japan', SIPRI Arms Procurement Decision Making Project, Working Paper no. 39 (1995).

[35] Endicott, J. E., 'The defense policy of Japan', *The Defense Policies of Nations* (Johns Hopkins University Press: Baltimore, Md., 1982), p. 448.

[36] Some critics believe that Japanese defence programmes tend to concentrate on high-cost items of equipment without comparable logistical back-up, which would make the Japanese defence capability vul-

Endicott considers this to be an aspect of the Japanese Government's industrial policy issue rather than a defence issue *per se*.[37]

Arms procurement policy and planning

In July 1970 the JDA defined the Basic Policy for Development and Production of Defense Equipment, which provides a framework for arms procurement. It consists of five principles: (*a*) the national defence capacity is the nation's industrial and technological capacity; (*b*) arms procurement from domestic production should be promoted; (*c*) maximum use should be made of the developmental and technological capacity of civilian industry; (*d*) a long-term perspective provides a basis for good arms procurement planning; and (*e*) the principle of competition should be actively introduced.

The JDA emphasizes procurement through domestic R&D and production. This is based on three factors. First, it is possible to develop defence equipment which is optimized for the Japanese topography, physical characteristics and operational situation. Second, equipment that is produced by the domestic industry can be easily maintained and replaced. Third, improvements to the national defence technology potential will benefit industry and enhance the national defence potential.

Arms procurement in Japan has the following characteristics:

1. Although procedures are well managed by the JDA bureaucracy, the related decision making can be highly politicized. For example, arms of US origin are often preferred for political or economic reasons, such as reducing Japan's trade surplus with the USA.
2. The prohibition on arms exports (except to the USA) and low domestic demand mean that the unit costs of domestic defence production are high.
3. Since the value of defence production in Japan is low in comparison with its overall industrial production, Japanese industry has little interest in the defence sector.[38]
4. The ratios of the defence R&D budget to the total JDA budget and total R&D expenditure are both very low. Given the relatively limited defence R&D budget, indigenous weapon development increasingly relies on foreign imports (including licensed production).
5. Since inter-operability with US military equipment is regarded as vital, there is a strong preference for importing equipment and weapon systems of US origin.

nerable in a conflict of long duration. Endicott (note 35), p. 54. In the former MTDP (1991–95) more emphasis was put on the improvement of logistics in budget allocations.

[37] Endicott (note 35) presents such a view, also found in Johnson, C. *et al.*, *Politics and Productivity: How Japan's Development Strategy Works* (Harper Business: New York, 1989). On this view, development of the FS-X fighter aircraft was part of Japan's industrial (not defence) strategy to develop its aerospace industry in order to become competitive with the US aerospace industry. This view significantly influenced US decision makers during the FS-X controversy of the late 1980s.

[38] Defence production accounted for 0.61% of total industrial production in FY 1994. For a preliminary report see *Defense of Japan 1996* (note 9), p. 358.

6. Although arms procurement decision making functions well in peacetime, the low levels of equipment holdings could lead to problems during emergencies.

Arms procurement decision-making processes and procedures within the JDA

Six sub-bureaux of the JDA's Internal Bureau, Naikyoku, are directly concerned with arms procurement budget planning (see figure 5.2). The Bureau of Defense Policy is considered to be the most influential in JDA decision making. Other important JDA divisions with specific tasks are the Technical Research and Development Institute (TRDI), the National Institute for Defense Studies (NIDS), the Central Procurement Office (CPO) and the Fairness Examination Committee. The CPO is responsible for procuring arms and equipment, for which it is allocated about 20 per cent of the total JDA budget.[39]

The system of financial checks and balances within the JDA includes three institutions: the Bureau of Finance, which is responsible for the JDA's budget; the Chief of Staff of each SDF service, which requests specific defence equipment; and the CPO, which is in charge of procurement based on requirements from each Chief of Staff (see figure 5.3). Since these three are directly involved in arms procurement decision-making with different roles and competences, they also monitor and balance each other through consultation in the course of the process. For instance, in the case of relatively large procurement orders, the Director of the CPO consults an advisory group, comprising the directors of various divisions within the CPO and the section heads of each SDF service and the TRDI involved with procurement.[40] The advisory group examines the propriety of contracts (non-competitive or limited competition) and the competence of manufacturers who receive orders. Within the CPO the authority for monitoring arms procurement is divided into functional subdivisions such as cost accounting, contracting, supervision and inspection, and financing.

In addition to these horizontal (within the CPO) and vertical (within the JDA) divisions of the arms procurement functions, professional tension between the JDA civilian staff and SDF staff also contributes to build in checks and balances. Furthermore, since officials are seconded from the MoFA, the MoF and MITI to key positions in the JDA's Internal Bureau, these ministries exercise considerable influence over decision making.[41] Although this is an efficient method of control of and coordination with the military, it also provides considerable opportunities for JDA officials and uniformed staff to lobby influential ministries for their favoured projects.[42]

[39] 'Chotatsu Jisshi Honbu no Gaikyo' [Outline of the CPO], Unpublished paper, Japan Defense Agency, Tokyo, 1995.
[40] *Chuo Chotatsu* [CPO bulletin], no. 12 (1 Mar. 1992).
[41] Chinworth (note 3), p. 3; and various editions of *Boei Nenkan* [Defence yearbook] (Japan Defense Agency, Tokyo).
[42] Chinworth (note 3).

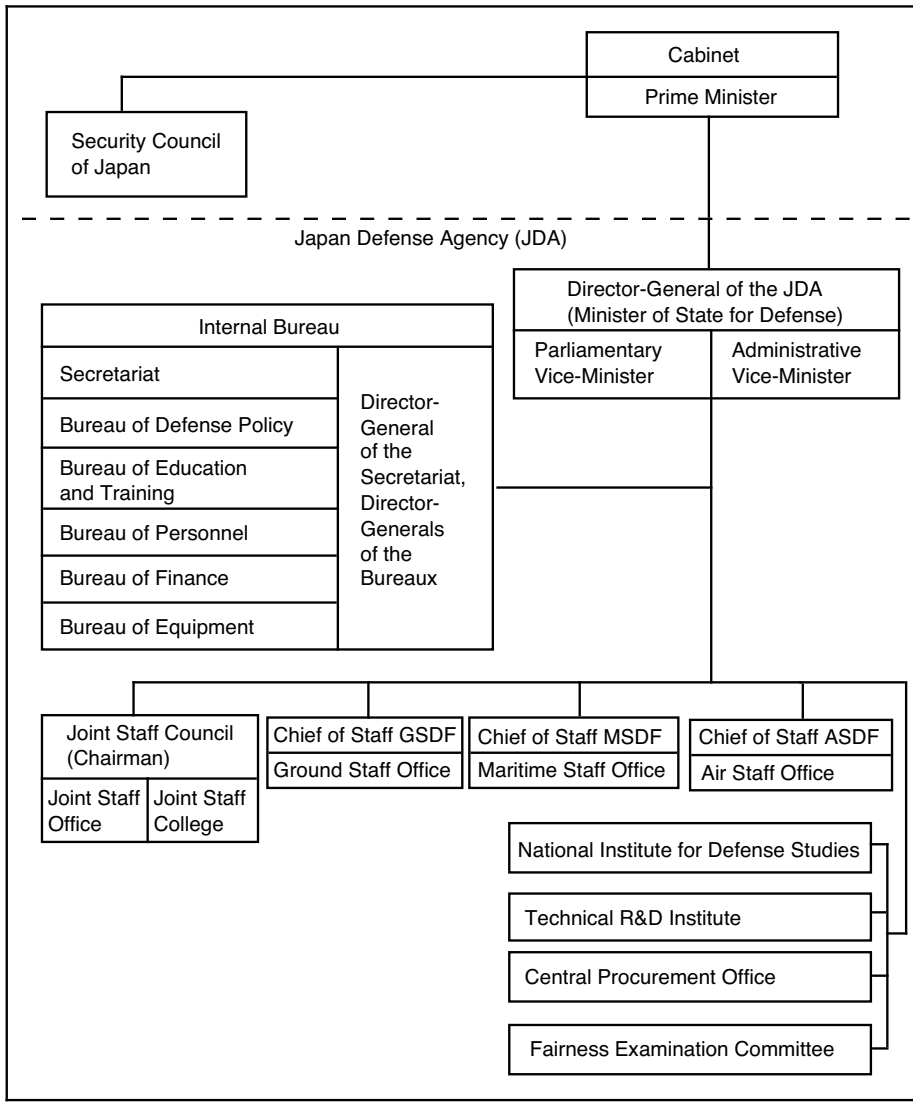

Figure 5.2. Actors involved in arms procurement decision making in the Japan Defense Agency and the Self-Defense Forces

Notes: GSDF = Ground Self-Defense Force; MSDF = Maritime Self-Defense Force; ASDF = Air Self-Defense Force.

Source: Defense of Japan 1996 (Japan Defense Agency: Tokyo, 1996), p. 337.

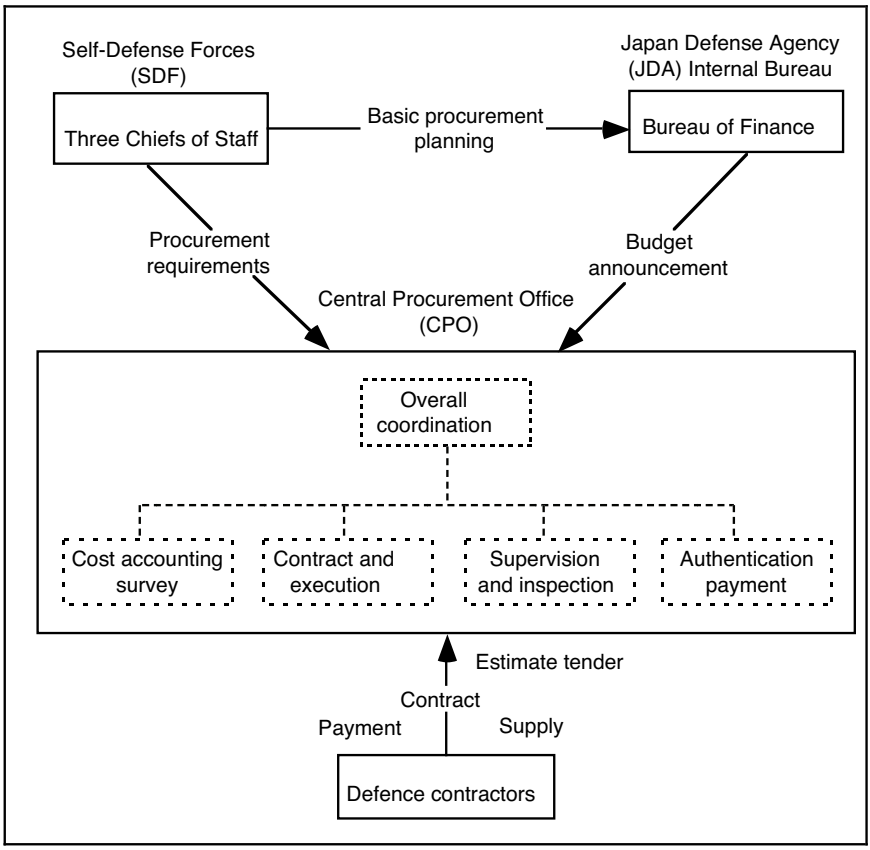

Figure 5.3. The role of the Japanese Central Procurement Office in the arms procurement decision-making process

Source: Summary of the Central Procurement Office 1995 (CPO: Tokyo, 1995).

III. Defence budgeting[43]

Features of the Japanese defence budget

During the period of rapid economic growth in the 1960s, Japan's defence budget increased by over 10 per cent annually, although it only accounted for approximately 1.2 per cent of GNP. The guideline of 1 per cent of GNP for defence expenditure introduced in 1976, initially based on financial rather than political considerations, has been retained and gained wider consensus.[44]

[43] This section is largely based on Shikata (note 14); Matsumoto, M. and Iwashima, H., 'Arms procurement budget planning process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 36 (1995); and Hamada, Y., 'Building public competence and accountability in the national security arena', SIPRI Arms Procurement Decision Making Project, Working Paper no. 38 (1995).

[44] See section II in this chapter.

Table 5.3. Changes in the composition of Japanese defence expenditure (original budget), FYs 1992–96

Figures are percentages of the total defence budget. Because of the conventions of rounding they may not add up to totals.

Item	1992	1993	1994	1995	1996
Personnel provisions	41.3	41.8	42.6	43.9	42.8
Supplies	58.7	58.2	57.4	56.1	57.2
Equipment procurement[a]	25.1	23.3	21.3	18.4	18.9
R&D	2.5	2.7	2.7	3.0	3.1
Facility improvement	3.6	4.3	4.3	4.6	4.7
Maintenance[b]	16.4	16.3	16.9	17.6	18.0
Base countermeasures	9.9	10.4	10.8	11.2	11.0
Other	1.2	1.3	1.3	1.3	1.4
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

[a] Includes expenditure for weapons, aircraft and vessels.

[b] Includes expenditure for housing, clothing and training.

Source: Defense of Japan 1996 (Japan Defense Agency: Tokyo, 1996), p. 300.

The defence budget, drafted by the MoF, is divided into two broad categories of expenditure: personnel provisions and 'supplies'. The former encompasses all expenditures related to personnel, such as the JDA's operating costs, housing, clothing, training, salaries for the SDF and the labour cost of maintaining the US defence bases in Japan.[45] 'Supplies' consist of arms and equipment procurement, R&D expenses, facility and maintenance expenses, and expenses for host nation support to the US military forces stationed in Japan, which account for over 10 per cent of the total defence budget.[46] On average, in fiscal years (FYs) 1992–96, 42.5 per cent of the defence budget was allocated for personnel provisions and 57.5 per cent for supplies, including 21.4 per cent for equipment procurement and 2.8 per cent for R&D. Changes in the composition of defence expenditures in FYs 1992–96 are presented in table 5.3.

Despite an increase in the share of capital expenditure (equipment procurement and R&D), the share of equipment procurement has decreased since FY 1992. On the other hand, the share of R&D has increased continuously, which is the budget allocated for the JDA's R&D institute (the TRDI) and its testing and evaluation costs. Japan's defence R&D also benefits from extensive Japanese investment in industrial R&D.

Obligatory outlays are a further feature of Japan's defence budget. The JDA makes payments to contractors for items of defence equipment using a system

[45] US Defense Budget Project, *Backgrounder: Japan's Defense Budget*, Rev. 26 (DBP: Washington, DC, July 1993), pp. 11–12.

[46] In 1991 the total value of Japan's contribution to the USA covered 40% of the total cost of maintaining the US forces in Japan. Embassy of Japan, *Japan's Host Nation Support* (Embassy of Japan: Washington, DC, 1991), cited in US Defense Budget Project (note 45).

Table 5.4. Budget allocations to the Japanese Self-Defense Forces, 1992–96
Figures are percentages.

	1992	1993	1994	1995	1996
GSDF	35.9	35.9	36.4	37.7	37.0
MSDF	24.2	23.4	23.7	22.4	23.1
ASDF	25.3	25.4	24.2	23.4	23.5
Other	14.6	15.3	15.8	16.5	16.5

Notes: GSDF = Ground Self-Defense Forces; MSDF = Marine Self-Defense Forces; ASDF = Air Self-Defense Forces.

Source: Boei Hakusho [Defence of Japan] (Japan Defense Agency: Tokyo), various editions.

of deferred payment (*saimu futan koi*):[47] the JDA usually pays a minimal sum to private companies for projects in the first year and then pays the rest over a period of between one and five years (maximum five years) depending on the lead time for procurement or production of the equipment. An increasing share of each year's budget tends to be absorbed by deferred payments for systems acquired in past years.[48] The total sum of money that the JDA owes to manufacturers constitutes a current-year obligatory outlay (*saishutuka keihi*) and is earmarked in any one fiscal year's defence budget to past expenses.[49] This causes rigidity in Japan's defence budget.

As indicated in table 5.4, budget allocations to the three SDF services have not changed much because a major part of the budget is for personnel and provisions.[50] The MSDF and ASDF receive heavy allocations for equipment procurement which, according to Muroyama, reflects the equipment intensity of these services since the 1976 NDPO.[51]

The budget planning process for procurement

The defence budgeting process[52]

Defence budget planning in the JDA is carried out concurrently with defence planning, in coordination with the MoF, the MoFA and MITI. The method of coordination is characterized not so much by formality and institutions as by compromise and consensus building in which *nemawashi* ('laying the groundwork') and *ringisei* (consultation or 'piling-up system') are essential concepts.

[47] *Boei Hakusho* (Japan Defense Agency: Tokyo, various editions); and US Defense Budget Project (note 45).

[48] Interview by the author with Naohiko Oshima, Defence Production Committee of Keidanren, May 1997.

[49] *Defense of Japan 1996* (note 9), p. 127; *Boei Hakusho 1995* (note 33), p. 115; *Boei Hakusho 1994* (Japan Defense Agency: Tokyo, 1994), p. 126; and US Defense Budget Project (note 45).

[50] Shikata (note 14).

[51] In FY 1990 the per capita cost of services personnel (in 10 000 yen) was 820 in the GSDF, 2121 in the MSDF and 2361 in the ASDF. Muroyama (note 1).

[52] This section is based on Kamata (note 34).

Table 5.5. Annual process of compiling the Japanese defence budget

Period	Action
April	Japan Defense Agency (JDA) drafts budget estimates for next fiscal year
June–July	Cabinet decides budgeting policy for approximate demands which are announced by Ministry of Finance (MoF)
End of August	JDA submits approximate budget requests
September	JDA gives MoF a detailed explanation of its approximate budget requests
October	MoF reviews and coordinates budget requests. Cabinet approves budget policy
December	MoF prepares draft which is submitted to the Cabinet. Cabinet approves this draft. JDA receives the draft
Late December	JDA liaises with MoF about rejected budgetary requests at the working and ministerial levels
	Government finalizes budget bill
January	Government submits budget bill to Diet

Source: Kamata, S., 'Arms procurement procedures in Japan', SIPRI Arms Procurement Decision Making Project, Working Paper no. 39 (1995).

The former involves talking with the parties concerned so as to prepare them to 'accept' a plan; the latter means that plans drawn up by lower-level officials circulate among officials at higher levels to win their approval.[53] These are traditional Japanese concepts emphasizing harmony, genuine agreement and solidarity rather than open debate and confrontation between institutions.

The MoF has great influence on the defence budget since the Director-General of the JDA's Defense Policy Bureau is usually a former MoF official. JDA officials from the Equipment and Finance Bureaux have discussions with MoF officials before formally submitting the budget proposal, usually around August. Based on MoF budget guidelines, a second round of negotiations usually continues until early December, when the MoF approves a level of defence funding which reflects a consensus among all the agencies involved. During this process, MITI exerts influence through the JDA's Equipment Bureau for defence R&D and production.[54] Other actors, such as the defence industry and influential politicians, use informal contacts to influence the JDA's draft plans. Once the MoF approves a budget plan, it is submitted to the Diet for approval. Table 5.5 outlines the Japanese defence budget process.

[53] van Wolferen, K., *The Enigma of Japanese Power: People and Politics in a Stateless Nation* (Macmillan: London, 1989), pp. 338–39. As van Wolferen indicates, the Japanese use the word 'consensus' to describe what is made to appear to be genuine agreement (but often is not) and 'to arrive at consensus' often means 'nobody concerned wants to take the risk or the trouble of resisting what a stronger person or group wants to happen'.

[54] The position of Director-General of the Equipment Bureau, who is in charge of procurement selection and the allocation of defence production contracts, is filled by a MITI official. Chinworth (note 3), p. 3. This has a historical background: MITI's predecessor before 1945 was the Ministry of Commerce and Industry (1931–43) and during the war period the Ministry of Ordnance, which achieved full state control of the economy. Johnson (note 4), p. 166.

The MoF checks the defence budget in accordance with the general principles of the national budget system—efficient distribution of funds, cost–benefit advantages and economic viability. The MoF Budget Bureau is responsible for compiling, supervising and controlling implementation of the budget, preparing statements of accounts and making allocations to each ministry and agency. Despite its strict budgeting principles, the MoF allows some exceptions such as deferred payments and the possibility to alter the initial budget as part of mid-term planning, for instance, for the MTDP or for special purposes. Types and quantity of equipment deemed necessary for procurement are fixed in the MTDP for a five-year period, but they become part of the budget with each new fiscal year. The MTDP budget is subject to change year by year depending on the national budget.[55]

Cost assessment, price negotiating and contracting procedures[56]

Calculations in defence budgeting are based on unit cost. The materials and equipment procured by the SDF fall into three categories: general materials, domestic equipment (including R&D) and imported equipment. There are also three types of contract: competitive, designated and specific. Domestic procurement includes indigenous and licensed production, while imported goods are purchased through government-to-government contracts (e.g., foreign military sales) as well as commercial contracts with arms-manufacturing companies.

Since the development and production of defence equipment require special design capabilities and the most advanced technologies, contracting on a competitive basis is often found to be an unsatisfactory solution. A large proportion of arms procurement is contracted on a non-competitive basis because the JDA requires special and complex designs and highly advanced technological capabilities, and companies are highly specialized.[57] MITI and the defence industry, represented by the DPC of Keidanren, prefer stability and consistency in arms procurement contracts.[58]

Foreign procurement can involve a combination of government, licensed and commercial contract. There is no fixed formula for contracting since procure-

[55] E.g., the MTDP for FYs 1991–95, approved in Dec. 1991, was budgeted at a total cost of 22.75 trillion yen (at 1990 prices). With the end of the cold war, the total cost was revised to 22.17 trillion yen in Dec. 1992, and further to 21.8 trillion yen in Dec. 1994. *Boei Nenkan 1995* [Defence yearbook] (Japan Defense Agency: Tokyo, 1995), pp. 460–63. On the other hand, for the FY 1996 budget, 4.85 trillion yen—an increase of 2.58%—was approved by the cabinet. The increase is partly because of deferred payments for major procurement in previous years. It is also believed that the new JDA administrative vice-minister, who is originally from the MoF, might have successfully persuaded his former MoF colleagues to approve it. *Asahi Shimbun*, 26 Dec. 1995.

[56] This section is based on Matsumoto and Iwashima (note 43).

[57] In FY 1995, 86% of defence contracts (in price terms) were awarded without competition and the remaining 14% of the JDA contracts had limited competition and competitive bidding. 'Chotatsu Jisshi Honbu no Gaikyo' (note 39). See also US Defense Budget Project (note 45), p. 15.

[58] In response to down-sizing after the cold war and tight fiscal conditions, the Defense Equipment Acquisition Advisory Group was set up in Mar. 1993 as a non-official advisory group of private experts under the initiative of the Director-General of the JDA Equipment Bureau. The group's report emphasizes the importance of cost reduction, rationalization and efficiency in defence procurement, such as standardization of specifications for defence equipment.

ment methods for certain critical equipment, such as aircraft, are complex.[59] Manufacturers are required to submit an estimate which is checked by CPO staff specializing in prime cost calculation. A detailed contract is then drawn up and exchanged, and delivery terms are set as well as penalties in case of disagreement. Prior to delivery, strict inspections are made by JDA specialists. For domestic production, on-site supervision is mandatory, with an attendant specialist permanently stationed at the production site.

Legislative oversight and budget auditing[60]

All defence plans, including arms procurement approved by the cabinet, must be examined by the SC and the Budget Committee of the Diet. The Diet is responsible for oversight of arms procurement decision making. However, the SC and the Diet seldom revise defence-related programmes prepared and processed by the bureaucrats.[61] Outlines of defence programmes are passed on to the public through the media only at the legislative stage, when all that remains is for them to be signed. Preliminary planning is seldom made known to the public.

In the Diet, the budget bill and overall security policies are examined at a plenary session of the Diet by the SC and the Budget Committee in the context of national priorities. Under the LDP-dominated governments, active debates occasionally occurred on defence issues, including the Diet's arms procurement decisions, but such debate has seldom had any substantial impact on defence programmes once they have been formulated by bureaucrats and approved by the Cabinet. The opposition parties have not had the knowledge or capacity to formulate and present to the Government alternative programmes or plans.

Although defence issues rarely catch public attention, comments of defence experts and scholars are occasionally presented in the media. Usually, however, the Japanese public do not have enough information to engage actively in a public debate on defence issues. Any controversy on defence issues is often the outcome of public opinion shaped by the media. Defence-related information is, however, available to the public to a certain extent: details of defence equipment procured, even the precise number of bullets, are listed in a budget bill. These data are also to a great extent available in the annual defence White Paper (*Boei Hakusho*) and defence yearbook (*Boei Nenkan*) issued by the JDA.

[59] The YS-11 medium transport aircraft was a domestic, specific contract. Although the E-2C early-warning aircraft and C-130 transport aircraft were ordered through government contracts, the completed aircraft were purchased through Japanese trade agencies. The F-15 combat aircraft and P-3C maritime patrol aircraft are also ordered through government contracts but are domestically produced under US licence. The F-1 combat aircraft, T-2 training aircraft and C-1 transport aircraft are mostly products of domestic R&D and production.

[60] This section is based on Hamada (note 43).

[61] Unlike the US National Security Council, the Japanese SC does not examine policies from the early stages. It plays a minor role in defence policy making since its members represent the same government bodies that negotiate the details of defence issues and during final deliberations choose to 'sign off' on major decisions. However, when there is a severe deadlock that cannot be resolved through routine processes (as was the case with procurement of the F-15), the SC's high-level decision may be important. Chinworth (note 3), p. 23.

In this sense, transparency in arms procurement is fairly well developed. Nevertheless, procurement planning and decision making are done behind closed doors and explanations of arms procurement decisions in official reports are superficial. The public only has access to snatches of prosaic figures without any understanding of the context.

Auditing for arms procurement is the same as that of other governmental agencies and special treatment is not extended to the defence sector. The Board of Audit[62] carries out a strict and fixed annual audit, pointing out illegal or irrational expenditure, and it often exposes details of misuse or incorrect use of national funds, such as overestimation of costs and under-utilization of facilities or equipment in public institutions. The JDA is not exempted from this scrutiny. In addition, a departmental audit is periodically carried out within the JDA to ensure that no errors occur and that there is an effective system of checks. The CPO has its own auditing section answering to the Board of Audit in the annual audit.[63] The CPO's internal audit sections, such as those for cost calculation and cost control, calculate the manufacturing costs of defence equipment and visit the JDA contractors to discuss aspects such as prices and costs of weapon programmes. The JDA and the CPO are organized so as to ensure maintenance of the principle of mutual surveillance and mutual checking of arms procurement among divisions of the JDA.[64] Although there have been scandals in the past, such as the Lockheed scandal,[65] very few corruption cases have been disclosed in connection with arms procurement in Japan.

IV. R&D and domestic production in arms procurement

Defence R&D in Japan[66]

R&D planning and the budget process

Generally in Japan both basic and applied research are actively undertaken by the civilian sector. According to data from 1995, total R&D expenditure (civilian and military) in Japan was 14 400 billion yen (*c*. 2.99 per cent of gross domestic product, GDP, or $153.1 billion[67]). The ratio of government-funded

[62] The Board of Audit is a public-sector authority whose duty is to monitor and audit government finances. It is independent of the Cabinet. Its Director is chosen by vote by the audit commissioners and appointed by the Cabinet on agreement of both houses of the Diet. It reports annually to the Diet.

[63] 'Chotatsu Jisshi Honbu no Gaikyo' (note 39).

[64] 'Chotatsu Jisshi Honbu no Gaikyo' (note 39), p. 19.

[65] The Lockheed scandal is said to be the biggest scandal concerning the Japanese Government and business circles in the post-war period. It was first disclosed in 1976 in testimony before the US Congress Committee on Foreign Affairs that Lockheed, in trying to sell commercial aircraft to Japan, had bribed some top Japanese politicians, including Prime Minister Tanaka, ministers of transport and leading business figures, to a total of 3 billion yen. The suspected top politicians were found guilty in 1987. Japan Association of Aerospace Industry, *Imidas 1996* (Shuei-sha: Tokyo, 1996) (in Japanese); and *Nihon no Koku-Uchu Kogyo Sengoshi* [Post-war history of the Japanese aerospace industry] (Japanese Aerospace Industry Association: Tokyo, 1987).

[66] This section is largely based on Suzuki, T., 'Defence R&D in Japan', SIPRI Arms Procurement Decision Making Project, Working Paper no. 37 (1996) and follow-up interviews with him.

[67] The figure is based on the 1995 IMF average exchange rate of 94.06 yen = $1.

Table 5.6. Government expenditure on defence R&D in select countries
Figures in italics are percentages.

Country	Year	Defence R&D expenditure (1995 US $m.)	% of total military expenditure
USA	1996	37 000	*14.0*
France	1996	4 900	*11.0*
UK	1996	3 200	*9.5*
Germany	1996	2 200	*5.5*
Japan	1996	1 800	*3.5*
China	1994	1 000	*<4.0*
Russia	1996	990	*5.1*
South Korea	1996	460	*3.0*
Taiwan	1994	350	*3.3*

Source: Arnett, E., 'Military research and development', *SIPRI Yearbook 1998: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1998), p. 268.

R&D expenditure (civilian and military) to total R&D expenditure was 17.3 per cent. Defence-related R&D expenditure (the budget allocated to the JDA) comprised 6.2 per cent of total government-funded R&D expenditure in 1995.[68] Table 5.6 shows the figures for government expenditure on defence R&D in Japan in relation to those for other industrialized countries and some neighbouring countries. In relation to other advanced industrialized countries Japan's defence R&D expenditure may appear low, but in comparison with that of neighbouring states it is quite competitive.

The TRDI is the only body responsible for R&D within the JDA. Since its budget is limited, its principles are: (*a*) to focus on basic technologies for developing tactical weapon technologies; (*b*) to use dual-use technologies developed in civilian sectors; (*c*) to have no technical cooperation with other countries except the USA; and (*d*) to have no production capability within the JDA.

Of the TRDI staff of just under 1200, around 800 are engineers, and of these 265 are from the SDF. This ensures that the requirements of the users (the three services of the SDF) are well reflected in the TRDI's projects. SDF staff usually return to the parent service after a few years with the TRDI. It generally allocates civilian engineers for research work and SDF engineers for development work. While the TRDI is in charge of research, test and evaluation, and prototype/model manufacturing, the SDF carry out operational test and evaluation and operational research, thereby mobilizing expertise from both civilian and military backgrounds for maintaining defence R&D competitiveness. The organization of the TRDI is shown in figure 5.4.

[68] Organisation for Economic Co-operation and Development, *Main Science and Technology Indicators*, no. 1 (1997).

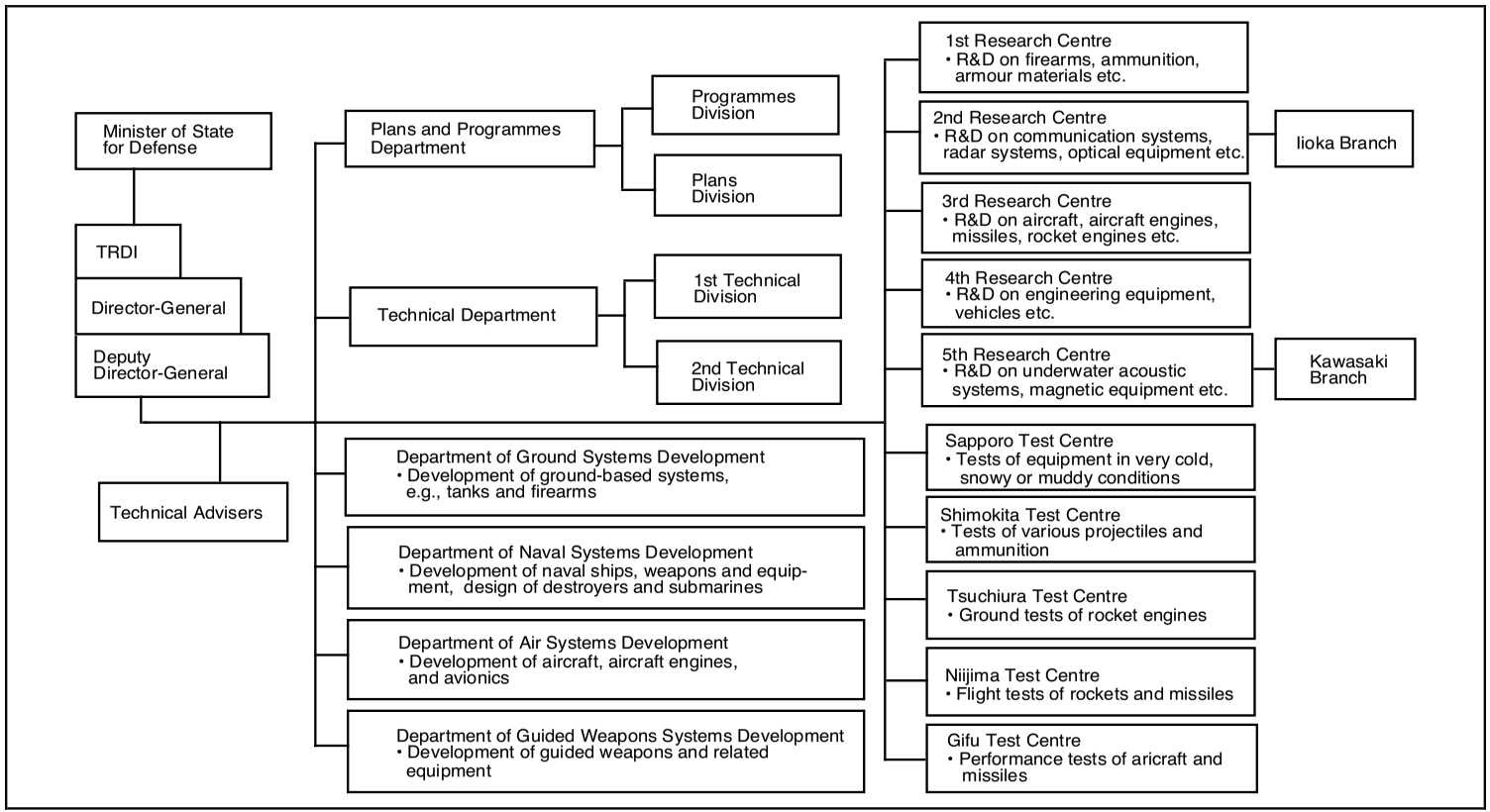

Figure 5.4. The organization of the Japanese Technical Research and Development Institute

Source: Information brochure about the Japanese Technical Research and Development Institute, Japan Defense Agency, 1990.

The TRDI is responsible for technology forecasting and for identifying civilian industrial technologies for possible applications in the defence sector. However, there is no established institutional channel for the transfer of technology from the civilian to the defence sector. Instead, transfer occurs on an ad hoc basis: the TRDI finds new ideas and technologies that could have possible applications in defence technologies through newspapers, conferences and workshops, and individual researchers in private companies occasionally present commercial technologies which could be applied to military use.[69]

There are 10 stages in the R&D process.

1. Long- and medium-term R&D planning, including research on key technologies and components. Each of the three SDF services provides forecasts of future operational requirements, technological feasibility, development costs and time-frames, international R&D trends, and so on.
2. The SDF and TRDI staff jointly carry out a concept exploration of the proposed equipment and possible technological trade-offs between the JDA's operational requirements and the TRDI's equipment development plans. The defence industrial entities are asked to present plans for manufacture.
3. The TRDI develops the concept design, estimates the necessary time-frame, costs and expected performance in the case of domestic development, and drafts an R&D plan. R&D planning and evaluation are basically carried out at the following levels. At the TRDI, an internal committee under its Director-General, consisting of engineers involved in the specific R&D programme, makes a draft for R&D planning and evaluation which is submitted to a JDA committee. This latter is chaired by the JDA administrative vice-minister and comprises the directors of the Finance, Equipment and Defense Policy Bureaux, the Chairman of the Joint Staff Council, the Chief of Staff of each SDF service, and the directors of the TRDI and the CPO. Other experts are invited as required. For major R&D projects, such as tanks or aircraft, the project has to be approved by the MoF, the Security Council, the Cabinet and finally the Diet.
4. The Government's decision to start development and the armed forces' request to proceed to development are received.
5. Equipment research and design follows, engineering models are developed and the models are tested against requirements.
6. A TRDI committee evaluates the prototype's draft design and a selected company develops the engineering prototype.
7. Prototype development is followed by engineering and operational tests.
8. The results are evaluated by the TRDI committee and then by a committee of the JDA's Internal Bureau.
9. If domestic development is chosen, this is first evaluated by the TRDI committee and then by the committee of the JDA's Internal Bureau.
10. The decision to continue to production is based on discussions between the TRDI and the defence equipment evaluation committee of the JDA, and

[69] Interview by the author with Teruo Suzuki, former TRDI Director, Sep. 1995.

finally the project's R&D budget is evaluated by the JDA's Internal Bureau and the MoF. The prototype manufacturing phase in Japan usually overlaps with the engineering development phase because R&D funds are limited.

Both domestically produced and imported equipment are tested operationally by the SDF, which then prepare an operation manual for the equipment. Afterwards the equipment is deployed to SDF units. Defence R&D planning in Japan is illustrated in a flow-chart in figure 5.5.

When an MTDP is formulated, the JDA's Internal Bureau examines the plan on the basis of the equipment requests of each SDF Chief of Staff. Large-scale development projects must be approved by the SC, which considers the following criteria: (*a*) how far it meets the military's operational requirements; (*b*) life-cycle costs; and (*c*) the maintenance of a defence manufacturing infrastructure and technology in Japan. Proposed domestic development projects are usually compared to similar products abroad in terms of performance, price, maintenance and supply. (There are limitations in such comparisons because of exchange-rate fluctuations and inflation.) When it is evident that domestic development is disadvantageous, plans are made to procure the equipment by import and/or licensed production (*donyu*, introduction of foreign goods).[70]

Problems and limitations of defence R&D in Japan

Five major factors constrain defence R&D in Japan.

1. The scale of production is small, and arms exports and defence technical cooperation with foreign countries are prohibited, except with the USA. Consequently, defence R&D is very dependent on civilian technology, and there have been many successful examples of spin-on.[71] On the other hand, there are very few examples of technology spin-offs.

2. Availability of advanced engineering skills is limited. There is no research collaboration between the JDA and the universities or national laboratories.[72] Although cooperation between the JDA and private industry does not particularly take the form of collaborative research projects, the JDA inevitably cooperates closely with industry during the prototype production phases.

3. Despite the importance attached to long-term basic R&D, no specific allocations in the R&D budget are given to important R&D projects in the mid- or long-term plans. In striking contrast with major civilian projects, such as nuclear power plants (e.g., plutonium breeder reactors) and rockets (e.g., the H-1 and H-2) which have been supported for decades by MITI and the Japanese Agency of Science and Technology, the current budgeting system based on

[70] A number of items of major equipment are procured from abroad in this way, for example, the F-15 fighter-interceptor, the Patriot surface-to-air missile, the Aegis naval air defence system and the M-110A2 203-mm howitzer.

[71] The charge-couple device system for the portable surface-to-air missile and the liquid crystal display system for the FS-X are examples of such spin-ons.

[72] In the light of Japan's pre-1945 history of militarism, most Japanese universities and academics have avoided military-related research.

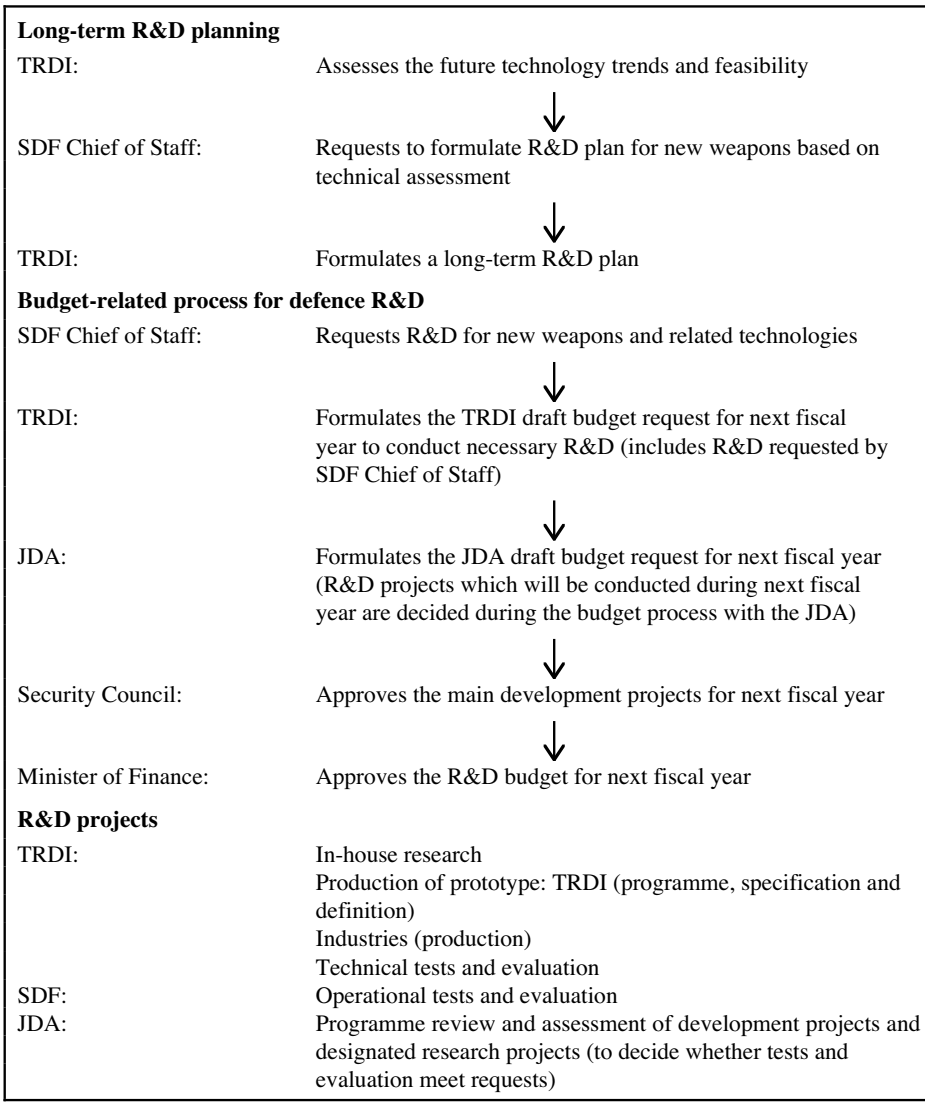

Figure 5.5. Flow-chart of defence R&D planning in Japan

Notes: TRDI = Technical Research and Development Institute; SDF = Self-Defense Forces; JDA = Japan Defense Agency.

Source: Suzuki, T., 'Policy decision for R&D efforts in weapon procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 37 (1995).

single fiscal-year allocations makes long-term R&D planning difficult. It would require identification of financial allocations for specific defence R&D projects in the MTDP. In addition, major projects such as the FS-X fighter aircraft (now called the F-2) consume the TRDI's limited budget for basic R&D.

4. The number of large companies in the defence industry with an in-house R&D capacity is limited, except in the electronics industry. Competition in other fields is insignificant.

5. Maintenance of core technological capabilities is considered essential. For example, in the absence of large-scale ongoing R&D projects in the field of aircraft, missiles or electronics technologies the TRDI facilitates the setting up of research projects.[73] However, without a good definition of operational needs, defence R&D for the maintenance of core technologies is difficult. Prototype development and production planning are equally important to the maintenance of technological capacities. As the defence budget constraints make moving from the development to the production phase difficult, concepts like 'prototype plus' and 'experimental production for technological demonstration before moving into a full-scale production phase' are adopted.[74] As and when operational needs emerge, the prototype may be converted for full-scale production.

As a substantial part of the defence R&D effort is in private industry and the constraints on the defence budget have serious implications for the industry, initiatives are being taken to convert defence R&D to civilian R&D. These include rationalization and transferring defence-related engineers to civilian divisions.[75] The efforts to rationalize defence divisions in the industry include reductions of defence production lines, reallocation of manpower and restraining investment in defence-related plant and equipment.[76] Japanese defence R&D actors are also seeking a major multinational R&D project such as the theatre missile defence (TMD) system, closer access to R&D in the universities, the creation of an institution like the US Advanced Research Project Agency (ARPA), and opportunities to improve access to information on technology.

[73] According to Teruo Suzuki, the significance of TRDI funding is that it gives the Japanese Government ownership of patent rights. Under normal circumstances the government negotiates a royalty-free licence with firms which exploit its patents, allowing companies to profit from their programmes while enabling government agencies to fulfil their own ambitions as well. Chinworth (note 3), p. 199.

[74] 'Prototype plus' means a prototype which has the potential to be produced full-scale for actual use but is produced on a small scale mainly for studying its technology and operation because of budget shortfalls and imminent need. 'Experimental production for technological demonstration' means that there is no initial plan for full-scale production, which is undertaken mainly to provide a test-bed for developing new technologies. In Japan there is the example of the *Asuka*, completed in 1995—a ship with new technologies for radar, sonar and propulsion. Suzuki (note 66); and *Defense of Japan 1996* (note 9), p. 113.

[75] For instance, the shipbuilding divisions of Ishikawajima-Harima Heavy Industries and Sumitomo Heavy Industries cooperatively set up a new subsidiary in 1995—Marine United—with the specific purpose of designing ships, as an effort to rationalize defence R&D.

[76] *Boei Hakusho 1995* (note 33), p. 215. The number of defence-related personnel is being reduced through transfers to other divisions or branch companies and by restricting the recruitment of new personnel. As the current MTDP (1996–2000) continues to constrain the front-line equipment budget, the major defence firms will continue to reduce their defence divisions by about 5%. *Nihon Keizai Shimbun*, 5 Jan. 1996.

Table 5.7. Ratios of defence production to industrial production and of domestic procurement to total procurement in Japan, 1985–94

Figures are percentages.

Year	Defence production as % of industrial production	Domestic procurement as % of total JDA procurement[a]
1985	0.51	90.9
1988	0.54	91.3
1991	0.55	90.0
1994	0.61	88.5

[a] Includes licensed production.

Source: 'Survey on procurement contracts of equipment', *Defense of Japan 1996* (Japan Defense Agency: Tokyo, 1996), pp. 357–58.

Arms production in Japan[77]

Scale and features of arms production in Japan

The Three Principles on Arms Export[78] and the 1976 government guidelines on arms control policy prohibit arms exports (including defence co-production and co-development with foreign partners) except to the USA, and the JDA is virtually the only source of demand for the Japanese defence industry.[79] Consequently, the defence market and defence production in Japan are small. Some industries, such as aircraft and shipbuilding, are more dependent on defence production owing to the limited market for their commercial production.[80] Japanese defence equipment tends to be expensive compared to that of international competitors. In FY 1994 the ratio of total defence production to total industrial production by value was 0.61 per cent (see table 5.7).

The share of defence production in total industrial production by value of contracts in 1994 is shown in table 5.8. In general, defence and civilian production lines are collocated, since most of the production line and facilities for defence production are owned by private industry. Exceptions are made in cases requiring secrecy, when defence production maintains production lines for its exclusive use. In addition to being cost-effective, this method reduces dependence on defence production in Japanese companies. For instance, in the aircraft industry assembly work is carried out for both civilian and military aircraft in the same factory. When the workload is heavy on the civilian aircraft

[77] This section is mainly based on Oshima, N., 'Defence production in Japan', SIPRI Arms Procurement Decision Making Project, Working Paper no. 34 (1995).

[78] See note 25.

[79] Transfer of Japanese military technologies to the USA became an exception to the Three Principles on Arms Export and the 1976 government policy guidelines on arms control in 1985 when the Exchange of Notes on Transfer of Military Technologies to the US of 1983 and the Detailed Arrangements for Transfer of Military Technologies were signed by the 2 governments.

[80] For details, see, e.g., Ikegami-Andersson, M., 'Japan: latent but large supplier of dual-use technology', ed. H. Wulf, SIPRI, *Arms Industry Limited* (Oxford University Press: Oxford, 1993).

Table 5.8. Defence production by category as a percentage of total industrial production in Japan, 1994 (preliminary)

Figures are value of contracts in m. yen. Figures in italics are percentages.

Category	Production for the JDA (A)	Special demands, US forces in Japan (B)	Defence production (C) = (A+B)	Total industrial production (D)	Defence production as % of total production (C as % of D)
Ships	243 380	. .	243 380	2 763 221	*8.81*
Aircraft	551 346	1 501	552 847	754 897	*73.23*
Vehicles	25 139	. .	25 139	40 800 631	*0.06*
Ammunition	414 230	. .	414 230	414 759	*99.87*
Electronics	302 341	. .	302 341	51 672 133	*0.59*
Oil products	48 353	. .	48 353	7 491 700	*0.65*
Textiles	18 232	. .	18 232	9 886 999	*0.18*
Medical products	8 063	. .	8 063	5 723 105	*0.14*
Food	34 778	. .	34 778	34 647 102	*0.10*
Other	181 411	. .	181 411	143 840 606	*0.13*
Total	**1 827 273**	**1 501**	**1 828 774**	**297 995 153**	***0.61***

Source: Boei Handobukku 1997 [Defence handbook] (Asakumo-Shimbun: Tokyo, 1997).

assembly lines, workers and engineers from the military section can be flexibly allocated to the civilian line (and vice versa). Defence-related and civilian work are also combined for production of spare parts and for repairs. In overhaul work, the situation is similar, but on a limited scale. Since private industry maintains sophisticated machine tools and facilities for defence-related production and repair through its own investment, companies try to use them as efficiently as possible, which also leads to an interchange of engineers between civilian and defence R&D.

In spite of such efforts by the industry, the financial situation of defence production is becoming difficult. Within the procurement budget, the budget for combat equipment, which mostly means domestic defence production, is shrinking.[81] Although shrinking defence demand does not endanger the major defence-related companies themselves, which are less dependent on defence production, it affects many smaller subcontractors that are strongly dependent on defence contracts.[82]

[81] Since FY 1992 expenditure on front-line equipment has decreased annually: to 994 billion yen (– 6.0% from previous year) in 1992, 918 billion yen (– 7.6%) in 1993, 894 billion yen (– 2.6%) in 1994, and 758 billion yen (– 15.3%) in 1995. During the 1991–95 MTDP, the 5-year accumulated budget for front-line equipment was initially about 5 trillion yen (in 1990 prices) and was cut to 4.44 trillion yen in 1993. *Boei Nenkan 1995* (note 55), p. 476.

[82] Medium and small defence industries face serious problems of restructuring and conversion. E.g., the F-15J/DJ, which is licence-produced by Mitsubishi Heavy Industries (MHI), has 1136 subcontractors and the Asagiri Class 3500-ton destroyer has 1898. Some small subcontractors are more than 50% dependent on defence contracts. MITI launched a survey to investigate the business situation of medium and small

While modernization of defence equipment is necessary, the defence industrial capacity needs to achieve greater efficiency and a more compact structure in the future.[83] As a reduction in procurement budgets would directly affect the defence industrial infrastructure in private industry, the JDA is concerned that this might undermine the minimum critical levels of production and technological infrastructure.

The choice between domestic production and import

The JDA's Equipment Bureau decides whether to procure equipment through domestic production, licensed production or import, including the US Foreign Military Sales (FMS) programme. The basic policy for procurement is that domestic production is chosen when the type of equipment needs to be adapted to Japanese conditions or when the necessary technology for development and production is available in Japan. The choice between domestic production and import depends on: (*a*) meeting the SDF's operational requirements; (*b*) ensuring that the delivery date meets the SDF's needs; (*c*) the accumulated programme costs of development, procurement costs (allowing for number of items to be acquired and including reserve stocks) and life-cycle costs (for reserves, supply, maintenance, overhaul and repair of equipment); and (*d*) factors such as operational suitability.

Domestically produced equipment has advantages in terms of supply, maintenance, repair and technology upgrading. This makes it preferable even when domestic production will cost more than other modes of procurement. For example, the JDA has emphasized missile-related technology, which is critical for an exclusively defence-oriented posture. In such cases factors such as excessive costs for domestic production or urgency of requirements are not necessarily given priority. When the required number of units is small and the accumulated cost (development plus production and life-cycle costs) of domestic production or licensed production is much higher than for import, the JDA procures by means of imports (both FMS and commercial import).[84]

Self-sufficiency and import dependence

For the Japanese defence industry, domestic production (including licensed production) is preferable to importing the end-product since it facilitates the maintenance and improvement of the defence R&D and industrial infrastructure. The

defence industries in 1994, and will provide support by protecting their technology capacities and assisting their conversion to commercial production. Interview by the author with Kensuke Ebata, Nov. 1995.

[83] The current MTDP (1996–2000) also emphasizes 'rationalization, effectiveness and compactness' while paying attention to qualitative modernization and updating of equipment. 'On the Mid-Term Defense Program (1996–2000)', *Defense of Japan 1996* (note 9), p. 287.

[84] This was the case with the E-2C early-warning aircraft and C-130H transport aircraft, of which only 11 and 15 were required, respectively. However, even in such cases, the JDA and the industry usually keep the maintenance and repair infrastructure inside Japan.

share of domestic procurement (domestic and licensed production) between 1985 and 1994 is shown in table 5.7.[85]

Generally, the unit cost of domestically produced defence equipment tends to be very high in Japan, since its defence sales are constrained by the Three Principles on Arms Export. Nonetheless, Japan has been able to contain the rising costs of advanced weapon systems fairly well within the budget and thus to maintain a policy of 'self-sufficiency in defence equipment'. Except for a small decline of about 5 per cent in the numbers of combat aircraft, the JDA has been able to maintain its inventories with modernized weapon systems within the defence budget ceiling of 1 per cent of GNP since the late 1970s.[86]

Factors which may have benefited Japanese defence production are high and stable economic growth, close collaboration between government and industry, and the 'learning effects' of the production cycle. In this sense, there has been a rational consistency between the scale of the defence budget, the 1976 NDPO and the defence industrial structure.

Although the increase in the costs of modern weapon systems has been kept within GDP growth, they have escalated, largely as a result of high manpower costs and the incorporation of sophisticated technologies for detection, surveillance, information processing and weapon guidance functions. Nevertheless, the integration of civilian and defence R&D has meant that the costs of the sophisticated technologies used in such functions have remained manageable.

V. Factors constraining the rationality of arms procurement in Japan[87]

The arms procurement decision-making process in Japan has a degree of functional rationality in terms of its management of strategic concerns, operational concepts, the defence structure, financial allocations, and defence R&D and production. This section examines the factors that work against this rationality and concludes that, despite its functional rationality, arms procurement decision making is inadequate in terms of transparency and public accountability and in terms of the broader national security goals.

[85] The share of domestic procurement decreases when Japan imports expensive major weapon systems. In FY 1993, e.g., when it procured the Aegis naval air defence system for the Kongo Class destroyer and the Boeing 767 airborne warning and control system (AWACS), the share of domestic procurement was 84.8%. *Boei Nenkan 1995* (note 55).

[86] International Institute for Strategic Studies, *The Military Balance*, various editions (Oxford University Press: Oxford); and communication with Siemon Wezeman, SIPRI Arms Transfers Project, Mar. 1998. The 1976 NDPO stipulated that the maximum number of combat aircraft to be procured by the ASDF was 430. *Defense of Japan 1995* (note 24). In the past 2 decades the combat aircraft have been continuously updated, for instance, from the F-4 to the F-15. Modernization of equipment usually results in soaring development and production costs, often at a rate much higher than the rate of growth of GDP. For a discussion on the issue, see, e.g., Muroyama (note 1), pp. 403–25.

[87] This section is largely based on Taoka, S., 'Domestic considerations and élite motivation in arms procurement decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 35 (1995); Ikegami-Andersson, M., 'Sociology of national decision making behaviour in Japan', SIPRI Arms Procurement Decision Making Project, Working Paper no. 40 (1995); and interviews by the author with defence experts and Yasukazu Hamada (LDP), Director, Standing Committee on Security.

The USA: a major external factor

Since the USA is the dominant supplier of major equipment to the SDF, a set-back in relations with the USA could cause serious disruptions in the efficient routines for arms procurement in Japan. Of about 1600 aircraft, including the helicopters of the three armed services, over 1100 (among them the F-15, P-3C and AH-1 combat helicopters) are either imported from the USA or licence-produced with US components. Most of Japan's surface-to-air missiles, such as the Patriot, as well as naval missile systems are of US design.[88]

US influence is very strong and can even overcome Japanese bureaucratic conservatism. The dispute over the development of the FS-X fighter aircraft is illustrative of the significant influence wielded by the USA. According to Japanese experts involved in the FS-X project, the decision for co-development was imposed by the USA, and during the course of the project more problems than were anticipated occurred over technology transfer issues. The Japanese R&D officials were disappointed by the suspension of the transfer of US technologies, such as General Dynamics' source code, when Japanese technologies were being transferred to the USA free of charge. According to Keidanren, the USA identifies only four technologies as original Japanese (what the USA calls 'non-derived') out of about 12 technologies so classified by Japan. The USA insisted that Japan should provide it with the remaining technologies free of charge.[89] The FS-X project may well remain a bitter experience for the JDA, the Japanese defence industry and their US counterparts, who expected a greater degree of cooperation. Another incident which caused some controversy was the procurement of Lockheed's P-3C anti-submarine patrol aircraft in the 1970s instead of the PX-L, which was planned to be domestically developed.[90]

A small budget for feasibility studies of the TMD system has been approved by Japan following discussions with the USA. The USA expects a financial contribution from Japan and regards Japanese dual-use technology as valuable for the accuracy of the system.[91] The Japanese defence industry, however, believes that its technological contribution will be marginal, since it lacks ballistic missile technologies (prohibited by the spirit of the constitution).[92] The

[88] Taoka (note 87).

[89] Interview by the author with N. Oshima, adviser to the DPC, Keidanren, in Sep. 1995. See also US General Accounting Office (GAO), *US–Japan Fighter Aircraft: Agreement on F-2 Production* (GAO: Washington, DC, Feb. 1997), p. 5.

[90] Domestic development of the PX-L was cancelled in 1972, after Prime Minister Kakuei Tanaka discussed Japan's procurement of civilian aircraft with US President Richard Nixon at a summit meeting. Although the Japanese defence industry lobbied for domestic development, the JDA officially decided to procure the P-3C (for licensed production) in 1977. *Nihon no Koku-Uchu Kogyo Sengoshi* [Post-war history of the Japanese aerospace industry] (Japanese Aerospace Industry Association: Tokyo, 1987).

[91] 'The system requires very precise sensors, a great deal of processing and some exquisite control. Japanese industry possesses some very fine capabilities in each of those areas. That is why we believe Japan could be a valuable partner in the NTW [Navy Theater-Wide] system following THAAD [Theater High-Altitude Area Defense system].' 'The Hon. Paul G. Kaminski on US–Japan strive to expand joint efforts to develop military systems', *Japan Economic Survey*, Apr. 1997, p. 9.

[92] Although an official decision has not yet been made by the Japanese Government, what could happen in the case of 'co-development' is that Japan will provide high-technology, dual-use components at low

Japanese Government, on the other hand, assumes that to turn down the collaboration offer would jeopardize Japan's relationship with the USA.[93] On various issues such as technology transfer and financial and political constraints, the Government has postponed its final decision on the project to 1998.

Competitive civil–military relations

Competition between the views of its uniformed and civilian officials is evident in the JDA's decision-making structure. For example, during the formulation of the MTDP there are many reports in the media on disagreements between them regarding weapon systems. The drafting of the JDA's arms procurement plan also reveals hard bargaining and differences of opinion.

When each SDF submits its plan to the JDA's Internal Bureau, it is scrutinized by civilian officials in terms of need, estimated costs, technical problems, limitations imposed by Article 9 of the constitution, the NDPO, the defence budget ceiling, difficulties of recruitment, and so on. In these discussions the directors at the Defense Policy Bureau's Defense Policy Division, who are senior bureaucrats, play the most influential role.

If the SDF officers do not agree with the proposals of the civilian officials, the senior military in charge of planning in each SDF service negotiate with the Office of the Director at the Defense Policy Bureau and, occasionally, the Chiefs of Staff of the three armed services meet with the administrative vice-minister or with the Minister of Defence to renegotiate and revive some of the plans rejected by JDA civilian officials. As the civilian bureaucrats have the final say and responsibility for drafting the MTDP and the annual defence budget, military officials have to be satisfied if they gain some concessions.[94]

Bureaucratic conservatism

Each item in the budget requests is scrutinized by MoF officials. Although they are mostly law school graduates and not experts in military science, they can often point out problems in connection with the weapon systems requested and question their necessity.

However, even MoF bureaucrats are not free from typical bureaucratic conservatism. In Japan's budget process, precedents become the most important

cost to the USA and purchase the TMD systems at a very high price from the USA. Interview with Kensuke Ebata, Nov. 1995.

[93] Interview with Shuhei Takahashi, MoFA diplomat and later senior researcher at the National Institute for Research Advancement (NIRA), Tokyo, Sep. 1995.

[94] Traditionally, civilian personnel had greater influence than uniformed staff in the JDA. This is partly a consequence of the organizational structure of the JDA's predecessor, the National Police Reserve Force (note 4). The authority attached to the Supreme Council of the Joint Chiefs of Staff is also relatively weak compared with that of equivalent authorities in other countries. This makes it difficult for the 3 services of the SDF to coordinate their interests. Hirose (note 1), pp. 63–69. However, defence analyst Tetsuo Maeda notes that JDA uniformed staff started to increase their influence after the completion of the 1978 Guidelines for Japan–US Defense Cooperation, which define the SDF's strategic role in the context of Japanese–US security cooperation. Maeda (note 20).

determining factor because bureaucrats' positions are secured as long as they follow the examples of their predecessors, who are usually their current seniors. The procurement of the P-3C is an example of over-reliance on precedents. As a result, the sea around Japan now has the heaviest concentration of anti-submarine aircraft in the world.[95] Another precedent is the preference for equipment of US origin. Powerful MoF and MoFA bureaucrats, who sympathize with the LDP, follow a pro-USA policy in their budgets.

Pride in national R&D or preference for the state of the art

Preference for domestic R&D and production of defence equipment is based on arguments such as: (*a*) the need to retain a minimum defence industrial infrastructure for national security; (*b*) the advantages of quicker servicing, repairs and supply; (*c*) the fact that equipment of domestic design is better adapted to domestic conditions; and (*d*) that morale can be higher with domestic weapons. However, this reasoning is also questionable, for the following reasons:[96]

1. The risk of an arms embargo pales into insignificance beside that of an interruption of imports of oil and food, on which Japan is heavily dependent.
2. The reliability and quality of arms that have not been tested in combat and are developed only in small numbers can lead to uncertainties.
3. The basic technological characteristics of modern weapons are fairly similar, and Japanese weapons do not have many unique features.
4. Soldiers' morale and confidence can be equally high with the best imported weapons. Japanese tank crews would like to operate the German Leopard II in the same way as young people in Japan admire German or Swedish cars.

Just as R&D is constantly pushing at the scientific and technological frontiers, and is a driving force of development, defence system researchers also like to make full use of their capacities, skills and resources to develop competitive defence equipment. This phenomenon is universal, but Japan is one of the few countries that can still afford R&D funds and human resources to realize the defence engineer's 'dream'. The FS-X is one such example of the JDA's R&D personnel and the defence industry wanting to fully stretch their technological capacity. A basic principle of arms procurement in Japan is 'to primarily buy advanced equipment within the available budget', which is not very different from admiration of top-brand goods.[97] Procurement of weapon systems on the basis of such reasoning may not always be necessary for the achievement of the larger objectives of security and may well lead to overcapacity.

[95] The MoF approved the MSDF's request to replace the P-2Js with P-3Cs on a one-to-one basis, even though the P-3C—with a longer range and advanced surveillance systems—can cover an area 10 times larger than that covered by the P-2J. Taoka (note 87); and interview by the author with Kensuke Ebata, Nov. 1995.

[96] Taoka (note 87).

[97] Shunji Taoka explains this 'top-brand admiration' as an effort by the JDA to make up for quantity (limited by the NDPO) through quality. Taoka (note 87), p. 11.

Information flow in defence policies and arms procurement[98]

An important informal channel for the flow of defence-related information is the JDA Press Club, located in the Internal Bureau. Having a press club in every major ministry is unique to Japan, and it has both advantages and disadvantages in terms of building public awareness. Accredited journalists are allowed access to most of the JDA officials—except those in restricted areas—without prior appointment. Top-level JDA officials such as the Director-General, vice-ministers and the Chairman of the SDF Joint Staff Council give weekly press briefings on Cabinet meetings and developments in the JDA. In this manner accredited journalists become acquainted with senior JDA officials, which facilitates their coverage of major events.

Senior SDF officials also make use of this system to promote their preferred defence systems once their procurement request is sent to the Internal Bureau. However, in the early stages of arms procurement decision making, such as planning for the next R&D project, it is difficult to obtain information on such aspects or on issues such as the official US position or the position of the defence industry on arms procurement proposals. Occasionally, JDA officials confide such embryonic plans to their close contacts in the press club with a view to eliciting public reactions.

A press club system fosters specialist journalists who can efficiently collect and analyse information in their fields. Unlike many other countries where government officials give interviews to select journalists, government officials in Japan cannot refuse an interview once a journalist has been assigned to the press club. The press clubs have certain officials appointed to explain organizational issues, and press club members sometimes exert collective pressure on the Government to disclose information. However, this system also has disadvantages. First, such exclusive press club membership is usually not open to the minor or foreign media and the clubs become a 'closed society'. Consequently, only a limited number of the major media enjoy the advantage of access to information. Second, press club members tend to become semi-insiders. With similar educational and social backgrounds they tend to share the views of administrators rather than those of the general public. Third, press club members often become friends with each other and cease to compete, so that no one is hurt through aggressive reporting. Such an atmosphere tends to discourage investigative journalism.

The weakness of legislative oversight[99]

Although the Japanese Diet is responsible for appropriating the national budget, including the arms procurement budget, it is actually rather weak in profession-

[98] This section is based on Taoka (note 87).

[99] This section is based on an interview by Ian Anthony, SIPRI, with Yoshinori Oono, Chairman of the LDP National Defense Committee and Director of the Standing Committee on Security, House of Representatives, Dec. 1995.

ally checking and assessing the defence budget. This undermines the spirit of public accountability in oversight of the defence budget.

The Diet does not have a confrontational or adversarial relationship with the Government. As the system works on the basis of trust among Diet members, they are usually satisfied with an explanation from ministers and senior bureaucrats on budget questions, and very seldom raise intrusive questions or monitor action taken on their comments and observations. The high point of the budget process is the stage of formulation of the MoF's budget plan, when active bargaining occurs between MoF officials and those from other ministries and agencies. Once the MoF budget plan is formulated, it is invariably approved by the Cabinet and the Diet without major changes. In Japan, it is not the political representatives elected by the people but the MoF bureaucrats (who do not represent the public) who decide how much public money to spend and where.[100] When the JDA's budget draft is signed by the JDA Director-General and presented to the SC, it is also invariably approved by the Cabinet. After this the JDA has to negotiate with the MoF for the release of funding. Approval by the Cabinet gives a strong foundation to the JDA's annual budget requests, unless there is a drastic change in the political, financial or international environment.

The Diet has the Standing Committee on Security, but its main task is not the examination of the defence budget or arms procurement decisions; it is mainly involved in reviewing the strategy, roles and missions of the SDF. It is not considered necessary to conduct a full review every year on these issues, except when a new MTDP is discussed or when part of the defence framework—such as the NDPO—is revised. The committee then has a more intensive debate.

Only a few individual members of the committee keep themselves informed of technological, political or military issues concerning the defence of Japan. Their main sources of information are:

1. *Party contacts*. Each party holds informal seminars and meetings on important issues where the media, academics and officials are invited to give briefings.
2. *The media.*
3. *Briefings from government officials*. The Diet does not have a qualified research unit except for a few non-specialist researchers. There is a small research staff that serves all members, but it does not conduct research on security matters. There is a striking contrast with the level of competence available to the US Congress, which has a large and capable research unit and the General Accounting Office, and can develop an active debate in appropriate committees. In Japan information is often obtained on a personal basis, such as contacts with US congressmen and officials. Very few Japanese parliamentarians are fluent in English or other foreign languages, which is also a disadvantage in the collection and exchange of information with foreign sources.

[100] van Wolferen, K., *Tami ha Orokani Tamote* [Keeping the people ignorant: the hidden agenda of Japanese bureaucrats and newspapers] (Shogakukan: Tokyo, 1994).

If the JDA wants to procure an advanced weapon system which is not an item of routine procurement, it must present its rationale to the Standing Committee on Security in the budget discussion. The discussion often concerns more general questions but can concern specific equipment such as the B-767 airborne warning and control system (AWACS) or the Aegis naval air defence system. Questions are usually raised by members of the opposition parties and are often answered informally by JDA officials before the committee session begins. Committee hearings tend to involve perfunctory discussion. In general the committee relies heavily on JDA officials for clarification, expertise and advice.

Socio-cultural traits

Security policy and decision making in Japan are highly controversial because part of the decision making is often carried out on a personal and informal basis. A 'fixer' actively lobbies other decision makers to persuade them and to obtain their informal consent. Then, at a later, formal stage, there is little debate and decision makers reach consensus rather easily. The decision-making style called *nemawashi*[101] is often criticized for ambiguity. Other socio-cultural characteristics in Japan's decision-making behaviour are outlined below.

Informality among decision makers

In the Japanese arms procurement decision-making process, a significant part of the decisions are made at an early stage. Close, informal business–government interaction is one factor which contributes to the lack of open information on arms procurement in Japan. Such interaction begins long before final decisions are made. Most of the contracting arrangements between the JDA and individual companies have been finalized informally by the time particular systems are selected, implying that the Government relies heavily on the private sector for professional resources and expertise.[102] Generally, however, leaders of the major defence companies do not welcome public attention to their defence production for fear that it could harm their corporate image in this 'defence-allergic' nation. The defence industry refrains from making any overt political moves to obtain contracts and tends to lobby informally in a confidential manner.

Although a group of conservative politicians known as *Kokubo Zoku* ('the defence tribe') support increased defence capabilities,[103] their motivation seems

[101] van Wolferen (note 53).

[102] Chinworth notes that in Japan the defence industry plays an important role in guarding government policy interests while shielding the JDA from negative exposure. Chinworth (note 3), p. 165.

[103] Under the long succession of LDP-led governments (1955–93), senior bureaucrats and LDP politicians established a close collaborative relationship in policy making and practice. Through studying and working for a specific area (e.g., transport, construction, agriculture, medical care or defence) some LDP politicians—called *Zoku* parliamentarians—became specialists on certain issues and accordingly established close connections with certain ministries and senior bureaucrats. Their activities, based on each ministry, involve mediating and coordinating interests between industries, powerful interest groups and the administration. However, this system has resulted in a strong barrier against intervention from non-experts

to be electoral considerations, in terms of winning votes from SDF personnel and their families, rather than the interests of the defence industry. Retired senior JDA administrators often become *Kokubo Zoku* parliamentarians, trying to represent the interests of the JDA uniformed staff. *Kokubo Zoku* parliamentarians often lobby the MoF to increase the budget for purchases of major defence equipment.

At the same time, the US Government and major US defence companies are politically very influential, but the channel of their influence is often personal and informal via their contacts with Japanese politicians. *Kokubo Zoku* are keenly aware of the Japanese–US security relationship. This means that they are not necessarily working in the interests of the Japanese defence industry. Some *Kokubo Zoku* may be on good terms with the US defence industry because of their contacts among Japanese interests who advocate procurement of US weapon systems. The *Kokubo Zoku* parliamentarians were not active advocates of Japan's autonomous development of the FS-X during the Japanese–US controversy over the issue in the late 1980s.[104]

The procurement decision-making process is time-consuming: decisions require compromises that are acceptable to most of the actors involved.[105] These actors may begin to exert informal influence (*nemawashi*) at an early stage, which may well be the most significant stage of decision making. Because the process is not transparent, it remains a 'black box'.[106] The personal nature of the black box makes it extremely difficult to understand for outsiders, including journalists, who have limited access. Furthermore, Japanese political–social tradition discourages societal initiatives to improve the transparency of administrative decision making.

The amakudari *custom among senior bureaucrats*

'Personalism' among decision makers is another factor which erodes rationality in arms procurement decisions, undermining the very objectives of goal rationality in the arms procurement decision-making process. The custom of *amakudari* ('descent from heaven') is one such practice: retired senior JDA officials are customarily absorbed in the defence industry as 'advisers' without regular responsibility. *Amakudari* is advocated among Japanese bureaucrats as

within the LDP and opposition parties. See, e.g., Inoguchi, T. and Iwai, Y., *Zoku-Giin no Kenkyu* [A study on Zoku parliamentarians] (Nihon Keizai Shimbun-sha: Tokyo, 1978), pp. 209–10.

[104] Green, M. J., *Kokusanka: FS-X and Japan's Search for Autonomous Defense Production* (Massachusetts Institute of Technology, Center for International Studies, Japan Program: Boston, Mass., May 1990).

[105] Chinworth (note 3), p. 163.

[106] To give an example, in 1994 under the LDP–SDP coalition government the JDA was criticized for its unclear procurement decision making in the case of the UX executive jet. The JDA's decision of Aug. 1994 to procure the US Gulfstream instead of the UX was criticized even within the government by some ministers and the SDP. Reportedly, the initial JDA report presented to the cabinet contained no comparable data on the US Gulfstream and the 2 other candidate aircraft. The decision was re-examined by a committee specially organized within the JDA. However, the investigation did not reverse the initial JDA decision. *Asahi Shimbun*, 18 Dec. 1994 and 5 Jan. 1995.

one of the ways of encouraging earlier retirement and guaranteeing efficiency within the bureaucracy (avoiding too severe competition for promotion).

Amakudari is rather widely practised among Japanese career bureaucrats, particularly among the powerful MoF officials. As the JDA manages the arms procurement budget, the JDA *amakudari* officials are considered important in the defence industry. Large firms accept *amakudari* bureaucrats, expecting to win government contracts through these personal connections. Eventually, the *amakudari* mediate private firms' interests and government funds, which erodes fairness of public policies.[107] A number of serious scandals have been disclosed that were driven by the practices of *amakudari.*[108]

Amakudari is a channel which often brings personal factors into public decision making, thus eroding transparency. Although the government–industry connection through retired defence officials—rather like the 'revolving door' in the USA[109]—is fairly common in arms procurement decision making worldwide, the potential to lobby higher levels of government across the board is considerable if the new adviser has retired from a senior JDA position after having served in ministries such as the MoF or MITI.[110] Moreover, decisions driven by personal connections may not be noted by the Diet owing to the lack of public accountability and transparency in the Japanese bureaucracy.

Élitism and dominance of the bureaucracy

The Confucian teachings and tradition advise Japanese society to maintain a strong sense of hierarchy. This keen consciousness of hierarchy is maintained among the Japanese throughout the education system, in the workplace and in modes of socialization. National security decision-making behaviour cannot be free of such influences. The Japanese élite take advantage of the general awareness of hierarchy. Traditionally, the Japanese public does not question or criticize authority. Such attitudes allow the élite to enjoy significant autonomy and power without being concerned about public criticism, the absence of which makes it easier for Japanese administrators to monopolize information and data to which the public have a right of access,[111] although this situation is gradually changing. Emphasis on collectivism in Japanese society tends to give priority to 'harmony' within a group rather than to the innovative idea that

[107] Although there is a law prohibiting national public employees from taking a post in a private industry whose interests are closely related to those of their former ministry for 2 years, the application of the law has been rather flexible.

[108] E.g., in the monetary scandals and bank crisis of the mid-1990s, MoF officials' *amakudari* to private banks was blamed as a root of the corruption. Japanese bureaucrats usually keep strong senior–junior relations in mind even after their retirement. Thus MoF officials could not implement proper supervision and control against some problematic private banks because former MoF senior officials were presidents of those banks as a result of *amakudari*. Hoffman, S. A., 'Faction behaviour and cultural codes: India and Japan', *Journal of Asian Studies*, vol. 40, no. 2 (1981), pp. 231–54.

[109] Kennedy, G., *Defence Economics* (Duckworth: London, 1983). Chinworth notes that, if there is any difference, it is that Japanese relationships are the result of longer-term interaction than might be evident in the US experience. Chinworth (note 3), p. 25.

[110] Chinworth (note 3), p. 25.

[111] 'Japan has a clearly discernible ruling class. Its members—mainly bureaucrats, top businessmen and one section of the LDP—are all basically administrators.' van Wolferen (note 100), p. 109.

individuals could promote change—an attitude that maintains a conservative decision-making behaviour in the bureaucracy.

Socio-political analyses of the Japanese power structure have pointed to the 'bureaucrat's dominance in policy making'.[112] This dominance derives from the Confucian tradition and continued during the Meiji era modernization (1868–1912). The Meiji Government adapted a national slogan—'rich nation, strong army'—in trying to catch up with the Western imperial powers of the time. Challenged both domestically and by external threats, it needed to establish a 'bureaucratic nation' for the legitimacy of the regime, in which the bureaucracy functioned as a neutral and capable policy maker.[113] As a result, senior bureaucrats took the leading role in various important policies and decisions.

This socio-political structure of the Meiji regime still characterizes the organizational behaviour of Japanese decision making. The dominance of the bureaucracy expanded significantly in the 1930s and during World War II.[114] Even defeat in World War II and the ensuing occupation by the Allied powers did not change the system. On the contrary, the occupation authority—the General Headquarters of the Supreme Commander for the Allied powers—used the Japanese bureaucracy to carry out various forms of reform in Japan (such as land reform, demilitarization and dissolution of the *zaibatsu,* the large financial and industrial combines).[115] In the post-war period, when economic growth was defined as the top national priority, the bureaucracy continued to maintain its strong influence in implementing industrial policy. This historical background gives the Japanese bureaucracy a strong sense of pride, self-confidence and legitimacy.

In this way the Japanese bureaucracy enjoys not only extensive authority but also high social status and public support. Such socio-cultural norms encourage élitism as a barrier against transparency in government decision making. For example, a number of studies of arms procurement have been conducted by the ministries and agencies concerned, but they are not available to the public, although many of them need not be treated as confidential. However, Japanese administrators still like to believe that it is better not to provide too much information to the public. It is thus very difficult for the general public to access defence-related information and data. Ironically, Japanese researchers often have to rely on US Government documents for information on Japanese national defence issues at the same time as decision makers decry the Japanese public's general ignorance of and lack of interest in defence issues.[116]

[112] See, e.g., van Wolferen (note 100).
[113] Inoguchi and Iwai (note 103).
[114] Johnson (note 4), pp. 40–41.
[115] Johnson (note 4), pp. 40–41; and Inoguchi and Iwai (note 103), pp. 10–11.
[116] This deep distrust between decision makers and the public derives partly from the controversial post-war history of the JDA, for example, the debate on the legality of the SDF in terms of Article 9 of the constitution. Under these circumstances, the JDA has developed a self-defensive and introversive political posture in order not to be drawn into domestic ideological conflicts. Its secretiveness is one aspect of this posture.

Of late there has been strong public criticism of the domination of bureaucrats as a result of media disclosures of financial scandals involving senior bureaucrats, high-ranking politicians and prominent business circles. The public is slowly beginning to realize the importance of monitoring government decision-making processes. Increased public awareness may promote transparency and accountability in these processes, including that of arms procurement.

In spite of the rationality observed in the implementation phase of the arms procurement process, Japanese socio-political and cultural factors thus make the related decision making less rational and thereby not necessarily in keeping with the broader goals of national security.

VI. Conclusions

The administrative process of arms procurement planning in Japan may be described as functionally rational. Even the drafting of the defence budget, involving actors with diverse interests, progresses smoothly by an informal consensus-forming technique unique to Japanese tradition. Once a draft of the defence budget and planning is approved, bureaucrats work for its implementation in a precise and punctual manner, for which the Japanese bureaucracy is noted. The defence R&D and production phases also show this kind of functional rationality and efficiency.

Actors involved in the arms procurement decision-making process perceive it as being consistent and efficient in its administrative and industrial dimensions, referred to in this study as functional rationality. However, a limited framework of rationality does not guarantee rationality in the entire system. In other words, the outcome of a series of functionally rational actions such as long-term planning, timely and precise action by the bureaucracy and the high performance of the defence industry, which combine to constitute the defence structure, may not necessarily guarantee security in the best interests of the people—the real objectives of national security—that is, goal rationality.

Irrationality and inefficiency in Japan's arms procurement

As discussed above, the Japanese security perception is based on the constitution. Thus the country has focused on developing a military capability which creates 'basic and standard' structures for an 'exclusively defence-oriented policy'. Although in theory Japan's defence posture is not based on specific threats, in practice it is determined by the assessment of potential threats from surrounding countries, resulting in a significant military capability, which is enhanced by the terms of Japanese–US security cooperation. This is the root of the controversial 'double standard' attributed to Japan's defence posture. As Muroyama points out, the 'basic and standard defence capability regardless of specific threat' and the defence expenditure ceiling of 1 per cent of GNP were presented and accepted as a rhetoric of self-restraint by a 'peace-oriented'

nation. Nevertheless, in practice this framework has allowed for the build-up of highly modernized defence forces which, if combined with the US forces, could even deter the former Soviet forces in the Pacific.[117] Muroyama shows that, if defence expenditure of 1 per cent of GNP is maintained, Japan will become a significant military power comparable to the US forces in the Pacific in the 21st century. What is lacking is an internationally accepted institutional framework which admits and utilizes such an expansion of Japan's defence capability. In these circumstances the absence of a Japanese rationale for its defence build-up will become even more problematic for both Japan and the international community.

In trying to define logical consistency between the concept of an 'exclusively defence-oriented policy' and a military build-up based on assessment of threats from neighbouring countries, Japan has failed to develop a comprehensive strategy for mobilizing various means for achieving security (for example, political, economic, diplomatic and strategic). The Security Council, which is expected to formulate a comprehensive security policy, does not function as a policy-making organ but ritually authorizes defence programmes formulated by 'real decision makers'—senior bureaucrats and other influential players.

Given the lack of a grand strategy or a competent structure for formulating a comprehensive security policy, arms procurement decisions are the result of bargaining among the main actors. As the first drafts of arms procurement plans are formulated by JDA officials from the SDF, they are exclusively based on military factors of territorial defence and the relative potential of weapon systems, and do not consider the diplomatic, economic or political factors influencing the security milieu. Although the JDA drafts are modified by other ministries, they cannot exert influence on matters concerning technical aspects such as the military's relative operational capabilities or weapon technologies. Once arms procurement plans are drafted, they are invariably approved by the Cabinet and the Diet without substantive changes. Eventually, in spite of the functional rationality of a well-institutionalized arms procurement decision-making process, a substantial proportion of the decisions emerge from the black box in which influential actors make informal bargains and compromises.

In such a bargaining process, decisions may well be driven along the lines of power relations among the actors involved and not on the principles of the best interests of society. Such an outcome does not contribute to goal rationality. For example, even though the 1976 NDPO defined the maximum number of each type of major weapons, the Japanese defence capability has been significantly strengthened, as can be seen in the case of the P-3C Orion procurement. Such procurement actions may cause overcapacity in the armed forces. As such overcapacity without a threat rationale could provoke an arms race in the region, it could eventually adversely affect Japan's national security. However, Japan has no neutral institution outside the JDA or the ministries with the competence to assess its defence structure in terms of adequacy, force balance and efficiency.

[117] Muroyama (note 1), p. 432.

This also brings out the limitations of the lack of transparency and public accountability.

The changing security environment

Until recently, Japanese society's indifference to public accountability because of traditional perceptions of bureaucratic superiority, power and authority, a tendency to avoid controversial security issues, and the lack of public understanding of and information on defence issues did not seem to be very important since Japanese security during the cold war was closely linked to that of the USA. However, in the post-cold war era, when all countries are seeking to redefine their security priorities and policies, including threat assessment, the situation is changing, in Japan no less than anywhere else.

First, instead of searching for alternative regional security frameworks, Japan and the USA have confirmed a strengthening of their security cooperation, and the Japanese Government has responded positively towards a redefinition of US regional strategy. In September 1997, the two governments presented the new Guidelines for US–Japan Defense Cooperation in case of emergencies in the area surrounding Japan. These factors suggest that Japan has opted to support and maintain the hegemonic presence of US forces in the region, which could lead to increasing reliance of the two countries on each other in arms procurement, defence R&D and production. Inevitably, this will place the Japanese Government in a dilemma as the US Government expects a greater defence contribution from Japan, not only for the defence of Japan if it is attacked but also to support the US forces' strategy in the event of a conflict in the region surrounding Japan. This basic change could be inconsistent with the Japanese Constitution.[118]

Second, in the post-cold war uncertainties under which many countries are reviewing their threat assessments, Japan's defence build-up may well be perceived as a threat by neighbouring countries. Undeniably, Japan has been mainly dependent on the USA in building up its defence structure. During the cold war, Japan's 'remilitarization' was understood by other Asian countries in the context of its alliance with the USA, namely, as an appendix of the US presence in the region. However, its stable economic growth and very large GNP will make Japan a major military power in the region in its own right in terms of its military expenditure and the technological sophistication of its weapons and systems. The argument that the Japanese SDF are an appendix to the US forces will no longer provide a good rationale for Japan's large-scale defence build-up.

Third, the 1996 redefinition of the Japanese–US security cooperation may generate a kind of 'duo-hegemony' in the region, which might stimulate new competition with such other major military powers as China.[119]

[118] Taoka (note 21).

[119] Interview by the author with Professor Young Sun Ha, Department of International Relations, Seoul National University, conducted in Stockholm, Feb. 1997.

Fourth, Japanese society is becoming increasingly dissatisfied with the traditional role of its bureaucracy in the wake of disclosures of corruption and maladministration in the nexus between the Government, the bureaucracy and industry. Public demands for increased transparency and public accountability in government decision making will foster a sense of fairness in domestic administration and confidence and security building in the region.[120]

Final observations

In conclusion, some general suggestions are called for as to how transparency and public accountability in arms procurement decision making in Japan can be improved.

First, the Security Council or other competent bodies in the Government need to examine Japan's security policy more comprehensively. Although the government has discussed 'comprehensive security',[121] it lacks an integrated defence policy-making process to coordinate different perspectives and means for achieving security, not only through defence capacity but also through stabilizing social and economic infrastructures. Wide-ranging capacities for research and analysis of national security issues need to be developed by academic and research institutions to provide the Government and the public with qualified analyses of security options. So far only ad hoc groups are organized to advise the Government on security issues, such as the Advisory Group on Defense Issues. Japanese think-tanks still avoid conducting national security studies. The challenge is to build a process which involves capable experts and intellectuals in the public domain to make insightful analyses or propose innovative ideas for a new framework for Japanese defence policy. However, decision makers do not want to share their power and influence with intellectuals outside *Nagata-cho* and *Kasumigaseki*—symbols of the centre of Japanese politics and bureaucracy.

Second, the Diet, and particularly the Standing Committee on Security, has to strengthen its own capabilities and expertise and the range of its responsibilities in order to assess defence programmes formulated by JDA officials instead of according them perfunctory approval. The Diet also needs to strengthen its research unit on defence issues and set up qualified research institutes for security studies. The functions of the Board of Audit in terms of range of expertise and examination should also be strengthened.

Each time the Standing Committee on Security approves an important defence programme, such as the NDPO or the MTDP, it should issue a report

[120] Japan as yet has no freedom of information law, although some acts have been passed at the local community level. At the time of writing a bill was planned to be introduced in Mar. 1998, but it states that government information on defence, diplomacy and crime investigations can be withheld at the discretion of the ministers involved. Asahi Shimbun, English News, 21 Feb. 1998, URL <http://www.asahi.com/english/enews/enews.html>.

[121] After the oil crisis of the 1970s, government organizations such as the Economic Planning Agency proposed the concept of 'comprehensive security'. See, e.g., *Hanei no Tetsugaku* [Philosophy of prosperity] (Economic Planning Agency: Tokyo, 1989).

on the discussion and an explanation of why a specific programme has been approved from the viewpoint of representatives of the people and not of the JDA or other ministries. If such reports are issued regularly, the public's knowledge of defence issues will increase, which is ultimately important in creating a national consensus on defence policy. Establishing an independent evaluation committee on important issues consisting of experts and civilian representatives would be helpful in enhancing the public debate on defence issues and consequently public accountability.

Third, academics need to be encouraged to study national security issues with the purpose of informing the public. As in other democratic societies, it is in the general public's interest to be aware how their tax money is used, not only for arms procurement but for government expenditure as a whole. The media need to develop professional insight and provide objective analyses of defence policies and arms procurement and to stimulate public debate instead of trying to channel public opinion in specific political or ideological directions. By having access to accurate information, the public may gain a rational and balanced understanding of national security issues. Only under such conditions can Japan expect to develop democratic policy-making processes.

Fourth, a dynamic international exchange of information about security issues at various levels (governmental, political, business and academic) will enhance transparency in both the domestic and the international spheres, which would in time contribute to confidence building in the region. As for the Asia–Pacific region, entities such as the Asia–Pacific Economic Cooperation (APEC), the ASEAN Regional Forum (ARF) and the Council for Security Cooperation in the Asia Pacific (CSCAP) should arrange international cooperative projects to produce reports on the defence policies and processes of each member country.

Fifth, over-confidence in high-technology weapon systems could be a pitfall in the best of security structures. Japan is one of the few countries which have both the technological capability and the R&D resources to continuously procure high-technology weapons. The SDF would prefer and can afford to be equipped with advanced weapon systems, but this is not an enduring solution to meeting diverse national security threats.[122] Advanced weapon systems can be effective for military deterrence and defence of national territory, but if an excessive defence build-up provokes a new arms race in the region it could eventually erode national and regional security. Thus military deterrence must be carefully examined in terms of both positive and negative effects. When Japan procures advanced weapon systems, the Government must convince the international community through diplomatic, political or other channels that they are not for aggressive use.[123] In this area, work by independent Japanese analysts is conspicuously rare.

[122] M. van Crevald points out the pitfalls of such a strategy: 'In war, this advantage [technological efficiency] has to be balanced against the fact that putting all one's eggs in a single basket is dangerous, is likely to lead to a loss of flexibility'. van Creveld, M., *Technology and War: From 2000 B.C. to the Present,* revised edn (The Free Press: New York, 1991), pp. 318–20.

[123] In the view of the author, Japan's war responsibility and the compensation issue are obstacles to be overcome in the interests of future confidence building in the region.

A major finding of this study is that Japanese defence decision making is based on disguised consensus. In spite of a democratic framework and functional rationality in the administrative procedure, a substantial proportion of decisions are made by powerful administrators through *nemawashi*, which eventually represses alternative or critical opinion. Such decisions are seldom challenged by politicians or the public because of lack of interest and information. Indeed, the legacy of pre-1945 militarism left a serious problem in the post-1945 security decision-making system: the Japanese were eager to conceal any information concerning the military and the consequence is that they have failed to establish a credible means of civilian oversight and monitoring. The transfer of officials from other ministries, such as the MoF, the MoFA and MITI, who are seconded to the JDA, is an example of the Japanese bureaucrats' efforts to conceal military influence within the decision-making system. However, this effort only brought the ill effects of 'vertically divided administration' (known to be a general problem of the Japanese bureaucracy) into the arena of defence decision making: no political entity is ultimately responsible for its decisions.[124]

A key to solving these problems is a reform of the decision-making system based on the principles of democratic consensus formation, providing accurate and substantive information and explanations to the public, and thus increasing transparency and public accountability. Japan will become 'normalized' without militarization only when the Government develops transparency as a norm in its policy making,[125] and can thus foster confidence building and cooperative security in the regional and international arenas.

[124] This problem was revealed, e.g., in the lack of crisis management at the time of the 1995 Kobe earthquake. van Wolferen notes that, just as in the 1930s, Japan today lacks a distinct core of political responsibility in the line of command for defence, and thus the current system will not be able to control the military sector should it become powerful. van Wolferen (note 100). 'Study of how the SDF are to be utilized has been undertaken almost exclusively within the Defense Agency . . . Now that discussing security has become easier, constructive proposals for utilizing the SDF emanating from sources other than the Defense Agency would be welcome, partly because they would help establish true civilian control'. Tanaka, A., 'A model for Japanese security in the twenty-first century', *Japan Review of International Affairs,* vol. 10, no. 4 (fall 1996), p. 290.

[125] Recently there has been speculation in the international community that Japan may become more 'normal' in the sense of adapting a more independent defence posture, such as sending the SDF overseas on UN peacekeeping operations. The change in Japan's defence stance has provoked concern among academics and the civil society. Johnson, C., 'Japan in search of a "normal" role', IGCC Policy Paper, University of California, San Diego, July 1992.

6. South Korea

*Jong Chul Choi**

I. Introduction

An examination of the arms procurement decision-making process of South Korea (the Republic of Korea) reveals certain idiosyncratic features stemming from the national and international security environments and from the institutional process within the Ministry of National Defense (MND).

Since the 1950 Korean War the security environment of South Korea has been characterized by the long-standing threat posed by North Korea (the Democratic People's Republic of Korea). US military policy towards South Korea—based on a military alliance relationship—and US arms transfer policy have been among the most salient factors influencing the arms procurement process. The domestic political system in operation since the 1970s—characterized by a strong presidency and an authoritarian tradition—has made the process less transparent and accountable to the public.

A key feature is the concentration of arms procurement decision-making authority in the MND and the President. Throughout the process the MND dominates other government agencies and institutions and even the National Assembly. It has the task of concluding the process and it receives interim reports at nearly every stage. The President has the final say regarding procurement programmes with budgets exceeding 5 billion won ($5.25 million).[1]

[1] At the 1997 average exchange rate of 951 won = $1. *International Financial Statistics,* Mar. 1998.

* The author wishes to thank J. Y. Ra, formerly Professor of Political Science, Kyung Hee University, and currently Vice-Director of the Agency for National Security Planning, for supervising the study in the ROK. He also thanks the experts who contributed the papers which formed the basis of the chapter. See annexe C for the biographical details of the contributors. In addition to these contributors, the following experts participated in the workshop held in Seoul on 20 June 1995: Yong Soon Yim, Sung Kyun Kwan University; In Young Eun, Korea National Defense University; Kyung Soo Ro, Seoul National University; Sun Ho Lee, Korea Association of Military Studies; Won Hee Lee, Ansung National University; Kwan Hee Hong, Korea Institute for National Unification; Swung Hee Lee, Korea National Defense University; Kun Choon Lee, Korea Institute for Maritime Strategy; Sam Sung Lee, Hanrim University; Suk Jung Lee, Ministry of National Defense (MND); Kyung Man Chun, Korea Institute for Defense Analyses (KIDA); Ki Hyun Chung, MND; Yong Hun Chun, Kyemyung University; Sung Dae Oh, Air University; Hong Kyu Park, Institute of Foreign Affairs and National Security; Ki Woong Son, Research Institute for National Unification; Nam Sung Han, KIDA; Chong Moon Kim, KIDA; Sang Ho Kim, Korean Research Institute for Military Affairs; and Chong Sik Moon, Navy Headquarters.

With the advent of a civilian, democratic government in the early 1990s, after 30 years of military–authoritarian rule, the arms procurement decision-making process changed dramatically through the reform of rules and regulations. In 1993 special inspection and auditing procedures were applied to the Yulgok Project—the force improvement plan launched in 1974.[2] More broadly, however, the changes can be attributed to the general process of political democratization which began in the late 1980s, as a result of which the Regulations on Weapon System Acquisition and Management (RWSAM) were formulated and rationalized in 1991. The gradual institutionalization of the arms procurement decision-making process has been complicated by a shift in civil–military relations and the more dynamic interplay of the determining factors since the end of the cold war.

This chapter describes the arms procurement decision-making process of South Korea, focusing on its idiosyncratic features. The process in developing countries differs in many ways from that of Western industrialized democracies, and in South Korea, a leader among 'third-tier' arms-producing countries in terms of defence industrial capabilities, it differs from that of many other developing countries.[3] Special attention is paid in this chapter to determining the level of institutionalization, transparency and public accountability of the process.

A number of questions about the decision-making process are addressed in section II. How is it organized? Who are the key actors? What external and internal factors influence the process? Section III explores problems in the current arms procurement decision-making process in the light of the need for public accountability and responsiveness to the objectives of national security, and presents some recommendations as to how these problems could be overcome. Section IV reviews short- and long-term developments and key findings.

The overall focus is on the decision-making processes with regard to the choice between: (*a*) domestic research and development (R&D) and production; (*b*) production using foreign technologies; and (*c*) off-the-shelf purchases from abroad. Multidimensional perspectives are taken into account, including threat perceptions, security concepts, the level of defence industrial capability, the motivations of the political and military élite which lie behind the choice of suppliers, alliance relationships, national policies of self-reliance and the characteristics of procurement procedures as expressed by the organizational structures involved.

[2] For a detailed account of the Yulgok Project, see South Korean Ministry of National Defense, [The Yulgok project: yesterday, today and tomorrow] (MND: Seoul, 1994).

[3] 'Third-tier' refers to those countries which cannot produce equipment across the full spectrum of military technology but which nevertheless have significant arms industries. For a detailed explanation see, e.g., Wulf, H. (ed.), SIPRI, *Arms Industry Limited* (Oxford University Press: Oxford, 1993), pp. 362–63.

II. The arms procurement decision-making process

Defence planning

The legal basis for arms procurement is the National Defense Planning and Management System (NDPMS), comprising five closely interrelated phases: planning, programming, budgeting, execution and evaluation (see figure 6.1).[4] The actual process is clearly laid out in the RWSAM.[5] Adopted and developed in line with the transformation of the security environment in the 1970s, the NDPMS is a comprehensive resource-management system in which MND efforts are integrated to ensure the efficient use of limited defence resources.

National defence goals, policies and military strategy are based on a threat assessment carried out in the planning phase. A statement of requirements is then prepared by each armed service stating its strategic needs for the implementation of defence policies and military strategy in accordance with the goals.

Two NDPMS documents regulate arms procurement in South Korea: the Joint Strategy Plan (JSP) and the Mid-Term National Defense Plan (MNDP).[6] Mission-specific military requirements stated in the JSP are submitted to the Joint Chiefs of Staff (JCS) according to the concept-based requirements of each service rather than on the basis of the available budget. Mission requirements under the MNDP are fashioned into specific defence programmes. Appropriations are then made for five years within the limits of the available budget to meet those requirements. After an annual review of the five-year programme, through which funding is reviewed and adjusted on a rolling basis,[7] some requirements are put off for later years or dropped altogether.

The institutional process for threat assessment[8]

Analysis of the security environment is an important preliminary stage of the procurement process. The security environment of South Korea is characterized by its relations with North Korea and the USA. The most serious and direct threat is posed by North Korea. It has also been suggested that potential or indirect security concerns stem from the interaction between the four great powers in the Asia–Pacific region—China, Japan, Russia and the USA.

[4] Initially drawn up by MND Directive no. 253 (7 June 1979), fully developed in 1983 and revised on 31 May 1995, the NDPMS was modelled on the US Planning, Programming and Budgeting System, with the addition of 2 steps: execution and evaluation. South Korean Ministry of National Defense, [Regulations on the National Defense Planning and Management System], MND Directive no. 500, 15 Apr. 1995.

[5] The RWSAM was established in 1991 by MND Directive no. 431, 8 Aug. 1991, and revised by MND Directive no. 531, 13 Jan. 1996 and MND Directive no. 559, 19 May 1997. The revisions emphasized increased effectiveness, accountability and transparency.

[6] The MNDP is a blueprint for MND national defence activities for the coming 5-year period. For a detailed explanation see Ministry of National Defence (note 2), pp. 71–75.

[7] On the arms procurement budgeting process, see Myung Kil Kang, 'Budget planning process in arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 46 (1995).

[8] The explanation and analysis of threat assessment are based on a telephone interview of 25 Mar. 1996 with Dr Choon Il Jung, KIDA Senior Research Fellow and Lt-Col in the South Korean armed forces.

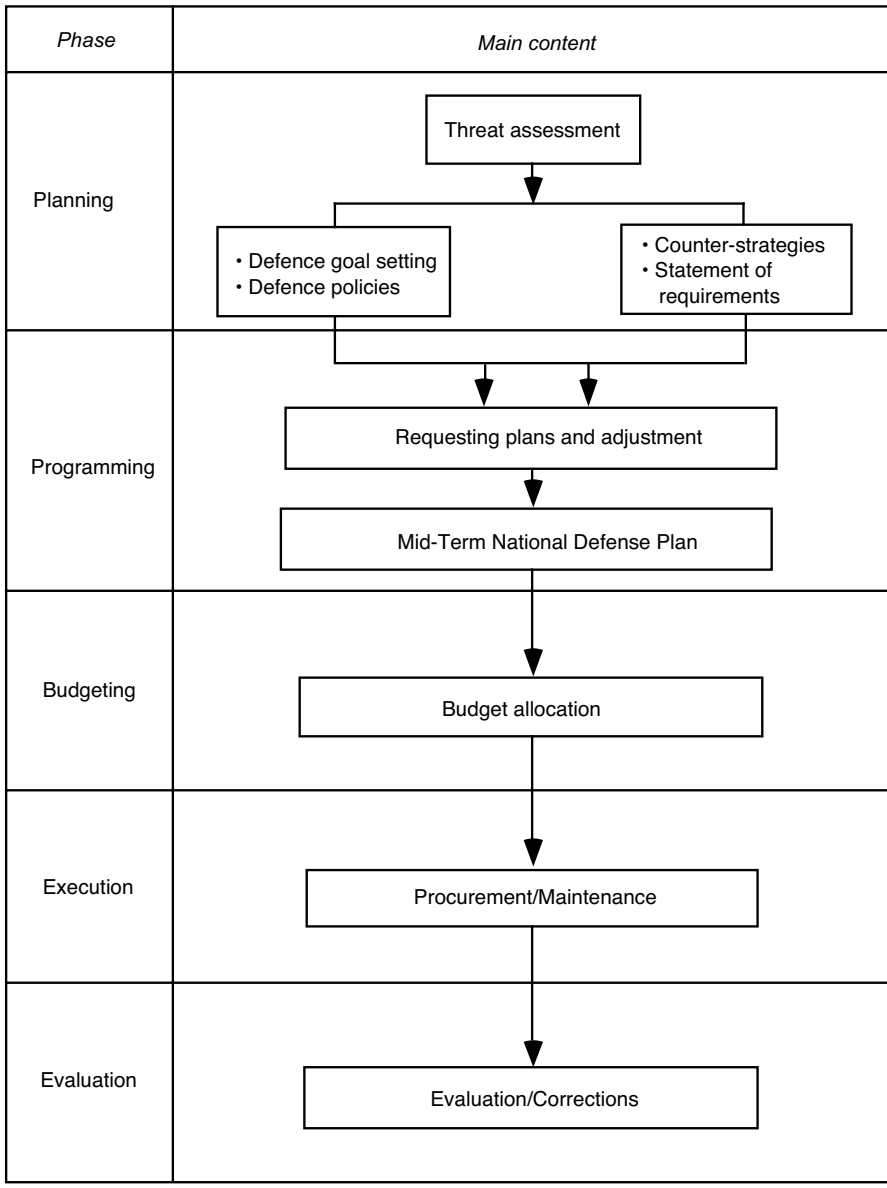

Figure 6.1. South Korea's National Defense Planning and Management System

Source: South Korean Ministry of National Defense [The Yulgok project: yesterday, today and tomorrow] (MND: Seoul, 1994), p. 69.

North Korea, separated from the South with the outbreak of the Korean War in 1950, has never relinquished its dream of unifying the peninsula and imposing communism on South Korea. The USA, having saved the South from military attack by the North, has undertaken to maintain and develop the secur-

ity and prosperity of South Korea. While dependence upon US political, military and economic assistance has decreased since the early 1990s, the USA remains in a pivotal position to determine—both directly and indirectly—South Korea's defence policy in general and arms procurement decisions in particular.

Threat assessment is conducted largely by the JCS.[9] Their Central Directorate of Strategic Planning (CDSP) is in charge of the comprehensive assessment of threats to national security, which it includes in its JSP documents. The JSP provides key information guiding the arms procurement process.[10]

Other MND agencies and other MND-staffed and -financed institutions play a supporting role in threat analysis and assessment. These include the MND Central Directorate of Policy Planning (CDPP), the Korea National Defense University, the National Defense Staff College and the Korean Institute for Defense Analyses (KIDA). The CDPP, which draws up the National Defense Basic Policy document,[11] plays a particularly significant role in assessing existing and potential threats to national security.

The Ministry of Foreign Affairs, the National Security Planning Board and the National Unification Board also deal with national security issues. The National Security Planning Board is similar to the US Central Intelligence Agency (CIA), and the directorship is at ministerial level. The National Unification Board deals with North–South Korean unification matters and is headed by the Vice-Prime Minister. These bodies all have formal and informal contacts with the MND and contribute indirectly to the National Defense Basic Policy document by routinely exchanging information with the MND.[12]

The most important influence on the threat assessment process is the USA, which has long provided critical information and intelligence on the North Korean military and the security situation surrounding the Korean peninsula through a number of political and military channels, notably the Intelligence Office of the South Korean–US Combined Forces Command but also the annual South Korean–US Security Consultative Meeting between the South Korean Minister of National Defense and the US Secretary of Defense and the annual Military Committee Meeting between the JCS chairmen of both countries.

Because of the unchanging military threat from North Korea, the rather rigid JCS and MND assessments are incorporated into national security policy with little modification or adjustment. The threat has sometimes been exaggerated

[9] The JCS is organized into 4 Central Directorates of Intelligence, Operations, Strategic Planning and Force Evaluation and 3 Offices of Personnel and Logistics, Command, Control, Communication and Computer, and Civil Affairs and Psychological Warfare.

[10] Threat assessment is first carried out by the Defense Intelligence Agency (DIA) and included in its Intelligence Estimate document. The threat assessment most relevant to weapon systems acquisition is that in the JSP drawn up by the CDSP. Ministry of National Defense (note 4), p. 68.

[11] The National Defense Basic Policy is drawn up every 3 years and is one of the 4 major documents for national defence planning. It covers a 15-year period and provides guidance for long-term direction and mid-term policy goals of national security policy, defence policy, and defence planning and programming.

[12] Other major documents produced in the first phase of the NDPMS are the Intelligence Estimate, the JSP and the Joint Strategic Capability Plan.

for political reasons, for example, to preserve various military–authoritarian regimes over a 30-year period.

There has recently been a considerable change in South Korea's threat assessment.[13] The government perception is changing more slowly than that of the general public. Because of South Korea's democratization and global *détente,* more and more people consider that the threat of war with North Korea has decreased notably and would thus afford lower priority to a tight security posture.

The changing threat assessment has led to a reconfiguring of national security policies, especially with respect to defence. Defence goals were revised in March 1994 in response to the rapid changes in the domestic and international security environments following the end of the cold war.[14] In the new statement of defence goals, the terms 'external military threat and aggression' and 'regional stability and world peace' replaced 'armed aggression' and 'the security and peace of the region' in order to widen the range of threats to incorporate non-military as well as military threats. The revision of defence goals reflects the importance of military cooperation and defence diplomacy with foreign countries, and has led to active participation by South Korean armed forces in UN peacekeeping operations. However, the most serious threat still comes from North Korea and defence policies must emphasize military readiness and enhance the morale and unity of military personnel so as to counterbalance the military power of the immediate neighbour. A comprehensive plan has been put forward to convert the current manpower-intensive force structure into a technology-intensive one.[15]

The Yulgok long-term force improvement plan

South Korea has carried through an ambitious long-term plan, code-named the Yulgok Project, with the aim of qualitative improvements in its operational capability while accepting quantitative reductions. It was initiated by President Chung Hee Park in 1974 to redress the serious imbalance between North and South Korean defence capabilities. A number of events directly affected his determination to implement the plan, including armed assaults on the presidential residence by North Korean infiltrators in 1969, the capture of the US intelligence vessel *Pueblo* and the shooting-down of the US intelligence aircraft in 1969, the Nixon Doctrine, and the collapse of South Viet Nam in 1975.[16]

[13] Min Yong Lee, 'Security policies, defence planning and military capability', SIPRI Arms Procurement Decision Making Project, Working Paper no. 41 (1995).

[14] The previous defence goals were: 'to defend the nation from armed aggression by potential adversaries, support the nation's efforts for peaceful unification, and contribute to the security and peace of the region'. South Korean Ministry of National Defense, *Defense White Paper, 1994–1995* (MND: Seoul, 1995), p. 20.

[15] For a detailed explanation of defence policies, see Ministry of National Defense (note 2), pp. 19–25.

[16] Ministry of National Defense (note 4); Min Yong Lee (note 13); and Jin W. Mok, 'Organizational structures and characteristics of the South Korean weapon procurement process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 50 (1995).

Table 6.1. Major activities of the force improvement plan, 1974–94
Figures are in current b. won.

Classification	1st stage (1974–81)	2nd stage (1982–86)	3rd stage (1987–94)
Investment expenditure	3 140.2	5 328.0	19 353.0
Percentage of total defence expenditure	*31.2*	*30.5*	*33.3*
Major activities	Replacement of old equipment	Development of self-propelled artillery[a]	Mass production of tanks, armoured vehicles, self-propelled artillery
	Construction of military bases in the front area	Joint development with the USA of tanks and armoured vehicles	
	Construction of fast attack craft	Construction of major surface combatant	Licensed production of helicopters, submarines, F-16 fighter aircraft
	Purchase of F-4 fighter aircraft	Licensed production of F-5 fighter aircraft	

[a] This project did not reach the production stage.

Source: South Korean Ministry of National Defense, *Defense White Paper, 1995–1996* (MND: Seoul, 1996), p. 94.

The fourth stage of the project has been under way since 1995, financed mainly by domestic taxes, notably a defence tax levied in 1975–90, and loans from the USA which have covered about 10 per cent of the total investment (*c*. 22 000 billion won).[17] The Yulgok Project has led to a marked improvement in South Korea's defence capability, as shown in table 6.1. However, the Government estimated South Korea's military power at 71 per cent of that of North Korea after the third stage.[18]

Assuming that the project continues, the long-term goal is to establish a basic foundation for a self-defence capability for the 21st century. Two specific objectives are stressed: (*a*) a defence capability robust enough to deter any armed provocation by North Korea; and (*b*) a capability to meet the security requirements of the 21st century and an eventual post-unification era.[19] Specific weapon and equipment requirements are suggested in the MNDP for 2001 (see table 6.2). If this is successfully implemented, the MND predicts that South Korea will achieve parity with North Korea and a mutual deterrence capability, and, more importantly, will much reduce its security dependence on the USA.[20]

[17] Ministry of National Defense (note 2), p. 33.
[18] Ministry of National Defense (note 4), p. 47.
[19] South Korean Ministry of National Defense, [Our defense expenditures: questions and answers] (MND: Seoul, 1994), p. 57.
[20] South Korean Ministry of National Defense, [South Korea's national defence towards the 21st century] (MND: Seoul, 1995), p. 102.

Table 6.2. Major arms to be procured under the Mid-Term National Defense Plan for 2001

Major capability/ purpose	Direction	Items to be procured
Information and command	Early warning and surveillance	Radar
	Self-command systems	
Strategic strike and high-speed mobile combat	Strategic strike and offensive mobility	
	Combat capability improvement	Quality improvement of tanks
		Self-propelled artillery
	Support of mobility	Computerization of fire control system
		Mobility-supporting equipment
Naval control	Strategic control of sea, early-warning system	Long-range surface patrol aircraft
	Amphibious combat capability	Landing assault armoured vehicles
		Landing ships
Air operations	Advanced air combat	Korean Fighter Programme
		Air-to-air missiles
Survivability	Countering biological and chemical warfare	Early-warning equipment
		Improvements of logistic facilities
		Military bases for navy and air force
R&D	Development of defence industry	Development of future models: tanks, missiles, radar
	Strategic weapons identified	
	R&D investments increased	Maintenance of a 3.6% share of R&D in total defence expenditure

Source: South Korean Ministry of National Defense [South Korea's national defence towards the 21st century] (MND: Seoul, 1995), pp. 100–102.

Strategic criteria for arms procurement decisions

In addition to threat assessment, the alliance with the USA and national defence policies, four more criteria are of particular strategic significance for arms procurement decisions.

1. The military significance of existing and prospective North Korean weapons and weapon systems is a major consideration. In particular, North Korea possesses ballistic missiles and is not a signatory to the 1993 Chemical Weapons Convention.
2. No arms procurement decision should risk unleashing an arms race between the two Koreas. The desire of the armed services for more advanced and powerful weapon systems, irrespective of cost, is not conducive to the

Table 6.3. Procurement by source: domestic, foreign and US, 1988–94

Figures are in current b. won. Figures in italics are percentages.

		Domestic procurement		Foreign procurement				USA
Year	Total	Total	%	Total	%	FMS	Commercial	%
1988	2 424	1 433	*59*	991	*41*	290	702	. .
1989	3 225	2 430	*75*	794	*25*	311	484	. .
1990	4 252	3 092	*73*	1 160	*27*	311	850	. .
1991	3 540	2 950	*83*	590	*17*	354	236	. .
1992	4 090	2 590	*62*	1 500	*38*	1 050	450	. .
1993	4 240	3 680	*87*	560	*13*	342	218	. .
1994	4 700	3 850	*82*	850	*18*	. .	. .	*70*
1995	4 711	3 850	*79*	861	*18*	. .	. .	*70*

Note: FMS = Foreign Military Sales.

Sources: South Korean Ministry of National Defense, *Defense White Paper* (MND: Seoul), various years.

long-term goal of unification. Fortunately, however, such aspirations tend to be moderated by resource-saving defence management and there is likely to be slowdown in the growth of the defence budget.

3. An equally important criterion is to maintain the traditional military cooperation with the USA. While this might be seen to conflict with a reduction of dependence on the USA, it should receive high priority. If the MND decides on a foreign purchase, US weapon systems are favoured in the interests of interoperability between South Korean and US armed forces. As shown in table 6.3, purchases through the US Foreign Military Sales (FMS) programme and private companies accounted for about 70 per cent of total foreign procurement in 1994.[21]

4. South Korea has attached great importance to strengthening the linkage between military procurement and the defence industrial base, and this has significantly influenced the arms procurement decision-making process. Under the RWSAM, the MND Acquisition and Development Office prioritizes domestic R&D and production for weapon systems with a long life-cycle. In the case of foreign purchases, priority is given to types of weapon and weapon technology which can contribute to the development of indigenous arms production capabilities and offer spin-off benefits for civilian industry. This characterized President Tae Woo Roh's (1988–93) arms procurement policy, in which self-sufficiency through domestic R&D and production with imported technology was a major goal. In this way, the Government aimed both to increase self-reliance in arms procurement and to maintain an adequate defence industry

[21] South Korean Ministry of National Defense, [Regulations on weapon system acquisition and management], MND Directive no. 557, 19 May 1997, p. 187.

capability. The order of preference is for licensed production first, then joint venture, then assembly production.[22]

Stages and key actors in the arms procurement process

After the above preliminary steps, the next two stages involve the planning of requirements (see figure 6.2 for an overview of the arms procurement process). First, the armed services present force requirements, corresponding to defence policies as outlined in the National Defense Basic Policy document, and a long-term military strategy to the JCS. The statement of requirements includes a brief statement on the operational concept, the date of deployment and quantity of weapons, and the required operational capability (ROC).[23] Each service also submits mid- and long-term force requirements to the JCS and the MND by June each year. Second, the statement of requirements is reviewed and evaluated by the JCS Acquisition Deliberative Committee (ADC), which selects two or three weapon systems that meet the ROC. The JCS decides on the weapon system at the Joint Strategic Council after a comprehensive examination of the needs.

Once the force requirement is determined, the path of the arms procurement process divides into: (*a*) production using domestic R&D; (*b*) domestic production using imported technology; and (*c*) foreign purchase. This division is reflected in the Defense Acquisition and Development Program drawn up by the MND on the basis of the JSP and the Mid-Term National Defense Plan. The government aims to acquire weapon systems for mid- and long-term requirements through domestic R&D and production as far as possible. Production from domestic R&D is largely managed by the Agency for Defense Development (ADD) and the MND Director for Acquisition and Development.

The third stage, for procurement by methods (*b*) or (*c*), is testing and evaluation (T&E). This is the responsibility of the JCS, which first makes a Request for Proposal (RFP-1) in accordance with the Mid-Term National Defense Plan. The JCS can also authorize T&E for each service that has made statements of requirements. It can be conducted at home, by examining data, or by sending a team overseas. The basic criterion to be checked is whether the systems comply with the ROC and RFP-1. The JCS or the armed service implements (or authorizes) T&E and submits a report to the MND Director for Acquisition and Development.

The fourth stage of the arms procurement process involves negotiation on the weapon systems to be acquired by domestic production and production with imported technology (methods (*a*) and (*b*)), under the management and control of the Director for Acquisition and Development, who decides the method of procurement and the weapon types at the next two stages.[24]

[22] Ministry of National Defense (note 21), pp. 6, 17.
[23] Ministry of National Defense (note 21), p. 14.
[24] Ministry of National Defense (note 21), pp. 21–26.

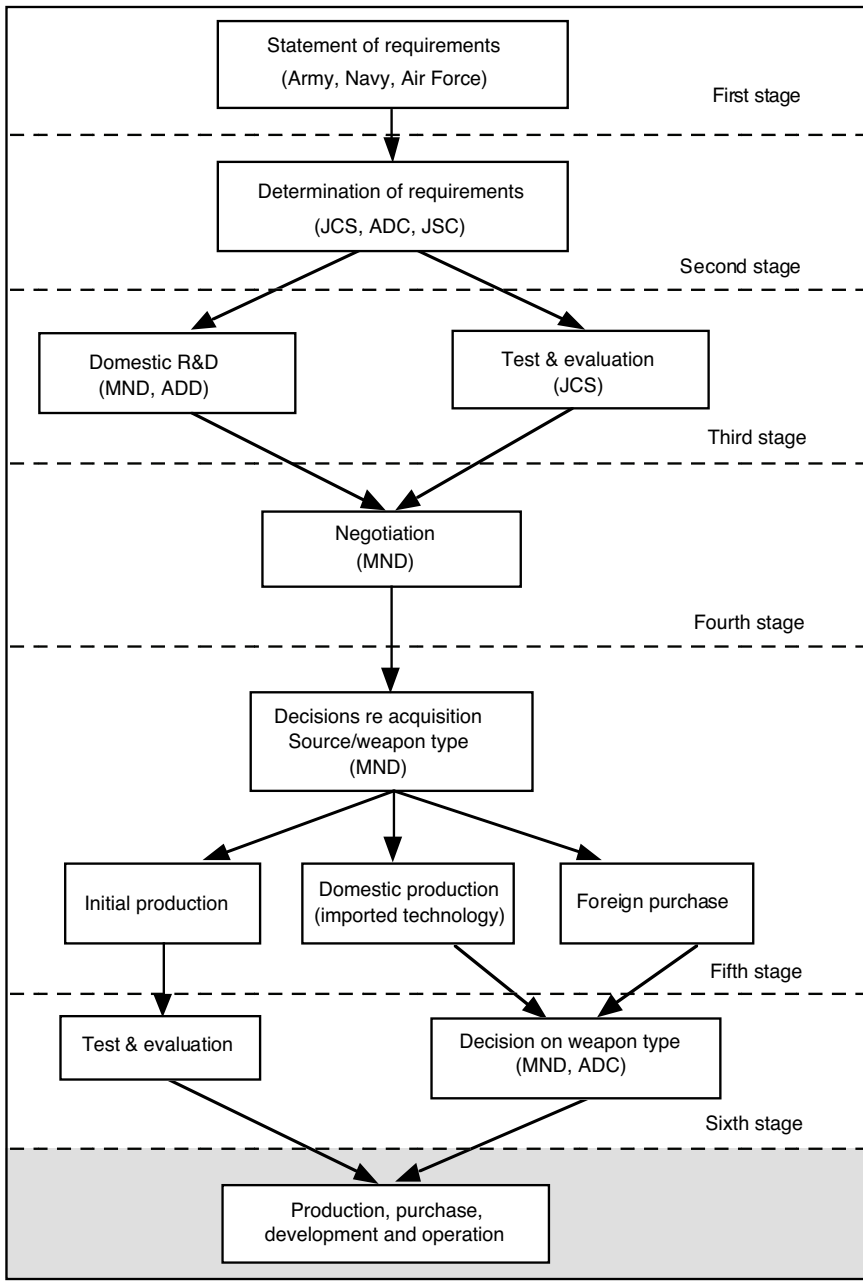

Figure 6.2. Main stages in South Korea's arms procurement process

Notes: JCS = Joint Chiefs of Staff; ADC = Acquisition Deliberative Committee; JSC = Joint Strategic Council; MND = Ministry of National Defense; ADD = Agency for Defense Development.

Source: South Korean Ministry of National Defense, [Regulations on weapon system acquisition and management], MND Directive no. 563, 1 July 1997.

The armed service negotiates with the Defense Procurement Agency (DPA), which is responsible for the procurement of all weapon systems and military construction for the MND, on the source and type of weapon systems to be authorized by the JCS. One principle is that more than two main contractors must be selected; another is that the DPA should prioritize commercial procurement. Procurement by government-to-government contract or under the FMS programme is the next best method.[25] Guidelines for negotiations are established by the Director for Acquisition and Development and delivered to the DPA.

In the case of domestic production with imported technology, the DPA directs the main contractor(s) to submit a plan to the Director for Acquisition and Development for the armed services. It should explain the project and give the details demanded by the MND (quantified ROC, the time for induction of the weapon, and numbers required), the contract for production by technology import, offsets, a schedule for the project, a production programme, a plan for indigenization of parts and a specification plan.[26] In the case of direct purchase, the DPA makes a provisional delivery contract for the Director for Acquisition and Development and the armed services, specifying the method of direct purchase (commercial or government-to-government), the time-frame for delivery, price information, offset details, product assurance, integrated logistics support, and so on.

In the fifth stage, the Director for Acquisition and Development evaluates weapon types on the basis of the T&E report, the review of the plan of production with imported technology and the provisional contract. The method of acquisition is decided by the ADC. The linkage between the improvement of defence science and technology and the development of the defence industry is considered, including the acquisition of essential technology, offset conditions, the expected cost of acquisition, the ratio of domestic technology to be used, inter-operability with allied forces, the effect on national security in general, and the available financial resources.[27]

In the sixth stage the weapon type is decided by the Director for Acquisition and Development or by the armed services in the case of weapon systems to be authorized by the JCS. The ADC also bases its decision on the T&E report, the economic efficiency of the investment and maintenance costs, spin-off effects, contract conditions, offset conditions and foreign policy considerations. The rule is that weapons and equipment that are judged most cost-effective should be chosen. This decision normally represents the end of the decision-making process. Mass production and purchase, deployment and operation follow automatically through a process of appropriation under the MNDP.

[25] Ministry of National Defense (note 21), p. 22.
[26] Ministry of National Defense (note 21), p. 24.
[27] Ministry of National Defense (note 21), pp. 16–18. See also Seok Soo Lee, 'The domestic dynamics of the decision-making process for arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 43 (1995), p. 3.

In the case of the force improvement plan, however, the decision on weapon type is not the end of the process. Before elements of the Yulgok Project are implemented they must be approved by the Defense Force Improvement Committee (DFIC), chaired by the Vice-Minister of National Defense. This committee functions as an expanded or a regular DFIC depending on the participation of non-MND members with special technical and budgetary expertise.[28] For the Yulgok Project, the expanded DFIC deliberates those proposals that require interdepartmental cooperation and coordination. The regular DFIC, on the other hand, reviews those proposals that come under the MND. Arms procurement proposals are usually reviewed by the regular DFIC unless the defence budget requires adjustment.[29] Any final adjustments to proposals approved by the DFIC are made by the Minister of National Defense, with the President having the final word on projects costing more than 5 billion won. Subject to the approval of the Minister and/or the President, a procurement programme is concluded and funds automatically appropriated.

The main actors in the process outlined above are the MND, the JCS and the armed services. The President and the Minister of National Defense are the two major decision makers, all other officials playing relatively minor roles. There is a dynamic political power game between MND agencies and institutions, and between the MND and other government bodies.[30]

The National Assembly is legally and institutionally obliged to oversee the arms procurement process. Particularly through the Committee of National Defense or the Armed Forces Committee, the Assembly is a principal actor and can control arms procurement decisions by funding and auditing programmes, inspecting their implementation and so on. It is specifically entitled to audit the cost-efficiency and adaptability of the weapon systems to be imported or developed domestically. In 1993 it set up a committee for audit and inspection and revealed the abuse and wrongdoing connected with the Yulgok Project. This had an unusual outcome, in part leading to the Government's establishing the DFIC within the MND in 1994. However, the role of the National Assembly in arms procurement decision making is still insignificant and falls far short of public expectations.

The predominant power in arms procurement decisions lies with the President, as vividly revealed in the special inspection and audit of the Yulgok Project in general and of the Korean Fighter Programme (KFP) in particular in the early 1990s. The selection of the next-generation fighter shows that President Roh had the final say on the project. The air force initially decided to procure the F/A-18 and this decision was adopted by President Roh and his Minister of National Defense in 1989. However, the President's office came to favour the

[28] The DFIC was created by Presidential Directive no. 12019 (revised 26 Dec. 1986). Its main function is to deliberate project schedules, times for force integration, project budgeting and methods of contract purchase.

[29] Jin W. Mok (note 16).

[30] For a detailed description of the role and work of the major MND actors, see South Korean Ministry of National Defense, [Regulations on weapon system acquisition and management], MND Directive no. 531, 13 Jan. 1996, pp. 2–5.

F-16 and 18 months later this was the model to be acquired. The minister who had insisted on the F/A-18 was replaced.

Several other actors are involved: the DPA; the ADD, a government-financed agency for defence R&D; the Korean Institute for Defense Analyses (KIDA),[31] responsible for cost–benefit analyses of weapon systems, collection and management of information and data related to the arms trade, and documentation on offset deals; and the Defense Product Assurance Agency (DPAA), in charge of quality control of defence items in mass production and of configuration management, technological assistance to the armed services and work related to international agreements on defence product assurance. Three deliberative committees—the Joint Strategic Council (JSC), the ADC and the Expanded ADC (EADC)[32]—are appointed under the MND to gather data from organizations in the procurement process and make recommendations to the Minister.

Defence contractors and other government agencies have minor roles in the arms procurement decision-making process.

A number of factors combine to constrain the transparency of the arms procurement decision-making process, including the security environment, the alliance with the USA and the nature of the domestic political regime. Others, including the diversification of sources of weapon supply by increasing the number of arms producers and the democratization of the political regime, enhance transparency and the efficiency and accountability of the process.

The arms procurement process under changing regimes[33]

The political leadership and regime are a major factor in the arms procurement decision-making process. Power has twice been seized by former generals and military–authoritarian regimes—in 1961, by President Park through a military coup, and in 1980, by President Doo Hwan Chun (1980–87). The last former general to serve as President, Tae Woo Roh, handed over to Young Sam Kim, a civilian, in 1993.

[31] The KIDA is affiliated with the ADD. It has functional directorates for policy planning, force development, manpower management, weapon systems studies and arms control research. In addition it has institutes for defence information systems and defence policy development. Brochure on the Korean Institute for Defense Analyses, 1993–94, p. 7.

[32] The JSC is composed of the chief director of the JCS (Chairman), the directors of each service and staff members of the US–South Korean Combined Forces Command. Its functions include deliberation of the JSP and determination of new force requirements and necessary operational performance. The ADC is composed of the MND Deputy Minister for Acquisition and Technology (chairman), 5 standing members (the Directors-General of the Force Improvement Programming Office, of the Acquisition and Development Office and of the Project Coordination Office, and the Director of Force Planning of the JCS) and, as of 1997, 13 non-standing members. Its major function is to confirm the Defense Acquisition and Development Plan, decide weapon type and approve the R&D programme. The EADC is composed of the Vice-Minister of National Defense (chairman), 6 standing members (Deputy Ministers for Planning and Management, for Acquisition and Technology, for Defense Policy and for Human Resources, and the Chief Directors for Strategic Planning and Force Evaluation of the JCS) and, as of 1997, 6 non-standing members. Its major functions are confirmation of the RWSAM and weapon systems acquisition. Ministry of National Defense (note 21), pp. 32–33.

[33] The analysis which follows is based largely on Seok Soo Lee (note 27).

The military–authoritarian leaders all put military security at the top of their list of national concerns in order to ensure national survival and maintain their unstable and illegitimate regimes. They tended to overestimate the North Korean threat in order to justify sacrificing social, economic and political values for military–security ones, and national security decision making became concentrated in the hands of a small political élite including the President, the presidential staff and the Minister of National Defense. Security issues in general and defence budgets in particular enjoyed a privileged position without being subject to social and political pressures. The Yulgok Project was seen as 'sacred' and was exempted from the normal budgetary process, without even legislative checks and balances or public participation.

President Park sought to maximize the country's military potential to overwhelm North Korea and free South Korea from its security dependence on the USA, opting to improve forces and develop the defence industry. His ideological orientation was one of self-reliance or independence.[34] This defence policy was pursued in parallel with the promotion of heavy industry, with backward and forward linkages to the defence industry and with a firm emphasis on production through domestic R&D rather than import.

The advent of the Chun regime brought many changes in the procedures for arms procurement and acquisition, resulting primarily from the introduction of a new military strategy and policies for the defence industry and national science and technology, and a drive for economic stability. In the 1980s, the arms race between North and South became intense and US–South Korean military cooperation was strengthened. Responding to a changed security environment, the South Korean military adopted the US AirLand Battle strategy and the strategic concepts of mobile and fire-power warfare. During the entire period of Chun's rule, direct foreign purchase, especially from the USA, was preferred to the domestic R&D favoured by his predecessor, because rationalization, standardization and inter-operability of weapon systems had become priorities and Chun desperately needed US support for his regime.[35] At that time, the JCS had an increasing distrust of weapons made in South Korea.

The R&D share of the defence budget was brought down from 2.33 per cent in 1970–79 to 1.62 per cent in 1980–89, as shown in table 6.4. The ADD research staff was reduced from 1800 to 950 under President Chun.[36] The value of weapon imports increased fourfold between 1981 and 1988, as seen in table 6.5. Clearly the Chun Government had no master plan for the development of the defence industry and military dependence on the USA increased still further. When President Roh replaced Chun in 1987, defence R&D expenditure began to rise, increasing from less than 1.5 per cent of the defence budget

[34] Ho Jin Kim, [A comparison of political leadership of Tae Woo Roh, Doo Hwan Chun and Chung Hee Park], *Shindonga,* Aug. 1991, p. 286.

[35] Jung Ki Kim, [Creation and development of the Korean military–industrial complex in the post cold-war era: in search of a structurally different defence industry policy], MA thesis, Yonsei University, 1995, p. 65.

[36] Nam Tae Cho, [A study on the policy of science and technology development for national security], Research Report (Agency for Defense Development: Seoul, 1993), p. 161.

Table 6.4. Defence R&D investment in South Korea, 1970–95

Expenditures are given in current b. won. Figures in italics are percentages.

	1970–79	1980–89	1990–95
R&D investment (A)	145.9	620.9	1 375
Defence expenditure (B)	6 259.3	38 292.5	54 061.9
A/B (%)	*2.33*	*1.62*	*2.54*

Sources: Chul Whan Kim, 'A plan for expansion of defense R&D investment', eds Jong Chul Choi *et al*., *The Changing National Defense Policy in the Changing World* (Jin Young Sa: Seoul, 1996), p. 17. Figures for 1994 and 1995, South Korean Ministry of National Defense [Statistics on defence expenditure] (MND: Seoul, 1997).

in 1988 to 2.93 per cent in 1993. Roh apparently wanted to consolidate the basis for domestic production through the development of military technology.

As the process of democratization began to accelerate, President Roh displayed a new style of leadership in security policy decision making, reducing the rate of growth of defence spending and cutting government subsidies for the defence industrial sector. His arms procurement policy was characterized by a shift from direct foreign purchase to domestic production with foreign technology, taking a middle course between the preferences of Park and Chun.[37] The ADD was rehabilitated with the resumption of the short-range ballistic missile development which had been suspended by Chun under US pressure in the early 1980s.[38]

Under military–authoritarian rule, the National Assembly did little to reflect public opinion in the arms procurement decision-making process. Except for a handful of former military personnel, most of its members lacked military expertise and a knowledge of arms procurement. Their access to military policy making and the arms procurement process was checked by the Military Secrecy Law and the 'sacred domain' concept. Conditioned by the tradition of *force majeure*, by which government arms procurement proposals were passed by the ruling party with little or no amendment, they were unwilling to get involved, believing that the presence of US forces could compensate for the weak military capability of their country. They were discouraged from attempting to engage in responsible oversight.[39] In 1993 the civilian democratic regime of Kim Young Sam made renewed efforts to shake off traditional customs. Civil–military relations were reversed, civilians gained control and, while Kim did

[37] For details on the major projects of force improvement during President Roh's tenure, see Jung In Moon, 'Suggestions for the development of defense industry of South Korea', *Defense and Technology,* Oct. 1994, pp. 10–21.

[38] Won Chul Oh, Second Chief Secretary for the Economy to President Park in 1971–79, played a significant role in developing missiles. Won Chul Oh, [Missile development, suspended by Chun Too Whan and the United States], *Shindonga,* Jan. 1996, pp. 388–411.

[39] The role of the National Assembly in the arms procurement process is discussed in Noh Soon Chang, 'The role of the National Assembly in the process of arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 49 (1995).

Table 6.5. South Korean imports of major conventional weapons, 1980–96

Figures are SIPRI trend-indicator values as expressed in US $m. in constant 1990 prices.

Supplier	1980	1981	1982	1983	1984	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994	1995	1996
Brazil	16	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .
France	. .	. .	. .	. .	13	. .	13	. .	27	. .	. .	30	. .	28	28	28	28
Germany	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	100	90	90	180
Italy	4	4	4	4	. .	1	1	1	1	1	. .	. .	. .	. .	. .	. .	10
Netherlands	4	. .	4	12	8	12	16	8	8	. .	. .	. .	. .	. .	. .	. .	. .
Russia	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	45
Spain	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	. .	25	125	. .	. .
UK	. .	. .	. .	. .	. .	. .	. .	117	117	8	118	118	91	90	. .	1	. .
USA	480	310	150	250	360	511	325	437	948	977	788	731	401	239	399	1434	1328
Total	**504**	**314**	**158**	**266**	**381**	**524**	**355**	**563**	**1101**	**986**	**906**	**879**	**492**	**482**	**642**	**1553**	**1591**

Note: The index produced using the SIPRI valuation system is not comparable to official economic statistics such as gross domestic product, public expenditure or export/import figures. To enable the aggregation of data on transfers of different types of weapon, SIPRI has created an index which gives similar values to similar weapon systems. The SIPRI system was designed as a *trend-measuring device* to permit the measurement of changes in the total flow of major weapons and its geographical pattern. For further explanation of the SIPRI trend-indicator value see the SIPRI Yearbook or the SIPRI Internet page, URL <http://www.sipri.se/projects/armstrade/atmethods.html>.

Source: SIPRI arms transfers database.

not opt for new arms procurement policies, he made the decision-making process more transparent and accountable to the public. This change was accelerated by the revival of a legislative audit system and the strengthening of the inspection rights of the National Board of Audit and Inspection over the force improvement plan and the military decision-making process, and of the military's self-reform efforts under the new leadership.

The influence of the USA

The goal of self-reliance in arms supply and of minimizing external constraints on policy and behaviour has been central to South Korea's arms procurement and national security policies.[40] Military and political autonomy is of critical concern to military planners. The initiation of an ambitious defence industrialization programme in South Korea in the 1970s led to conflict with the USA as predominant supplier.[41] With the officially declared MND policy of diversifying acquisition sources in the late 1980s, the conflict became more intense but not explosive.

While the Government uses every opportunity to get the USA to reduce control over its transfers of weapons and military technology, and is seeking to diversify weapon procurement sources and establish comprehensive defence cooperation with European countries,[42] defence planners are trying to increase the ratio of local production to import. US control over South Korea's arms import and export policy and, to a lesser degree, indigenization of weapon production is taken seriously by the Government; restrictions on the re-export of technologies of US origin are one of the main reasons for difficulties in exporting and low capacity utilization South Korea's defence industry.[43] In many cases the USA has visibly and invisibly put pressure on contracts for weapon and military technology deals with non-US arms manufacturers and exporters. A recent case involved the April 1995 bilateral accord allowing Russia to repay $450 million in debts to South Korea with Russian-made arms and raw mater-

[40] Ross, A. L., 'Arms acquisition and national security: the irony of military strength', eds E. E. Azar and Chung In Moon, *National Security in the Third World: The Management of Internal and External Threats* (Edward Elgar: Cheltenham, 1988), p. 154.

[41] Kwang Il Baek and Chung In Moon, 'Technological dependence, supplier control and strategies for recipient autonomy: the case of South Korea', eds Kwang Il Baek, R. D. McLaurin and Chung In Moon, *The Dilemma of Third World Defense Industries* (Westview Press: Boulder, Colo., 1989), pp. 153–83.

[42] In the 1980s South Korea made a considerable number of arms deals and established defence cooperation relationships with, among others, France, Germany, Italy and the UK.

[43] Tae Woo Kim, 'Impact of US arms export controls on South Korea's arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 44 (1995), p. 10. In the early 1990s, the USA conspicuously tightened its fetters, shifting away from the 1980s policy of cooperation and control and ending the honeymoon era of the 1970s. In 1984–89, e.g., the USA approved 99 of 119 (83%) of South Korea's requests for export. In 1990–93, only 25 of 185 (14%) were approved. US representatives for the KFP aircraft contract in 1989 revealed a very parsimonious attitude when negotiating high-technology defence technology transfer, putting a 'Must Not List' on the table before their South Korean counterparts, listing military technology items that could never be given to South Korea on any condition. This was seen as severely discriminatory compared with the FS-X fighter aircraft deal with Japan agreed a year earlier.

ials.[44] At the beginning of the negotiations on this accord, senior US officials and President Bill Clinton publicly conveyed disappointment to the South Korean Government, worrying openly about the inter-operability of Korean and US forces in Korea.

A 1979 US–South Korean memorandum of understanding exchanged between the ADD and the Commander of the US Forces in Korea only allows South Korea to develop and produce missiles weighing below 453.5 kg and with a maximum range of 180 km—the direct distance between Seoul and Pyongyang.[45] So far the USA has shown no willingness to lift the restriction, despite growing North Korean superiority in missile capability. North Korea has increased its indigenous missile production capabilities and is developing medium- and long-range missiles such as the Daepodong 1 and 2. It is currently estimated to have a production capability of up to 100 Scud-B/C missiles per year and is reported to have successfully test-fired the Rodong-1 missile over a range of 1000 km.[46]

US controls have obstructed the consolidation of South Korea's military capabilities. South Korea should seek a policy that can reduce or eliminate the vulnerabilities inherent in a single- or predominant-supplier relation. The conventional wisdom on arms transfers and dependence holds true: 'Third World dependence associated with arms imports from industrial countries does not disappear . . . with the creation of local defense industries; the form of dependence is changed'.[47] The South Korean–US arms transfer relationship has developed from grants or imports of complete weapon systems, through the supply of technical data packages, to the supply of component parts and critical technology. What has changed is the form of dependence, not the dependence itself.

[44] Under the accord, Russia will provide an unspecified number of T-80U tanks, BMP-3 armoured vehicles, 9M115 (AT-7) anti-tank missiles, Igla-2 (SA-18) portable low-altitude surface-to-air missile systems, spare parts and other equipment. Zhigulsky, A., 'Russia moves to repay S. Korea: plans to retire overdue debt with arms, raw material', *Defense News*, 31 July–6 Aug. 1995; Jung Yong No, 'Korea, import Russian arms', *Segye Times* (Seoul), 22 Apr. 1995; and Tae San Joo, 'Diversification of weapon supply source', *Segye Times*, 23 Feb. 1995.

[45] The MND and the Minister of Foreign Affairs reconfirmed the memorandum in 1982 and 1990, respectively. Won Chul Oh (note 38), pp. 399, 410–11.

[46] Hayes, P., 'International missile trade and the two Koreas', *Korea Journal of Defense Analysis,* vol. 5, no. 1 (summer 1993), pp. 207–39; Bermudez, J. S. and Carus, W. S., 'The North Korean SCUD-B programme', *Jane's Soviet Intelligence Review*, Apr. 1989, pp. 177–81; Jehl, D., 'Iran said acquiring NK missiles', *Korea Herald*, 9 Apr. 1993; [The North Korean missile], *Chosun Ilbo*, 9 Sep. 1993; [NK's Rodong-1 and 2 missile, probably for export], *Hanguk Ilbo*, 17 Sep. 1993; and Jong Chul Choi, [North Korea's arms transfer policy], eds Jong Chul Choi *et al*., [North Korea's strategy for survival] (Boseung Munhwasa: Seoul, 1995), pp. 344–45.

[47] Moodie, M., 'Defense industries in the third world: problems and promises', eds S. G. Neuman and R. E. Harkavy, *Arms Transfers in the Modern World* (Praeger: New York, 1979), p. 301. Many scholars and commentators agree: see also Ross (note 40), pp. 168–69; Cahn, A. H. *et al*., *Controlling Future Arms Trade* (McGraw-Hill: New York, 1977), p. 87; and Neuman, S. G., 'Arms transfers, indigenous defense production and dependency: the case of Iran', ed. A. Hossein, *The Security of the Persian Gulf* (Croom Helm: London, 1980), p. 145.

Defence budgeting

Most recently, the arms procurement budget process has been conducted in specific programme terms. Force improvements are budgeted not for each service but for each functional military capability. The long-standing practice of pre-allocating national resources to the defence sector was abandoned in the early 1990s[48] because of the increasing demand for budget accountability by the Board of Finance and Economics. Each investment in force improvement is scrutinized, and the budget requirement is evaluated for cost-effectiveness. This should lead to increased responsibility for and transparency in budget management and the budget process. One important change introduced by the new civilian government in 1993 was to divide the defence budget delivered to the National Assembly into three categories: category A budget items are aggregated and are presented to the entire National Assembly; category B items are disaggregated and are revealed without restrictions to the members of the National Assembly Committee of National Defense; and category C items are further disaggregated and revealed to the Committee of National Defense with certain restrictions. The entire defence budget was previously deliberated as a lump sum.

Contract procedures and offsets

Contract procedures are managed by the DPA with negotiation guidance from the MND Acquisition and Development Office.[49] In the case of direct foreign purchase, the DPA asks the foreign supplier or its agencies in South Korea to submit a proposal containing a technology assessment, data on the performance, reliability, operability and maintainability of the weapon system, and the proposed price. Negotiations are then opened between the DPA, the foreign suppliers and their domestic agencies on price conditions, performance or functional alternatives and logistic support requirements.

In the case of co-production or licensed production by technology transfer, the prime contractor should be the domestic defence industry. Two types of contractor decision are used. In the first, a prime contractor (a Korean firm) is determined in advance, but a foreign one is selected through negotiation. The case of the KFP aircraft is an example.[50] In the second, the prime contractor is not determined *ex ante* and more than two Korean companies which already have a co-production contract with foreign suppliers enter into open bidding for the contract. Thus the prime contractor and the type of weapon system are determined by negotiation. Most of the co-production programmes conducted by the Government are of this second type. Recently, however, the MND has

[48] Until the mid-1980s, the defence budget was allocated 5–6% of gross national product (GNP).

[49] Ministry of National Defense (note 21), pp. 41–45.

[50] In the KFP, the Samsung Aviation Company was selected in advance as prime contractor by the government but General Dynamics was chosen as a foreign contractor, defeating McDonnell Douglas in the final competition.

Table 6.6. Rank of offset preferences based on technological merit

Rank	Technological merit
A	Acquisition of key technologies for R&D and production Depot maintenance capability Transfer of design technology
B	Middle-range technologies acquisition Cost–benefit analysis method for weapon system Free provision of equipment and tools for depot maintenance

Source: Sung Bum Hong, 'Procedures for technology assessment and the selection of equipment in South Korea', SIPRI Arms Procurement Decision Making Project, Working Paper no. 45 (1995), p. 5.

tended to favour the first type which, by permitting foreign companies to compete, produces much more favourable contract terms, including those for programme cost, technology transfers and offsets. Offset policy prioritizes the acquisition of advanced critical technologies. The Offset Trade Committee is responsible for deciding on target projects for offset trade, and the Technology Evaluation Committee reviews offset trade negotiations in terms of technological merit, as shown in table 6.6. Under the 1973 Special Act for the Defense Industry eight methods are legally available for contract price determination,[51] including fixed-price, cost-plus and incentive contracts. Fixed-price contracts have been used almost exclusively.[52]

Technology assessment and defence R&D[53]

Technology assessment (TA) is an important step in the arms procurement process, essential for offset programmes for acquiring advanced critical technologies. There are three grades of technologies to be acquired. Other elements of the assessment include the evaluation of logistics support requirements, of personnel management, and of costs for each stage of the arms procurement decision-making process. While the technologies and components comprising the weapon systems are forecast on the basis of work breakdown structures, the ADD leads the decision on key technologies for each field of science and tech-

[51] The Special Act for the Defense Industry, established in 1973, has been revised 8 times. It has contributed to the foundation of funds for the promotion of the defence industry, the development of a system for contract and cost accounting, the establishment of the Association of Defense Industry Promotion, the development of a system of defence products quality assurance, the formulation of a basic policy for the defence industry, the establishment of a system of specialization of defence contractors and the development of offsets.

[52] This applied to 96% of contracts in 1989–92. Chul Whan Kim, [A comparison of the USA's and South Korea's arms acquisition and management processes (Korea National Defense University: Seoul, Dec. 1993), p. 79.

[53] The discussions on TA below are largely based on Sung Bum Hong, 'Procedures for technology assessment and the selection of equipment in South Korea', SIPRI Arms Procurement Decision Making Project, Working Paper no. 45 (1995).

Table 6.7. Technology assessment for domestic R&D

Stage	Agency	Technology assessment activity
Planning	A, C	TA in making the R&D plan (outline)
	A, B	Test and evaluation plan (outline)
Exploratory development	C	System technology analysis according to ROC I, setting up work breakdown structures
	A, B, C	System requirement review and system design review for the weapon system derived through setting up system concept
Advanced exploratory development	C	Completion of work breakdown structures in exploratory development stage, system design review based on configuration identification, writing technology documentation and developing a prototype
	A, B, C	Technology review: system design review, preliminary design review and circumstantial design review
	A	Advanced test and evaluation
System development	C	Completion of work breakdown structures in advanced development stage, review system design based on configuration, identification, writing technology documentation, and production of prototype
	A, B, C	Technology review: system design review, preliminary design review and circumstantial design review
	B	Engineering tests and evaluation

Notes: TA = technology assessment; A = Agency for Defense Development; B = armed forces; C = major contractor company; ROC I = Required Operational Capability I.

Source: Sung Bum Hong, 'Procedures for technology assessment and the selection of equipment in South Korea', SIPRI Arms Procurement Decision Making Project, Working Paper no. 45 (1995), p. 3.

nology and the scope of component development. TA is applied to all arms acquisition methods: production from domestic R&D, production with imported technology and direct foreign purchase. It is carried out at each of the main stages of domestic R&D, as shown in table 6.7: (*a*) planning, which involves the examination of development alternatives and concept design; (*b*) exploratory development, which involves basic design, experimental modelling and a decision regarding development alternatives; and (*c*) system development, which involves detailed design, the production of engineering prototypes, testing and evaluation, and standardization.

For weapon systems purchased abroad or made with imported technologies, the T&E Task Force of the ADD and Army Training and Doctrine Command (or the Air and Naval Training Command) decides which tests are to be used. The military services and the ADD draw up the T&E plans. The offset ratio is set at more than 30 per cent of the contract price for military supplies costing over $10 million.[54] Several issues must be considered in deciding on offset

[54] MND Directive no. 559 (note 5), p. 14.

trade: (*a*) whether to use it to acquire advanced technologies; (*b*) whether the subsequent supply of munitions can be secured; and (*c*) whether it will contribute to other national interests.

In the case of joint ventures in the aeronautical industry, for example, TA is carried out to select the most appropriate methods among assembly production, licensed production and licensed production with domestic R&D. The technologies needed are classified and ranked. For each method and each classified technology the emphasis is on how much technology South Korea can acquire. As shown by the case of the KFP, licensed production with domestic R&D is preferred.

The defence industrial base

The defence industry emerged in the late 1960s in the wake of a series of shocks to national security, such as the armed entry by North Korean personnel to the presidential mansion and the Nixon Doctrine in 1969. The first and second US–South Korean Defense Minister Conferences in 1968 and 1969 provided an impetus for the Government to establish a plan to develop more self-reliant military forces. Because of these events and the strong leadership of President Park, who recognized that South Korea's defence should not depend solely on the USA, the defence industrial base began to be built up on legal and institutional arrangements as well as the Government's full financial support in the early 1970s.[55]

Under Park's leadership the defence industrial base was rapidly consolidated with the establishment of the ADD in 1970 as a cradle of defence R&D, the enactment of a special law to promote the defence industry in 1973, the introduction of a defence tax in 1975, and the establishment of an Association of Defense Industry Promotion (ADIP) to connect the MND and defence industry companies in 1976, among other initiatives. Park also ordered the development of a short-range ballistic missile.[56]

The defence industrial base has evolved in three stages: (*a*) the early 1970s to 1980, in which the groundwork was laid for basic equipment production; (*b*) 1981–92, which was characterized by a slowdown; and (*c*) 1993 to the present, a period of reorganization and revitalization. The ambitious government-

[55] For an account of the historical evolution, current status and other aspects of South Korea's defence industry, see Byung Rok Song, 'Building a national defence industrial base', SIPRI Arms Procurement Decision-Making Project, Working Paper no. 42 (1995); Yong Sup Han, 'South Korea's defence industrial base', Working Paper no. 51 (1995); Chung In Moon, 'Reviving the South Korean defense industry: challenges and strategies', Paper presented at the International Conference on Fifty Years of National Independence: Past, Present, and Future of National Security of the ROK, Korean Association of International Studies, Seoul, 16–17 June 1995; Young Sun Ha, 'South Korea', ed. J. E. Katz, *Arms Production in Developing Countries* (Heath and Company: Lexington, 1984); Kwang Il Baek and Chung In Moon (note 41); and Hyun-Kun Yoon, 'National security: defense, development and self-reliance through defense industrialization—the case of South Korea', Ph.D. dissertation, University of Maryland, College Park, Md., 1991.

[56] Won Chul Oh, [Arm 20 divisions], *Chosun, Monthly Magazine* (June 1994), pp. 477–81.

Table 6.8. Methods of arms acquisition in South Korea, 1970–

Period	Indigenous R&D and production	Joint R&D and production	Licensed production	Import
1970–80	Small naval craft	Small naval craft	Small arms Minor surface ships Helicopters Artillery Combat aircraft Small naval craft	Major surface ships Minor surface ships Combat aircraft Helicopters Missiles Artillery Tanks Armoured vehicles Radars Trainer aircraft Small arms
1980–90	Major surface ships Minor surface ships Midget submarines Armoured vehicles Small naval craft Small arms	Artillery	Helicopters Tanks Combat aircraft Artillery Armoured vehicles Radars	Missiles Submarines Tanks Radars Trainer aircraft Helicopters
1990–2000	Major surface ships Minor surface ships Armoured vehicles Small naval craft Small arms Trainer aircraft	Artillery	Tanks Submarines Radars	Missiles Helicopters Artillery Combat aircraft Radars Trainer aircraft
2000+	Major surface ships Minor surface ships Armoured vehicles Trainer aircraft Small naval craft Small arms	Combat aircraft Tanks Helicopters Artillery Trainer aircraft Submarines	Submarines Helicopters Combat aircraft Artillery Radars	Missiles Radars

Sources: Compiled by Siemon T. Wezeman from the SIPRI arms transfers database; based on data from several editions of *Jane's Fighting Ships*; *Jane's All the World's Aircraft*; *Jane's Armour and Artillery*; and *Jane's Defence Weekly* (Jane's Information Group: Coulsdon).

led strategy of developing the defence industrial base in the past three decades has made South Korea one of the leading arms producers among third-tier countries, able to satisfy most of its domestic needs for conventional weapon systems, including armoured vehicles, aircraft, missiles, and naval vessels (see table 6.8). By the early 1990s, about 60 per cent of the weapons needed by the Korean armed forces were being manufactured locally.[57] However, the defence industry still needs foreign technologies and components to produce a number of required systems.

[57] Sung Ki Min (Brig.-Gen., ret.), Lecture at the Korea National Defense University, Seoul, 1995.

Table 6.9. Designated defence products and contractors, 1996

Classification	Contractors	Products
Aircraft/guided	7	18
Ammunition	10	92
Communications/Electronics	13	78
Guns	14	41
Mobility	12	33
Vessels	5	18
Other	22	39
Total	**83**	**319**

Source: South Korean Ministry of National Defense, *Defense White Paper, 1996–1997* (MND: Seoul, 1997), p. 119.

Under the Kim Government large private corporate conglomerates known as *chaebols* had a certain amount of influence on the arms procurement decision-making process through their formal channel, the Association of ADIP. The ADIP is an independent organization through which *chaebols* with subsidiaries manufacturing defence products seek government subsidies and assistance in making deals with overseas suppliers and in formulating a defence industrial policy favourable to them.

In 1996, over 80 defence contractors were producing 319 kinds of defence product (see table 6.9). The capital of the major defence firms (*c.* 39 per cent of all defence firms) amounts to more than $65 million. Capacity utilization in the industry as a whole is less than 50 per cent, and in such sectors as ammunition and guns even lower—36 per cent in 1993.[58] Although defence production capabilities and technologies have developed greatly through experience gained as subcontractors and part suppliers since the 1960s, many firms still engage in licensed production and indigenization of defence products of US origin.

Although data on the domestic R&D capability indicate remarkable progress in a quantitative sense, the South Korean defence industry is largely engaged in the production of basic conventional weapons. The low rate of defence indigenization is directly connected with the heavy dependence on the USA for sohpisticated weapon systems, the degree of which varies from item to item. The army's dependence is relatively low (34 per cent). However, the navy and air force rely heavily on imported parts and components, for 83 and 91 per cent, respectively.[59] This degree of dependence for high-performance systems contradicts the assumption that the defence industry has achieved a significant level of indigenous production. Military officers, MND officials and even local

[58] Sung Bin Choi and Nam Sung Han, [The roles and paths of the Korean defence industry in the transition period], *Kukbangnonjip*, spring 1993, p. 103. According to Sung Ki Min (note 57), the capacity utilization rate is 59.8%. See also Yong Sup Han (note 55), pp. 6–7.

[59] Byung Rok Song (note 55), p. 13.

defence contractors favour foreign components because they are reliable, cheaper and delivered faster. In the MND, the higher-ranking officials favour foreign weapons, particularly those made in the USA.[60]

The official emphasis in the MND is on greater self-reliance in R&D and production of indigenous weapon systems. Accordingly, the ADD is being upgraded to an advanced institute whose 'primary task will be to develop core technologies and parts for weapon systems requirements in the 21st Century',[61] and the MND is promoting production using dual-use technology acquired through civilian–military cooperation.

In 1995, 27 weapon system R&D projects were under way—15 being run by the Government and 12 by defence industries. The MND expects the number of defence industrial R&D projects to increase as research capability improves. A cooperative system of private firms, university research institutes and government-funded research institutes has already been set up to enhance national science and technology by developing dual-use technologies,[62] and 112 core parts are under development.

III. Problems with the arms procurement process and recommendations

Seen from the outside the arms procurement decision-making process of South Korea is not yet able to implement defence objectives, military strategy or public accountability.

1. Operational procedures are not satisfactorily specialized, scientifically systematic, objectively fair and transparent, or efficient. A primary consideration is how procurement decisions respond to the fast-changing security environment. During the cold war there was only one enemy and the whole national security power was directed at deterring and defending against military provocation from North Korea. The US commitment to its long-standing ally was invariably firm. The new global order that has developed in the past decade means that South Korea must change almost all aspects of its national defence policy, and the arms procurement decision-making process must become more responsive to the new internal and external environments.

Internally, the change to a civilian democratic government in the early 1990s led to growing popular pressure for participation in the national policy decision-making process, public information, civilian control of the military, strengthening of National Assembly oversight of government activities, and so

[60] Chung In Moon (note 55), pp. 24–25.

[61] South Korean Ministry of National Defense, *Defense White Paper, 1995–1996* (MND: Seoul, 1996), p. 102.

[62] The Subcommittee for Defense Science and Technology comprises 'relevant experts and directors from the Board of Finance and Economy and the Ministries of National Defense, Education, Trade, Industry and Energy, and Science and Technology. Its mission is to provide a link between science and technology policies, to establish industry–academic institution–research institute cooperation plans and to analyse the results of cooperative activities for research and development'. MND (note 61), p. 101.

on. Externally, the US commitment to the national defence of South Korea has declined. There is increasing competition between the great powers in North-East Asia for regional leadership. North Korea is not expected to start to abide by international norms, rules and principles in the near future. South Korea has to revise and consolidate its defence posture not only towards threats from North Korea but also towards other neighbours, including China, Japan and Russia, seen as potential future adversaries.

2. One of the most serious problems is the concentration of decision-making power in the hands of the Minister of National Defense and the relative exclusion of the National Assembly, defence specialists, and civilian and military officials. The minister routinely receives many interim reports on the arms procurement programme while it moves along the line of signatures, and it is difficult for officers in charge to go against policy directions and guidelines formulated by the minister at the outset. This means that the agencies and committees involved in arms procurement decisions are not given autonomy in decision making commensurate to their position. The National Assembly's oversight is still superficial, and its participation in arms procurement decisions is visible only at the time of defence budget allocation. As a result, the arms procurement process fails to arouse public concern.

3. The process itself is cumbersome. For instance, final acceptance of an arms procurement proposal requires more than 60 approvals by the heads of every division, office, directorate, committee, and so on, of the organization in authority and signatures by the President and/or the Minister of National Defense.

4. The supremacy of national security, foreign dependence and the predisposition to organizational closeness in MND policy making combine to create further structural barriers to transparency and accountability. These attitudes have long characterized the mind-sets of military planners and of decision makers generally. Within the MND, decision makers are reluctant to disclose information to other government agencies, to encourage civilian participation or to share decision-making power.

The excessive and deeply rooted confidentiality of the decision-making process has led to public suspicion of and irregularities in arms procurement. In turn this has contributed to decreased transparency, thereby diluting accountability and isolating the public from the decision-making process. Under the long-held traditions of the military regime, the government tightly controlled and even manipulated the flow of information on national security affairs, and the National Security Law and the Military Secrecy Act permitted military and closely associated agencies to carry out most of the arms procurement programmes exclusively, with minimal and superficial legislative oversight.

The Yulgok Project has been conducted in such a way as to prevent public legislative review. Although its budget reached 40 per cent of the total defence budget at some points, legislators could not examine whether the amount budgeted was sufficient or appropriate for individual projects since they were given an unitemized budget, a practice stemming from the fear that an itemized

Table 6.10. Time span of the arms procurement decision-making process

Acquisition method	Average time span
Direct foreign purchase	4 years 10 months
Domestic production with foreign technology	5 years 5 months
Production through domestic R&D	7 years 1 month
Average time span	6 years 9 months

Source: South Korean Ministry of National Defense, [The Yulgok Project: yesterday, today, and tomorrow] (MND: Seoul, 1994), p. 95.

budget in enemy hands could jeopardize national security. There was thus no mechanism outside the military that would allow any wrongdoing in the process to be spotted, and it is not surprising that former President Roh and some of his officials are suspected of having received kick-backs from arms dealers in connection with this and other military projects.[63]

5. At the stage of submitting force requirements, those in charge of proposing weapon systems are not always capable of identifying what is appropriate. They tend to be mid-level active officers (at the rank of lieutenant-colonel or above) whose backgrounds are limited to field command and who lack not only a strategic knowledge of overall defence policy and the defence policy-making system but also technical knowledge of the weapons and weapon systems. Moreover, as they only hold the position for one to two years, in accordance with the rotation principle, they are not acquisition professionals.

As a result, the ROCs are largely based on magazines, arms manufacturers' handbooks, suggestions by agents who work for the arms manufacturers and are registered in the MND, past experience or organizational directives. For example, the Korean K-1 tank was developed and produced on the basis of models of the US M-1A1.[64] Emerging technological developments do not feature in the early stages of initiating procurement. The best quality weapons which they recommend are then selected with no serious consideration of such vital factors as cost, performance and suitability for Korean conditions. The weapons to be bought or developed are often too expensive or take too long to prepare for field use.[65]

At the review stage of the process, the ADC committee members often have a low level of technical expertise. They bring little understanding of the content of or problems associated with the statement of requirements under consideration. They are therefore unable to carry out their primary function—to collect, coordinate and integrate separate requirements into one suitable for the overall defence posture. Consequently the committee reviews the statements of require-

[63] 'Foreign arms to be purchased through open bid', *Korea Herald,* 25 Jan. 1996.
[64] Chul Whan Kim (note 52), p. 17.
[65] Man Won Jee, *Segye Times*, 30 June 1993.

Table 6.11. Offset rates provided by the 50 largest US arms exporting companies, 1980–87

Figures are in US $m. in constant 1989 prices.

Recipient countries	Export value	Offset value	Offset rate (%)
Britain	1 800.8	1 896.5	*105.3*
Canada	3 874.1	3 024.2	*78.1*
Egypt	383.0	87.8	*22.9*
Israel	6 083.7	1 384.2	*22.8*
NATO	667.4	320.4	*48.0*
South Korea	1 055.8	488.0	*46.2*
Spain	2 151.3	2 851.1	*132.5*
Sweden	381.7	663.3	*173.8*
Switzerland	370.9	248.5	*67.0*

Source: Dong Ah Ilbo, 27 Apr. 1990.

ments in terms of the budget already allocated, and the major criterion for the review becomes whether the cost is less than the amount allocated.

6. In the light of the legal and institutionalized decision-making process prescribed in the RWSAM, a major problem is the difficulty of formulating an arms procurement plan that fully considers long-term strategic elements. Since the average time span for arms procurement plans for major weapon systems (including the six stages shown in figure 6.2) is generally more than five years, they cannot usefully be included in the Mid-Term National Defense Plan (see table 6.10). Consequently, strategic elements in the long-term defence planning cannot have any meaningful effect on the drawing up of the Mid-Term National Defense Plan. This is particularly the case for domestic R&D. Although there are difficulties in achieving congruence between the long-term military strategy and mid-term defence plans, annual reviews provide a certain degree of coordination between the plans.

7. At the stage of determining the acquisition method, the problem of offset agreements with foreign arms suppliers arises. Government regulations require the rate of offset trade to be 30 per cent or more of the contract price of deals over $10 million. This rate is low when compared to major offset agreements between the USA and many other countries, as shown in tables 6.11 and 6.12,[66] and clearly inadequate to meet the policy of defence indigenization. While South Korea seeks a policy that emphasizes securing arms technologies in order to accelerate the rate of indigenization of defence production, the USA is most reluctant to offer a high ratio of offset trade to South Korea.

In the same context the rigidity of contract procedures also causes problems. The DPA, which is in charge of making contracts, is often placed at a disadvantage in negotiating with foreign suppliers or their domestic agencies by the

[66] Tae Woo Kim (note 43); and Jong Chul Choi (note 46), p. 339.

Table 6.12. Comparison of offset rates and directed buy-back requirement in the F/A-18 co-production programmes

Recipient countries	Offset rate (%)	Buy-back requirement
Canada	*100*	Yes
Spain	*100*	Yes
Australia	*30*	Yes
South Korea[a]	*30*	No

[a] The deal between South Korea and the USA for the co-production of the F/A-18 did not materialize.

Source: Jong Chul Choi, 'US arms transfers and global hegemony: an analysis of their global scale and the regional context of Japan and Korea', Ph.D. dissertation, Pennsylvania State University, May 1992, p. 339.

annual revisions of the defence budget: foreign contractors are well aware that the DPA must finalize the negotiation, execute the contract and pay the supplier within the fiscal year. Under such pressure, the DPA accepts unfavourable or even unacceptable terms proposed by the contractor. If the ROC is decided and the contract is under a time constraint, the DPA has little flexibility at the negotiating table.

8. Finally, concerning the efficiency of the process, contract forms and cost management systems are not developed so as to improve the productivity of defence companies and reduce unit costs. Defence contractors, for example, have no incentive to reduce costs in the case of fixed-price contracts since the military deducts the difference between the prime cost on the contract and the real prime cost after production.

Recommendations for improvement

Taking these factors into account, the following recommendations could help to achieve a more efficient, transparent and objective process.

1. To achieve a more efficient arms procurement process the South Korean Government needs to 'simplif[y] and integrat[e] . . . various stages in arms procurement decision-making'.[67] Needless to say, the Government must acquire the right weapons at the right time and at the right price. The process must be streamlined. Working-group meetings of the officers in charge and specialists are needed to guide the work of the acquisition deliberative committees.

2. To make the process of procuring foreign arms more transparent, the involvement of the National Assembly, government agencies and even the taxpayers must be strengthened and expanded. Their minimal role hitherto stems from the tacit agreement that arms programmes should remain mostly

[67] Ministry of National Defense (note 19), p. 89.

confidential. Major defence projects (those exceeding 5 billion won) already have to be approved by the National Assembly Committee of National Defense as well as the President. To increase transparency the public should be briefed about some of these, and direct foreign purchase should be based on open and competitive bids rather than free contracts. This could eliminate suspicion over irregularities in arms build-up programmes.

3. The objectivity of the arms procurement process should be strengthened in the related institutions and legal mechanisms as South Korean society moves rapidly towards a Western-style democracy. Clearly divided roles should be given to the participating agencies and institutions of the Government, the National Assembly, the ADD and the individual defence companies, so that they provide checks on each other and in order to ensure that arms procurement decisions are valid and transparent. Above all, the centralization of decision-making power in the MND must be reduced and balanced with the power of the National Assembly and other government agencies.

Despite their access to technology, defence companies have almost no opportunities to participate in drawing up the statements of requirements. Their participation would contribute to strengthening the nation's defence industrial base. The ADD monopoly over defence R&D leaves much to be desired in exploiting industrial–academic–research institute cooperation.

4. The current dominance of the army in the arms procurement decision-making process should be ended. Since the Korean War, the South Korean military has gradually come to place an absolute emphasis on its ground forces, largely because of the US military strategy.[68] With the end of the cold war, the significance of naval and air power is being recognized by military leaders and civilian experts. Much more should be spent on building up these forces. A visible improvement of naval and air forces is essential to prepare for unification of the Korean peninsula—widely expected to occur within the life cycle of existing weapon systems—and for a marginal presence or complete withdrawal of US troops, which might be expected in the first decade of the 21st century.

5. Those dealing with arms procurement in the armed services, the JCS, the National Defense Staff College, the ADD and other bodies should be qualified professionals able to prepare a high-quality ROC and capable of analysing strategic and tactical concepts and implementing them with the appropriate weapon system. A concept-based requirements system should be established.[69] To improve impartiality and transparency, civilian and military specialists in national security policy, science, technology and weapon systems should be given time to examine and discuss the requirement planning and acquisition

[68] Through its post-World War II defence planning tradition and specific strategic interest in the Korean peninsula, the USA has forced South Korea to concentrate on building up ground forces while depending on US air and naval assistance.

[69] US Army War College, 'Army command and management: theory and practice', Reference text for the Department of Command, Leadership and Management, Carlisle Barracks, Va., 1991, pp. 11–12. It is more desirable that legislation similar to the US Defense Acquisition Workforce Improvement Act be introduced.

programming before the official deliberative committees such as the ADC and Defense Force Improvement Committee begin their work.

6. Tools such as computer-aided acquisition and logistic support should be used to integrate and automate data and information exchange between government and defence contractors and in the areas of acquisition, design, production and logistical support of weapon systems. The type of contract needs to be improved to boost productivity and reduce unit costs in defence companies. This could be done by increasing the proportion of fixed-price contracts and using cost-plus contracts to cushion the contractors' potential losses.[70]

At the same time, South Korea needs to review aspects of its defence policy in order to meet the challenges of a future-oriented defence policy, the changing security environment and demands on military capability.

First, the chosen weapon systems should be comparable with those of neighbouring countries, not just those of North Korea. The fact that main and potential enemies must be taken into consideration in a new military strategy has recently been recognized by some military leaders.[71]

Second, those involved in the arms procurement process must also take account of regional confidence building and the degree of transparency regarding armaments in North-East Asia. The Government supports the UN General Assembly resolution on transparency in armaments[72] and the UN Register of Conventional Arms, insisting that the register achieve universality and credibility as soon as possible. It started to issue an annual defence White Paper in 1988 and maintains strict control over the import and export of conventional arms in accordance with domestic arms transfer regulations and various agreements with other nations. It thereby hopes to build confidence between the two Koreas, which is essential for disarmament.

Third, the counter-dependence strategy must be accelerated. South Korea should emphasize the final stage of military import substitution or the production of indigenously designed arms, preferably based on local R&D but still incorporating foreign components. Such a strategy would not mean an end to its long-standing heavy dependence on the USA in the immediate future; it would merely substitute import dependence with technological dependence.

Finally, in tune with the import substitution strategy, the diversification of suppliers should be accelerated. The need for inter-operability with US weapon systems has severely constrained South Korea's freedom in selecting other suppliers. The MND should re-examine its preferential policy towards US weapons but in such a way as to cause minimum damage to US–South Korean military cooperation. It is generally understood in South Korea that security cooperation with the USA should be maintained until unification of the Korean peninsula is achieved, but the preference given to US weapons is widely

[70] Chul Whan Kim (note 52), pp. 77–83.

[71] A Commander of the Air Force Combat Unit said in a private communication to the author that the Korean Air Force is assigning about 10% of its surveillance capabilities to neighbouring countries other than North Korea.

[72] 'Transparency in armaments', UN General Assembly Resolution 46/36/L, 9 Dec. 1991.

criticized by the National Assembly, defence analysts and other commentators. One rationale for this criticism is that the returns from this preference are not adequate in cost–benefit terms.

IV. Conclusions: short- and long-term developments

South Korea has some well-organized mechanisms for arms procurement decision making, including the RWSAM and the planning, programming, budgeting, execution and evaluation system which, while not perfect, provide satisfactory legal and institutional arrangements. The introduction of special auditing and inspection routines in the Yulgok Project in 1993 was a watershed in the history of the force improvement plan and opened up a new era with a more democratic and rational system of arms procurement decisions.

In 1996 special inspection and auditing provisions were included in the revised RWSAM. While prioritizing R&D or licensed production over imports of ready-made equipment, the MND issued new or amended guidelines for the defence R&D managed by the Government and initiated by defence contractors, for cooperation between industry and the academic and research institute communities, and for the management of major projects. The 1996 version also aims specifically to change the methods of functioning of the Director for Acquisition and Development. By introducing open competitive bidding instead of free contracts and making the process efficient, it will also accelerate the development of future-oriented defence science and technology.[73] It also prioritizes increased defence industrial cooperation with foreign countries. Such cooperation is currently under way with nine countries: Canada, France, Germany, Italy, Malaysia, Spain, Switzerland, the UK and the USA.[74] In addition, the MND has tried to save time and resources by integrating and simplifying the arms procurement process, and has taken steps to improve transparency and public accountability by selectively releasing as much information as possible about the process, including expenditures. The 1996 RWSAM introduces the intention to regularly brief journalists and legislators about most arms procurement programmes and to invite non-military officials and experts to participate in the decision-making process in the case of major procurement projects.[75] This would ensure a more rational and institutionalized decision-making process, one that will become more responsive to public concerns and interests as well as the objectives of national security.

However, a number of problems remain in achieving an advanced system of arms procurement that will enable a self-reliant defence posture. These include: centralized decision making; the lack of professionalism among those responsible for procurement; and the continuing heavy dependence on US arms and

[73] 'Foreign arms to be purchased through open bid' (note 63); and *Gukbang Ilbo*, 6 Feb. 1996.
[74] Sung Ki Min (note 57).
[75] 'Foreign arms to be purchased through open bid' (note 63).

arms-manufacturing technology. It will take some time to eliminate inherited customs and iron out the distorted procedures deeply embedded in the military and government institutions. Arms procurement decision making has been largely dominated by the military, the President and the presidential staffs, with no political or social constraints. The public interest has been ignored and public debate severely restricted. The USA has been indirectly involved in almost every aspect of the process and, faced with US Government pressure, arms acquisition in South Korea will only slowly establish a pattern of security-based, autonomous decision making.

The South Korean defence industry is now at a crossroads. There are some major reasons for this: industry is uninterested in becoming heavily involved in arms production; the military drag their feet in supporting indigenous R&D; and the defence industry suffers from a number of structural weaknesses such as the lack of long-term R&D planning by the Government, a low rate of defence R&D investment and huge idle capacity.

The democratic transition which began in the early 1990s presents new opportunities for overhauling the foundations of the national security decision-making process. The MND has opened its door wider than ever before to the public, allowing closer, more balanced civil–military relations. These developments are likely to facilitate further legislative oversight, active public participation in the decision-making process and civilian control of the national security machinery. This will enhance accountability and responsiveness to the public and lead to a more rational arms procurement decision-making process and better choices.

7. Thailand

Panitan Wattanayagorn[*]

I. Introduction

By the mid-1990s it was evident that the Thai military had begun to take its modernization programme seriously. In 1994 the programme was officially outlined in Thailand's first defence White Paper.[1]

The main emphasis of the programme appears to be the acquisition of more modern weaponry: the armed forces intend to spend 75–100 billion baht ($3–4 billion)[2] on armaments between 1997 and 2006.[3] The major procurement programmes proposed include new assault rifles, armoured personnel carriers (APCs), light tanks, helicopter gunships, frigates and other major surface ships, two submarines, F/A-18 Hornet fighter aircraft, a military satellite and electronic warfare systems.

In the new post-cold war regional security environment the rationale for such a significant arms modernization programme can be questioned. This chapter examines the decision-making structures and processes behind the procurement of major conventional arms in Thailand. The country's current decision-making structure and arms procurement process are outlined in section II, and the present arms procurement programmes in section III. Section IV examines the problems with the existing structure; factors affecting arms procurement are described in section V; and in section VI a model for an ideal type of arms procurement decision-making structure as well as the problems anticipated in implementing this model are discussed. Section VII presents the conclusions.

[1] Thai Ministry of Defence, *The Defence of Thailand 1994* (Supreme Command Headquarters: Bangkok, 1994), p. 20.

[2] An exchange rate of 25 baht = US $1 is used here, based on the average exchange rate between 1990 and mid-1997. *International Financial Statistics*, Mar. 1998.

[3] Tunyasiri, Y., 'Govt may slash military's shopping list', *Bangkok Post*, 4 Apr. 1996, p. 6; Brooke, M., 'Thailand's new policy for ASEAN?', *Asian Defence Journal* (Feb. 1996), p. 99; and Tasker, R., 'Hold the hardware', *Far Eastern Economic Review*, 23 Jan. 1997, p. 18.

[*] The author wishes to express his thanks to Suchit Bunbongkarn, Dean, Faculty of Political Science, Chulalongkorn University, Bangkok, for advising on the research in Thailand and Kusuma Snitwongse, Director, Institute of Security and International Studies (ISIS), Chulalongkorn University, Bangkok for reviewing the chapter. He would also like to thank the experts who contributed the papers which formed the basis of the chapter and source material. See annexe C for the biographical details of the contributors.

This chapter was written in late 1996/early 1997 before the financial crisis in Asia. Since then many of the planned weapon procurement programmes have been put on hold.

II. The arms procurement decision-making process

After Thailand became a constitutional monarchy in 1932, the military leaders dominated Thai politics for many years, although there were short periods of civilian rule. Since the 1980s, however, various aspects of Thai society have undergone a transformation. Rapid economic growth has been accompanied by the rise of a middle class. In the area of security, the fundamental threats to Thailand's internal security posed by the communist insurgency and the armed separatists since the 1940s have virtually disappeared and the external threats posed by the communist governments of Indo-Chinese countries in the 1970s have also evaporated. In the 1980s, the country's political stability was further strengthened under the leadership of Prime Minister General Prem Tinsulanond (1980–88). With the increasing participation of business executives in the Thai political process, the military has gradually had to relinquish some of its power.

In 1991 an attempt by the military to hold on to power after General Suchinda Kraprayoon assumed the post of Prime Minister was met with mass demonstrations. Protests and the subsequent riots in Bangkok in May 1992 effectively forced the military to step back from politics.

After the May 1992 demonstrations, the National Assembly passed a constitutional amendment to prohibit serving military officers from assuming the post of Prime Minister: only elected Members of Parliament (MPs) may now become Prime Minister. It also designates the Speaker of the House of Representatives instead of the Speaker of the Senate as Speaker of the Parliament. This prevents the military-dominated Senate from controlling the lower house. Furthermore, the powers of the appointed senators to initiate a general debate against the Thai Government and to vote on motions of no confidence have been limited by new amendments. Finally, the 1976 Internal Peacekeeping Commander Act, which gave excessive power to the military, was repealed and the use of force by the military in domestic affairs now requires Cabinet approval. In short, an era of strong military rule is coming to an end and the representative parliamentary system continues to evolve.

Increased civilian control over the military after the May 1992 violence is also gradually being reflected in the arms procurement process. The Cabinet now has to approve any major arms procurement programmes and the House of Representatives approves the defence budget as a whole. Although the military still retains a considerable influence over arms procurement decisions there seems to be a greater willingness on its part to explain its proposals to the public.

In the 1990s the Thai economy has undergone rapid transformation and seen high rates of growth. Real gross domestic product (GDP) increased by an average of 7 per cent per year between 1983 and 1993.[4] In 1995, GDP was

[4] Thai National Economic and Social Development Board, [National economic and social development annual report] (NESDB: Bangkok, 1994) (in Thai).

$164.5 billion—an increase from $86 billion in 1990.[5] Despite the set-backs in 1997, the general trend indicates growth in export-oriented industries, a significant shift of production centres from Japan to Thailand and an increase in the contribution of light industries to the Thai economy.

As these factors combine to dissipate the military's domination, the government is expected to become more responsive and perhaps more accountable to the public. The attention being paid to arms procurement policies suggests that the public also expects to see greater transparency in this area.

The structure of arms procurement decision making

The nominal head of the command structure of the armed forces is the King. The Prime Minister answers to the King and the Minister of Defence reports to the Prime Minister. The overall responsibility for operations, organization and administration of the three armed services rests with the Minister of Defence and the Supreme Commander and Commanders-in-Chief of the Royal Thai Army (RTA), the Royal Thai Navy (RTN) and the Royal Thai Air Force (RTAF) report to him. Other actors with a role in defence issues include the National Security Council (NSC) and the Defence Council. The NSC is chaired by the Prime Minister and coordinates foreign and security policies for the government. Other members of the NSC include the Deputy Prime Minister, the Ministers of Defence, Foreign Affairs, the Interior, Transport and Finance, and the Commanders-in-Chief of the three armed services. The Defence Council is chaired by the Deputy Minister of Defence and makes decisions, among other things, on general military policies and on the Ministry of Defence (MoD) budget.[6]

In general, the arms procurement decision-making process in Thailand can be divided into five levels. The first level is within the three armed services. The Supreme Command Headquarters becomes involved at the second level. The MoD, which is one of the most important actors in the process, represents the third level. Quite often procurement proposals can be determined at the lower levels. However, at the fourth level, proposals for new or major systems requiring funds that exceed the budget allocation of the MoD are forwarded to the Prime Minister and Cabinet for consideration. Finally, at the fifth level, the Parliament is responsible for approving the expenditure for the proposed procurement in the form of an annual budget for the MoD. The five levels of arms procurement decision making are described in detail below.

The armed services

Procurement of armaments and other military equipment by the RTA, the RTN and the RTAF generally begins in a bottom-up manner with the drawing up of

[5] International Monetary Fund, *International Financial Statistics Yearbook 1997* (IMF: Washington, DC, July 1997).

[6] Brooke, M. and Wassana, N., 'The military in Thailand', *Strategic Digest*, vol. 26, no. 9 (Sep. 1996), p. 1400.

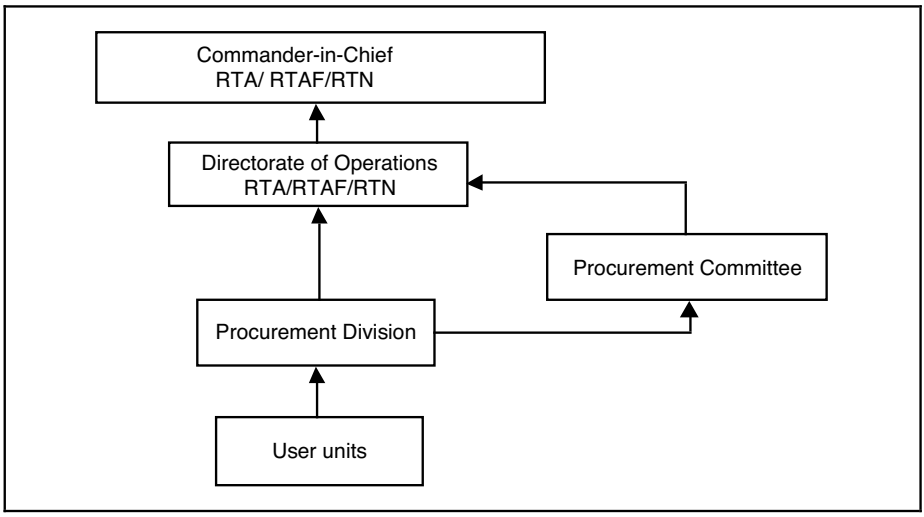

Figure 7.1. The arms procurement structure in the Thai armed services

Notes: RTA = Royal Thai Army; RTAF = Royal Thai Air Force; RTN = Royal Thai Navy.

Source: Army Staff College, [Joint logistic activities of the Thai armed forces] (Institute of Army Studies: Bangkok, 1996), p. 42.

an equipment request by a military unit or user service (see figure 7.1). The request usually includes a detailed specification of the equipment needed and states the case for the request. It is then submitted to the procurement division of the respective branch of the armed services.

The procurement division then draws up a procurement plan, determines the availability of resources and seeks initial approval from the Commander-in-Chief to set up a procurement committee. The main task of the procurement committee is to evaluate the plan and to forward it to the Directorate of Operations with a recommendation. The Directorate of Operations, in turn, examines the proposal and makes its own recommendation to the Commander-in-Chief. Finally the relevant Commander-in-Chief considers the plan. If it is within his budget allocation, he can authorize procurement at this point. New or major procurement programmes that exceed the annual budget of each of the armed services, however, need approval from a higher authority. In this case, the procurement proposals are forwarded to the Supreme Command Headquarters.

The Supreme Command Headquarters

At the Supreme Command Headquarters, arms procurement proposals are evaluated according to the regulations of the armed forces. These include rules on logistical supply, Cabinet decisions, and orders of the Minister of Defence and the Prime Minister. For example, established Supreme Command Headquarters guidelines for multi-service application are also followed closely at this

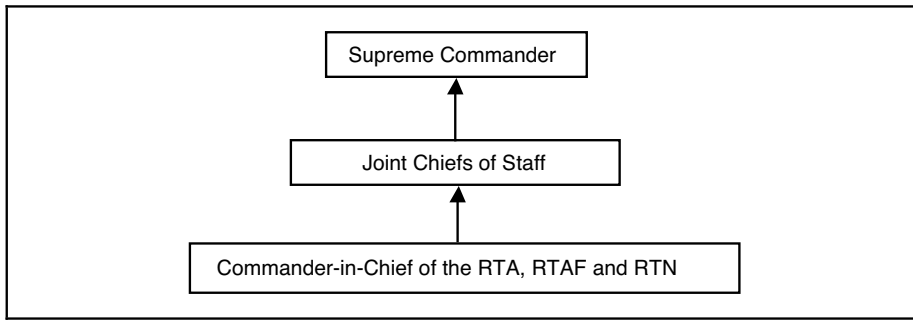

Figure 7.2. The arms procurement structure at the Thai Supreme Command Headquarters

Notes: RTA = Royal Thai Army; RTAF = Royal Thai Air Force; RTN = Royal Thai Navy.

Source: Army Staff College, [Joint logistic activities of the Thai armed forces] (Institute of Army Studies: Bangkok, 1996), p. 43.

level. In addition, procurement plans are evaluated on the basis of a five-year defence plan using the planning, programming and budgeting system. After initial evaluation, the Supreme Command Headquarters consults with the armed services to set priorities among the competing procurement proposals if necessary. In the coordination process, the Joint Chiefs of Staff are responsible for examining the needs of each of the armed services and for determining security requirements (see figure 7.2).

After these coordination and evaluation procedures, the procurement proposal is submitted to the Supreme Commander for approval. If approved, it is forwarded to the MoD for further consideration. It is not customary for the Supreme Commander to propose procurement, although recently he proposed the purchase of approximately 300 APCs for the army and of light tanks for the marines.[7] This initiative can be explained as an attempt to avoid duplication in the equipment needed by the three armed services.[8]

The Ministry of Defence

Proposed arms procurement programmes submitted to the MoD are evaluated by a joint committee at the level of the MoD Directorate of Joint Operations (see figure 7.3) consisting of representatives from the three armed services. The committee makes a recommendation and forwards the proposed programme to the Permanent Secretary of Defence, who determines whether it is in line with the ministry's policies and regulations. If it is, the Permanent Secretary submits the proposal to the Minister of Defence for final approval. The Minister is the

[7] 'Viroj denies allegations in army deal', *The Nation* (Bangkok), 14 Aug. 1996, p. 2; 'Supreme command to review APCs purchase', *The Nation*, 10 Sep. 1996, p. 1; and Wassana, N., 'Viroj defends move to buy Giat vehicles', *Bangkok Post*, 12 Sep. 1996, p. 4.

[8] Vatikiotis, M., 'Wheeling and dealing', *Far Eastern Economic Review*, vol. 159, no. 25 (20 June 1996), p. 14.

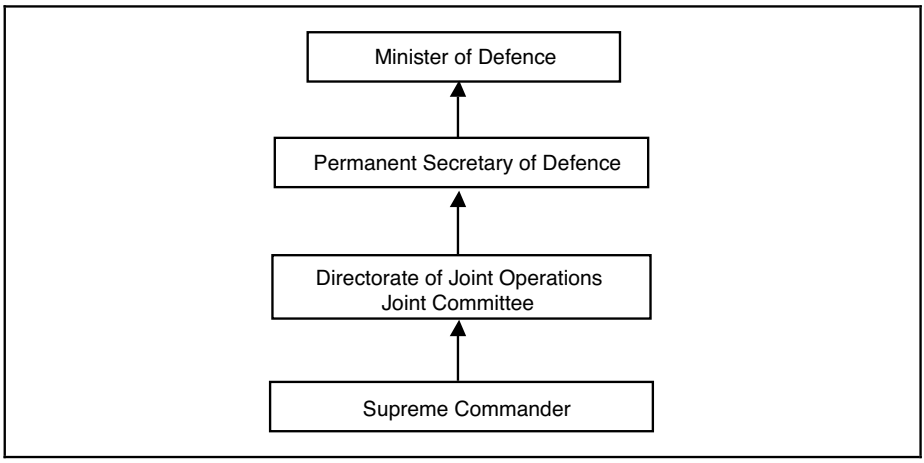

Figure 7.3. The arms procurement structure at the Thai Ministry of Defence

Source: Army Staff College, [Joint logistic activities of the Thai armed forces] (Institute of Army Studies: Bangkok, 1996), p. 43.

highest authority within the military establishment and all major proposals for arms procurements go to him for approval. If the proposed procurement is within his budgetary powers he can authorize it at this point, but if it is new or requires additional funds not allocated to the MoD, he is required to forward the proposal to the Cabinet for consideration.

Traditionally, the Minister of Defence seldom proposes arms procurement programmes independently, although in 1995 Minister of Defence General Chavalit Yong-chaiyudh proposed a 26-billion baht ($1.04 billion) military satellite project.[9]

The Cabinet

Before the Minister of Defence forwards a procurement proposal to the Cabinet for consideration, he is expected to have the support of the Director of the Bureau of the Budget (BoB) regarding funding. The BoB, which comes under the Ministry of Finance, is responsible for determining the availability of funds for specific procurement proposals, giving advice on financial matters and facilitating the payment process. If the BoB confirms the possibility of funding, the Minister of Defence submits the proposal to the Cabinet (see figure 7.4). The role of the BoB is thus crucial. Without the support of its Director arms procurement proposals have little chance of being included in the Cabinet's agenda for consideration. In early 1995 the Director of the BoB refused to

[9] According to Chavalit the military needed its own satellite since commercial satellites do not cover certain areas and their military use is restricted. Wassana, N., 'Chavalit wants B26b military satellite plan', *Bangkok Post*, 18 Sep. 1995, p. A1; and Wassana, N., 'Chavalit puts satellite project under his control', *Bangkok Post*, 9 Apr. 1996, p. A3.

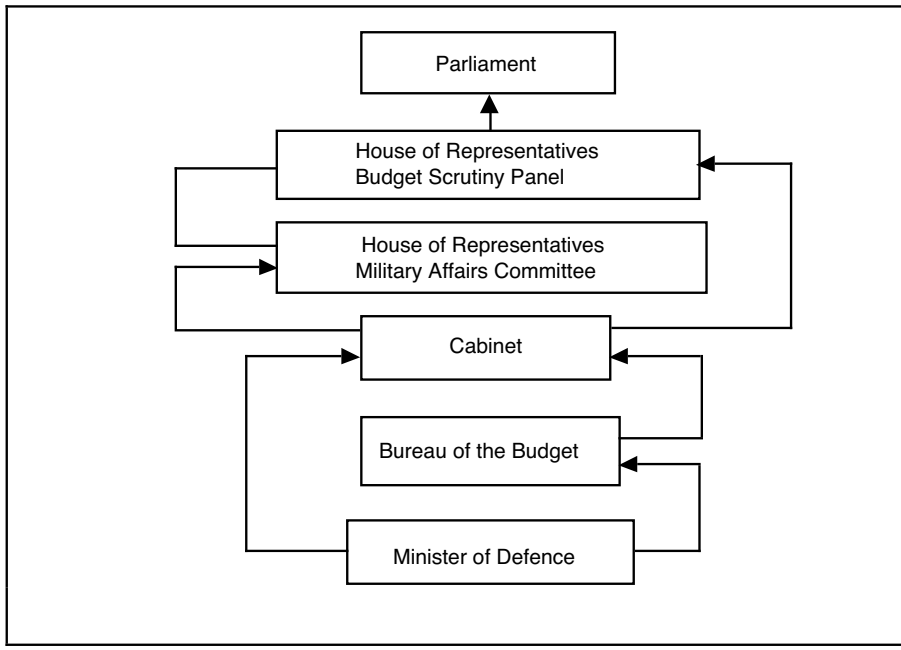

Figure 7.4. The arms procurement structure in the Thai Parliament and Cabinet
Source: Committee Division [Summary report on the budget act] (Bureau of the Budget: Bangkok, 1996).

support a RTN proposal to buy two medium-sized submarines on the grounds that the payments would exceed the five-year limit set by the Bureau, and the Minister of Defence had to withdraw the proposal.[10]

After the BoB has confirmed the availability of funds, the Prime Minister and other members of the Cabinet decide whether or not to approve the proposal in principle. In the past, the Prime Minister and Minister of Defence were the key Cabinet members directly involved with arms procurement. The Cabinet still relies heavily on the Minister of Defence in security-related decisions. The military also influences the process since the directors of the various intelligence services provide the information on which these decisions are based. Most of the actors in this process are serving military officers.

Recently, however, the Cabinet adopted a new policy on counter-trade agreements in connection with arms imports. The new policy requires a counter-trade agreement with the supplier if the cost of a project exceeds 1 billion baht.[11] With this policy, other Cabinet members such as the Minister of Commerce

[10] 'Navy's bid to buy subs may be sunk: Finance says other development projects must take priority', *The Nation*, 21 Jan. 1995, p. A1; and 'Navy drops plans to buy submarines', *The Nation*, 22 Feb. 1995, p. A1.
[11] [Reformulating counter-trade agreement: green light for big Jew to buy arms?], *Matichon*, 29 Apr. 1996.

have become more involved in the arms procurement process. For example, in return for the RTAF purchase of eight F/A-18 fighter aircraft (a deal which never materialized), the USA was asked to buy Thai products worth about 25 per cent of the 10 billion baht ($400 million) deal.[12] To implement this, the approval of the Minister of Commerce was needed.[13]

After all the requirements have been satisfied, the Cabinet approves the proposal, which is then included under MoD expenditure. Finally at this level, the proposed MoD budget is submitted to the Parliament with the budgets of other ministries and enters into the drafting process for the next government budget.

In general, the influence of the Cabinet on major arms procurement projects has increased in recent years. The Prime Minister and Cabinet members have been able to intervene directly in the military's procurement planning: in 1996, for example, 14 projects were shelved.[14]

The House of Representatives

All proposed budgets are examined by the Budget Scrutiny Panel of the House of Representatives. The Military Affairs Committee may also be consulted on specific strategic and military issues relating to arms procurement proposals (see figure 7.4); however, it has so far not made use of its power to make the military more accountable. This is mainly because most of the committee members are former military officers. If the proposed defence budget is initially approved by the Budget Scrutiny Panel, it is submitted to the Parliament for a final reading as part of the drafting of the annual budget bill. Once the bill is passed, the MoD can proceed with the normal routine of procuring arms for the next fiscal year.

In recent years the influence of the House of Representatives in the arms procurement process has been more discernible. For example, members of the house have openly questioned the military on issues of transparency, accountability and the legitimacy of arms purchases, particularly during parliamentary debates on the annual government budget.[15] This has led to tensions and conflicts between military leaders and politicians. Hitherto the military has dominated the process, as the structure of arms procurement shows. However, the politicians are gaining influence, particularly through their oversight of military spending during the budget process.

[12] 'Air force to ask US to buy Thai goods', *Bangkok Post*, 3 May 1996, p. A3. Another report gave a counter-trade requirement of 50% of contract value. 'The military in Thailand', *Asian Defence Journal,* no. 7 (1996), p. 25.

[13] In this particular case, McDonnell Douglas hired an outside contractor in Japan to manage the offset package. The Tokyo-based contractor is to sell $90 million-worth of Thai food and agricultural products, plastics, toys, garments, ceramics and leather, which the USA has to purchase on the international market. Opall, B., 'Outside contractor to handle McDonnell Thai fighter offsets', *Defense News*, vol. 7 (July 1996), p. 10.

[14] 'The Cabinet will decide on arms soon, says Banharn', *The Nation*, 15 May 1996, p. 7; and 'Banharn cites deficit worries as B17b sub purchase goes under', *Bangkok Post*, 2 May 1996, p. 1.

[15] Tunyasiri (note 3); 'Opposition attacks military spending', *The Nation*, 26 Apr. 1996, p. 3A; 'PM hit over arms talks with military', *The Nation*, 13 June 1996; and 'Democrats stand firm over military's budget', *The Nation*, 17 July 1996, p. A1.

Threat perception

Under the current Thai decision-making structure, the military élite can easily implement a national defence doctrine and most arms procurement policies independently, without being subjected to the direct influence of other actors. In recent decades arms procurement policies have, to a great extent, reflected the military's interests and perceptions. For instance, when challenged by the communist insurgency in several rural areas beginning in the late 1950s, the military élite attempted to counter communism with military force.[16] This was seen as an appropriate counter-insurgency strategy by most of the military élite. To support it, the decision was made to adopt arms procurement programmes focusing on small arms, light armoured vehicles and equipment for guerrilla warfare. This strategy and policy proved to be a mistake as the number of communist insurgencies increased rapidly and the military was faced with severe resource limitations.

In the 1970s, the military élite concluded that the immediate threat emanated from Viet Nam. It envisioned an attack on Thailand by Viet Nam with support from Cambodia and Laos.[17] Emphasis then shifted from a counter-insurgency strategy to a more conventional warfare scenario. Certain arms 'modernization' programmes were initiated simply to counter the 'Vietnamese threat'. The procurement of F-16 fighter aircraft and the Stingray light tanks are examples.[18] Throughout the 1970s several major procurement programmes were based on this perception and a vast quantity of weapons was delivered to Thailand in the 1970s and 1980s.[19]

At this time no formal or official concept of national security, threat assessments or national interests was articulated openly or regularly in Thailand. Threat perceptions were broadly perceived, loosely defined and heavily influenced by socio-cultural factors. The concept of national security was articulated by some of the Thai élite[20] but not until 1994 was a concept formally stated and systematically described in the first defence White Paper. In this White Paper, it is asserted that the country's national interests are: (*a*) the maintenance of the state with independence, sovereignty and territorial integrity; (*b*) the happiness and well-being of the people; (*c*) the growth and advancement of the nation as a whole, both in economic and social terms and through the existence of an administrative system that benefits the people; and (*d*) honour and prestige in the international community.[21] The concept of threats to Thailand is thus based

[16] Chai-anan, S., Kusuma, S. and Suchit, B., *From Armed Suppression to Political Offensive* (Institute of Security and International Studies: Bangkok, 1990).

[17] Sukhumbhand, P., 'Thailand: defence spending and threats perceptions', ed. Chin Kin Wah, *Defence Spending in Southeast Asia* (Institute of Southeast Asian Studies: Singapore, 1987), p. 87.

[18] For the F-16 case, see Bamrungsuk, S. (ed.), *F16s and Thai Politics*, 2nd edn (Institute of Security and International Studies: Bangkok, 1985). The Stingray case was described by Gen. Patra Akranibut in Oct. 1995 in a private communication with the author.

[19] Brzoska, M. and Ohlson, T. (eds), SIPRI, *Arms Transfers to the Third World 1971–85* (Oxford University Press: New York, 1987).

[20] Alagappa, M., *The National Security of Developing States: Lessons from Thailand* (Auburn House: Mass., 1987), pp. 32–39.

[21] Thai Ministry of Defence (note 1), pp. 18–19.

on all security concerns in a very broad sense, encompassing all levels and aspects of politics, economics and socio-cultural issues.

At present, the military élite is becoming more attentive to the 'uncertainties' of the post-cold war regional environment.[22] In particular, it is increasingly concerned about the competition for offshore resources and conflicting maritime claims in the region. It perceives that, over the long term, conflicts may arise at sea that could have a significant impact on Thailand's security[23] and argues that Thailand's geographic location is disadvantageous in situations of maritime conflict, since about 95 per cent of its trade is ocean trade. As the economy is increasingly dependent on international trade, the military élite believes that sea lines of communication will become more critical to the country's security. In January 1997 the RTN drew up a 10-year plan to strengthen the naval forces which stated that the RTN will pursue its arms acquisition plan regardless of the budget restraints and austerity policy reiterated by the Prime Minister.[24] However, the RTN has not identified any specific potential threats to justify its procurement plans.

Oversight of military expenditure

The approval of the national budget involves three main stages. First, the BoB drafts the annual budget bill. Second, the bill is passed to the Parliament for approval. After the Parliament has passed the budget proposal it becomes an act. Finally, government ministries and equivalent agencies adopt the budget act for implementation.[25]

From a policy perspective, the second stage is the most critical. It involves three important activities. First, the government presents the budget proposal to the House of Representatives. Should the House of Representatives not accept it for consideration, the government must resign or the House of Representatives be dissolved. Second, when the budget proposal is received, a Budget Scrutiny Panel is set up to consider modifications to it. After the proposal has been considered and modified, it is forwarded to the Parliament for debate and further modification. Finally, the House votes.

Under the constitution MPs have the mandate to debate and examine proposed expenditure and approve the general budget each fiscal year. They may also suggest amendments. Most MPs take this occasion to exercise their control over the bureaucracy and the government in power. Generally the budget debate is broadcast live; many MPs take this opportunity to make themselves known or to increase their popularity with the public. Most of the debates, therefore, are

[22] Thai Ministry of Defence (note 1), p. 16.

[23] Royal Thai Navy, [Document on submarine procurement programme] (RTN: Bangkok, Jan. 1995), pp. 1–2.

[24] [Navy, air force to pursue arms acquisition plans], *Matichon*, 23 Dec. 1996, pp. 1, 12 (in Thai) in Foreign Broadcast Information Service, *Daily Report–East Asia* (*FBIS-EAS*), FBIS-EAS-96-249, 27 Dec. 1996.

[25] Chaiwat, S-A., 'Defence budgeting', SIPRI Arms Procurement Decision Making Project, Working Paper no. 57 (1995), p. 6.

lively and tend to be unmerciful to the requesting ministry. MoD proposals, however, have been received more cautiously. In fact, usually only a few MPs propose modifications and far fewer actually debate the proposal each year.[26] Any debate has been of a very careful nature, often with a very apologetic opening remark followed by the explanation that their parliamentary duty 'forces' them to scrutinize the proposals, such as: 'I desire to reiterate to the Parliament that I have no ill will towards the army, air forces, navy or the Supreme Command. I have no personal animosity towards any individual; I am merely carrying out my MP duties correctly'. 'I do not want to cut [the defence budget]. In reality, I don't want to cut it because it cannot be cut. Even if I were to speak of cutting it for ten days and ten nights, it still can't be cut.' 'Please do not think that I hold any ill will towards anyone or towards our country. I have good intent towards everyone and desire for the benefit of our country. I have no desire to disparage or to disdain anyone in any way.'[27]

In the past, the most frequently proposed modification concerned the military's classified activities. Proposals to cut or trim down these activities tend to become controversial and receive a great deal of media coverage. Other reductions in the defence budget have been proposed by MPs in the past, but have been relatively small and have usually focused on less significant areas. For instance, one MP proposed reducing spending on the military glass, battery and clothing manufacturing departments.[28] A cut in the military's rural development project, 'Green Isaan', was proposed by another MP who reasoned that the project duplicated an existing army programme and was not expected to achieve its goals.[29] Some MPs have asked about the total costs of weapon systems, but the military has not responded to these questions. Since such details and information are not available there has been no debate on the life-cycle costs of proposed weapon systems in the Parliament.

Past records indicate that after the Parliament has debated the proposed modifications the MoD has sometimes ended up with more than it originally requested. For instance, in 1991 the MoD received 93 million baht ($3.72 million) more than its original request. In the years when the MPs' proposed reductions were successful, the actual reductions were still minimal. For example, the cuts in 1985 and 1986 represent only about a 1.0–1.3 per cent reduction and those in 1987 and 1990 amounted to between 0.024 and 0.003 per cent.[30] The MPs' attempts to control military spending appear to be rather symbolic, but they usually receive considerable public attention and media coverage. Attempts to control military spending are perhaps perceived as a civilian challenge to military domination in Thai politics. In the end, the failure to control the defence budget is often attributed to a lack of any right to information under

[26] For statistics, see Chaiwat (note 25), p. 7.
[27] Statement by three different MPs, cited in Chaiwat (note 25), p. 8.
[28] Chaiwat (note 25), p. 10.
[29] Chaiwat (note 25), p. 10.
[30] Chaiwat (note 25), pp. 11–12.

the constitution, a shortage of staff with a knowledge of military affairs, and an absence of sophisticated analyses to counter the military's arguments.

Since the May 1992 demonstrations and the subsequent constitutional amendments, attempts to exert control over military spending have been more successful. MPs, for example, have focused more on arms procurement spending and obsolete military activities. Larger cuts have been proposed and requests to examine military expenditure have been more assertive. In 1996 members of the Budget Scrutiny Panel proposed a 1 billion baht cut on the 1997 expenditure of the Internal Security Operation Command (the agency set up to fight communism) on the grounds that there were no communists left to fight.[31] On another occasion, a member of the panel questioned the legitimacy of the Supreme Command Headquarters' handling of the purchase of 295 APCs worth 7 billion baht ($280 million).[32] Hitherto, the most controversial incident has been the demand by members of the panel that the three Commanders-in-Chief testify before it with full details of spending. The Commanders-in-Chief had never before had to appear in front of civilian politicians to defend their budget and they refused to do so. When they failed to show up and sent lower-ranking officers to testify, the members of the Budget Scrutiny Panel walked out of the meeting and vowed not to approve the defence budget. This particular incident received a great deal of public attention and was widely reported.[33]

The Budget Scrutiny Panel is not the only body to attempt to exert control over military spending, particularly on arms procurement. The Prime Minister and Cabinet have been gaining increasing influence in curbing spending on armaments. In the past, most Cabinet members did not object to or were unable to influence the military's proposed programmes. Recently, they have managed to slow down and even reject several major proposals. For example, 14 proposed projects including two submarines, additional F-18 fighters and new rifles for the army were deferred by Prime Minister Banharn Silapa-Archa in early 1996.[34] The procurement of two small submarines, in particular, has been rejected by three prime ministers since 1993. In this case the official reason has been the 17 billion baht ($680 million) cost.[35] Financial difficulty has in fact been cited by politicians several times in the past, but under the current domestic conditions politicians have been more successful in using financial reasons to delay or oppose arms procurement programmes.

[31] 'Democrats stand firm over military's budget', *The Nation*, 17 July 1996, p. A7.

[32] 'Armored cars raise questions', *The Nation*, 13 Sep. 1996, p. A6.

[33] However, the incident ended with a compromise as the military sent higher ranking officers with more details on spending to testify before the budget panel. For more details, see e.g., 'Armed forces' chiefs told to see budget panel', *Bangkok Post*, 15 July 1996, p. A1; 'Boonchu plans counterattack on military spending budget', *Bangkok Post,* 17 July 1996, p. A6; [Boonchu clashes with big Jew: conflicts over military budget], *Matichon*, 17 July 1996, p. 2; 'Democrats stand firm over military's budget', *The Nation*, 17 July 1996, p. A1; 'Govt faces opposition's wrath over defence spending schemes', *Bangkok Post*, 18 July 1996, p. A4; and 'Democrats, army in war of words over golf game', *The Nation*, 18 July 1996, p. A7.

[34] Tunyasiri (note 3); 'Banharn and top brass to discuss arms procurement', *Bangkok Post,* 22 May 1996, p. A6; and Tasker (note 3).

[35] 'Banharn cites deficit worries as B17b sub purchase goes under', *Bangkok Post,* 2 May 1996, p. A1.

This success in gaining increased control over military expenditure and arms procurement is mainly the result of the decline of the military's influence in Thai politics following the constitutional changes in 1992. In addition to these and judicial changes, a civilian leader took the opportunity to become involved in the appointments of top-level military officers for the first time. In 1992, Prime Minister Anand Panyarachun removed several senior military officers who were involved in the military crack-down during the May 1992 demonstrations from their posts—the Commander-in-Chief of the RTA (the most influential military officer), the Supreme Commander and the Commander of the First Army Region. A number of career or professional officers were promoted to the commanding posts. If the democratic civilian leaders are able to sustain their influence on military appointments on a long-term basis, the arms procurement decision-making process may eventually become more transparent.

III. Arms procurement programmes

The military leaders have accelerated the modernization programmes to meet the 'new challenges'.[36] The current modernization policy aims to restructure the armed forces into more compact and effective professional forces with modern armaments,[37] to improve the reserve and conscription system, to revise the military education curriculum, to promote the role of the military in the country's development and to improve the welfare of lower-ranking soldiers, but the main emphasis is on procuring more modern equipment.

Of the three services' arms modernization programmes, those of the RTN are the most revealing. The most significant procurement has been that of the 11 500-ton *Chakri Naruebet* small aircraft-carrier from Spain. Carrying short take-off/vertical landing (STOVL) aircraft, it is the first ship of its kind in the region and is expected to be a major part of the RTN's transformation into a navy with limited strike, air-defence and anti-submarine capabilities.[38] Other RTN plans include the procurement of maritime surveillance radar and aircraft, command and control equipment, advanced ship-to-air missiles, new support ships, including minesweepers and tank landing ships, and light tanks for the Marine Corps. The most ambitious proposed programme concerns the submarines mentioned above.[39] If all its programmes proceed without major

[36] Brooke (note 3), p. 102.

[37] Thai Ministry of Defence (note 1), p. 20.

[38] Some observers argue that the RTN goal of a blue-water navy is not realistic, while others disagree. See, e.g., Mak, J. N., *ASEAN Defence Reorientation 1975–1992: The Dynamics of Modernization and Structural Change* (Australian National University: Canberra, 1993), chapter 6: Thailand; Brooke, M., 'Helicopter-carrier marks transition to blue-water navy', *Bangkok Post*, 12 Dec. 1995, p. 5; Commander Goldrick, 'The Royal Thai Navy', Preliminary working paper for *Navies in Asia*, Australia (no date), pp. 5–6; 'Fitted for . . . but not with', *Naval Forces*, vol. 17, no. 2 (1996), pp. 98–101; and Paisarn, N. (Capt.), [Military doctrine for small aircraft carrier], *Navikasart*, no. 9 (Sep. 1996), pp. 15–37.

[39] The RTN proposal was widely debated in public for the first time. The naval officers not only published a statement of policy on the submarines in Jan. 1995 but also gave interviews and discussed

financial or political difficulties, the RTN may eventually possess a power-projection capability well beyond its territorial waters.

For the RTAF, the modernization programmes focus on additional fighter aircraft, trainers, and weapon guidance and control systems. Owing to a tightening of the budget, the RTAF is not likely to receive approval for additional fighter aircraft in the near future. It wanted eight F/A-18Cs which it intended to buy to be armed with AIM-120 AMRAAMs (advanced medium-range air-to-air missiles).[40] However, a report in 1996 indicated that the USA was still hesitant to release the AMRAAMs to Thailand. Fears of setting off a missile technology arms race in South-East Asia and the view that Thailand's security situation does not require such systems were among the reasons reported for the US reluctance.[41]

Military leaders, on the other hand, believe that Thailand will need fighter aircraft with greater missile capability in the near future. According to the RTAF Commander-in-Chief, the reasons are 'to maintain its military preparedness, to deter potential enemies, and to allow it to negotiate from a position of strength in political and business deals with other countries'.[42] The most interesting reason, however, was that given by Minister of Defence General Chavalit. He was reported to have mentioned Thailand's southern neighbour investing heavily in air and naval power.[43] Many observers think that he was referring to Malaysia's purchase in the early 1990s of F/A-18 Hornets and MiG-29 fighter aircraft. Malaysia has also equipped new C-130 aircraft with modified fuel tanks for mid-air refuelling, ordered a large number of main battle tanks for the first time and reportedly rented two submarines. Although most analysts agree that Thailand's reaction to Malaysia's air and naval build-up is an isolated case, and may be short-lived, RTAF concerns over the uncertainties at sea and its intention to build up a capability for medium air-to-air operations and maritime strike missions are apparent from its current procurement programmes.[44]

RTA force modernization plans focus on achieving more cohesive rapid-reaction units with more modern armoured vehicles and tanks and include the improvement of capability and mobility in border areas. According to the 1996 White Paper, the RTA aims to be 'compact in size, light and have high destructive power'.[45] Plans include several hundred new tanks and armoured vehicles, including 101 M-60 A3 decommissioned tanks from the United States and 295 APCs (to be supervised by the Supreme Command Headquarters).[46] Several

with academics in public meetings. 'ASEAN facing weapons crisis, says researcher', *Bangkok Post*, 24 Jan. 1995, p. A3; and 'Military urged to clarify its arms purchases', *Bangkok Post*, 6 Feb. 1995, p. A3.

[40] 'Air force wants F-18s plus all the extras', *Bangkok Post*, 6 Oct. 1995, p. A1.

[41] [US humiliated the RTAF: still refusing to sell AMRAAMs with F/A-18], *Matichon*, 27 Aug. 1996, p. 1.

[42] Wassana, N., 'Plan afloat to enhance Thailand's air strength', *The Nation*, 7 Jan. 1995, p. A1.

[43] Brooke (note 3), p. 106.

[44] 'Air force sees need for F-18 jets to meet national security needs', *Bangkok Post*, 18 Sep. 1995, p. A8.

[45] Thai Ministry of Defence, *The Defence of Thailand 1996* (Supreme Command Headquarters: Bangkok, 1996), p. 42.

[46] 'Supreme Command to review APCs purchase', *The Nation*, 10 Sep. 1996, p. A1; and Wassana (note 7), p. 4.

Table 7.1. Equipment holdings of the armed forces of Thailand and its neighbouring countries, as of 1 August 1996

	Cambodia	Laos	Malaysia	Myanmar	Thailand
Main battle tanks	100	30	. .	106	253
Light tanks	10	25	26	105	510
APCs and AIFVs	250	70	816	270	973
Reconnaissance vehicles	. .	. .	394	115	32
Artillery (all types from 100 mm)	428	75+	127	126+	427
Frigates	. .	. .	6	. .	12
Corvettes	. .	. .	. .	2	5
Missile craft	. .	. .	8	. .	6
Combat aircraft	19	31	60	60	95
Light combat aircraft	6	. .	21	31	116
Armed helicopters	. .	. .	. .	18	4

Notes: APC = armoured personnel carrier; AIFV = armoured infantry fighting vehicle.

Source: International Institute for Strategic Studies, *The Military Balance 1996–1997* (Oxford University Press: Oxford, 1996).

hundred light tanks will be acquired if the budget permits. In addition, the RTA has plans to improve ranges of artillery and fire-control systems. Finally, it intends to replace old assault rifles with some 50 000 new modern ones and to obtain several helicopter gunships in the near future.[47] To achieve compactness, the RTA has also been seriously planning to reduce its current force level from 190 000 men since 1992.[48] In 1996, the force level was reduced to 150 000 and a further reduction by 10 per cent was planned for 1996–2000. Several modifications in force structure, including a new voluntary system for combat and reserve forces, are proposed.

Concern about the situation along the borders is apparent. Border problems affecting Thailand's security were underlined clearly in the 1994 White Paper.[49] Its 5655 km of border—2401 km with Myanmar, 1810 km with Laos, 798 km with Cambodia and 646 km with Malaysia—have not always been clearly demarcated. In fact, Thailand has been in dispute with all its neighbours over border issues. Its security forces clashed with Laotian troops several times on the border in the late 1980s; it has been in dispute with Cambodia over areas in three eastern provinces and in the exclusive economic zone (EEZ); some areas of five northern and central provinces are disputed with Myanmar; and four areas are disputed with Malaysia. Complications and skirmishes have erupted in these contested areas from time to time in recent years and have been intense on the eastern borders and increasingly on the western front. Boundary problems

[47] [Examine arms procurement: the cause of budget deficit], *Arthit Vikroh*, 5–11 May 1996, p. 2.

[48] Parthet, D. (Col), [Current situation in Asia Pacific region and the force reduction of the Thai armed forces], *Senathipat*, Sep.–Dec. 1993, p. 44.

[49] Thai Ministry of Defence (note 1), pp. 16–17.

have been exacerbated by a number of border-related incidents involving illegal entry, cross-border smuggling, trade in arms, drug trafficking and prostitution.[50]

A comparison of Thailand's equipment holdings with those of its neighbours indicates that the military still has considerable influence and is able to translate its concerns about the security situation into significant arms modernization programmes without too much outside interference (see table 7.1).

IV. Problems with the existing structure

At first glance, it would appear that the Thai arms procurement decision-making process begins with the military user units submitting procurement requests up the line. In practice, however, decisions regarding major arms procurement are frequently made in a more top-down manner. The military élite—essentially the chiefs from the three armed services—makes key decisions such as which arms to procure, how much to spend, when to acquire the arms and on what basis procurement programmes should be justified. No politicians or other actors are so directly involved in arms procurement. Many of the military élite are close friends, having attended the same military academy and having fought together. It is quite common for them to be related through marriage. This small and highly cohesive group reaches consensus on key arms procurement issues before passing on its decisions or 'demands' to the Parliament.

Under these circumstances, there are three basic problems that obstruct the development of greater transparency and accountability in the current arms procurement process. The first problem is related to Thailand's centralized bureaucratic system, the second is associated with the dominance of the military—particularly the army—in the procurement process, and the third problem is connected with the weaknesses in the democratic system of government.

The first problem is the most obvious. A request for arms must in general be sent by the agency immediately responsible for procurement to the Commander-in-Chief for approval. Only when the Commander-in-Chief has appointed a Procurement Committee can the request undergo a regular examination process. Once this examination is completed, the request is forwarded to the Directorate of Operations for further examination before being returned to the Commander-in-Chief for consideration before its approval. A similar approach is also adopted at the Supreme Command Headquarters and the MoD. This highly centralized process not only is slow, tedious and cumbersome, but also means that most information on arms procurement options is in the hands of a narrow military élite. The military is generally aware of the problem and there have been some suggestions to review the decision-making structure.

The second problem is associated with the role of the RTA in the decision-making process within the armed forces. It has been a dominant force in the defence of the country, particularly since it successfully broke the power of the

[50] Thai Ministry of Defence (note 1), p. 16.

RTN and the marines in 1951.[51] The RTN budget was cut drastically and its capability was restricted to coastal defence until the 1980s. The RTA's victory allowed it to assume a dominant role not only in the armed forces but also in Thai politics.

The consequences of the RTA's domination are profound. In terms of defence posture, in 1996 the army had the largest number of forces at 150 000, as compared to 66 000 in the navy and 43 000 in the air force.[52] In terms of the defence budget, the RTA usually commands about 50 per cent of the total budget for the three services.[53] Regarding the role of the military in politics, it is the RTA élite that has mostly dominated the government and manipulated the public for support. Consequently, the Commander-in-Chief of the RTA has not only been the most powerful leader in the military establishment but was once also considered to be the most influential person in the country. Arms procurement policies have largely been influenced or controlled not just by a military élite but, essentially, by the élite in the army.

The third problem is connected to weaknesses in the democratic political system and to the limited exercise of checks and balances. The current system does not give the Thai Parliament the power to make the military more accountable in its arms procurement processes.

Civilian control over the arms procurement process has many deficiencies. The Permanent Secretary of Defence, who is supposed to ensure civilian control over the military, has hitherto always been a serving military officer. The Bureau of the Budget, which is supposed to examine the availability of funding for arms procurement, has not stopped many procurement proposals. For example, when former Prime Minister Chavalit (at that time also serving as Minister of Defence) told the armed forces to make all their arms purchasing plans available for the BoB in December 1996 he also informed them that he did not object to their buying plans and that the belt-tightening policy of the country would not affect military procurement.[54]

The civilian decision makers, such as the Prime Minister and the members of the Cabinet, are not often directly involved in the arms procurement process. More importantly, they have not often been able to influence or contest demands concerning military procurement issues. Another limitation is that the Cabinet, in security-related decision making, mostly relies on the Minister of Defence and various Directors of Intelligence, who are usually serving military

[51] In June 1951 the RTN attempted to install the leader of the Democrat Party, Khuang Aphiawong, as head of the government and was faced with the opposition of the army, police and the RTAF. The combined forces sank the RTN's flagship, *Sri Ayuuthaya*, damaged the patrol vessel *Khamronsin* and disarmed most of the RTN's surface ships. Goldrick (note 38).

[52] International Institute for Strategic Studies, *The Military Balance 1995–1996* (Oxford University Press: Oxford, 1995), pp. 102–103.

[53] In the 1996 and 1997 budgets, the RTA received 53% of the total allocation (in 1996 47 billion and in 1997 51 billion baht) to the 3 armed services and the RTN and the RTAF each obtained only 23% (in 1996 21 billion and in 1997 22 billion baht). Office of the Prime Minister, [Details on budget expenditure], no. 4 (Bureau of the Budget: Bangkok, 1996), pp. 1–30.

[54] Wassana, N., 'Military given go ahead on satellite, submarine purchase plan', *Bangkok Post*, 21 Dec. 1996, p. 3, in FBIS-EAS-96-247, 24 Dec. 1996.

officers. MPs are even less involved in making and implementing the military's arms procurement policy. The parliamentary debate on the annual budget bill provides an opportunity for MPs to examine arms procurement policy. However, they have not been successful in creating greater transparency in the military's arms procurement programmes. The Military Affairs Committee of the House of Representatives, most of whose members are former military officers, also has only limited ability to control the military. Almost half of the seats in the Senate are held by military officers.

For the time being, however, arms procurement decision making may be affected not so much by the influence of politicians as by budget constraints and the inadequacies in the domestic defence industry.

V. Factors affecting arms procurement

Budget constraints

Budget constraints have become increasingly significant to arms procurement. In the early 1980s the Ministry of Defence had the largest budget of all government ministries (see table 7.2). It dropped to second place in 1985, slipped to third in 1990, and in 1993–97 was consistently ranked third among all ministries. The defence share of total government expenditure fell steadily from 18.3 per cent in 1982 to 15.6 per cent in 1989 and to an all-time low of 10.7 per cent in 1997. Moreover, the military seems to be unable to keep up with the rate of economic growth. The defence budget as a percentage of GDP fell from a high of 3–4 per cent in 1982–87 to an average of 2.25 per cent in the period 1989–96.[55] The reasons for the fall are domestic political changes and almost simultaneous changes in external threats.

Recently, financial constraints appear to have had a direct impact on arms procurement. When it was estimated that Thailand's 1995 current account deficit was 291 billion baht ($11.6 billion, around 7.1 per cent of GDP),[56] politicians began to point to military spending as the culprit.[57] Although the causes of the deficit were in fact more complicated, the Ministry of Finance ordered an urgent cut of 20–25 billion baht ($0.6–0.8 billion) in the 1997 budget.[58] The MoD budget was rolled back by about 134 million baht ($4.3 million) and the Commanders-in-Chief were asked to scale down their weapon purchases.[59] Minister of Defence Chavalit therefore had to withdraw several arms

[55] Sköns, E., Courades Allebeck, A., Loose-Weintraub, E. and Weidacher, R., 'Military expenditure and arms production', *SIPRI Yearbook 1998: Armaments, Disarmament and International Security* (Oxford University Press: Oxford, 1998), p. 230.

[56] Fairclough, G., 'Born to shop', *Far Eastern Economic Review*, 18 Jan. 1996, p. 48.

[57] Prime Minister Banharn Silapa-Archa was among them. See, e.g., [Deng said current account deficit caused by the military spending on arms], *Matichon*, 4 Apr. 1996, p. 1; and 'Premier's remark upsets military', *Bangkok Post*, 11 Apr. 1996, p. A3.

[58] 'Govt to cut '97 budget as quick fix', *The Nation*, 10 Oct. 1996, p. A3. The average 1997 rate of exchange of 31 baht = $1 is used. *International Financial Statistics* (note 2).

[59] Thai House of Representatives, [Report of the Special Committee on drafting the budget act] (Committee Division: Bangkok, 1996), pp. kh1–kh3.

Table 7.2. The Thai Ministry of Defence budget, 1982–97
Figures in italics are percentages.

Fiscal year	Defence budget (baht m.)	% of GDP	% of total government exp.	Increase year on year (%)	Ranking number[a]
1982	29 384.5	*4.1*	*18.3*	–	1
1983	33 055.6	*3.8*	*18.7*	*12.4*	1
1984	35 926.7	*3.9*	*18.7*	*8.7*	1
1985	38 308.6	*4.3*	*18.5*	*6.6*	2
1986	38 866.2	*3.8*	*18.3*	*1.5*	2
1987	39 155.2	*3.4*	*17.2*	*0.7*	2
1988	41 170.7	*2.9*	*16.9*	*5.2*	2
1989	44 484.1	*2.6*	*15.6*	*8.0*	2
1990	52 632.5	*2.4*	*15.7*	*18.3*	3
1991	60 575.2	*2.4*	*15.6*	*15.0*	2
1992	69 272.9	*2.4*	*13.2*	*14.3*	2
1993	78 625.3	*2.5*	*12.4*	*13.5*	3
1994	85 423.9	*2.4*	*12.6*	*8.6*	3
1995	91 638.7	*2.2*	*12.0*	*7.3*	3
1996	100 586.5	*2.2*	*11.9*	*9.7*	3
1997	105 238.3	. .	*10.7*	*8.0*	3

[a] Indicates the position of the MoD budget in relation to other ministries' budgets.

Sources: Chaiwat, S. A., 'Defence budgeting', SIPRI Arms Procurement Decision Making Project, Working Paper no. 57 (1995), pp. 12, 15; 1982–96 budget statistics from Thai *Government Gazette*, 1982–97; 1997 budget statistics from Bureau of the Budget, Budget Document no. 4, 1996; statistics on share of GDP for 1982–89 from Ball, D., 'Arms acquisition in the Asia Pacific', Paper presented at the 9th Asia–Pacific Roundtable, June 1995, p. 9; and 1991–96 GDP based on National Economic and Social Development Board statistics, Aug. 1995.

procurement programmes from the Cabinet agenda in 1997.[60] In 1998 the MoD may face even more fiscal constraints as the Ministry of Finance has suggested that 4480 million baht ($144 million at the 1997 average exchange rate) should be cut from the defence budget.[61]

Although the military may not initiate new major armament programmes during the current financial difficulties, each fiscal year the MoD still has to earmark a large amount of money to pay for procurement agreements approved earlier (see table 7.3). Allocations for the RTA in 1997 included 31 projects approved in previous years (and three newly approved programmes, including 36 155-mm self-propelled guns, 18 military logistic vehicles and fire control systems). The RTN had 16 programmes to pay for in instalments in 1997, two of them for the first time—for three transport ships and three helicopters. The RTAF has fewer ongoing procurement programmes than the RTA and the RTN. However, the instalments to be paid in 1997 for six current procurement

[60] 'Chavalit suspends arms programs', *The Nation,* 3 Aug. 1996, p. A1.
[61] [Armed forces accept budget cut of 4.48 billion], *Matichon,* 14 Feb. 1997.

Table 7.3. Costs of the Thai equipment procurement and force modernization programmes, 1997

Figures are in baht m.

Programmes[a]	Amount
Supreme Command Headquarters	
Equipment procurement	57.8
Force-building	2 473.8
Royal Thai Army	
Equipment procurement	1 307.0
Force-building	7 944.9
Royal Thai Navy	
Equipment procurement	889.0
Force-building	7 202.4
Royal Thai Air Force	
Equipment procurement	3 480.0
Force-building	6 778.5
Total	**30 133.4**

[a] Equipment procurement includes small arms and related expenditure; force-building includes major arms procurement and related expenditure extending over more than one fiscal year. Figures are for programmes approved in previous years, not whole defence budget.

Source: Office of the Prime Minister, [Details on budget expenditure FY 1997], no. 2 (Bureau of the Budget: Bangkok, 1997), pp. 7–30.

programmes included the SAR helicopter and communication systems. In total, the MoD had to allocate approximately 30.1 billion baht ($0.8 billion) or 28 per cent of total military expenditure for 1997 for payment of instalments.

So far the MoD has managed to pay the instalments on these current programmes without major difficulty, probably because its budget is more flexible than is generally believed. Flexible management and accounting methods appear to allow the military to shift expenditure between categories easily. In general, the MoD budget comprises two major categories: the General Administration Plan and the National Defence Plan, as shown in table 7.4. The budgets for arms procurement and production are included under the National Defence Plan under the 'defence of the kingdom' activities.

Salaries and compensations usually take the largest share of the budget (a little over 56 per cent for 1982, 1985 and 1990). Approximately 35–37 per cent was allocated to defence of the kingdom for these years. In 1991 another major category was added, the Rural Development Plan (see table 7.5); in 1993 two major new categories, the Public Health Services Plan and the Social Security and Welfare Plan, were added; in 1995 the AIDS Prevention and Control Plan joined them; and for 1996 yet another major category, the Higher Education Management Plan. The five new categories account for only a very small percentage (1–3 per cent) of the total military budget. Nevertheless, the more

Table 7.4. Breakdown of the Thai Ministry of Defence budget, 1982, 1985 and 1990
Figures are percentages of the total defence budget.

Plans	1982	1985	1990
General Administration Plan			
Salaries	27.4	28.1	33.5
Compensation, materials, utilities	28.7	28.1	22.9
Capital, land, construction	4.6	3,7	2.7
Subsidies	0.7	1.0	1.1
Other expenses	0.2	. .	. .
National Defence Plan			
Defence of the kingdom	36.0	37.2	35.7
Classified activities	2.4	1.2	1.0
Special programmes	. .	0.6	3.1
Other programmes	. .	0.1	. .
Total	**100.0**	**100.0**	**100.0**

Source: Adapted from Chaiwat, S.-A., 'Defence budgeting', SIPRI Arms Procurement Decision Making Project, Working Paper no. 57 (1995), p. 18.

categories that are added, the more flexible the MoD budget becomes as expenditure can be moved from one category to another less noticeably.

The defence budget is set artificially higher than actually needed in the first place. This is quite a common practice in many developing countries and it also gives the military the flexibility to manage its budget without reaching the ceiling too quickly. There are other ways in which expenditure can be hidden. Since some military expenditures are not subject to government audit, real expenses and revenues can be been hidden elsewhere, perhaps through an accounting procedure. Finally, there may be projects for which the MoD can share the costs with other ministries or some that are channelled through other agencies operating similar programmes. This is particularly obvious in the case of the military's own 'development for security' projects, which are quite similar to the development projects operated by the Ministries of the Interior, Health and Education and other development agencies.

Whatever the explanation, this flexibility has enabled the MoD to manage to pay for major arms modernization programmes without much difficulty, at least in the past. Moreover, its success in financial management gives it considerable confidence in initiating new and even larger arms procurement programmes. In the future, however, it may not do so well as the total cost of projects increases, the cost of living rises, and the civilian government becomes more aware of the practices and begins to tighten military accounting. The military will therefore increasingly face difficulties in terms of budget constraints as it attempts to procure more arms in the future.

Table 7.5. Breakdown of the Thai Ministry of Defence budget, 1992–95
Figures are percentages of the defence budget.

Plan	1992	1993	1994	1995
General Administration Plan	56.5	57.8	52.4	49.8
National Defence Plan	41.9	40.2	45.0	45.0
Rural Development Plan	1.6	0.5	0.4	2.7
Social Security and Welfare Plan	. .	0.5	0.7	0.7
Public Health Services Plan	. .	0.8	1.5	1.5
AIDS Prevention and Control Plan	. .	. .	. .	.03
Total	**100.0**	**100.0**	**100.0**	**100.0**

Sources: Chaiwat, S.-A., 'Defence budgeting', SIPRI Arms Procurement Decision Making Project, Working Paper no. 57 (1995), p. 18; and Office of the Prime Minister [Details on budget expenditure FY 1997], no. 2 (Bureau of the Budget: Bangkok, 1997), pp. 7–30.

Limitations in domestic arms production

Like several other developing countries, Thailand has obtained major weapon systems from abroad and has done so in such a way that it has become dependent upon a few sources. Most of the weapons acquired in the 1950s were from the United States.[62] Throughout the 1960s and 1970s the country continued to depend upon the USA as a primary source for major weaponry. In the 1980s, the arms modernization programme forced Thailand to rely on particular foreign arms suppliers such as the USA and some European countries.

A situation of dependence is a vulnerable one, particularly in the event of arms embargoes or restrictions on the use of imported weapons being imposed. Dependence is also unsatisfactory in terms of the quality of equipment and the financial terms provided by a limited number of suppliers. More importantly, most leaders in the developing countries worry that it might permit certain arms-supplying countries to influence their foreign and domestic policies.

Thai leaders are generally aware of the potential problems and some efforts have been made to counter this dependence.[63] By the mid-1980s Thailand had achieved a moderate level of diversification of arms sources.[64] However, this does not solve the problem: there is a limited number of suppliers of major weapon systems, it is difficult to operate different types of equipment from different countries, and diversification redistributes rather than eliminates dependence on imports.

To deal more effectively with the situation in the long term, the Thai military aims to develop an indigenous defence capability. Several arms production pro-

[62] For statistics on shares of major arms suppliers in South-East Asian imports of major conventional weapons in 1950–85, see Brzoska and Ohlson (note 19), appendix 7, pp. 340, 343–45, 347–50; and Blackaby, F. *et al*., SIPRI, *The Arms Trade with the Third World* (Paul Elek: London, 1971), p. 460.

[63] For a discussion, see Panitan, W., 'ASEAN's arms modernization and arms transfers dependence', *Pacific Review*, no. 3 (1995), pp. 499–503.

[64] Panitan (note 63), pp. 500–501.

grammes have been initiated by the military since the 1960s, for example, within the research and development (R&D) divisions of the armed services' ordnance departments. Small arms have been produced, including ammunition, artillery, anti-tank rockets and other military equipment. By the 1990s, production included the 105-mm howitzer M425, a mine detector, a metal alloy flotation for raft building, the RC 292/SS 29 antenna, a field helmet, a 73-mm anti-tank rocket, a 60-mm mortar, a towed 120-mm mortar, a second-generation night vision scope, night vision goggles and a laser range-finder.[65]

Production of major weapons has concentrated on light aircraft, trainer aircraft and naval vessels. There were two production programmes for light aircraft licensed from Canada and the USA before 1975: the first—the US PL-2—only involved the assembly of imported parts and the second involved the licensed production of the Canadian DHC-1, which was given the local name of RTAF-4. The air force used the RTAF-4 as a prototype for the RTAF-5 trainer—the first aircraft to be locally designed and built. Production began in 1984, but owing to several difficulties only a limited number of RTAF-5s were produced and the project was later terminated. Between 1981 and 1985, a licence to assemble a West German Fantrainer was also obtained and some 50 Fantrainers were assembled with some locally produced parts by the end of the 1980s. By the mid-1990s, no aircraft were locally designed or built. Small aircraft production has concentrated on assembling licensed products.

The RTN Dockyard began to build naval vessels in the 1930s and more modern vessels were produced from the mid-1960s. In 1965, the RTN Dockyard designed and built the T-91 type patrol boat. Nine vessels were built over a period of 22 years and the last T-99 was commissioned in 1987. Private shipbuilding companies have been more active than the aircraft industry in manufacturing for the military. For example, the Bangkok Dockyard Company, set up with US assistance, built several types of support ship for the RTN. Between 1976 and 1980, the Suriya Class 690-tonne support ship of indigenous design and the Thalang Class (1000-tonne) mine countermeasure support ship licensed from the Federal Republic of Germany were produced. Between 1981 and 1985, the company produced a locally designed 1400-tonne support ship.

Another shipbuilder, the Italthai Marine Company, began building the T-213 coastal patrol craft for the RTN in 1976. Production ceased after 18 vessels had been built and the last of the series—the T-230—was commissioned in 1990–91. Between 1981 and 1985 the company constructed six Sattahip Class large patrol craft copied from the T-213. In 1985–90 it had a licence to build two French PS-700 landing ships and a West German Hysucat-18 hydrofoil. (The hydrofoil programme was later cancelled by the RTN.) In future Italthai may licence-produce fast-attack craft.

By 1992 there were approximately 385 shipbuilding subcontractors in Thailand engaged in producing some 1200 vessels. However, production of naval

[65] Brooke (note 3), p. 107.

vessels is still limited to less sophisticated types of ship and the main products of most of those 385 companies are for commercial shipping. In general, the Thai shipbuilding industry is more capable than the aircraft industry in terms of using local design and production.

Apart from these examples, the Thai defence industry has been limited to production of small arms, assembly of licensed products and manufacture of less sophisticated armaments. The Army Weapons Production Centre, the Rifle Production Plant and the Armed Forces Vehicle Rebuild Workshop are examples. These industries are state-owned but the military is considering their privatization in order to increase production and improve quality.[66]

The inadequacies of the domestic defence industry have prevented the Thai military from obtaining the weapons it needs from local sources. In the post-cold war period, the closure of US bases in South-East Asia and disputes on trade and human rights issues between Thailand and some Western countries have created a new desire for self-reliance in national defence. The MoD has accordingly formulated a policy to boost military self-reliance and strengthen the local defence companies. The guidelines specify that: (*a*) national defence R&D institutes are to develop techno-industrial capabilities; (*b*) the military is to coordinate with non-military institutes which can conduct specific defence R&D; and (*c*) a committee will be formed to define standard specifications for weapon systems to be procured from abroad or produced domestically.[67] The MoD has also established policies to: (*a*) operate state enterprises which produce military equipment; (*b*) modify state enterprises which mainly produce civilian equipment to serve related military needs; (*c*) improve the production capabilities of those enterprises; (*d*) consolidate all military industry units which produce similar equipment; and (*e*) support private industries that can produce military equipment to standard specifications.

To implement the new policies, a Centre for Defence Industry and Energy was established under the MoD Defence Industrial Department in December 1991.[68] It is to plan, promote and implement activities concerning the defence industry. It incorporates several divisions, including the Office of Defence Industry Committee, the Armament Control and Industrial Development Division, the Industrial Control Division, the Industry Division and the Military Explosive Material Factory. Whether this new department helps to promote military self-reliance and the local defence companies remains to be seen.

VI. An 'ideal type' of process

Problems in the current arms procurement decision-making structure in Thailand suggest that an ideal arrangement should focus on three basic

[66] 'The military in Thailand', *Asian Defence Journal*, no. 7 (1996), p. 22.

[67] Surasak, B., 'National arms procurement policies and decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 55 (1995), pp. 1–2.

[68] Thai Ministry of Defence, [History, objectives and organization of the Ministry of Defence] (Office of Policy and Defence Planning: Bangkok, 1996), pp. 27–32.

elements: (*a*) a unified military decision-making structure; (*b*) greater involvement of the full Cabinet; and (*c*) an effective parliamentary mechanism of control of arms procurement.

A unified military decision-making structure

Within the military establishment, an ideal arms procurement decision-making structure should be based on a more unified concept. Seven military organizations or agencies would be directly responsible for arms procurement policies (see figure 7.5). At the top of the structure a single body, such as an Arms Procurement Council, would be responsible for the formulation of arms procurement policies. Only the top decision makers in the military establishment, such as the Minister of Defence, the Supreme Commander, the Commanders-in-Chief of the armed services, the Permanent Secretary of Defence and their deputies or equivalents, would be members of the council. Based on current rankings in the armed services, the number of members would not exceed 15–20. The chairman should be the Minister of Defence as he is responsible to the government. As the supreme authority of the armed forces, the Supreme Commander should serve as the council's secretary. The council would also have an inter-service Joint Chiefs of Staff Committee as an advisory board, led by the Chief of Staff of the Supreme Command Headquarters and assisted by the Chiefs of Staff of the three armed services. The main function of this committee would be to provide all necessary assessments and recommendations on arms procurement issues to the council, including overall military and security strategies, the impacts and drawbacks of proposed arms procurement programmes, and other related military and security issues.

At the middle level of this ideal structure, an inter-service arms procurement committee would be set up—a Joint Procurement Committee—with two important functions: (*a*) to oversee the major arms procurement policies approved by the Arms Procurement Council; and (*b*) to assess the acquisition requests submitted by the procurement authorities of the armed services before submitting them to the council for approval. Members of the Joint Procurement Committee would include the Assistant Commanders-in-Chief of the three armed services and the directors of divisions, such as the Director-General of the BoB, the Director-General of Policy and Planning, the Director-General of the Defence Industry and the Director of Intelligence. The Joint Procurement Committee would also have an advisory board including the three Deputy Chiefs of Staff from the Supreme Command Headquarters and two Deputy Chiefs of Staff of each of the three armed services. Its basic responsibilities would be similar to those of the advisory board for the Arms Procurement Council: it would provide assessments and recommendations on arms procurement issues, but from an administrative angle. Several administrative and supply departments could come under this inter-service committee.

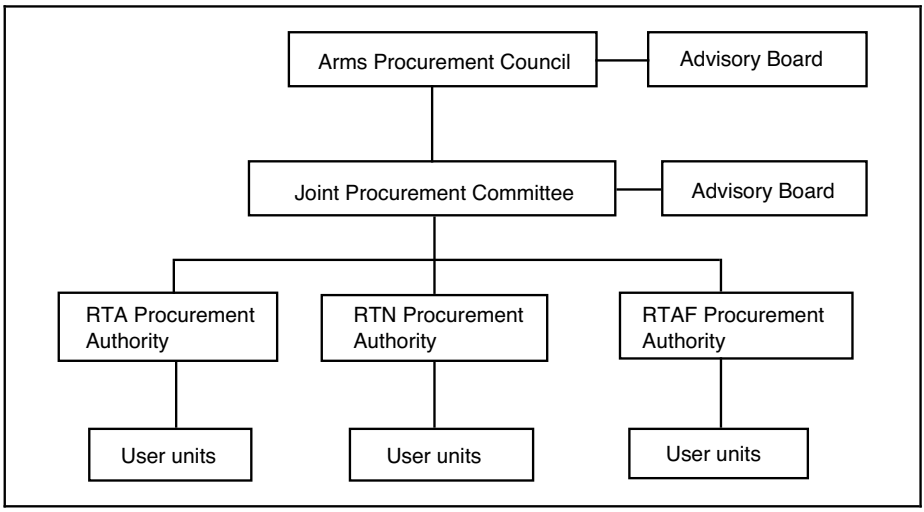

Figure 7.5. A model arms procurement structure for the Thai military

Notes: RTA = Royal Thai Army; RTAF = Royal Thai Air Force; RTN = Royal Thai Navy.

At the bottom level of the structure would be the individual procurement authorities within the three armed services—the administrative and supply departments which process requests for armaments submitted by different military users. Their members could be appointed by the respective Commanders-in-Chief. Some procurement can be approved at this level under existing rules and regulations. If approval is required from a higher authority, the procurement request would then be forwarded to the Joint Procurement Committee.

Greater Cabinet involvement

The ideal arms procurement decision-making process should emphasize greater involvement of the full Cabinet and other decision makers. The procurement of modern armaments involves a wide range of considerations and expertise, ranging from security and foreign affairs to coordination of finance, barter trade and offset activities, and the involvement of the decision makers in these various fields is critical to an appropriate arms procurement policy.

Under the ideal model the Minister of Defence, as the chair of the Arms Procurement Council, would be required to consult with the ministers and directors of various agencies. These would include the Ministers of Foreign Affairs, Finance and Commerce, the Director of the BoB, which comes under the Office of the Prime Minister, the National Economic and Social Development Board (NESDB), the National Security Council (NSC) and the National Institute of Defence Studies (NIDS). The three latter could provide analyses of the overall national security priorities and of the effects of arms procurement policies on regional and global security assessments. Cabinet engagement in

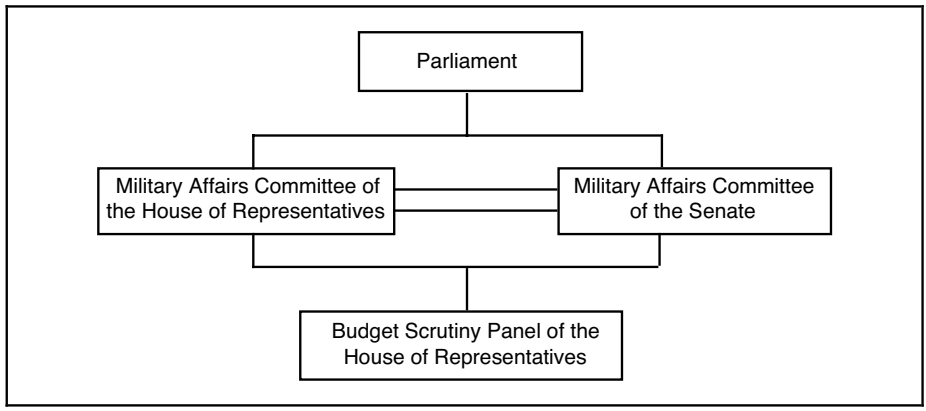

Figure 7.6. A model arms procurement structure for the Thai Parliament

such activities would lead to a more harmonized arms procurement policy, based largely on national priorities and capabilities.

After this formal consultation process, the Minister of Defence could submit the proposed arms procurement programme to the Cabinet for final approval, after which it would enter a review process in the Parliament.

An effective parliamentary control mechanism

A more effective parliamentary control mechanism for arms procurement would begin with the Budget Scrutiny Panel of the House of Representatives (see figure 7.6), to which details of arms procurement proposals would be required to be submitted by law. Details of resource availability, financial terms and conditions, impact assessments and other relevant information would be submitted to the Budget Scrutiny Panel by the Minister of Defence. Information on the military's past performance and management of arms procurement programmes would also be submitted, whereupon the panel would be required to commission an independent organization to review the performance of the military's arms procurement programmes and their management.

Once the Budget Scrutiny Panel has completed the examination process, the acquisition proposals would be submitted to the Military Affairs Committee of the House of Representatives and the Senate's Military Affairs Committee, which would consider the proposals separately. The members of the committees could consider the rationality of choices, the intentions, short- and long-term prospects, and the transparency of the proposed arms procurement programmes. The two committees could then hold a joint session to approve the proposed procurement before passing it as part of the budget bill to the Parliament for debate and final approval.

Implementing the ideal model

The model suggested here is preliminary at best and in no way conclusive. It is based mainly on available information and current assessments and much more analysis would be necessary before it could be implemented. Nevertheless, advantages of and difficulties in implementing the ideal model are discernible.

Advantages of the ideal model

The arms procurement process would achieve greater coherence under a single body. At the top level, the Arms Procurement Council would oversee a national procurement policy and set priorities among the competing programmes of the armed services. Requirements would be determined jointly by top military officers and priorities, choices, alternatives, potential impact and any needs for multi-service application would receive close attention at this level. As the advice and recommendations would come mainly from the Chief of Staff of the Supreme Command Headquarters, the national arms procurement policy would be harmonized according to overall priorities.

All major and small arms procurement programmes would initially be coordinated, harmonized and prioritized at the second level of the proposed model. Arms procurement policies would be jointly implemented by officers from the three services. Important administrative and logistical considerations such as resource availability, financial effects, alternative procurement strategies and regulations would be evaluated closely and requests for armaments submitted by a lower authority, such as the procurement authorities of the three armed services, would be evaluated and processed at this level. Decisions made at the top would be implemented on the basis of operational realities at the middle and lower levels. Similarly, requirements identified at the lower level would be considered and quickly passed to the higher authority.

At the level of the individual armed services, their arms procurement authorities would propose programmes directly to the Joint Procurement Committee. Thus, the needs of operational units or military users would be considered quickly with less red tape. Moreover, the three services would submit their major procurement programmes independently, without having to coordinate with the other armed services at this level. In this way, constructive competition among the three armed services would be maintained.

For the civilian government, there would be several significant advantages in this structure. First, arms procurement priorities would be balanced according to overall national priorities during the Cabinet procedure and later in the parliamentary process. Internal and external considerations and civilian perspectives would be taken into account. Second, the government would receive a well-considered proposal, coordinated by the various ministries. Third, arms procurement proposals would be closely scrutinized and reviewed by the Budget Scrutiny Panel. Critical assessments and related information would be presented during the procedure—something that is missing in the current examination in

the Parliament. Fourth, proposals would jointly receive approval from the Military Affairs Committees of the House of Representatives and the Senate, which has never happened before in the procurement process and could contribute to a higher level of professionalism in arms procurement. Finally, the Parliament would debate the well-constructed proposals in the traditional manner as part of the budget procedure. Given that the procurement proposals resulting from the ideal type of structure would be more unified, better balanced and transparent, they would be less of a source of tension and conflict between the military and MPs than they have been in the past. In the end, this process would increase the legitimacy and rationality of the military in proposing defence policy which, in turn, would create a more stable government and a more secure nation.

Difficulties in implementing the ideal model

There would be several difficulties in implementing this model. First, it would require a major reorganization of the bureaucratic structure. For example, the Arms Procurement Council would have to be established with the full support of various government agencies and of the competing armed services—something that would not be easy to bring about. Major structural and procedural changes in the Cabinet and Parliament would also be necessary and would certainly require constitutional changes.

Second, the ideal model would require significant adjustments in the working methods of military officers and civilian politicians. The different branches of the armed services and agencies would be required to work together closely—which has hitherto not been the case—as would all Cabinet members and all the directors involved.

Third, and perhaps most important, the ideal structure would require a major adjustment in the traditional attitudes of the Thai military. This is because in practice the new structure would give the Supreme Command Headquarters more authority over the other three services. It would be less likely that a single service could completely dominate the arms procurement process because the emphasis would be placed on a horizontal division of authority. This would be very difficult for the army to accept.

Finally, even if major structural changes were achieved, it is not certain that arms procurement policy would become more responsive to the changing environment or more accountable to the general public, because Thai society as a whole is still very hierarchical and based largely on patron–client relationships. In such a society, a person's status is ranked primarily according to his or her socio-economic position. Privileged persons usually command more respect (have more *baramee*)[69] than lesser ones. The military élite and top-level bureaucrats gain respect simply because of their positions.

[69] *Baramee* describes a polite and non-aggressive personality, and is among the highly valued cultural traits expected by the Thai people of a leader. A person who has *baramee* gains respect, love, loyalty and

According to Thai social values the ability to maintain influence depends on good interpersonal relationships and networks.[70] This means that a client typically obtains a job, gets promotion or resolves disputes through the contacts of a patron. In this type of society, there are social limits on who can challenge whom. In many cases, the prevailing norms are those of referring decisions to higher levels of authority, non-questioning, avoidance of express disagreement and an expectation of a benevolent rather than accountable leadership.[71] Any good decision-making structure should be able to deal with significant sociocultural influences imposed by the decision makers themselves.

VII. Conclusions

Various aspects of Thai society have undergone a fundamental transformation. In the area of national security, threats to the country have changed significantly from the threat of communist insurgency and armed separatists to the uncertainties of the post-cold war environment and conflicting territorial claims. In domestic politics, stability has been strengthened by an emerging democratic parliamentary system. The military, traditionally a dominant force in society, has been forced to relinquish its political control.

For the military élite, the basis of the new security strategy centres on the uncertainties of the post-cold war regional environment, competition for offshore resources and conflicting maritime claims in the region. It considers that sea lines of communication will become more critical to Thailand's security. Arms modernization is largely a reflection of these concerns. In particular, the RTN and the RTAF are focusing their capabilities on maritime strategy, as reflected by the acquisition of an aircraft-carrier and multi-role fighter aircraft with maritime attack capabilities. Emphasis has also been placed on compact forces with light armoured artillery and supporting vehicles to deal with complications arising along the border areas such as illegal migration and smuggling.

The military hitherto has basically arrived at the decisions to procure a significant amount of modern armaments in a top-down manner. A few élite groups have decided which arms to procure, when to acquire them and how much to spend. No politicians, civilian officials or others have had such a direct influence over arms procurement policy. Consequently, the present arms procurement policy does not allow for any greater transparency to the public. Moreover, the current structure of arms procurement decision making is highly centralized and based mainly on the traditional bureaucratic system of the country. The decision-making process has been dominated by the army. The process also suffers as a result of several weaknesses in the democratic system

sacrifice from his subordinates. This Thai term does not have an English equivalent: the closest would be charisma, goodness and loving-kindness.

[70] On Thai social values, see Suntaree, K., 'National decision-making behaviour in Thailand', SIPRI Arms Procurement Decision Making Project, Working Paper no. 59, pp. 9–17.

[71] Suntaree (note 70), p. 30.

of government. Attempts by MPs to control armaments spending through the budget process appear to be symbolic rather than real as the actual cuts in the defence budget have been minimal. The present arms procurement policy is thus not responsive to the changing domestic environment.

In the 1990s, the democratically elected prime ministers and the Cabinet have been more successful in influencing military spending on armaments. Fourteen proposed procurement projects, including two submarines, additional F-18 fighters and new rifles for the army, were shelved by then Prime Minister Banharn Silapa-Archa in early 1996. The official reason was that military spending could create a major financial problem for the country. Although financial difficulties have been cited by politicians several times in the past, it is under current domestic conditions, when the influence of the military is decreasing, that the government has been more successful in using financial reasons to delay or oppose the military's arms procurement programmes.

Only two constraints have a significant impact on arms procurement: budget constraints and deficiencies in domestic arms production. The budget constraints have become increasingly significant to the military as the MoD's share of the government budget has continued to shrink since the early 1980s, and the practice of moving funds from one budget heading to another to pay for earlier procurement commitments may not last long if costs of modern weaponry and other costs rise rapidly in the near future. Budget constraints may therefore become a real obstacle to arms modernization sooner than most have expected. Efforts to diversify arms procurement sources and create an indigenous defence industry have been going on since the 1960s. So far, success has been limited to small items of military equipment.

In order to make arms procurement policies more transparent and responsive, several suggestions have been made to alter the existing structure of arms procurement decision making. On the basis of the problems in the current structure, three ideal-type arrangements are suggested in this chapter. They focus on: (*a*) a unified military decision-making structure; (*b*) an inclusive decision-making Cabinet; and (*c*) an effective parliamentary mechanism for control over arms procurement. Several difficulties in implementing these arrangements are anticipated. Problems include a lack of political support and socio-cultural obstacles. Nevertheless, the suggestions are the first small step towards making arms procurement policies more responsive and relevant to an emerging democratic society.

8. Comparative analysis

Ravinder Pal Singh

I. Introduction

This study examines the arms procurement decision-making processes of six countries which are dissimilar not only in their political organization and military industrial and technological potential but also in their perceived security threats. Considering these differences and the unique characteristics of national security decision-making structures, direct comparison would be misleading. The approach adopted by this analysis is to set out some common propositions which are directly relevant in all the countries to the development of public scrutiny and accountability in the arms procurement processes. The concept of accountability is a thread that runs through this whole study.

To the extent possible, this chapter also compares and contrasts those elements of the decision-making process which have similar roles and functions in the different countries. Because of the unevenness of the available information, some salient elements are selected to facilitate comparison of and judgement on the varying factors that either allow or obstruct public scrutiny and monitoring of the arms procurement processes. The variation in the information available about the methods for exercising oversight of the military in different countries should encourage the research community and decision makers to further explore the propositions presented here in order to understand the strengths and limitations of public-interest monitoring in their respective countries, and thereby arms procurement restraints.

This comparison is explored for the four major themes described in chapter 1: (*a*) military and politico-security issues; (*b*) defence budgets, financial planning and audit; (*c*) techno-industrial issues; and (*d*) organizational behaviour and public-interest issues. These themes are further discussed in sections II–V for each country. Within each section, a number of propositions are put forward which may be used by the reader to analyse the varying levels of public accountability embodied in the arms procurement processes of different countries. In this context the chapter examines the information in chapters 2–7 relevant to each theme and, in some cases, introduces information which the author of a particular country study was not able to provide. Section VI presents the conclusions of the study.

II. Military and politico-security issues

This section highlights the characteristics of national security planning, threat assessment and arms procurement decision-making structures. The analysis is based on the following propositions, which are examined for each country in the sections which follow:

1. Arms procurement decisions must be shaped by well-defined threat assessment methods and long-term defence planning if the chosen national strategy and arms procurement policies are to be coherent. Clarity in policy-making processes reduces the probability of ad hoc and wasteful decisions because it facilitates public scrutiny and oversight.
2. Coordination between foreign and defence policy-making processes and between the armed services is a condition of coherent national security decision making.
3. A high level of military influence or autonomy in national security and arms procurement decision making constitutes a major obstacle to introducing public accountability norms and arms procurement restraints. Among the factors which contribute to the military's influence are: heightened national security concerns; the national political organization; the military's role in domestic politics; and in some cases the influence of a predominant arms-supplying country or military alliance.

Threat assessment and long-term planning

In China national security threat assessments are broadly defined at the level of the Politburo and the Central Military Commission (CMC) and more closely defined at the level of the People's Liberation Army (PLA) by the Headquarters of the General Staff (HGS), which has formulated the five-year Weapons and Equipment Development and Procurement Plans since 1953. However, a long-term weapon and equipment development outline was formulated for the first time for the years 1987–2000. There is evidently good coordination between the drafting of China's defence budget and its arms procurement plans.

Instead of taking a comprehensive capacity-building approach, Indian arms procurement plans and decisions are based on threat scenarios which are primarily driven by the Chinese and Pakistani military potential. Consequently, arms procurement planning is primarily reactive. The fact that the 15-year perspective plans are formulated by the armed services and the 5-year defence plans by the Ministry of Defence, without concomitant budget allocations, hampers the development of coherent plans.[1] The lack of an overarching body for long-term planning and of any comprehensive security policy document

[1] India, Lok Sabha, Estimates Committee, *Ministry of Defence: Defence Force Levels, Manpower Management and Policy*, 19th Report (Lok Sabha Secretariat: New Delhi, Aug. 1992), pp. 15, 30. A further example is the mismatch between the military's perspective planning and the 10-year self-reliance plan (1996–2005) of the Defence Research and Development Organisation (DRDO).

impairs consistency between immediate and medium-term decisions, on the one hand, and broader long-term defence plans, on the other.[2]

Israeli force-building policies and arms procurement decisions are determined by the Annual Intelligence Assessment of the Israel Defence Forces (IDF), which provides a strategic threat assessment and a formal appraisal of the probability of war.[3] Arms procurement policies are based on the need to maintain technological superiority to offset the numerical advantages of the armed forces of the countries which are perceived as threats to Israel.

Japan's threat assessment includes broader perspectives of security and non-military threats, such as disruptions to international trade and the import of natural resources and regional instabilities, and is based on longer planning horizons.[4] Unlike the other countries examined in this study, Japan has developed a comprehensive national security approach, reflected at the highest levels by the Security Council. The process for long-term planning is relatively clear and institutionalized, and thus transparent. It is based on a three-tier framework: the National Defense Program Outline (NDPO); the Joint Long-Term Defense Estimate (JLTDE); and the Joint Mid-Term Defense Estimate (JMTDE)—which allows greater scope for legislative scrutiny.

South Korea's threat assessments concern above all the military potential of North Korea and are also heavily influenced by the US assessment of the security situation in the Korean peninsula. Consistency in planning is based on the National Defense Planning and Management System.

The autonomy of the military in Thailand has allowed the army to promote the narrow military view of national security and has probably militated against the development of a well-defined threat assessment method. Although arms procurement plans are formed on the basis of five-year defence plans, requirements are not based on a comprehensive threat assessment process.

Assessment

In the case of Japan, this study found that the transparency resulting from debate on the NDPO in the Diet and the Standing Committee on Security probably contributes to a more thorough process in the Japan Defense Agency's (JDA) formulation of the JLTDE and the JMTDE. In South Korea the planning processes are well defined but the level of legislative scrutiny of the threat assessment is not as high as in Japan.

[2] Katoch, G. C., 'Defence expenditure: some issues', *Indian Defence Review*, Jan. 1992, p. 37; and Mookerjhee, S. (Vice-Admiral, ret.), 'India's defence expenditure: a holistic approach', *USI Journal*, no. 522 (Oct.–Dec. 1995), p. 456.

[3] Pinkas, A., 'Domestic considerations, élite motivations, the bureaucracy and the political culture of arms acquisitions in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 23 (1995), p. 20.

[4] Hamada, Y., 'Building public competence and accountability in the national security arena', SIPRI Arms Procurement Decision Making Project, Working Paper no. 38 (1996), p. 6. 2

Coordination between foreign policy and integrated defence policy

In China, national security policies are made by the CMC. Defence policy is executed by the PLA and foreign policy by the State Council, resulting in difficulties in creating close functional coordination between them. Unlike its counterparts in many other countries, the Chinese Ministry of National Defence (MND) does not have executive authority over defence policy making or arms procurement decisions. It reports to both the CMC and the State Council in matters of coordination between the PLA and the Ministry of Foreign Affairs, adding yet another step in the process. Since the PLA is an overarching body responsible for the PLA Navy and the PLA Air Force, the HGS coordinates the arms procurement plans of all the Chinese armed forces.[5]

Coordination between foreign and defence policies in India is limited by a lack of institutionalized interaction between the Ministry of Defence and the Ministry of External Affairs. Despite the existence of inter-ministerial security planning forums, such as Cabinet Committee of Political Affairs, the Defence Minister's Committee and the Committee on Defence Planning, comprehensive planning and inter-service coordination at the functional levels—particularly for weapon systems common to more than one user—is wanting.[6] The fact that there is only one representative from the Ministry of External Affairs on the small Defence Planning Staff (DPS) limits the scope and capacities for coordination between the foreign and defence policy-making processes. The DPS therefore merely provides secretarial functions to the Chiefs of Staff Committee (COSC) rather than a mechanism for making comprehensive threat assessments, carrying out long-term integrated inter-service planning and identifying arms procurement requirements based on operational priorities.

Israel has a higher level of coordination between its foreign and defence policy-making processes. Following the start of the Middle East peace process, arms control units were set up in the Ministry of Defense and in the Foreign Ministry and representatives of these units have participated in multilateral arms control negotiations. The military still has a strong influence on the implementation of both foreign and defence policies. The IDF General Staff processes and prioritizes equipment requirements on behalf of the three armed services on the basis of overall threat perceptions, financial resources and operational priorities. This integrated approach applies to both short-term arms procurement and long-term force-building requirements. The guiding principle is that the IDF determines what it needs, while the Ministry of Defense determines how and from where to get it.[7]

The facts that the JDA is not an autonomous ministry responsible for defence policy making and that Japanese security policy is strongly influenced by the 1960 Japan–US Treaty of Mutual Cooperation and Security administered by the

[5] This responsibility has since been taken over by the newly formed General Equipment Department.

[6] Jayal, B. D., 'Status of the Indian Air Force', *Indian Defence Review*, Nov. 1996, p. 56; and Cariappa, K. C., 'Inter-service weapons systems commonalty', *The Pioneer* (New Delhi), 22 Aug. 1996.

[7] Pinkas (note 3), pp. 12–13.

Ministry of Foreign Affairs (MoFA) have led to comparatively close coordination between Japan's foreign and security policies. Although the MoFA does not provide direct input into arms procurement decision making, which is primarily managed by the JDA Equipment Bureau, the coherence between foreign and security policy making has resulted in a greater sensitivity on the part of the military to arms procurement restraints as a part of international arms control. Cross-posting of diplomats and military officials in the JDA and the MoFA allows for close coordination between foreign and security policy-making processes and between the threat assessment and force planning processes.

Coordination of national security decision making between various bodies is carried out at three levels in South Korea: (*a*) within the framework of the annual South Korean–US Security Consultative Meetings between the defence ministers, with representatives from South Korea's Ministry of Foreign Affairs and the US State Department in attendance; (*b*) within the Ministry of National Defense, the National Security Planning Board and the National Unification Board; and (*c*) within the South Korean–US Combined Forces Command. Arms procurement requirements for the armed services are coordinated by the Joint Chiefs of Staff (JCS) to avoid duplication of mission requirements and to facilitate combined mission capabilities.[8] The process is institutionalized in the offices of the Defense Procurement Agency and in the Acquisition Deliberative Committee and governed by the Regulations for Weapon Systems Acquisition and Management and the Mid-Term National Defense Plan.

The Thai Ministry of Defence, which is staffed by senior military officials, is seen more as a part of the military establishment than as a part of the government. This makes functional coordination difficult between the officials of the Ministry of Foreign Affairs and the military. Coordination between foreign and security policies is carried out only at the level of the National Security Council, which is chaired by the Prime Minister. The planning processes of the three armed services are separate and the Supreme Command Headquarters merely coordinates their priorities.

Assessment

A high level of inter-ministerial coordination generally results in greater transparency, since information is naturally exchanged during the process of coordination and not confined to a single organization. In this regard this study found that coordination between the Japanese MoFA and the JDA is broadly based and well institutionalized. Although this may not directly influence arms procurement decisions, it nevertheless reduces the military's autonomy and, at the same time, broadens the rationality of national defence decision making. In Israel, coordination between ministries is at an early stage of development, but the IDF's defence plans and arms procurement priorities are closely integrated. In South Korea, coordination is better developed between the country's military

[8] Myung Kil Kang, 'Budget planning process in arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 46 (1995), pp. 1–3.

and the USA than between its military and the Government. In all other countries in this study, the absence of institutionalized coordination processes may handicap coherence in national security decision making as well as reduce the possibilities of greater accountability.

The political influence of the military and of predominant arms suppliers

The level of political influence enjoyed by the Chinese PLA is indicated by the relatively high number of PLA members in the Communist Party of China (CPC) Central Committee.[9] The fundamental difference between civil–military relations in the West and party–military relations in China is that the CPC is not exclusively regarded as civilian, but as both civilian and military, and the PLA is seen as an intrinsic part of the political system. As the President is the General Secretary of the CPC and Chairman of the CMC, the PLA enjoys a greater influence in formulating national defence policies than do the militaries in the other countries examined in this study. In meeting the PLA's need for advanced weapons or systems, China's decision makers have been sensitive to the attendant political influences of the suppliers.

As the political leadership in India is responsible for making the final decisions on defence policy and arms procurement issues, the military's influence remains low. However, increasing devolution of power to the individual Indian states and political uncertainties at the central government level are relegating defence policy making to lower levels of political priority. The unstable nature of relations between the individual states and the central government coupled with a limited awareness of defence matters among the civilian leadership may lead to the military gaining a greater role in national defence and arms procurement decisions, at the cost of public accountability. In addition to the recent Russian arms transfers to India, the massive existing inventory of weapon systems of Russian origin will prevent Indian decision makers from disregarding the Russian factor in their future decisions.

In Israel arms procurement decisions by the Minister of Defense depend heavily on the information provided by the IDF since it is the only body with systematic capacities for planning and data assessment.[10] The unique nature of

[9] At the 14th CPC National Congress, there were 45 members and 19 alternate members from the PLA in the Central Committee out of 188 members and 127 alternate members, and only 2 members represented the CMC in the Politburo, with the same 2 in the Standing Committee, one of them being Chairman Jiang Zemin. At the 15th CPC National Congress the PLA members and alternate members in the Central Committee had been reduced to 41 and 17 out of 191 members and 151 alternate members, respectively. This is based on proportional representation from the various services of the PLA. There are no PLA representatives in the Standing Committee other than CMC Chairman Jiang Zemin. *China Directory 1997* (Tokyo: Radiopress, 1996), pp. 151–89 (in English); *China Daily*, 19 Sep. 1997, p. 2; *Jiefangun Bao*, 19 Sep. 1997; *South China Morning Post*, 19 Sep. 1997; and *International Herald Tribune*, 29 Sep. 1997, p. 4.

[10] In the absence of an independent source of professional expertise to evaluate data provided by the IDF, the MoD lacks the technical capacity to assess the cost-efficiency of procurement decisions. According to Aryeh Naor, a former Cabinet Secretary, cabinet members function as mere 'rubber stamps' for the defence establishment. Pedatzur, R. and Weisblum, C., 'The decision making process and public awareness', SIPRI Arms Procurement Decision Making Project, Working Paper no. 29 (1995), pp. 2–3.

the security threats to Israel has given the military a higher political profile and influence in security decision making than exists in other countries in this study, as is also evident from the participation of senior military officers in negotiations with foreign powers.[11] Its dependence on US military support is illustrated by the US re-supply in the course of the 1973 Yom Kippur War to make up for very high equipment attrition rates. However, because it has no treaty obligation with the USA (as well as an exceptionally large budget for procurement) Israel experiences fewer constraints in choosing sources of arms imports other than the USA than do Japan or South Korea, which are constrained by the requirements of inter-operability.[12] Joint-venture contracts between the US and the Israeli defence industries also have a heavy influence on Israel's arms procurement decisions.[13]

As Japan's security policy making is led by the MoFA and the JDA does not have the status of an autonomous ministry, the Self-Defense Forces' opinion is not the final word in making decisions on arms procurement. The military's opinion is expressed through lobbying by *Kokubo Zoku* ('defence tribe') parliamentarians, who primarily represent defence industrial interests, and through the JDA Press Club. Assertive civilian control of the military is facilitated by the low salience of the JDA. Its preference for buying weapons of US origin is influenced by requirements of inter-operability, access to state-of-the-art systems, and the desire of the MoFA to maintain cordial relations between the two security bureaucracies.

During the 30 years of military–authoritarian rule in South Korea, the military received political support by virtue of its absolute control over the assessment of the threat from North Korea and over the information available to the public, using the legal and institutional safeguards provided by the National Security Law and the Military Secrecy Act. The military's threat assessment chimed in with that of the USA.[14] Despite the advent of a civilian, democratic leadership and demands for public accountability, the military remains influential. Factors which have contributed to the influence of the USA as a predominant supplier to South Korea are the joint combat operations, the need for inter-operability of weapon systems and reliance on US operational doctrines. Furthermore, in the eventuality of a protracted conflict with North Korea,

[11] It is customary for the Chief of General Staff to participate in cabinet meetings and for high-ranking military officers to make public statements on defence policies. Etzioni-Halevy, E., 'Civil–military élite relations and democratization: the case of the connection between the military and political élites in Israel', Paper presented at the International Political Science Association World Congress, Berlin, Nov. 1994, pp. 15–16.

[12] According to Gen. Mendy Meron, Israel has access to the best that the USA has but not to everything. Israel has considerable freedom to choose other markets to buy or make locally basic military equipment. Meron, M., 'Threat perceptions in Israel's strategic environment and their impact on the decision process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 21 (1995), p. 9.

[13] Klieman, A. and Pedatzur, R., Jaffee Center for Strategic Studies, Tel Aviv University, *Rearming Israel: Defense Procurement through the 1990s*, JCSS Studies no. 17 (Jerusalem Post/Westview Press: Jerusalem/Boulder, Colo., 1991), p. 63; and Bonen, Z., 'Parliamentary supervision of military procurement in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 27 (1994), p. 5.

[14] See chapter 6 in this volume; and Min Yong Lee, 'Security policies, defence planning and military capability', SIPRI Arms Procurement Decision Making Project, Working Paper no. 41 (1995), p. 5.

equipment attrition rates exceeding South Korea's own arms production would mean that the immediate deployment of weapons of US origin would be essential. On the other hand, there is some concern that reliance on weapons of US origin has restricted South Korea's options for diversification of its sources of military supply: since the mid-1990s efforts have been made to find other sources.[15]

Although the transition to an elected civilian government in Thailand occurred in 1992, at around the same time as in South Korea, its history of frequent coups has allowed the Thai military to maintain influence over the political processes. The autonomy of the military in national security policy making can also be attributed to the constitutional provisions allowing military leaders to stand for election to the National Assembly. The military's substantial presence in both houses of the assembly indicates not only its strong political influence but also a tenuous state of civil–military relations, which allows the military to avoid public accountability in arms procurement. Threats of communist insurgency in the 1970s and 1980s led to the development of close links between the Thai and the US militaries, and the availability of US arms at favourable prices led to the USA becoming the predominant supplier.[16] Although a strategy of the diversification after the end of the cold war began to include Chinese and other West European suppliers, Thailand remains dependent on the USA for sophisticated weapons, missiles and aircraft.

Assessment

In China, the military is not publicly accountable because of the country's political organization. In India, despite the healthy state of civil–military relations, the military is somewhat insulated from public accountability norms. In all other countries in this study, the political organization and the influence of the predominant arms supplier—the USA—on national defence decision making combine to give their militaries varying degrees of influence.

This study found that, in cases where there is a predominant influence of an arms-supplying country, the arms-supplying organizations in that country are often better informed of the national arms procurement plans than the elected representatives in the recipient countries.

[15] US concerns that Russia is encroaching on a traditional US market in the context of the South Korean proposal to buy the Russian Su-300 air defence missile system are due to problems of inter-operability and difficulties in integrating a Russian weapon into the unified air defence environment. The procurement cost of the Patriot air defence system is estimated to be twice that of the Russian Su-300 system. [To buy or not? US-made Patriots], *Chosun Ilbo*, 3 Apr. 1997; and 'ROK prepared for question in possible Russian arms deal', *Korea Times*, 20 Mar. 1997.

[16] Brooke, M., 'Thailand's new Policy for ASEAN?', *Asian Defence Journal*, no. 2 (1996), p. 100; and Panitan, W., 'US–Thailand arms transfer dependence', SIPRI Arms Procurement Decision Making Project, Working Paper no. 60 (1995), pp. 3–4, 10–12.

III. Defence budgets, financial planning and audit

This section examines aspects of accountability in arms procurement financial planning, the capacities of legislative oversight bodies to monitor and review budgeting, and the role of statutory audit authorities. The analysis is based on the following propositions:

1. Integrated defence budgets which are designed to indicate the costs of specific military functions, such as air defence, surveillance, logistics and so on, facilitate the evaluation of arms procurement decisions in relation to long-term priorities. On the other hand, defence budgets which divide up allocations by conventional cost heads such as pay and allowances, equipment, and operations and maintenance are less informative and inhibit cost–benefit evaluation.[17]

Public-interest oversight of defence financial planning should also include examination of other aspects of efficient financial planning such as life-cycle costs and offset policies.

2. While departmental audits check the probity of military expenditure, statutory audits should have the broader aim of evaluating the effectiveness of arms procurement decision making in relation to the attainment of stated objectives and of assessing the performance and utility of weapon systems. Effective statutory audits require multi-disciplinary capacities and close working cooperation with the armed services, the executive and the legislative oversight bodies responsible for monitoring waste, fraud and inefficiencies in the system.

Defence budget planning and accountability

China's defence budget is classified in terms of allocations both to the armed services and to different functions. However, arms procurement expenditure is not only governed by the national defence budget, since that is not the PLA's sole source of finance: the foreign exchange costs of imported equipment are largely met through arms exports.[18] Moreover, the military's indirect expenditure, such as that on academic research and construction, is not specified in the PLA's budget.[19]

Counter-trade arrangements are used as a part of offset policy. Although life-cycle cost models are recommended for calculating equipment costs, they are not yet being applied in Chinese arms procurement planning.[20]

The Indian defence budget is not integrated. It is based on separate allocations to the three armed services, which carry out parallel budgeting. It is therefore not feasible to analyse and compare budget allocations with military capability

[17] On the distinction, see chapter 3, note 37 in this volume.

[18] The PLA is also expected to earn much of its foreign exchange in competition with industry. For example, Polytechnologies Inc., which is an import–export arm of the HGS, can sell military equipment directly from the designated stocks to gain hard currency.

[19] Ku Guisheng, 'National defence budgeting procedure and price reforms of military products', SIPRI Arms Procurement Decision Making Project, Working Paper no. 3 (1996), p. 6–7.

[20] Ku Guisheng (note 19), pp. 15–16.

levels. Although a study on alternative budget designs has been conducted by the Ministry of Defence,[21] its findings have not been tested. Lack of budget planning also results from the deficiencies in general long-term planning already mentioned.[22]

In the absence of information in India on the life-cycle costs of arms to be procured, the total financial burden of a procurement programme on society cannot be fully understood by the financial oversight bodies. India has not developed an offset policy because of the public-sector defence industry's difficulties in executing direct offsets; neither have the advantages of technology offsets been analysed because of the lack of interaction between the research and development (R&D) and financial planning bodies.[23] On the other hand, the experience of commodity barter in arms procurement contracts with the former Soviet Union continues to be applied in contracts from other sources.

In Israel, because the IDF's annual budget planning system was found to be detrimental to financial forecasting, a five-year budget framework was started in 1992. It divides the defence budget into two parts: the IDF budget, subdivided into the ground, naval and air forces; and the central budget, which is allocated for feasibility studies and exploratory development of major long-term projects.[24] The burden of life-cycle costs has been well analysed in the national public debate. Israel's offset policy has been significantly shaped by US military grants. Direct offsets are used to enhance the technical competence of Israeli defence companies. However, as they generally involve the production of components for weapon systems of US origin, a number of Israeli arms manufacturers have set up joint ventures in the USA.[25] These offsets are not transparent, for reasons of commercial confidentiality.[26]

In Japan the budget breakdown does not indicate functional costs, but it does give greater detail by user category than other countries' budgets. The Mid-Term Defense Program plays a part in reducing uncertainty in defence budget planning, but coordination of the defence budget is more of an informal process of *ringisei* (consensus building) and *nemawashi* (laying the groundwork). Such traditional attitudes militate against an institutionalized flow of information, which in turn undermines transparency and accountability. Cost–benefit evalua-

[21] Arora, G. K., former secretary, Ministry of Finance, Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995. A. K. Ghosh, former Financial Adviser, MoD, says that a feasibility study was carried out on introducing the Planning, Programming and Budgeting System under the direction of the Defence Planning Staff in Mar. 1987. Ghosh, A. K., *India's Defence Budget and Expenditure Management* (Lancer Publications: New Delhi, 1996), p. 57.

[22] *Ministry of Defence: Defence Force Levels, Manpower, Management and Policy* (note 1).

[23] Santhanam, K., Adviser, DRDO, Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

[24] Tropp, Z., 'Economic aspects in military procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 26 (1995), pp. 7–8; and Bonen (note 13), p. 3.

[25] In the annual US military grant of $1.8 billion approximately 20% ($400–475 million) is allocated for procuring defence products from Israeli manufacturers and $1325–1400 million according to the Buy American Act, which stipulates that final assembly is done in the USA and that over 55% of the product should be of US origin. Consequently, Israeli firms such as Tadiran, El-Op and Israel Aircraft Industries (IAI) have established subsidiaries in the USA, offering R&D and manufacturing services. Tropp (note 24), pp. 7–8; Bonen (note 13), p. 3; and Pinkas (note 3), p. 11.

[26] Pinkas (note 3), p. 10.

tion of arms procurement is carried out by three parts of the JDA: the Bureau of Finance, the Chiefs of Staff and the Central Procurement Office. Life-cycle costs are taken into consideration, as the official guidelines and financial planning procedures show. The large Japanese trade surplus with the USA dampens the motivation to develop offset policies and instead motivates decisions to purchase weapons from the USA. Relatively sophisticated information is available, but members of the Diet have only a perfunctory interest in scrutiny of the defence budget.[27]

Owing to the assertiveness of the South Korean Board of Finance and Economics in demanding budget accountability, the capital budget does indicate the costs of specific military functions. It is designed to generate mission-specific requirements for arms procurement and R&D planning. Estimates of life-cycle costs do not, however, figure in the public debate on arms procurement decisions. The offsets required by government rules are smaller than in most countries because political restrictions on arms procurement from sources other than the USA make it difficult for South Korean companies to bargain. The offset policy prioritizes a technological rather than a commercial approach—a strategy of seeking core technologies.

Although the Thai five-year defence plans are designed to shape the defence budget on the basis of functional cost indicators,[28] the allocations are made in a manner that does not allow evaluation of arms procurement decisions. For example, budget headings such as 'other expenses', 'special programmes' and 'other programmes' do not allow public scrutiny. The absence of detail from the defence budget is a major limitation to oversight by the elected representatives.

The Thai media also lack adequate details—such as the burden of life-cycle costs—to be able to comment meaningfully on arms procurement decisions. With a devaluation in the Thai currency of around 100 per cent in the period 1996–97, the burden of the life-cycle costs of imported sophisticated weapons will fall very heavily on future generations. Offset policy, which was previously left to the initiative of the armed services, was rationalized in the mid-1990s.[29] However, the revised policy is still primarily based on commodity barter, and a comprehensive approach for building industrial capacities in priority sectors is not evident.[30]

[27] Comments by H. Iwashima, Seminar at SIPRI, 17 Aug. 1995; and Matsumoto, M. and Iwashima, H., 'Arms procurement budget planning process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 36 (1995), p. 4.

[28] Surasak, B. (Col), 'Arms procurement decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 56 (1995), p. 4.

[29] 'Barter trade not compulsory', *Asian Defence Journal*, no. 2 (1994), p. 117. See also chapter 7, section II, in this volume.

[30] The counter-trade agreement for procurement of F/A-18 Hornets included the sale of agricultural products. Two conflicting reports indicate buy-back values of up to 50% of contract value ('The military in Thailand', *Asian Defence Journal*, no. 7 (1996), p. 25); and up to 25% (*Bangkok Post*, 3 May 1996, p. A3).

Assessment

In the case of China, parliamentary oversight of the defence budget does not exist except insofar as it is part of the general state budget. In all the other countries oversight is carried out in a perfunctory manner either because of a lack of data or because of a lack of skilled staff to analyse the defence budget.[31] However, in the case of South Korea, a better budget design to facilitate oversight is beginning to take shape. There is some evidence of public understanding of the implications of life-cycle costs in Israel and in Japan. South Korean offset policies are consistent with its national technology priorities. In China, India and Thailand such questions are largely unaddressed still, indicating an under-informed public and, consequently, low levels of oversight of and accountability in defence financial planning.

Departmental and statutory audit

Within the Chinese PLA audit is conducted at two levels: at the departmental level by the PLA's General Logistics Department; and at the CMC level by the Auditing Administration.[32] Other organizations which may have a role in this area are the Central Commission for Discipline Inspection at the level of the CPC Central Committee, and the Commission for Discipline Inspection at the CMC level. It is not certain whether these organizations are investigation agencies or 'working groups' to prevent corruption, or whether they are external agencies for audit of the PLA.[33] This study has not been able to identify a statutory audit organization which carries out overarching audit of the PLA and reports to the National People's Congress (NPC).

Although Indian defence expenditures are open to both departmental and statutory audit, the statutory audit agency—the Office of the Comptroller and Auditor General (CAG)—does not have the necessary multi-disciplinary expertise to conduct performance assessment of arms procurement or cost–benefit evaluations in relation to stated objectives. The audit reports are limited to the financial aspects of arms serviceability and maintenance and do not assess the quality of decisions or functional efficiencies. The reports are well documented and publicly available and provide exhaustive details of financial waste, neglect and misuse. However, they do not analyse systemic shortcomings in the decision-making processes and procedures. The composition of the statutory audit team and the formulation of audit schemes indicate a lack of multi-disciplinary skills and of understanding of the broader effects of arms procurement decisions. Other than use of CAG reports, this study has not been able to identify a close working relationship between the CAG and the parliamentary Standing Committee on Defence or the Public Accounts Committee.

[31] See section V below.

[32] Zhang Dongbo, [All army auditing brings about one billion yuan in economic benefits], *Beijing Xinhua*, 16 Dec. 1995.

[33] 'Modern weapons enter production: PLA better equipped', *Inside China Mainland*, Jan. 1996, pp. 37–38.

A high quality of professional auditing of the arms procurement process and evaluation of long-term R&D projects by the Israeli State Comptroller is evident from the report on the Lavi project, which made a crucial contribution to domestic opinion on the project and to its subsequent cancellation. The State Comptroller's audit teams are multi-disciplinary, including financial, technical, logistics and military experts with a broad range of experience, reflected in their formulation of the audit schemes.[34] Despite criticism of his interference in the arms procurement process, there have been recommendations that the auditor should develop methods for carrying out project auditing, build capacities for macro-planning of future force designs, and bring out the deficiencies in the military's cost analysis methods.[35] Although it has privileged access to information on arms procurement decisions, the State Comptroller's Office does not have legal powers to ensure implementation of its findings and its role is essentially advisory.[36] Scandals have still resulted from the relative autonomy of the IDF, the lack of administrative supervision of the arms procurement process by the Ministry of Defense, the accommodating approach of the Knesset Committee on Foreign Affairs and Security to the military's view of confidentiality, and the strong influence of the defence industry.

In Japan, besides the departmental audits within the JDA, statutory audit is carried out by the Board of Audit whose director is selected by vote of the audit commissioners and appointed with the agreement of the Diet, thereby reducing the direct influence of the government. This study has not been able to identify multi-disciplinary skills within the agency or its methods of management.

Since 1993 the civilian regime in South Korea has strengthened the statutory audit system and the discretion of the National Board of Audit and Inspection over the arms procurement process. The role of the audit authorities in highlighting armament pricing mechanisms and financial irregularities has been notable. In exercising oversight of the military's arms procurement decisions the Committee of National Defense in the National Assembly uses the audit reports on pricing and efficiency reports on weapon systems.

This study did not identify any statutory audit process in Thai arms procurement decision making or use of a statutory audit institution by the legislature. Anecdotal accounts indicate that arms procurement expenditure is subject to departmental rather than statutory audit. Even the 'ideal type' of process recommended in chapter 7 of this volume does not discuss the role of statutory audit in ensuring public accountability, indicating the low salience given to the audit

[34] Ya'ari, A., 'The role of the auditor in the purchase, production and development of arms', SIPRI Arms Procurement Decision Making Project, Working Paper no. 31 (1995), pp. 6, 8–9, 12–13.

[35] Ya'ari (note 34), pp. 9–11. See also chapter 4 in this volume.

[36] In Mar. 1991 the Flomin Committee was appointed to investigate the Dotan corruption scandal. In 1993 the Comptroller General reviewed the implementation of the Flomin report and found that, owing to the influence of the IDF, some of its basic recommendations had not been implemented. Pedatzur and Weisblum (note 10), p. 9.

functions in Thai defence planning.[37] The extent to which such checks and balances need to be developed and institutionalized merits further research.

Assessment

While departmental audit agencies exist in all the countries, their purview does not extend to major arms procurement decisions. In China and Thailand, the study did not identify any statutory audit processes for the assessment of arms procurement decisions. The statutory audit processes in other countries indicated varying levels of competence, which improved with increasing democratization, as observed in the case of South Korea. Of all the countries in this study, Israel appears to have the highest standards of multi-disciplinary competence in the Office of the State Comptroller, enabling arms procurement decisions to be evaluated and reviewed in a timely manner.

IV. Techno-industrial issues

This section focuses on the organizational capacities for defence R&D, arms manufacturing in the public and private sectors, and the obstacles to public scrutiny of military technology and industrial issues. The comparison is based on two propositions.

1. Because costs and risks in the defence business are high, the defence industry and defence R&D organizations tend to seek autonomy and public money in order to build themselves up, using the arguments of defence industrial self-reliance or efficiency in meeting military requirements. However, for defence R&D to be competitive, independent technical evaluation and professional monitoring capacities are essential.
2. An internationally competitive engineering industry is an essential condition for a country's building up a defence industry. Successful defence industrial programmes also require advanced management skills, such as technology assessment (TA) and systems integration, and technology diffusion between the defence industry and engineering industry in general. In the absence of such capacities the defence industry will tend to go its own way.

The defence industry, self-reliance and defence R&D

China has achieved a relatively high level of self-reliance in terms of ground weapon systems and naval combatants. Defence R&D is conducted both in the research institutes under the Committee for Science, Technology and Industry for National Defence (COSTIND) and in those that come under the defence industrial corporations under the State Council. R&D testing and quality evalu-

[37] The formation of a special counter-corruption commission in the case of the F-18 aircraft contract does indicate an element of checks in the process. 'Minister orders prompt investigation of F-18 purchase', *Thailand Times*, 8 Nov. 1996, p. A2.

ation are carried out by the State Test and Evaluation Committee (STEC), which comes under the CMC and is independent of the R&D and defence manufacturing agencies.

All defence R&D in India is conducted in the state-controlled laboratories of the Defence Research and Development Organisation (DRDO). The DRDO is also responsible for R&D budget monitoring as well as three functions of defence R&D—technology assessment, development and evaluation. The result is low levels of monitoring by the executive branch and of public accountability. All R&D-related functions are controlled by the Secretary of the Department of Defence R&D in the Ministry of Defence, who is also the Scientific Adviser to the Minister of Defence, so that there is no independent system of external checks and technology evaluation.

As regards efficiencies in defence R&D in India, a comparison of the DRDO and the Japanese Technology Research and Development Institute (TRDI) in terms of ratios of research to administrative staff and personnel costs is illustrative (see table 8.1). The comparison suggests that additional allocations to defence R&D in India would be disproportionately used on personnel costs. Defence public sector undertakings (DPSUs) are similarly characterized by overstaffing and weak executive monitoring.[38]

A major part of Israel's defence R&D and production is under the state-controlled industrial corporations. The domestic arms development process is characterized by a close network of ties between the military, the defence industry and the Ministry of Defense, thus allowing end-user involvement in the R&D and production of weapon systems[39] and a preference for certain technologically competent companies in both the public and the private sectors for developing weapon systems from the concept formulation stage onwards. This discourages competition at the feasibility study, operational development and production stages. Although the Agency for Research and Development (MAPHAT)—a Ministry of Defense agency—conducts external review, the mutuality of interests of the staff of the IDF, the Ministry of Defense and the defence company selected leads to high approval rates and extension of projects beyond the original time and cost estimates.

With the ban on Japanese arms exports and limited demand from the JDA, Japanese companies have a very low dependence on defence contracts and primarily respond to the R&D requests of the JDA. As a result there is no technology push to urge the production of new weapon systems. To prevent an erosion of the defence production capacities, the Ministry of International Trade and Industry (MITI) offers tax incentives to promote modernization and introduce advanced technological equipment into the production process. Defence R&D is conducted both in the private-sector industry and in the TRDI, which con-

[38] *Ministry of Defence: Defence Force Levels, Manpower Management and Policy* (note 1), pp. 73–77, 81. Retrenchments or relocations are difficult to implement under prevailing regulations and the defence production factories remain encumbered with surplus labour forces. Ahuja, G. S., Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

[39] It is not uncommon for engineers from El-Op and production managers from Ta'as to find themselves in the reserve services with tank and artillery battery commanders. Pinkas (note 3), p. 15.

Table 8.1. Manpower ratios and personnel costs at India's and Japan's R&D institutes

	DRDO (India)	TRDI (Japan)
Ratio of engineers to administrative and auxiliary staff	1 : 3.48	1 : 0.42
Percentage of personnel-related costs to the total R&D budget	24.4[a]	5.5[b]

[a] Budget estimate for fiscal year 1994/95.
[b] Budget estimate for 1997.

Sources: Government of India, Ministry of Science and Technology, *R&D Statistics 1992/93* (Government of India Press: New Delhi, 1993), p. 14; Government of India, *Defence Services Estimates 1994/95* (Government of India Press: New Delhi, 1995), p. 22; Brochure from the Technology Research and Development Institute (TRDI: Tokyo, 1997); and T. Suzuki, Private communication with the author, 7 July 1997.

ducts research only on major projects. The relative openness of the defence R&D system allows review and evaluation of the projects to be undertaken, thereby contributing to greater efficiency.

As in the case of Japan, South Korea's applied defence R&D and arms production are done mainly in the private sector, but are only a small element of the output of the large industrial conglomerates (*chaebols*). They prefer to divest this share because of limited demand, high risk, the need for heavy initial investment for weapon development and difficulties with arms exports, particularly in the case of weapons using technologies of US origin. Consequently defence companies are subsidized, helped by tax reductions and exemptions, and encouraged to specialize in high-technology and precision systems. Problems in building military technology competitiveness include the ADD's monopoly of defence R&D decisions, low levels of technological skills on the part of the military who draw up statements of requirements, and the preference of South Korean military leaders for US equipment and technologies. As a result of the latter, defence R&D was cut down during President Doo Hwan Chun's regime (1980–87, which also coincided with low levels of accountability, high levels of corruption, financial scandals and irregularities in arms procurement), but since the advent of the civilian leadership in 1993 the government's relationship with the engineering industry has been broadened and the National Assembly has begun to have a say in the formulation of defence industrial policy.[40]

Most of South Korea's basic defence R&D and testing and evaluation for indigenous weapons, in the private as well as the public sector, is carried out by the Agency for Defense Development (ADD) which functions under the Ministry of National Defense.

[40] Yong Sup Han, 'South Korea's defence industrial base', SIPRI Arms Procurement Decision Making Project, Working Paper no. 51 (1995), p. 5.

Although the Thai military maintains that defence industrial self-reliance is among its objectives, considerable effort will be required to indigenize major weapon systems. Most key defence equipment is imported[41] and the armed forces have strong relationships with foreign suppliers. The defence R&D establishment is small[42] and underdeveloped and technical expertise lacking. The Ministry of Defence has an R&D Coordination Committee but its role is restricted to coordination between the three armed services. Reports of various cooperative initiatives being taken up by different parts of the army with research institutes in the public and private sectors indicate the absence of an effective central organization responsible for integrated defence R&D work.[43] These are further constraints on the development of public accountability.

Assessment

In all countries except India and Thailand (where information on the subject was not available), the agencies for R&D testing, monitoring and evaluation are independent of those which carry out R&D. Separation of these functions enhances the quality of both executive and legislative accountability. In China the STEC evaluates projects developed by COSTIND and defence technology corporations under the State Council. In Israel, Japan and South Korea, where applied R&D is conducted in the private sector, technology testing, validation and evaluation are carried out by agencies of their defence ministries (MAPHAT, the TRDI and the ADD).

The engineering industry, technology assessment and technology diffusion

In order to make optimum use of R&D outputs it is vital that science and technology (S&T) levels in the user organizations are correspondingly developed. This involves building up adequate skills and capacities for the absorption, adaptation and diffusion of advanced technologies, and developing a certain level of technology intensity.[44] Defence R&D budgets *per se* may not accurately indicate a country's military technological potential. Relevant aspects are the ability to use equipment developed by R&D laboratories other than those of the user organizations; the availability of technology management skills based on multi-disciplinary applied research; institutionalized processes for information flow; coordination and cross-fertilization between different sectors of civilian R&D and military technology; and manpower trained to advanced levels in engineering, the sciences and technology.

[41] The RTA, which is least dependent on foreign technology, procures up to 83% of its equipment from foreign sources. Surasak (note 28), pp. 3–4.

[42] In 1995 it had a staff of 246. Surasak (note 28), p. 6.

[43] Surasak, B. (Col), 'National arms procurement policies and decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 55 (1995), p. 4; and 'The military in Thailand' (note 30), p. 22.

[44] 'Playing godmother to invention', *The Economist*, 24 May 1997. Many countries spend heavily to foster R&D, but inventing new technology is less important than using it effectively.

The corporatization of China's former Ministries for Machine Building Industries which began in the late 1970s aimed to increase defence industrial competitiveness and has led to greater coordination and integration of civilian and military R&D and manufacturing between establishments under the CMC and those under the State Council, including laboratories under the Academy of Sciences. Corporatization of defence companies was intended to improve their interaction with the user services. Similar objectives—the improvement of TA and of the management of defence R&D—led to the creation of the PLA's General Equipment Department in April 1998. A number of reports have advocated advanced engineering training and training in information technology for the PLA, the development of technology spin-ons from the civil to the military sectors, especially in micro-electronics, communications and computer software, and technology diffusion to improve the PLA's human resources and combat capabilities.[45]

With priority being given by China to foreign investment for conversion of military R&D enterprises into high-technology market-oriented corporations, in order to keep pace with technological change the development of TA and applied technology management skills is being emphasized, particularly in the Academy of Military Science, the subordinate organizations of the PLA and the research institutes under the State Council.[46]

Primarily because of the lack of an advanced engineering industry, both China and India have found that their abilities to develop completely indigenous design, R&D and manufacturing capabilities for high-performance weapons and equipment are limited. Deficiencies are also found in designing and prototyping, systems engineering and integration, and project management. It is one thing to assemble weapon systems from semi- or completely knocked-down kits, but for indigenous design and development of sophisticated weapon systems an internationally competitive engineering industry and a well-developed R&D management capacity are required. China, however, has a comparative advantage in its advanced engineering sector, discernible from its exports to a technologically competitive market such as the USA (see table 8.2).

Indian defence technological capacities are also handicapped by low levels of technology intensity in the military, as in the country as a whole: an increase in R&D outputs would not automatically improve the country's military capabilities. Although the DRDO has started a programme to facilitate post-graduate engineering courses in the universities, the military only trains graduate engineers as officers for the technical corps.

[45] Over the 6 years 1991–96, close to 100 000 officers and soldiers attended courses in technology. Fan Yinhua, 'Contemporary military revolution and new thinking modes', *Beijing Jingfangjun Bao*, 24 Mar. 1998, in Foreign Broadcast Information Service, *Daily Report–China (FBIS-CHI)*, FBIS-CHI-98-105; 'Do great things with new ways of thinking', *Beijing Jingfangjun Bao*, 2 May 1998 (in Chinese), in FBIS-CHI-98-133; and Chen Wanjun and Li Chaogui, 'China: Navy makes advances in equipment modernization', Beijing Xinhua Domestic Service, 13 May 1998 (in Chinese), in FBIS-CHI-98-137.

[46] *China Directory 1997* (note 9), pp. 153–54 (in English); and Information brochure about the Academy of Military Science, 1994.

Table 8.2. High-technology engineering exports to the USA from China and India, 1991

Figures are in US $m.

	China	India
Opto-electronics	17.38	0.09
Computers and telecommunications	293.00	5.96
Electronics	2.22	2.16
Computer-integrated manufacturing	1.19	0.41
Material design	0.54	2.30
Aerospace	25.55	2.92

Source: Rausch, L. M., *Asia's New High-Tech Competitors* (National Science Foundation: Arlington, Va., 1995), pp. 57–60.

As neither the military nor the R&D organizations are subject to independent technological audit and evaluation, their productivity is impossible to judge. The absence of an framework for using broader engineering capacities in the civilian industry or for comprehensive TA may also be among the reasons why monitoring and oversight of defence R&D remain perfunctory. This observation is supported by five indicators. First, long-term technology forecasts are too general and there are no guidelines on long-term military technology policy. Second, in the absence of close user–developer interaction, some of the R&D projects initiated by the DRDO on the assumption that they may have operational use in the future are based on educated guesswork. Third, in the absence of skills in the armed services for conducting operational research, systems analysis or advanced technological research, rationalization of weapon system requirements tends to follow acquisition.[47] Fourth, although there is a Directorate-General of Quality Assurance independent of the producers and users of weapons, no independent, autonomous agency for quality assurance of R&D projects exists. Fifth, the DRDO does not always carry out comprehensive studies of life-cycle costs of major weapon systems.[48]

The absence of specialized technical and financial expertise to assist the parliamentary oversight and statutory audit bodies in evaluating major R&D projects means that generalists from think-tanks, the universities and military institutions conduct defence technology policy analyses—in most cases retired civil servants or retired military officers with expertise in strategic analyses.[49]

[47] Ghosh (note 21), p. 147. Development of the Agni and Prithvi missile systems was evidently a DRDO decision taken in order to acquire autonomy in missile technology. There is no evidence that these missile systems were developed either because of the emergence of new threats or through systematic development of new operational doctrines. The army has difficulties with field storage, battlefield mobility and the detectability of the liquid-fuelled Prithvi missile and the air force has never expressed any interest in the Agni. Joshi, M., 'Agni missile: operation defreeze', *India Today*, 11 Aug. 1997, p. 68.

[48] Santhanam, K., Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

[49] Karim, A. (Maj.-Gen., ret.) and Malhotra, I., Comments at the CPR–SIPRI Workshop, New Delhi, 1 July 1995.

Israel has demonstrated considerable capability in producing advanced sub-systems and modifying equipment. This has been greatly helped by a system for technological cooperation between ministries, other national bodies in the field of technology development, universities and the defence industry, developed in order to build national technological capacities and infrastructure.[50] From the mid-1960s the entry of retired military officers into industry reinforced the network of ties between the military, the industry and the Government. In the early 1980s investments were made to generate spin-offs to the civilian industry, and joint ventures were created between civilian industries and subsidiaries of major defence companies for selecting technologies for spin-offs, but these initiatives ran into difficulties which were overcome only marginally.[51] The experience also showed that shared use of facilities and a smooth flow of human skills between the defence and civilian technology sectors promoted the effective use of military or civilian components and sub-systems and, interestingly, that cross-fertilization of skills and ideas may be achieved by combining civilian and military research in the same laboratory, but that development, production and marketing should remain separate.[52]

Israel has also developed expertise and methods for systematic and scientific monitoring by developing TA skills in the academic world.[53] The availability of these skills facilitates public scrutiny of arms procurement decision making. Finally, an unprecedented number of Israeli troops have professional training in mechanics, engineering, medicine and computing.[54]

Advanced engineering companies in the private sector play a predominant role in the Japanese defence industry. Production lines are usually flexibly shared by defence- and civilian-sector workers for the production of defence equipment and civilian products, except in cases requiring secrecy.

The Japanese approach to gaining technological competitiveness is to access foreign technologies for adaptation and rapid diffusion throughout the economy. This capability is considered to be more important in enhancing technological autonomy than integrating military and civilian technologies.[55] Despite

[50] The Ministries of Defense, Industry and Trade, and Science and Technology as well as the Council of Higher Education have started to cooperate with other national-level bodies and universities. Bonen (note 13), pp. 7–8; and Klieman and Pedatzur (note 13), pp. 211–13.

[51] Lifshitz, Y., 'Budgeting for defence and development of the domestic military industrial base', SIPRI Arms Procurement Decision Making Project, Working Paper no. 30 (1995), pp. 16–18.

[52] Bonen (note 13), p. 7.

[53] The Systematic Evaluation Procedure developed by the Inter-disciplinary Centre for Technology Analysis and Forecasting (ICTAF) for making arms procurement decisions has also been used to conceptualize the development of the unarmed airborne vehicle and to study future communication systems and smart munitions. Sharan, Y. and Naaman, D., 'Technology assessment and methods in procurement procedures', SIPRI Arms Procurement Decision Making Project, Working Paper no. 25 (1995).

[54] Cohen, A. S., 'The changing face of civil–military relations is Insrael', unpublished thesis, Bar-Ilan University, Oct. 1994. Israel as a whole has a higher proportion of scientists and engineers with advanced degrees than have Germany, Japan, the UK or the USA. British Council/British Department of Trade and Industry, *Israel: a Science Profile* (British Council/Department of Trade and Industry: [London], 1996), p. 39.

[55] The Defense Technology Foundation is composed primarily of former TRDI engineers and aims to encourage defence technology R&D and promote interchange between the government and industrial corporations. T. Suzuki, former director of the TRDI, private communication with the author, 7 July 1997; and Freidman, D. and Samuels, R. J., *How to Succeed Without Really Flying: The Japanese Aircraft*

the forums set up by the JDA and the defence industry for technology diffusion, experts in fact aver a lack of a well-developed process for the diffusion of technologies between the civilian and the defence sectors.[56] The TRDI has also been innovative in using retired engineers to carry out testing, evaluation and other technical experiments.

Research collaboration between the JDA and academic institutions has not developed owing to the JDA's policy of maintaining a low profile in society and avoiding arousing anti-militarist sentiment. A similar attitude exists among the major industrial corporations, which also avoid drawing attention to their arms production activities for fear of developing a negative public image. Legislative oversight of Japanese defence industrial policy is underdeveloped because in the large Japanese industrial corporations defence production is a fairly minor part of their total output.[57]

In order to reduce its dependence on technologies of US origin and improve its defence R&D capacities, South Korea is contemplating a number of initiatives such as fostering inter-ministerial cooperation to promote industry–university–laboratory programmes, cooperating with universities that specialize in key technologies, linking defence S&T with national S&T policy, using offset programmes to acquire core technologies, raising the R&D budget to 5–10 per cent of the defence budget and expanding capacities for developing defence-related information technologies.[58] Academic institutions, such as the Science and Technology Policy Institute, often provide analyses for S&T policy management and R&D coordination required for decision making in the defence sector. Such resources are also available to the legislative oversight bodies, but the extent of their use by members of the National Assembly requires investigation.

Thailand's engineering industry is small, and private industry is reluctant to venture into the defence field because of the uncertainties of requirements in Thai military contracts.

Assessment

The competitiveness of the engineering industries in Israel, Japan and South Korea is complemented by capacities to manage and integrate technologies developed in the defence and the civilian sectors in these countries. While Japan has institutionalized organizations for diffusing technologies between

Industry and the Japanese Technology Ideology (Massachusetts Institute of Technology, Centre for International Affairs, Japan Program: Cambridge, Mass., 1992), pp. 4–5.

[56] These forums include the Japan Association for Defence Industry, the Society for Defence Equipment Manufacturers, the Firearms and Ammunition Technology Liaison Council, and the Society of Japanese Aerospace Companies. Suzuki, T., 'Defence R&D in Japan', SIPRI Arms Procurement Decision Making Project, Working Paper no. 37 (1995), p. 2. Suzuki believes that the existing processes for technology diffusion between the industrial and the military R&D sectors are inadequate. Private communication with the author, 7 July 1997.

[57] Taoka, S., 'Domestic considerations and élite motivation in arms procurement decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 35 (1995), p. 6.

[58] Chul Whan Kim, 'The perspectives of changes for national defence research and development', SIPRI Arms Procurement Decision Making Project, Working Paper no. 48 (1995), pp. 10–14.

these two sectors, TA processes in Israel and South Korea are well developed in academic research institutes. Consequently, public debate and legislative oversight of military technology and industrial decisions in these countries are more focused than in India or in Thailand.

V. Organizational behaviour and public-interest issues

Organizational behaviour and public-interest issues have been the most challenging of the four themes of this analysis. The focus is on the limitations on and opportunities for the improvement of public scrutiny and oversight of defence policies and arms procurement decision making. The analysis is based on two propositions:

1. Public scrutiny of arms procurement decision making requires constitutional provisions, assertiveness on the part of the legislature and the availability to the public of sufficient information. In some cases, the Government's resistance to legislative oversight is indicated by its reluctance even to issue White Papers or policy documents to identify defence policies or arms procurement guidelines. In such circumstances, the military's autonomy in arms procurement decision making develops at the cost of the broader priorities of society.
2. The degree to which demands are made for security-related information by the legislative bodies is conditioned by a society's attitudes towards military security, traditional élite behaviour, and the nature of the country's political organization. Since attitudes which encourage military autonomy and excessive confidentiality create barriers to public accountability, they can also allow inefficiencies to creep into arms procurement processes, permitting waste, fraud and abuse.

Content and quality of legislative oversight

In China the NPC has eight committees for legislative oversight of the various ministries under the State Council. However, there is no evidence of oversight by the NPC of the PLA or of the MND. The absence of public debate on security issues in the media is indicative of the military's relative autonomy in defence policy making.

The 1995 Chinese White Paper on defence presents a broad outline of the policies on military manpower reductions, defence spending, military industrial conversion, technology export controls and arms control obligations. However, it does not identify China's security concerns or the long-term objectives of arms procurement—areas where official statements could significantly contribute to regional confidence and security building.

India neither publishes a White Paper on defence policy nor formally issues details of its arms procurement process. The government argument that information on defence policy can be derived from the Ministry of Defence's annual

reports, the parliamentary debate on defence and the defence budget[59] overlooks the fact that these are defence management documents, focusing on the functions, activities, allocations and efficiency levels achieved during the year of the report. A defence policy document, on the other hand, would provide guidelines for the formulation of long- and medium-term defence capability-building programmes, identify joint roles, force structures and arms procurement programmes, and facilitate the drawing up of coherent guidelines by each department and armed service for their arms procurement and logistics programmes. The absence of a national defence policy document allows misinterpretations to creep into the public assessment of official policies—a weakness which remains unaddressed by the Indian Parliament. The parliamentary committees have failed to build up the means to access independent, specialized expertise to enable them to judge the military's threat assessment, financial planning or TA.

There are several possible reasons for the passivity of Indian Members of Parliament in failing to enact laws to give Parliament the right to information from the Government, among them the heavy demands of electoral politics on their time, their lack of knowledge of defence matters, and the fact that they have no opportunity to develop this knowledge within the one-year period they serve on the Standing Committee on Defence. This committee is large and unwieldy and has not been organized into specialized subcommittees, as is the case in Israel, or developed an institutionalized process for accessing outside expert opinion, as in South Korea. Consequently, the defence debate and oversight by the Indian Parliament are marked by low participation and perfunctory interest.

Although the military–political élite poses no tangible threat to Israeli democracy, parliamentary oversight of the military through the Knesset Committee on Foreign Affairs and Security is formal rather than actual. The committee's decisions are not binding on the armed forces and, although it is constitutionally empowered to oversee the military's decision-making process, its members rarely question decisions since they lack the capacity to scientifically evaluate defence-related decisions, in particular the more technical aspects. Notwithstanding the assumption that legislative oversight of the executive branch is essential for it to function efficiently, the budget does not provide funds for the development of research expertise to serve the committee. Its information is provided exclusively by the organizations under scrutiny.[60]

The influence of the Knesset on the military is also weak because it lacks institutional tools of control,[61] despite the fact that several members of the Knesset are knowledgeable former military leaders. None the less, the existence of a number of subcommittees allows for efficient, detailed and focused deliberations in a small forum of five to seven members, promoting a better quality of oversight of arms procurement decisions than in any other country in this

[59] *Ministry of Defence: Defence Force Levels, Manpower Management and Policy* (note 1), pp. 1–3.

[60] Klieman and Pedatzur (note 13), p. 104. The Knesset members are co-opted into the system and hence rarely question the military's decisions. Pinkas (note 3), pp. 18–19.

[61] Halperin, D., 'The impact of American aid on decision making in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 32 (1995), p. 7; Meron (note 12), p. 15; and Etzioni-Halevy (note 11), p. 10.

study.[62] The influence of the Israeli State Comptroller is substantial and, having the benefit of multi-disciplinary expertise, his reports are insightful. The Israeli Government does not publish a White Paper on defence policy.

In Japan the controversial nature of national defence and military capability issues has led the JDA to adopt a defensive posture and a low profile, building a cocoon of confidentiality around itself. Until the Standing Committee on Security was established in 1991 in the House of Representatives, conflict on security issues between the Liberal Democratic Party (LDP) Government and the opposition parties deprived the Japanese Diet of a forum in which to deliberate security issues. Japan's White Paper on defence, which is published annually, contains enough detail to enable public assessment of national security policies and the military's long-term priorities. However, arms procurement expenditure is not considered to be a very important part of the JDA budget, so that the political parties avoid confrontation with the government on such issues and generally resolve their differences in the Defense Coordination Committee.

Although a limited level of independent expertise is available to members of the Diet through its library and through the research organizations of the party, expert capacities and access to broader expertise have not been developed in a systematic manner. The Budget Committee relies heavily on JDA officials for clarifications and expert advice.[63] According to members of the Standing Committee on Security, hardly any contentious issues relating to arms procurement decisions come up for discussion.[64] Differences are apparently resolved informally between the members.

In the South Korean National Assembly, members of the Committee of National Defense share the view that, as national security questions belong to a secret domain, they should avoid raising concerns about the arms procurement process. Other limitations on legislative oversight include: (*a*) the sharp polarization between the ruling party and the parties in opposition; (*b*) the absence of specialized subcommittees; (*c*) the fact that legislative hearings are confidential; and (*d*) the lack of staff with multi-disciplinary specializations to access information and provide technical advice for the Committee of National Defense.[65] To address these shortcomings, a security division is being developed in the Legislative Research Office, staffed by middle-level military officials with advanced academic degrees and experts from various specialized disciplines.

[62] Hearings by the subcommittees are conducted in a professional manner: defence officials are required to report and minutes are taken and compared with previous reports. The committee's professionalism is shown by the serious nature of discussions and the insightful quality of its questions. Begin, Z. B., 'Parliamentary supervision of military procurement in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 28 (1995), pp. 1–3.

[63] Interview by Ian Anthony, SIPRI, with Yoshinori Oono, Chairman of the LDP National Defense Committee and Director of the Standing Committee on Security, House of Representatives, Dec. 1995.

[64] Interviews by the author with Akira Fukida, Chairman, and Tsutomu Kawara, member of the Standing Committee on Security, Jan. 1996.

[65] Noh Soon Chang, 'The role of the National Assembly in the process of arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 49 (1995), pp. 9–12. Specialists from the ADD and the Korean Institute for Defense Analyses are not available to the National Assembly members.

Despite the distorting effect of the perception of the military threat from North Korea and of the relationship with the USA, legislative monitoring and audit of defence expenditure have apparently improved with the advent of a civilian elected government in 1993, as is revealed by the report on the misuse of resources in the Yulgok Project. The South Korean Government has issued a White Paper on defence annually since 1988. It is a comprehensive and informative document on defence policy, defence posture and priorities, and defence management.

In the Thai National Assembly the Military Affairs Committees in the Senate and in the House of Representatives, being made up primarily of former high-ranking military leaders, have neither encouraged accountability of the military nor influenced the level of detail in the defence White Paper. It is quite likely that the members of the Military Affairs Committees are predisposed to represent the interests of the military in the National Assembly rather than those of the public. The constitutional provisions enabling the military to stand for election provide incentive and opportunity for them to try to gain political power. As the key positions in the Ministry of Defence are held by serving or former military officials, including the Minister of Defence,[66] the influence of the military in the executive and the legislative branches can be compared to that of the PLA in China. This study has not been able to identify any evidence of legislative scrutiny of the defence planning process.

As public accountability in the arms procurement process is new in Thai society, building public opinion in favour of scrutiny of the military processes will require considerable effort.[67] Arms acquisitions in Thailand are still confidential and are known only to those who 'need to know'. As the elected representatives do not belong to that privileged group and have no expertise on security affairs, the situation is likely to continue. The first Thai White Paper was issued in 1994, followed by a second in 1996. They give some details of military expenditure and define security policy and the role of the Thai armed forces in very broad terms.[68] The level of detail is inadequate if compared with the Japanese and South Korean White Papers and, although it started as a confidence-building exercise, the Thai White Paper does not describe the arms procurement decision-making process.

[66] The Permanent Secretary of Defence and the 3 Deputy Permanent Secretaries of Defence designated for each of the armed services in the MoD are all from the armed forces. Brooke, M., 'Thai reshuffle', *Asian Defence Journal*, no. 10 (1997), pp. 18–19.

[67] Chumphol, S. (Capt.), 'Perspectives on national security, military security and military capability', SIPRI Arms Procurement Decision Making Project, Working Paper no. 58 (1995), pp. 5–6.

[68] The first White Paper developed from an unprecedented debate organized by the military seeking input from about 100 civilian experts, including some from industry. Kang Choi and Panitan, W., 'Development of defence white papers in the Asia–Pacific region', ed. B. Gill and J. N. Mak, *Arms, Transparency and Security in South-East Asia*, SIPRI Research Report no. 13 (Oxford University Press: Oxford, 1997), p. 87.

Assessment

More often than not, parliamentary opinion on security policies is given low priority by the Government and the military on the assumption that they know what is best for the security of the country. On the whole, a lack of availability of experts to the legislative oversight processes impedes the creation of capacities for monitoring the Government. Legal provisions for assertive public scrutiny of defence policy decisions are inadequate. As military priorities in these countries are primarily debated within the executive branch of government, public accountability norms and practices do not grow within the decision-making system. Legislative oversight is relatively well organized in Israel, although its military retains an influential position in the national decision-making apparatus owing to the country's strong security concerns. On the other hand, a vibrant public debate on Israeli national security decisions acts as a check on the military's autonomy.

Societal and élite attitudes and exclusivity of defence policy making

The Chinese traditionally regarded security policy and decision making as the exclusive responsibility of the emperor, while society's role was to respect confidentiality with unquestioning obedience. Public accountability and oversight of national security decisions are seen as Western ideas. Having replaced the emperor as the traditional guardian of Chinese society, the CPC is similarly regarded by the public, and the leader of the CPC is given complete autonomy in national security matters.[69] A similar attitude is found in several other East Asian societies and has contributed to an acceptance of secrecy and the absence of public debate on national security issues. As this study could not examine the sociological dimensions of the relationship between the security élite and the public, it is difficult to assess the reasons for the reluctance of the Chinese public to participate in the national security debate.

Although publications on the subject of security are issued by state-controlled organizations and are available in Mandarin, these reports tend to be repetitive and laudatory rather than descriptive or analytical. Notwithstanding the existence of forums for discussion, in which senior scholars from think-tanks interact with officials from various ministries,[70] Chinese scholars experience difficulties in analysing national security issues. This is due to lack of information and (where information is available) to their own reluctance to make objective assessments that could go against established opinion. Chinese military and civilian official agencies are hierarchical and disciplined; the security debate is characterized by a repetition of established ideological viewpoints. This attitude not only restricts the flow of new ideas between officials at similar levels in different organizations, but also deprives China's leaders of alternative points

[69] Interview by the author with Pei Jiangfeng, *China Daily*, 13 Mar. 1995.

[70] E.g., the National Defence University, Academy of Military Science, Military Science Institute and China Institute for International Strategic Studies. *Jiefangun Bao*, 8 Jan. 1996.

of view. As opinions which differ from those of the government engender uncertainty, ideas from Chinese scholars and intellectuals, which could benefit the security decision-making processes, are suppressed.[71]

Despite public and parliamentary demands in India for the institutionalization of accountability in the security policy-making processes, because of bureaucratic inertia and a traditional guarded attitude towards accountability to the public the government has turned a deaf ear.[72] It refers to the Official Secrets Act when withholding official information on defence processes and procedures. Such rationalizations are not convincing. Barriers to information have been described as the single largest factor behind the prevailing corruption in the society, which facilitates clandestine deals, arbitrary decisions, manipulation and embezzlement.[73] Despite public support for a Freedom of Information Act, the proposed bill excludes information on matters relating to national security and foreign relations. However, India's democratic processes do allow security issues to be openly debated, and criticism in both the media and the public is vigorous because the corrective measures taken are ineffectual.

Public acceptance of military secrecy in Israel is a consequence of the dominant culture of security: the public willingly gives up its 'right to know'.[74] Secrecy has become legitimized in security decision-making, creating a 'no questions asked' atmosphere. As the legal powers of the Government over the armed forces are ambiguous, the authority exercised by the Minister of Defense over the IDF depends to a large extent on the personality of the minister. The relationship orientation in Israeli decision-making behaviour has influenced a number of important arms procurement programmes.[75] Even the Cabinet is usually informed of major arms deals only after they have been decided upon by the Minister of Defense or when the Prime Minister deems it appropriate to report. Secrecy has also been important in arms procurement and arms exports from the perspective of commercial and diplomatic sensitivity. From the military security perspective, secrecy is further justified by the need to maintain 'technological surprise', as demonstrated in the 1982 Lebanon War,[76] and high levels of secrecy are maintained with respect to the suspected nuclear weapon programme.

[71] 'Military academies suffer brain drain', *Inside China Mainland*, May 1994, pp. 50–52.

[72] Bureaucratic inertia in security policy making is also indicated by the failure to debate or progress recommendations of the Estimates Committee of the Indian Parliament that budget allocations should match the 5-year defence plans. *Ministry of Defence: Defence Force Levels, Manpower Management and Policy* (note 1), p. 30.

[73] 'Information control is power. India's administrative processes are surrounded by needless and excessive secrecy bordering on farcical.' Soli Sorabjee, Comments at a workshop on Freedom of Information and Official Secrecy in New Delhi in July 1996. See also 'Will the new government let the sunshine in?', *Times of India*, 6 July 1996, p. 11.

[74] Pinkas (note 3), p. 4.

[75] The decision to cancel the Lavi project was influenced by a number of personalities—Yitzhak Rabin as Defence Minister, Avihu Bin-Nun as Chief of the Air Force and Dan Shomron as Chief of Staff. Meron (note 12), p. 6.

[76] Steinberg, G., 'The influence of foreign policy and international agreements on arms procurement decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 24 (1995), pp. 4–5.

The secrecy ethos has undergone some change since the public disillusionment with the military's handling of the 1973 Yom Kippur War and its intervention in Lebanon. Despite increased demands in the media for discussion of security issues and the defence budget, public interest is limited to general staff politics, corruption and mismanagement.[77] However, the media show some professionalism in that they do not merely resort to coverage of matters of immediate public interest, and the national security debate is relatively open compared with that of other countries in the region.

In Japan national security analysis has remained exclusively within the domain of the bureaucracy. This is because of the authority of hierarchical structures in the society and a Confucian legacy which gives the bureaucracy high social status. Tradition, precedence and organizational collectivism reinforce each other.[78] Senior bureaucrats have reinforced this dominant position by joining the long-ruling LDP. In some ways this resembles the situation in Israel, where senior military leaders generally join the leading political parties, which adds to their influence in security decision making.[79] There has been muted public criticism in Japan of the strengthening of corrupt relationships between the bureaucracy, industry and politicians, creating what is described as the 'iron triangle'.[80]

The tendency in the Japanese bureaucracy to withhold information from the public builds habits of behaviour that undermine transparency. The concerns of each ministry are with its 'territory'. This promotes factionalism, reduces interministerial communication and makes cooperation difficult. To reduce these effects, the JDA has seconded officials from the MoFA, MITI and the Ministry of Finance to its Bureaux of Defence Policy, Equipment and Finance, respectively. Anti-militarist sentiment also contributes to the low salience given to national security analyses. Japanese scholars tend to avoid specializing in security studies, and the field has been neglected by research foundations. A large number of specialists in national security issues are MoFA officials seconded to various think-tanks—which largely excludes academics and independent experts from specializing in national security affairs.

The JDA Press Club facilitates the dissemination of information through accredited defence reporters specializing in defence matters but its exclusivity makes its members semi-insiders. Sharing similar backgrounds and perceptions with the officials, they are prone to reflect the viewpoints of the JDA and the military rather than broader public opinion. Such informal channels are also used by senior JDA and military officials to build information networks and

[77] Very few defence analysts criticize the culture of secrecy and lack of debate on 'macro' issues, such as national security concepts, defence policy options, threat analysis, weapon system procurement processes and so on. Pinkas (note 3), p. 5.

[78] Individuals have a very low profile in Japanese society. The organization, group or company always comes before an individual. Taoka (note 57), pp. 5–6; and Ikegami-Andersson, M., 'Sociology of national decision-making behaviour in Japan', SIPRI Arms Procurement Decision Making Project, Working Paper no. 40 (1995), pp. 2, 6.

[79] Etzioni-Halevy (note 11), pp. 7–9.

[80] Ikegami-Andersson (note 78), pp. 5, 6.

promote their views as the official perspective of the JDA. However, the press club can also exert collective pressure on the government to disclose certain information.

South Korea demonstrates a unique combination of cultural, political and commercial factors. Deep-rooted Confucian values emphasizing status and hierarchical control tend to promote a tradition of élite authoritarianism. Regional parochialism has contributed to political faction and the adversarial nature of oversight in the National Assembly, resulting in a situation where only those in the opposition demand transparency and accountability.[81] Various military regimes have interpreted the National Security Law and the Military Secrecy Act as requiring tight control of security-related information. Finally, the influences of the defence industrial lobbies and foreign arms dealers work against demands for administrative transparency. As a large number of former senior military officers are involved in arms deals,[82] illicit relationships between the arms dealers and serving senior military are reported to be developing.[83]

Despite improvements in public scrutiny and arms procurement audit processes in South Korea, the interest groups which oppose accountability in arms procurement decision making are broadly based, influential and well entrenched for various reasons. Lack of transparency in arms procurement decision making consequently allows elements of arbitrariness in decision making.

In Thailand, the restrictive attitude towards defence-related information is shaped by close social and professional connections among the military élite, who are a cohesive group, ensuring information control.[84] Given the influence of family connections, networks and respect for seniority in the Thai value system,[85] the military élite in the legislature and the executive resists institutionalization of public accountability by asserting the need for military autonomy in security decision making. The question of selectively releasing information to the public, the Parliament or members of the Military Affairs Committees has not been addressed. If any initiative is seen by influential officials as threatening to their personal benefits or power base, it is obstructed in all possible ways, from the subtle and indirect to the explicit and unreasonable. In a society where a norm of conflict avoidance and the influence of personal

[81] Sang Joon Kim, 'Characteristic features of Korean democratisation', *Asian Perspective*, vol. 18, no. 2 (fall/winter 1994), pp. 182, 184, 192.

[82] *Korea Times*, 22 Oct. 1996, p. 3.

[83] About 90% of the arms dealers are former senior military officers who thrive because of the lack of transparency in arms procurement procedures and even influence the promotions of their favourite officers in service. 'Arms procurement culture', *Korea Times*, 22 Oct. 1996, p. 3. A former minister of defence has been charged with leaking information to an arms dealer in return for favours. In another case a senior officer in the Logistics Bureau of the Ministry of National Defense has been charged with passing on the details of the draft Mid-Term Force Improvement Plan to an arms dealer. Yong-chin, O., 'Korean military procurement systems remain vulnerable to leaks of secret information', *Korea Times*, 25 Apr. 1997, p. 3.

[84] At a seminar held in Thailand in Mar. 1997, attended by military leaders and defence ministry officials from 18 countries, most delegates were opposed to transparency or revealing military-related information. Some stated that their countries do not even have constitutional provisions allowing them to reveal military information. Snitwongse, K., 'The Asia–Pacific security dialogue', *Asian Defence Journal*, no. 4 (1996), p. 158.

[85] Suntaree, K., 'National decision-making behavior in Thailand', SIPRI Arms Procurement Decision Making Project, Working Paper no. 59 (1995), pp. 9, 13, 25.

relationships are strong, public institutions remain comparatively weak in creating objective checks and balances. Military accountability to the elected representatives would go against the society's traditional perceptions and is opposed by the military's vested interests. It will be difficult for civilian elected representatives to demand public accountability on the floor of the National Assembly. The deference they display towards the military while debating the defence budget[86] shows that any public assertions that the military should be accountable, in a country which has had the largest number of military coups in South-East Asia, will require creative approaches.

Some demands for public accountability are being made by the growing urban, educated middle class[87] which supports democratization in Thailand. As the growing influence of the mass media makes officials cautious about public exposure and brings government decisions under sharper public scrutiny, permitting journalists to attend parliamentary defence budget committee meetings is a positive step.[88] The level of information available publicly on Thai arms procurement decision making needs to be enhanced and, towards that end, the participation in this study of a number of Thai military officials is laudable.

Assessment

Official information and statements of civilian and military officials in China, India, Japan, South Korea and Thailand are traditionally treated with deference, even if they are not substantiated by scientific evidence. Despite a tendency among Indian officials to keep information close as a source of power, the press is active in prising it out. In Israel the relationship between the military bureaucracy and the public is less formal and more trusting. Consequently, the defence debate in India and Israel is comparatively more developed. However, as processes for transmitting official information are not institutionalized, criticism of arms procurement decisions lacks focus, substance and evidence.

VI. Conclusions

Not all the ambitions of this study have been met. It set out to examine a broad range of questions requiring information on sensitive issues for countries that did not have a tradition of sharing such information. The fact that not all the questions set out in the project (see Annexe A) have been addressed by all the countries provides some useful insights into research gaps in the field. In examining arms procurement decision-making processes in terms of public accountability and the broader goals of security, the study finds that these processes are

[86] Chaiwat, S.-A., 'Defence budgeting', SIPRI Arms Procurement Decision Making Project, Working Paper no. 57 (1995), pp. 7–9.

[87] Stier, K. and Bao Anyou, 'The bitter truth behind Thailand's khaki commerce', *Asia Inc*., Oct. 1992, pp. 30–32; Panitan (note 16), p. 3; and Suntaree (note 85), pp. 27, 31.

[88] 'Military budget hearing to be attended by the press', *The Nation* (Bangkok), 20 Jan. 1997, p. A1.

severely handicapped by a lack of public information on and understanding of defence policy making.

General findings

1. A key finding of this study is that the barriers to developing public accountability norms in national security decision making are reinforced by: (*a*) societal indifference, which allows the military greater autonomy in security policy making; (*b*) the inadequacy in a qualitative sense of the information needed to facilitate public-interest oversight of defence policy making, for example, by parliamentary defence committees, statutory audit authorities and think-tanks; and (*c*) legislative oversight bodies' lack of access to professional expertise and advice.

In spite of the general assumption that a democratic system encourages pluralistic security perspectives, the military view in several of these countries is the opposite—that some institutions are better qualified to understand security requirements than others. Although the military has an important role to play in the decision-making process, elected representatives enjoy a greater legitimacy in representing public interests in all dimensions of security policy than do military technical experts. Parliamentary oversight is one way to broaden the choice of national security alternatives, validate the decisions made and exercise checks to prevent a bad decision from becoming worse. Public debate on national security issues provides an arena for harmonizing dissent and alternative perspectives of national security and conflict resolution.

In none of the countries in this study is the domestic debate on legislative oversight of defence decision making sufficiently engaged to improve the representative quality of the decision and review processes. This study reveals unevenness in the quality of public knowledge of the ways in which national security concerns are addressed and decisions are made. Where the lack of such understanding is ignored and debate is discouraged, the democratization processes are slow and security dilemmas remain unresolved. However, considering the complexity of security policy making, it is necessary to strike a balance between the role of the military and independent experts, on the one hand, and that of the elected representatives, on the other.

In a democracy the elected representatives in the legislative assembly are supposed to monitor the Government. However, while the Government has all the resources of the state available for making policy assessments and decisions, the members of the legislative assembly often lack the capacity to monitor it. The questions what kinds of arms procurement-related information should be available to the legislative oversight bodies and how it should be made available have not yet been satisfactorily resolved. Since arms procurement decision-making processes legitimately require a certain degree of confidentiality, these bodies are often under-informed of the basis of their country's security rationale. The building up of professional advisory capacities for the legislative

oversight bodies in areas such as finance, TA and threat assessment would help to harmonize arms procurement decisions with public-interest priorities.

2. A further constraint on the institutionalization of public accountability norms in national security decision-making processes is the enduring influence of personal relationships. In several of the countries under study, it was found that working relationships centre around factions and groups inspired by individuals using influence rather than institutions and professional organizations. This attitude subordinates public interests to the political priorities of the ruling élite. Public institutions are often used to promote the position of influential individuals and interest groups rather than to serve public interests.

3. Two main approaches are taken in national assessments of arms procurement needs. The first is the 'threat scenario' approach—a reactive approach spawned by a need to offset the effects of arms procurement by other countries in the region. Here the military perceives arms procurement as a solution to threat assessment, equipment replacement or modernization problems. The second is a comprehensive national security problem-solving approach, which integrates the perspectives of diverse agencies in a coherent manner. Arms procurement decisions are made as incremental components of security-building solutions. This approach places a greater emphasis on exploration of national security alternatives through dialogue between various actors and agencies.

4. Structures and processes for coordinating and developing coherent foreign and defence policies are lacking. Only in the case of Japan are the coordination processes between the JDA and the MoFA institutionalized at functional levels; in other countries this coordination is limited to inter-ministerial communication. The shaping of foreign and defence policies in separate processes or arenas leads to bureaucratic tribalism and discourages cross-fertilization of ideas. This can result in the military disregarding larger regional or global developments when it makes its arms procurement plans.

Excessive military autonomy in security policy making and arms procurement decision making can lead to apprehension among neighbouring countries, resulting in a reactive spiral of arms procurement—an arms race. Better coordination would lead to a more balanced view and facilitate an examination of alternative approaches to security rather than military capability and deterrence strategies. Developing organizational compatibility between the foreign policy and defence policy-making structures would help in shaping preventive security measures, military confidence-and security-building measures, regional force reduction initiatives and regional arms procurement restraints.

5. The examination of arms procurement budget and auditing processes reveals serious gaps in the public understanding of the entire financial burden of arms procurement on society. The R&D community and arms producers often understate weapon system costs in order to obtain approval. Public debate on arms procurement decisions tends to focus on issues such as threats to national security, the size of the defence budget or the effects of weapon procurement costs, indicating an incomplete understanding of the true ownership costs of weapons to future generations. With the purchase costs of weapon systems

escalating, the life-cycle costs rise correspondingly, but public debate does not pay adequate attention to this aspect of the military burden.[89] Public understanding needs to be broadened to include life-cycle costs if arms procurement programmes are to be understood in the context of other public priorities. The elected representatives would then be able to assess more accurately the financial burden on society.

6. The lack of transparency in defence budgeting is often connected to obsolete budget designs, the absence of multi-disciplinary expertise in the national statutory audit organizations, weak constitutional provisions for the provision of information for public scrutiny of decisions, and a typical bureaucratic attitude which prefers confidentiality to accountability. The statutory audit authorities and the legislators need to identify and address these broader systemic weaknesses.

7. In several cases in newly industrializing countries the arguments for large public-sector investments in order to achieve military industrial self-reliance are questionable. With the exception of Japan, none of the countries in this study has advanced engineering and technological capabilities in its civilian industrial sectors—a prerequisite for achieving military technological self-reliance. The general faith in the value of spin-offs from the defence industrial sector to the civilian economy and industry also remains unsubstantiated. Given the limited oversight of the defence R&D and industrial sectors, the escalating pace of change in technology and the monopolization of information, public accountability is avoided. The process not only fails in independent evaluation and monitoring of defence R&D and defence industry, but also allows oversized organizations to be created. Ironically, opportunities for waste, fraud and abuse abound in the defence R&D and industrial sectors.[90]

Key propositions

In the context of these findings, several points are important to keep in mind.

1. Arms procurement decisions understandably require a certain degree of confidentiality. The elected representatives need to devise criteria and methods to harmonize those valid requirements with their demands for information for the purposes of oversight.

2. The potential contribution of a cadre of inter-disciplinary experts independent of the Government in advising legislative oversight bodies in their work to create checks and balances on national arms procurement decision making cannot be overemphasized.

[89] Estimates of the life-cycle costs indicate that these are often greater than the procurement costs. Jafa, V. S., 'Arms procurement budget planning process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 12 (1995), p. 14.

[90] Zeev Bonen states that, although it is difficult to measure R&D productivity, it is possible to evaluate it after completion of a project on the basis of criteria such as fulfilment of objectives and contributions to the user, the developer and national infrastructure. Similarly, the aggregate of projects from an R&D organization or other laboratories can be used to evaluate the organization. Bonen (note 13), p. 6.

3. Public accountability of security policies and arms procurement decision making could also encourage accountability in other aspects of public policy.

4. Major arms-recipient countries with relatively transparent public scrutiny methods have a responsibility to show other countries in their respective regions how accountability norms can be developed to encourage balanced arms procurement decision and national security making.

5. Broader public participation in the national security debate has a stabilizing influence and can contribute to regional confidence and security building. There is a need to investigate the possibilities of developing regional dialogues to design a code of conduct for arms procurement restraints as a confidence-building initiative. As security threat perceptions are woven through regional or subregional security webs, more often than not arms procurement needs are rationalized to the public with claims that other countries in the region have acquired superior weapon systems.[91] If developed by an inter-disciplinary group of national experts, region-specific codes of conduct would have better acceptability and an enduring quality.

This study examines ideas for resolving the tension between the security establishments' perspective of the 'need to know' and the public perspective of 'the right to know' from the viewpoint of national experts from diverse backgrounds. It demonstrates that, even in established democracies, military institutions, security bureaucracies, and defence R&D and production organizations tend to emphasize their autonomy in defence decision making by controlling information, encouraging deference to the military and resisting accountability to the public. Public debate is stifled by promoting the belief that military strength is the only instrument for advancing national security and examination of defence institutions amounts to a lack of patriotism. More often than not, defence decision makers overemphasize the need for secrecy by failing to distinguish between the demands for public accountability and the competing requirements of military confidentiality. In order to marginalize dissenting opinion that suggests subjecting the military's decision making to public scrutiny, they evoke apprehensions of foreign interference.

As long as the public sees military capability as the final recourse in ensuring a society's security when other means, such as diplomacy, fail, the military will continue to play a dominant role in the national security decision-making processes and in making defence budget allocations. This will impede the advancement of alternative security paradigms for a number of reasons. First, the military favours incremental improvements in its power potential or accretions of

[91] In this context Surachart Bamrungsuk's observations are noteworthy. First, if Thailand were to pursue an effective diplomatic policy with neighbouring states it could prevent the generation of an arms race and, in the process, could avoid tensions. Second, the argument of the Thai military that possession of powerful modern weapons gives the country an edge in its foreign relations or has increased its bargaining power in border negotiations is contestable. Third, the difficulties in creating a system of checks and balances are compounded by the weaknesses in the Thai Parliament. Bamrungsuk, S., 'Peace dividend bites into military plans', *The Nation* (Bangkok), 31 Oct. 1997, p. A5; and 'Get debate back on top of the table', *The Nation* (Bangkok), 1 Nov. 1997.

equipment and technologies in use. Second, decisions on arms procurement and military technological competence building are made in the context of specific military threats and emerging military systems, and tend to disregard wider politico-security, economic and technological ramifications. Third, military training and culture are given to tradition, obedience and control—attributes which do not encourage the examination of alternative perspectives.

If the national security policy- and decision-making processes are not made adequately accountable, if governments fail to provide direction to security policies with the help of wider professional expertise in society, and if the military fails to harmonize public priorities with its own security policies, then intrinsic weaknesses in national security decision making will remain.

Good decisions are the products of good policies; good policies flow out of good policy-making processes; and good policy-making processes can develop only if there are good oversight mechanisms. In other words, good decision making should not only be viewed from the perspective of technical and functional advantages but also from the perspective of broader national and societal goals.

Annexe A. Research questions

The workshop contributors were asked to highlight issues unique to their country. The instructions and research questions listed below were intended to assist them in preparing material which would facilitate a comparative analysis of national arms procurement decision-making processes.

The questions are arranged according to four themes around which the research was conducted: (*a*) military and politico-security issues; (*b*) defence budgets, financial planning and audit; (*c*) techno-industrial issues; and (*d*) organizational behaviour and public-interest issues. Some questions are deliberately repeated in the different topics so as to ensure that the varying perspectives of the contributors, who represent many different academic and professional disciplines and backgrounds, are reflected.

Contributors were asked to base their papers on strong empirical evidence and published data, but they were also encouraged to draw on their own experience and first-hand knowledge in refining their analyses.

Military and politico-security issues

Effects of security threats and operational doctrines on force planning

Discuss the effects of threat perceptions, security concepts and operational doctrines on force planning. How are military technologies tailored to the requirements of developing balanced force structures in terms of intermediate and long-term planning profiles? This topic should be addressed by someone with military experience.

Threat assessment

Discuss the methods and processes used for carrying out threat assessments, identifying strategic objectives, setting priorities and implementing and reviewing national security policies and alternatives. Describe and examine the efficacy of the arms procurement process as it develops from security policies into arms procurement plans and military capabilities.

Long-term forecasting

Examine the types of methodological research carried on long-term forecasting for the development of balanced force structures. Discuss the methods of carrying out force structure analyses and examine such aspects as: (*a*) sequential analyses of operational scenarios; (*b*) the evolution of operational concepts; (*c*) the integration of service-specific threat analyses into defence force analyses; (*d*) operational and technical assessments of alternative systems; (*e*) estimates of resource availability; (*f*) budget simulation; (*g*) balancing defence plans with the available resources; and (*h*) balancing resource levels with required military capabilities.

Defence White Papers

Analyse the content of long-term planning guidelines or White Papers on national defence policy and the sequence of their evolution and development. Do such guidelines contribute to creating a comprehensive framework for policy planning and implementation, or to incrementalism and ad hoc accommodation? In the absence of a defence White Paper or long-term guidelines on national security, discuss any drawbacks experienced in equipment procurement prioritization. Does the absence of a defence White Paper allow non-defence factors to influence or inhibit monitoring of long-term defence planning and limit comprehensive analyses?

Procurement budgets and external threats

Do changes in procurement budgets reflect an increase in perceived external threats or vice versa, or are changes in procurement budgets related to other factors? Is there a process for examining alternatives to procurement decisions that are made? Give examples if possible.

Responses to emergent military threats

Examine the criteria and planning considerations for the development of balanced force structures for meeting conventional threats. Discuss the following: (*a*) arms procurement responses to the mobilization requirements of emergent conventional military threats, low-intensity threats, small-scale conflicts in peacetime or other commitments such as UN operations; and (*b*) the effects of recent conflicts, other political/military factors or technological changes that could affect procurement planning.

Constraints on arms procurement planning

Discuss the types and level of constraints on designing desired force structures or on arms procurement planning. Examples of such constraints include: (*a*) budgetary; (*b*) political (international/domestic); (*c*) arms or export control-related; (*d*) human resource-related; (*e*) technological or domestic industry-related; and (*f*) constitutional.

Political leadership and arms procurement planning

Examine the relative influence and control of the civil and political leadership over arms procurement plans. To what extent do political guidelines, force design parameters and defence commissions contribute to developing a balanced force planning process? How do the security planning processes lend themselves to public accountability and to addressing dissenting opinion?

Influence of foreign and security policies on arms procurement

Examine the influence of foreign and security policies on arms procurement decision making. Discuss the following: (*a*) domestic arms procurement processes in relation to the country's position on international arms control initiatives; and (*b*) the impact of international technology export controls on the selection of arms supply sources. An expert in foreign and security policies or export control should address this topic.

Relationship to technology control regimes

Assess the country's relative position in technology control regimes and the level of acceptance of the export administration policies of major arms suppliers. Examine the experience of: (*a*) transferring generic technologies and manufacturing 'know-how'; and (*b*) developing 'know-why' capacities to enhance technological self-reliance.

Commitment to international arms control initiatives

Discuss the perceptions of different actors in the arms procurement decision-making process regarding national obligations towards international conventional arms control and transparency initiatives such as the UN Register of Conventional Arms. How are the relevant actors informed of continuing developments in international arms control discussions and related national commitments?

Risks and effects of export controls and embargoes

Examine the methods for political evaluation of the effects of export controls and UN or suppliers' embargoes. Analyse factors considered in decisions about procurement from foreign suppliers and the criteria governing the choice between suppliers. Discuss a formal or optimal model for the procurement of equipment and major conventional weapons from foreign sources with reference to joint ventures as well as direct 'off-the-shelf' imports.

Foreign supply vulnerability and risk assessment

Discuss the criteria for determining foreign supply vulnerability and acceptable levels of military/political risk in procurement policy. Analyse: (*a*) methods of risk assessment, including responses to disruptions in foreign supply; and (*b*) substitutability and alternative supply sources. What factors and actors are most important to this analysis?

Technology: isolation vs. participation

Discuss the implications of technological isolation as opposed to participation in international technology transfer. Examine possible approaches to: (*a*) technology-related confidence building; (*b*) reducing problems in integrating with international science and technology initiatives; and (*c*) facilitating access to technology and learning.

National security, military security and military capability objectives

Discuss the perspectives of different actors in the arms procurement process concerning the relationship between national security, military security and military capability objectives. Examine the relevance of accountability and transparency in rationalizing arms procurement, inducing regional confidence and security, and restraining the use of extra-constitutional influences. Discuss ways of harmonizing the expectations of transparency with the military's legitimate need for secrecy. An expert on security issues or from the military should address this topic.

Conflicting security objectives

From the perspective of military, political and socio-economic development priorities, discuss the different interpretations of the participants in the procurement process of the broader objectives of national security, military security and military capability. Analyse possible approaches that could harmonize such conflicting interpretations.

Effects of public accountability on the arms procurement process

Examine the assumption that higher levels of public accountability in the arms procurement process could help to improve the quality of analysis and impede the use of extra-constitutional procurement methods that lead to delays, poorer performance or cost overruns in arms procurement programmes. Also present an opposing viewpoint.

Transparency in defence budgets and accountability in arms procurement

International arms control initiatives assume that transparency in military expenditure is a suitable means of promoting restraint of military build-ups and preventing the diversion of scarce national resources to the military. Compare the effectiveness of transparency in defence budgets with accountability in arms procurement plans as elements of arms control initiatives in terms of their measurability, verifiability and confidence-building value.

Security implications of transparency

What kinds of actions, plans or policies relating to arms procurement could be discussed transparently in keeping with the legitimate requirements of military confidentiality? Analyse the implications of transparency for military security in relation to its application in regional confidence-building measures.

UN General Assembly Resolution 46/36 L

Discuss the implications of the transparency levels outlined in UN General Assembly Resolution 46/36 L for requirements of military confidentiality in relation to: (*a*) military holdings; (*b*) domestic arms production; and (*c*) arms procurement through foreign sources.

Organizational behaviour resisting public accountability

Analyse the organizational behaviour of military bureaucracies and factors contributing to their resistance to public accountability or legislative oversight.

The determinants of recipient dependence and their effects on autonomy

Arms procurement policies and practices have to a large extent been determined by predominant supplier–recipient relationships. During the cold war regional political and strategic necessity led to relationships of dependence. Examine the determinants of recipient dependence on a single or predominant arms supplier.

Determinants of recipient dependence

The determinants of recipient dependence on a single or predominant arms supplier could include the following aspects: (*a*) the relationship of threat perception and strategic support; (*b*) the degree of self-sufficiency; (*c*) the ability to increase domestic arms production; (*d*) the effects of diversification and availability of alternative suppliers; and (*e*) the domestic capacities for training, maintenance and availability of spare parts. Examine the consequences and effects of such dependence on political autonomy and foreign policy; domestic policy; strategic advantages or limitations; military–technological self-reliance; operational autonomy during armed conflict; and the opportunity costs of discontinuity in arms supply relationships.

Implications of financial concessions from a single or predominant arms supplier

Different modes of payment for arms could include: (*a*) grants for arms transfers; (*b*) military aid; (*c*) credit or cash sales; and (*d*) offsets or barter. While predominant suppliers might subsidize the procurement budgets of recipients, relationships of dependence can create distortions in long-term defence planning and capacity building. The concessionary financial terms restrict options to the supplier's major weapon platforms which, more often than not, are optimized for the recipient's requirements. It may be cheaper and more convenient to buy off-the-shelf equipment when domestic production is limited by national technical infrastructure or other considerations.

Strategies and countermeasures against recipient dependence

Examine the strategies and countermeasures against the development of recipient dependence in arms transfers, licensed production, and joint R&D and co-production projects.

Effects of arms dependence relationships

Through a specific case study, discuss: (*a*) the political and strategic necessity leading to the development of a relationship of dependence; (*b*) the influence of supplier capacities on the needs of the recipient; (*c*) the effect on public debate and legislative oversight; and (*d*) the effects of a large inventory of equipment from a predominant supplier on the military's operational autonomy in the recipient country.

Defence budgets, financial planning and audit

Budget planning

Examine the defence budget planning process and the influence of cost and the source of supply on the selection of weapon systems. Review the methodologies for procurement pricing negotiations, offset mechanisms and establishment of priorities, and tendering and contracting methods. This topic should be addressed by an economist or an expert in international financial negotiations.

Long-term financial planning in defence budgeting

Discuss the process of long-term financial planning in defence budgeting. Examine the linkages between strategic and operational decisions and arms procurement budgeting necessary to achieve a given set of objectives. Is the arms procurement budget process integrated and mission-specific or is it programme-specific? Does the defence budget allocate funds separately for different services and agencies?

Methods of defence budgeting

Discuss different methodologies for defence budget planning. If budgeting practices are based on foreign models, examine the internal and external review processes and modifications that are introduced. Are the guiding principles for arms procurement based on monetary ceilings derived from national budgeting or are the equipment ceilings based on threat perceptions? As procurement budgeting requires long-term and multi-year allocations, how does parliamentary review of the annual national budget harmonize with long-term arms procurement commitments?

Cost assessment and price negotiating methods

Describe the elements of cost assessment and the composition of the price negotiating body in arms procurement from the state and private sectors, and foreign sources, including both direct purchases and cooperative projects. Examine the level and range of expertise available to the price negotiating bodies in carrying out sub-optimal planning.[1] Discuss the interaction between military and commercial costing and accounting practices.

Contracting procedures

Are contracting procedures standardized? If so, when and how do they operate? Describe contracting practices and alternatives to fixed-price contracts, cost-plus contracts or any other methods used. Are the contracting procedures and guidelines available to the public?

Offset policies

Analyse government policies in seeking offsets against arms procurement, if any. Discuss the offset policy's aims, strategies, priorities, characteristics, the coordinating agency involved and the methods used for implementing the offset policy. Examine the various methods of evaluation of products/services, the degree of compensation, the minimum size of agreements, and so on. Are offsets flexible, formalized, mandatory or written into government arms procurement regulations? Do offsets prioritize a technological approach (seeking access to specified technical capabilities), a market approach (primarily evaluating commercial prospects) or security considerations? Dis-

[1] Sub-optimization in the language of systems analysis implies breaking up decision making into component parts or sub-problems. Analysis and decision making are carried out in relation to different aspects of the problem in order to find optimum solutions. By analysing smaller sub-problems, greater attention can be paid to detail.

cuss the participation of financial or trading organizations in facilitating offsets and the development of counter-trade policies.

Costing models

Discuss ways of balancing economic resource allocations and arms procurement budgets. Describe the costing models that incorporate data on technology costing and equipment costing including manufacturing design costs. Assess recurring hardware costs, weapon system costs, procurement costs, programme costs, life-cycle costs, and so on.

Financial evaluation

Discuss the methodologies and guiding principles used for financial evaluation of major procurement projects by the ministries of finance and foreign affairs in relation to: (*a*) national creditworthiness; (*b*) an assessment of international financial support in terms of export credit or direct funding; (*c*) an evaluation of the impact of exchange rate movement and financial risk, and the value of offsets; and (*d*) the influence of international financial institutions—for example, the International Monetary Fund (IMF) and the World Bank—on defence budgeting.

Impediments to accountability in defence budgeting

Discuss the problems with and impediments to introducing accountability and transparency in defence budgeting. What are the acceptable thresholds for transparency in financial procedures that would be in keeping with the legitimate interests of military confidentiality?

Financial review

Examine the financial review process. Discuss the methodologies for assessing financial resource requirements and resource levels through cost and operational effectiveness simulation of a given set of defence force alternatives.

Balancing arms procurement with national socio-economic imperatives

This topic concerns the difficulty in balancing arms procurement with national socio-economic imperatives. Identify strategies for harmonizing the broader objectives of national security with technology acquisition from domestic R&D or foreign sources, with a view to developing the national technology base. This topic should be addressed by an economist or a sociologist in the academic sphere or the national planning sector.

Interaction of the military and economic development sectors

Technology-intensive investments in the military sector could have useful applications in national economic development and vice versa. For example, benefits in the areas of communications and surveillance, advanced materials, marine technology, and signal processing and sensors could be derived. Examine the institutionalization of structures

facilitating this process and the level of influence and interaction among policy makers and officials in the military and economic development sectors.

The industrial base and military technology

Analyse the assumption that, owing to escalating weapon system development costs and the accelerating pace of change in military technologies, advanced weapon technology projects cannot be initiated by defence R&D alone. A number of studies have also indicated that military technologies increasingly appear to depend on advances in civil applications. Discuss the contention that a strong national industrial base is more conducive to developing military technology than vice versa.

Spin-off vs. spin-on effects

Examine the assumption that technology transfer through licensed manufacture contributes to the national technology base and can have spin-off benefits for socio-economic development in the context of a case study and in comparison with other forms of technology transfer. Another case study could examine the relative spin-on effects of technology transferred from the civil to the military sector.

Effects of the military sector on the civil industrial sector

Examine the strategies for strengthening the civil industrial sector through the absorption of R&D, manufacturing and technical skills from the military sector. Discuss the components of civil–military integration strategies in terms of: (*a*) integration of R&D to foster dual-use technologies/processes critical to defence and techno-economic competitiveness; (*b*) integration of engineering, manufacturing and logistical support for cross-fertilization and efficient allocation of resources; (*c*) a shift towards flexible manufacturing and methods to increase inputs of commercially competitive technologies and components for military and civil products as well as production processes; and (*d*) balancing performance requirements with cost considerations.

Military auditing

Discuss alternative methodologies for military auditing in terms of the performance, operability and serviceability of the selected system.

Comparative review of arms procurement policies and practices

Examine the processes for reviewing arms procurement policies and for comparing decisions with practices. Discuss the relative merits of auditing the process as a whole and auditing specific procurement actions.

Performance auditing

Examine the methodologies for auditing costs, performance and serviceability against the initial objectives of arms procurement plans. Discuss the criteria for measuring efficient procurement and methods of testing and evaluating the criteria.

Arms procurement budget design

Discuss the arms procurement budget design in terms of its objectives. Is it integrated so as to indicate costs of specific military functions, such as air defence, surveillance, logistics, and so on, or does it merely divide up allocations by conventional cost heads such as pay and allowances, equipment, and operations and maintenance?

Post-procurement comparative evaluation

Discuss the methodologies used if any evaluation of weapon systems and their procurement is carried out after the systems have been introduced into service.

Availability of data

An important factor in performance auditing is the quality and availability of data on various facets of security-related decisions. Analyse the availability and quality of reports and data from the primary sources that are available to the public.

Techno-industrial issues

Equipment modernization and a national arms industry

Examine the influence of equipment modernization, building a national arms industry, and arms export intentions and capabilities on national arms procurement policies and procedures. This should be done from the perspective of a defence production organization.

Building arms production capacities

The major global military technological trends that seem to be emerging include: (*a*) the enhanced performance of weapon systems and improvements in technological quality; (*b*) a longer life cycle and shorter production time; (*c*) rising costs; and (*d*) improvements in overall quality and reliability. By contrast, economic trends indicate reductions in demand and increased commercial competitiveness. Such indicators would suggest that military–civil conversion or transnational cooperation are likely, while the need to maintain competitiveness has to be balanced against the competing priorities of military self-reliance. Discuss interpretations of national policies for: (*a*) technological self-reliance in arms production; and (*b*) achieving crisis independence[2] in arms procurement.

Prioritization of defence needs

Discuss defence technological priorities in the light of the heavy demands for subsidies from national defence industries. Examine policy planning guidelines and methods for balancing the competing requirements of domestic technological enhancement through indigenous production and import.

[2] E.g., the ability of a state to meet either all or specified elements of its weapon and military hardware requirements for an identified period of crisis or conflict.

Integrating civil and military production processes

Examine strategies for responding to the twin problems of escalating costs of defence R&D and pressures to reduce procurement budgets. For example, discuss: (*a*) the trends, capacities, methods and practicalities of integrating civil and military production processes; (*b*) concurrent engineering; (*c*) flexible manufacturing; (*d*) introduction of commercial practices in the defence sector; (*e*) budgets for the modification or development of equipment as an element of procurement budgets; and (*f*) domestic marketing (manufacturing advanced technology products for civil applications) and international marketing. What weight is given to such cost reduction criteria as: (*a*) modular design for reducing operations and maintenance expenditure; and (*b*) the development of interdisciplinary teams for R&D, manufacturing, marketing, and so on?

Implications of public and private ownership of defence companies

Examine the various criteria used for determining the extent of public/private sector control of defence production. Describe the structure of public/private ownership in defence companies engaged in the production of aerospace systems, ship systems, armament systems, electronics, and miscellaneous products and services. Discuss structural readjustment strategies for privatizing non-critical defence companies or expanding national or international cooperative initiatives such as joint ventures including: (*a*) R&D; (*b*) design and production; and (*c*) marketing collaboration.

Collaboration in technology acquisition

Discuss the implications of co-development, co-production, licensed production, subcontract production and other forms of cooperation in relation to strategies for technology acquisition, building defence industrial capacities and reducing the economic burden of the defence industry.

Joint ventures

Joint ventures are considered to be among the more efficient methods for facilitating technology transfer, as well as skills and resource sharing in the development of complex systems. Discuss the relevant criteria, priorities and types of joint venture or cooperative project. Describe the decision-making process within joint ventures and analyse the motivations governing such collaboration, the problems and benefits envisaged and the methods for managing competing priorities among the collaborators. Discuss military and national technological objectives with respect to joint venture strategies.

Measuring relative levels of self-sufficiency and import dependence

Analyse the relative shares of imported and indigenously produced components in major weapon systems as a proportion of total arms procurement. This may include consideration of the relative indicators of: (*a*) imported complete systems; (*b*) complete systems produced under licence and the ratio of imported to domestically produced components; and (*c*) systems produced on the basis of indigenous R&D.

Influence of the defence industry on arms procurement

Discuss the level, scope and nature of the influence of the defence industry on the arms procurement decision-making process. What input does the defence industry have in shaping final decisions? Conversely, to what extent do the priorities of the military sector shape the defence industry?

Constraints on building a national defence industrial base

Discuss the types of constraints experienced in building a national defence industrial base. Major advanced technology projects are becoming increasingly complicated and expensive. Bearing this in mind, examine the changes in industry–government relations in terms of control and oversight, forms of international cooperation and other initiatives to offset the effects of constraints on the development of a national defence industrial base.

Technology assessment

Assess the procedures for technology assessment (TA) and the selection of equipment. Assess the capacities for incorporating TA, systems analysis and costing methodologies into the selection of weapon systems. This topic should be examined by individuals trained in systems analysis and TA.

Systems analyses and technology assessment

Discuss the methodologies used for: (*a*) carrying out systems analyses and TA of weapon systems; and (*b*) forecasting long-term technological development.

Evaluations of options

Giving examples, discuss the methodologies employed for conducting various types of evaluation required for a typical procurement decision. These could include: (*a*) operational and technical maintenance assessments; (*b* field trials; (*c*) assessment of commercial costs/offsets; and (*d*) analysis of financial outlays and contractual offers. Discuss the methods for setting credit rates and prices of services, training, the provision of spares and subsequent technology upgrades, and for developing cost escalation criteria and delivery schedules, including any penalties for delays.

Assessment of joint ventures

In the case of joint ventures involving higher-level technology transfer, specify the TA methods used. If possible, provide examples for a comprehensive assessment of joint ventures.

Limitations of the decision-making process

The key to successful analysis is a continuous cycle of formulating the problem, selecting objectives, designing alternatives, collecting data, building better models, determining levels of effectiveness or satisfaction, questioning assumptions and data, weighing cost against performance, re-examining objectives, opening new alternatives,

and so on. Discuss any limitations in the decision-making process, such as bias, subjectivity, the influence of preconceived judgements, and so on.

Alternative methods of decision making

Examine various decision-making methods for developing a comprehensive analysis of the views of different experts or specializations. The committee method is one example. The objectives and criteria for measuring the efficacy of different methods should be clearly defined and a comparison of alternative courses of action should be made.

Building public capacities for policy analysis

Discuss the problems of developing competence in arms control and security issues in the society in general and professionalizing legislative oversight of arms procurement.

Trends in weapon systems development from an R&D perspective

New problems in arms development and procurement are being created by trends such as increases in performance and cost, an increasingly competitive market, decreasing development times, shrinking demand for weapons and decreasing military budgets. Weapon producers are resorting to transnational collaboration and other innovative approaches to meet these challenges. Discuss the implications of these changes for national defence R&D policies and the problems being faced by R&D organizations.

Implications of self-reliance for defence policy making

Examine the implications for defence policy making of a policy of technological self-reliance in relation to collaboration or procurement from foreign sources. Discuss the problems in developing cost- and risk-sharing methods, as well as technology linkages for the upgrading and replacement of equipment. Discuss the effects of levels of national competence and capacities for building components or complete major weapon systems ranging from semi-knocked down assembly to co-production.

Problems in developing defence R&D competitiveness

Discuss the problems in developing defence R&D competitiveness, for example: (*a*) the management of priorities between short-term project-specific research and long-term generic R&D; (*b*) protecting core competencies; (*c*) greater reliance on continuous prototyping and design for producibility; and (*d*) developing human resources for specialized research.

Management of inter-organizational differences

Discuss how conflicting service and organizational philosophies are dealt with, particularly in the weapon conceptualization and project implementation phases. Examine possible options, for example: (*a*) the integration of scientists and engineers from the armed services into R&D projects and teams; (*b*) methods for keeping abreast of progress or changes relevant to service-specific technologies; and (*c*) the interface between weapon system developments and operational missions.

The push of technology development vs. the pull of operational requirements

Discuss the relative influence of the push of technology development and the pull of operational requirements in the arms procurement process. Assess the influence of international marketing and the media on determining the specifications of equipment under development or discussion.

Defence R&D–civil research interaction

Discuss the exploitation of long-term strategic research for future military applications and the role of strategic civil research establishments. Examine the weapon development process with a view to identifying spin-off and spin-on linkages, providing examples. Discuss the capacities of and the level of concern shown by the government and the national legislative bodies in facilitating long-term strategic research.

Strategies for civil–military integration

Examine the assumption that a strategy for civil–military integration could include: (*a*) integration of R&D to promote technologies for both national defence and industrial competitiveness; and (*b*) the integration of engineering, manufacturing and logistical support to promote cross-fertilization and increased reliance on commercial components of proven reliability to reduce lead times and costs. Discuss the methods for promoting synergy between defence laboratories, universities, industries and independent research associations. Analyse the level of educational skills of personnel engaged in defence R&D in the state sector in comparison to the private sector. Assess the problems of attracting and retaining qualified personnel in defence R&D laboratories.

Stages of the weapon system development process

A total weapon system development approach requires the integration of operational needs, systems development and logistical integration into the overall force structure of land, sea and air operations. Discuss the various stages and phases of the weapon system development process and the roles of the interacting agencies and organizations. This could include an assessment of: (*a*) project identification and determination of needs; (*b*) concept exploration; (*c*) research and mathematical modelling; (*d*) exploratory development, preparation and evaluation of projects; (*e*) preparation and evaluation of draft design and technical projects; (*f*) development, testing, demonstration and validation of prototypes; (*g*) full-scale engineering development and decisions to transfer to series production or a prototyping-plus strategy;[3] and (*h*) production, testing and deployment.

Productivity of defence R&D establishments

Discuss methods used for measuring and monitoring the industrial and human productivity of defence R&D establishments. Examine the effects of innovations in enhancing

[3] E.g., developing a weapon system to the prototype stage, then successfully demonstrating and proof-testing it but not continuing to the production stage. However, improvements to the system's components may be undertaken.

productivity, including the delegation of decision-making authority to laboratory and project managers and the development of a payment channel to the developer or to laboratories through a user service. Discuss methods of maintaining efficiencies in the user–developer relationship. Does the process include a periodical review of specific projects or of the entire defence R&D organization?

The private sector in the national defence industrial base

Examine the different concepts of and views concerning the composition of the defence industrial base. Analyse the level of national and international private-sector companies' participation in the arms procurement process, and their interaction and influence in decision-making processes in countries with private-sector involvement in military production. This topic should be addressed from the perspective of the private sector.

Defence industrial, technological and economic bases

Discuss the different interpretations of the defence industrial base, defence technological base and defence economic base. Discuss the methods for the measurement of techno-industrial compatibility and productivity in public and private enterprises in the defence industrial base.

Types of cooperative venture

Other than arms procurement-related cooperative projects, the private-sector defence industry in a number of countries is characterized by acquisitions, mergers and cooperative ventures with both domestic and foreign companies. Different business rationales offer an explanation of the need for new industrial ventures, ranging from reducing costs, risks and threats and increasing capacities, markets, competitiveness and efficiencies to technology transfer. Discuss the types and objectives of cooperative ventures that private-sector military enterprises could have. Include an account of external influences on autonomy, problems in procurement plans and the legislative provisions available to the procurement agencies.

Problems of civil–military integration in defence production

Discuss the problems of civil–military integration in defence production. Are military and civil R&D mutually supportive of the development of tangible and intangible spin-offs and spin-ons? Examine the structural compatibility of the two sectors in terms of such factors as: (*a*) the application of dual-use manufacturing processes; (*b*) organizing combined research teams for specific projects; (*c*) organizing cooperative research associations in civil companies with specific military laboratories, projects or industries; and (*d*) developing cross-fertilization through a specialization-oriented network of military/government, industrial and technical expertise.

Influence of national science and technology initiatives on military technology

Discuss the influence of national science and technology initiatives on military technology development. Analyse the effects of developments in military technology pol-

icies on national industrial capacities and productivity. Analyse structures facilitating these processes in terms of efficiencies, modes of control and public accessibility.

Conversion problems in incompatible industrial cultures

Strategies to promote the defence industry seek to encourage private partnerships to share the financial burden as well as facilitate spin-offs and spin-ons. This public–private linkage in the defence industry is hampered by technological differences in the public- and private-sector defence and civil industry as well as by their approaches to innovation. Defence companies in the state or state-supported sector are less exposed to risks, primarily owing to access to funds and a lack of domestic competition. In contrast, the private sector constantly needs to increase productivity and to adapt to market demands and commercial competition. Discuss the problems of conversion in the context of such incompatible industrial–technological paradigms and cultures.

Impediments to convertibility in the national manufacturing sector

Analyse the criteria for identifying core and critical competencies in the defence industrial base. Examine the impediments to the convertibility of the national manufacturing sector to defence industries in terms of: (*a*) the demand for surge capacities; (*b*) the need for sustained production at mobilization levels; and (*c*) the problems of converting to military-specific designs and specifications.

Problems in developing conversion strategies

Analyse the potential for privatization or conversion from military to civil production in terms of institutional structures, policy studies, the application of human resources, management methods and various techniques employed. Discuss the criteria, priorities and factors facilitating or impeding conversion initiatives.

Role of the private sector in arms procurement decision making

Discuss the role of the private sector in arms procurement decision making. How can the private sector contribute to the development of more advanced and efficient military production capacities? What are the impediments and potential problems that could result from such contributions?

Private-sector perceptions of accountability and transparency

Discuss whether the increased involvement of the private sector hinders or contributes to greater accountability and transparency in the arms procurement process.

Organizational behaviour and public-interest issues

Domestic considerations and élite motivations concerning equipment and sources

Discuss the influence of domestic considerations and élite motivations on the choice of equipment or sources of supply in arms procurement decision making. Examine the conflicting pressures within the military sector, the bureaucracy, inter-service relations,

R&D organizations and the defence industry in relation to the arms procurement process. Ideally, this topic should be addressed by a social scientist or a media expert.

Information flow and decision making

Examine the institutionalization of feedback and the horizontal flow of information in the arms procurement process. Discuss the formal and informal modes of providing information for optimal decision making through the stages of concept definition, applied research, exploratory development and production.

Information assessment

Examine the process of selection, evaluation and acceptance of new information or assessments. Analyse the information-processing behaviour and degree of group conformity displayed by actors in the arms procurement process. Examine the relative levels of institutionalization and the influence of personal relationships in information flow. Discuss attitudes to new policies, dissonant information and re-evaluation methods.

Defining and coordinating military needs

Is the procedure for defining military needs and requirements for arms procurement separate and specific to the different armed services or is it related to general military security roles? How does the process coordinate the requirements of multi-service applications such as logistics, command, control, communications and intelligence, and space-based communications? Does it concentrate on the allocation of resources and the procurement and management of weapon systems or is there an overall rationale for building techno-industrial or operational capacities? Discuss the contribution of the process of integrating broader techno-industrial capabilities and military requirements.

Political culture and arms procurement decisions

Analyse the structural characteristics of the prevailing political culture and its influence on civil–military relations in general and arms procurement decisions in particular. How is the divergence between perceptions of national interest and the traditional role of the military sector reconciled? Discuss responses to divergent pulls, pressures and the influence of competing interests, as well as the constraints of bureaucratic and factional politics on the arms procurement process. What kind of influence could a defence White Paper have on the politics of decision making? What other kinds of structures or mechanisms are employed to achieve policy coordination?

Availability of technical and multi-disciplinary skills

Analyse the levels of scientific and technical skills and multi-disciplinary expertise available within different agencies and departments of the arms procurement decision-making structure. Does such expertise facilitate the conduct of sub-optimal studies, decision making and the cross-fertilization of ideas?

Intra- and inter-organizational priorities

Discuss the problems of and methods for harmonizing intra- and inter-organizational priorities. Is the final decision influenced by a particular organization which carries more weight than others? Would a periodic review of the process reduce communication barriers, develop accountability and improve forecasting capacities?

Reconciling military priorities and broader public interests

Examine the process of harmonization between organizational interests, such as those of the military, and broader public interests and national policies. Discuss the concerns and influences that limit or further the objectives of public accountability in public decision making in general and arms procurement in particular.

Effects of secrecy-related regulations

An inadequate flow of information, organizational politics, bureaucratic inertia and tribalism are among the major factors contributing to dissonance in decision-making processes. While confidentiality is needed concerning technical specifications or plans, limitations on secrecy are also desirable from the perspective of accountability. Discuss the effects and use of official regulations and legislation on public accountability.

Decision-making processes, good governance and accountability

Examine the institutionalization of decision-making processes based on the principles of good governance. Discuss the problems, apprehensions and barriers in building public awareness, public interest, transparency and accountability. This topic should be addressed by a senior politician or a constitutional expert.

Interests in public accountability and transparency

Examine the influence of various national interest groups which support or oppose public accountability and transparency.

Arms procurement expertise available to parliamentary committees

Examine the levels of expert advice and information available to parliamentary committees involved in monitoring arms procurement. To what extent do the members of the committees participate in debates in the legislature on defence policy making or arms procurement planning? Discuss the role and influence of legislative oversight in long-term arms procurement planning.

Linkages between overseas development aid and military expenditure

Examine the attitudes and responses within legislative and administrative bodies to the linkages being developed by international aid agencies between overseas development aid and an aid recipient's level of military expenditure. How is public concern over the effects of military expenditure or arms procurement on different levels of the economy articulated and how does it influence the decision-making process?

Objectives of national security: perceptions of the legislature

Discuss the perceptions of different segments of the legislature concerning the broader objectives of national security as distinct from military security and military capability objectives. The ways in which public-interest priorities and public policy making can be harmonized should be examined in the context of sensitive issues such as arms procurement.

Effects of confidentiality on arms procurement policies

Analyse the effects of confidentiality on arms procurement policies, on procedures and guidelines that could enhance the influence of arms dealers, and on the extra-legal dimensions of arms procurement. Are the decisions constitutionally valid?

Building public competence in the national security arena

One of the handicaps in promoting public accountability and debate in arms procurement processes is a lack of adequate capacities to engage the decision makers in an objective professional debate combined with insufficient levels of public awareness. Discuss alternative methods of building capacities and competence in society at large concerning national security and arms control issues.

Public concerns relating to the arms procurement process

Assume that the public interest regarding arms procurement relates to such concerns as: (*a*) that arms procured are essential from a national security perspective; (*b*) that governments pay a fair price that is appropriate to national capacities and needs; (*c*) that arms procured meet the expectations of the users; (*d*) that there is accountability in the process and that it is free from waste, fraud or abuse; and (*e*) that there is a legal basis for the decisions and actions. Discuss whether these assumptions are correct and analyse the effects of legislative oversight of the arms procurement process.

Arms procurement and organizational behaviour at the decision-making level

Discuss the characteristics of arms procurement processes in terms of the organizational structures involved. Are they competitive and do they incorporate a diversity of perspectives, or are they exclusive and insular, indicating a cultural or political bias? This topic should ideally be addressed by a military or civilian expert in public administration or organizational behaviour.

Dominant organizational attitudes and norms

In order to harmonize security policies with public-interest priorities, the arms procurement process needs to be examined in terms of: (*a*) the constitutionality of decision-making practices; (*b*) the technical and analytical skills available for advising decision makers; (*c*) the levels of information flow; and (*d*) public accountability and interaction among various organizations and specialists. Do the dominant organizational attitudes and norms lend themselves to an internal audit of the arms procurement process?

Evaluation of intra-organizational performance

Examine the assumption that, while rules and procedures are designed to regulate functioning on the basis of policy guidelines and to prevent waste, fraud and abuse, they can also block innovation and initiative by producing rigidity and delay. How is evaluation of intra-organizational performance carried out?

Influences that oppose or support transparency

Evaluate the interests and influences that oppose or support transparency in arms procurement decision making from an organizational behaviour perspective. Analyse the way these influences relate to legislative oversight, constitutional and legal provisions, the interests of the military, the bureaucracy, the military–scientific community and the public interest.

Effects of centralization and non-delegation of authority

Examine the effects of society's dominant political cultures on the behaviour of different actors and agencies in the arms procurement process. Discuss the situation in terms of centralization and non-delegation of authority.

Impediments to change in large-scale national processes

The problems encountered within major national processes, such as the arms procurement process, are often not addressed. This is not because of a lack of innovative ideas and solutions, but rather because of impediments such as intransigence, resistance to change, bureaucratic inertia, extra-organizational factors, personal influences, systems of governance and the seemingly incompatible positions of different interest groups. Compare such impediments and barriers with those evident in the private sector or with practices in more transparent and accountable systems.

Influence of international marketing and the media

Examine the influence of marketing organizations and the international media on the determination of operational needs and of threat assessments on procurement decisions. To what extent are arms procurement requirements driven by long-term threat assessment or influenced by new information or organizational priorities?

Influence of management in arms procurement decision making

Why do certain organizations have a greater role and influence in arms procurement decision making than others? How have they achieved this influence? Provide examples of organizations expanding their influence in arms procurement decision making.

Sociology of national decision-making behaviour

This topic includes the attitudes, strengths and limitations in developing sub-optimal analyses in decision-making structures. It should be addressed by a senior sociologist or a management consultant.

Effects of sociological traits on decision-making behaviour

Discuss the effects of sociological traits, characteristics and culture-based codes on bureaucratic, military and political decision-making behaviour.

Effects of factional identities on decision-making politics

Examine the effects of small-group dynamics and factional identities on decision-making politics. Discuss the characteristics of the prevailing bargaining paradigm.

Cultural factors influencing élite behaviour

Discuss the cultural factors influencing the behaviour of the decision-making élite and the dominant psychological predisposition sustaining the inner circles of power. Consider the effects of transparency, public accountability and democratization or bureaucratization on such factors.

Management of dissent

Examine the effects of dissent and its management in the decision-making process.

Influence of different groups and interests

How is influence and power gained or lost in the decision-making process? Examine the levels of influence of different groups and interests.

Annexe B. Abstracts*

SUN ZHIAN, 'China's national defence industry: general situation and problems', SIPRI Arms Procurement Decision Making Project, Working Paper no. 1 (1995), 18 pp.

China's defence industry is in a state of transformation. The increased openness of the Chinese economy and a shift in strategic thinking have contributed to changes in military industrial capability and the refocusing of defence production to serve both the national defence and the national economy. Reform measures include the adoption of a contract-based system emphasizing risk-taking on the part of increasingly independent and self-reliant enterprises.

KU GUISHENG and ZHAN WEI, 'National defence policy and arms procurement budget', SIPRI Arms Procurement Decision Making Project, Working Paper no. 2 (1995), 24 pp.

Chinese national defence policy and arms procurement decision making are headed by the Central Military Commission of the Chinese Communist Party and the Central Military Commission of the People's Republic of China. National military and economic development strategies and the international strategic situation, reflected in the complex process of threat assessment, are major factors influencing arms procurement and budgeting. The import of the means of production and technological know-how—both to upgrade existing systems and to develop new weapons and equipment—is a major component of China's efforts to modernize its defence production.

KU GUISHENG, 'National defence budgeting procedure and price reforms of military products', SIPRI Arms Procurement Decision Making Project, Working Paper no. 3 (1996), 20 pp.

The process of reform and increased openness have brought about considerable changes in China's procedures for national defence budgeting and setting of prices for weapons and equipment. Gradual increases in China's defence budget in the early and mid-1990s attracted great attention from military strategists and security specialists around the world, underscoring the importance of transparency to an understanding of the process.

YAN XUETONG, 'China's security and military transparency', SIPRI Arms Procurement Decision Making Project, Working Paper no. 4 (1996), 13 pp.

Changes in the post-cold war security environment have involved increasing demands for greater military transparency in China. Although direct military threats have disappeared, the international separatist trend of the post-cold war period, as exemplified by the breakup of the Soviet Union and the threat of the breakup of otherwise stable federations, is of great concern to the Chinese leadership. China's integration into the world economy and the increased emphasis on transparency in military affairs contribute to the creation of a peaceful environment for national economic development, which is a top priority for Chinese national security.

* This annexe presents abstracts of the 60 working papers on which the chapters of this book are based. It was prepared by SIPRI Research Assistant Eva Hagström.

CHAI BENLIANG, 'Development and reform issues of China's defence, science, technology and industry', SIPRI Arms Procurement Decision Making Project, Working Paper no. 5 (1995), 18 pp.

The near-term objective of Chinese defence research and development (R&D) is to develop the necessary weapons and equipment so as to increase the quality and quantity of China's military capacity. The long-term objective is to conduct basic and applied research and to monitor developments. By a strategy of self-reliance combined with external assistance as required, it is hoped that defence R&D will contribute to the development of the national economy and of science and technology in general.

FAN WEI, 'Arms procurement and national development in the People's Republic of China', SIPRI Arms Procurement Decision Making Project, Working Paper no. 6 (1995), 23 pp.

Chinese policy makers consider economic progress to be the foundation of national power and the best guarantee for the country's security. Chinese arms procurement policies emphasize the import and assimilation of advanced technology into its weak technical base, and production supported by domestic defence R&D and the defence establishment in order to achieve greater self-sufficiency.

LING RUYONG, 'Procurement auditing of weapon systems', SIPRI Arms Procurement Decision Making Project, Working Paper no. 7 (1995), 15 pp.

Faced with a limited defence budget and resources, China's defence planners have come to understand the importance of improving arms procurement procedures and have implemented a series of reforms. Current procurement auditing practices aim to monitor the process through regular checks as to whether desired tactical–technical performance levels have been attained and the assigned budgets have been met.

LUO FENGBIAO, 'Development of defence science, technology and industries in China', SIPRI Arms Procurement Decision Making Project, Working paper no. 8 (1995), 22 pp.

China's fundamental policy of defence industrial self-reliance does not mean that it has closed its door to outside assistance or cooperation when required. Decisions to import weapons and technologies involve a number of agencies before the proposals are submitted to the highest political level for approval. The factors considered include the availability of domestic production facilities, technical capacity, the supply of materials, the required level of technical performance, overall quality, sources of supply and training.

CHADHA, K. D., 'National security and arms acquisition: the Indian scene', SIPRI Arms Procurement Decision Making Project, Working Paper no. 9 (1995), 25 pp.

Despite a traditional lack of political interest in national security structures in India, there is a functional system of checks and balances on defence policy making. This has constrained military profligacy and kept India out of harm's way. Through its military affiliation with the former Soviet Union, India has been able to maintain a competitive military capability at moderate cost.

KALRA, D. V., 'Building national arms industrial capabilities', SIPRI Arms Procurement Decision Making Project, Working Paper no. 10 (1996), 13 pp.

India's relatively dated ordnance factories and a highly dynamic but untapped civilian sector cannot presently match the technological levels achieved elsewhere in the region. Reactive responses to the induction of high-technology weapon systems sometimes make import the only viable solution. A greater infusion of funds into defence R&D, a clearly defined action plan and increased involvement of the private sector could provide the route to much-desired modernization and self-reliance.

NAYAR, K. P., 'Élite motivation and domestic considerations in arms procurement decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 11 (1996), 15 pp.

Despite two major arms scandals in India—the cases with Bofors and Howaldtswerke Deutsche Werft (HDW)—there has been no change in the procedures for or organizational structure of arms procurement. Disquiet exists among the armed forces since no major arms purchases have been made in recent years. At the same time, threat perceptions, stability and the integrity of India are of major concern to the public. The interest in processes and procedures is thus outweighed by a desire to see a strong India in the 21st century.

JAFA, V. S., 'The arms procurement budget planning process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 12 (1995), 15 pp.

Appropriate budget allocations for defence are necessary to ensure modernization and adequate preparedness in India. At the same time, competing demands on national resources from the social sector need to be considered. Defence expenditure can become more efficient by examining the need for existing equipment, establishments and procedures. Manpower costs and other mandatory expenditure need to be reviewed and resources used in new ways to maximize productivity and effectiveness.

SEN, S. K., 'Decision making on India's defence technology and industrial base: implications of changes for R&D policies and prospects', SIPRI Arms Procurement Decision Making Project, Working Paper no. 13 (1995), 16 pp.

Despite India's organizational disabilities, the future of the country's defence industrialization looks promising in the post-liberalization economic era. Whether the passage of the Indian defence technology and industrial base from the present state to a more developed level will be smooth will largely depend on the quality of decision making by the political leadership.

SINGH, J., 'Legislative oversight in arms procurement decision-making processes', SIPRI Arms Procurement Decision Making Project, Working Paper no. 14 (1995), 27 pp.

There is a lack of legislative and public control over the arms procurement process in India. Legislative control is exercised by the Consultative Committee and the Standing Committee on Defence, whose influence is limited to examination of the defence budget. The committees lack the authority to demand to see documents, hear witnesses or obtain expert reports and the Indian Parliament has hitherto never appointed a defence commission. The Official Secrets Act also weakens transparency and public accountability in arms procurement decision making.

AHUJA, G. S., 'Defence industrial, technological and economic bases', SIPRI Arms Procurement Decision Making Project, Working Paper no. 15 (1995), 22 pp.

The defence industrial base in India primarily consists of the state-owned ordnance factories. The private-sector industry plays a supportive role, supplying components and raw materials. India is seeking to reverse the high proportion of imports to indigenous production and the private-sector industry is increasingly demanding a larger share of defence production. The current resource limitation and inflationary pressures could thus lead to a diversion of defence production from the ordnance factories to the private sector.

JHA, P. S., 'India's arms procurement system: secrecy versus accountability', SIPRI Arms Procurement Decision Making Project, Working Paper no. 16 (1996), 14 pp.

Since the start of its cooperation with the Soviet Union India has insisted on technology transfers in order to develop a defence production base. The strong influence of the Department of Defence Production and the Defence R&D Organisation (DRDO) in arms procurement decision making has caused friction with the armed services, who consider imported weapons to be more suited to their operational requirements. Increased outside and parliamentary control over the decision-making process could lead to greater efficiency and fewer misjudgements.

PANINI, M. N. and KUMAR, V. R., 'Sociology of strategic decision making on national security issues', SIPRI Arms Procurement Decision Making Project, Working Paper no. 17 (1996), 13 pp.

Although the Indian Parliament has decision-making authority, the Prime Minister's Office has become the supreme actor in strategic decision making through the dominance of charismatic leaders and a centralization of power. Personal relationships are of considerable importance in the decision-making process. However, recent developments have worked against the culture of relationship orientation and the centralization of power and increasing demands for transparency are being made.

KUMARAN, P. K., 'Auditing in Indian arms procurement decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 18 (1995), 30 pp.

It is difficult to assess cost-effectiveness in arms procurement in India since information on procurement and life-cycle costs for particular weapon programmes is not open to audit or parliamentary control. However, the independent statutory audit authority has access both to the annual defence budget and to evaluations of domestic and international weapon systems. Increased control and access to information should be given to the statutory audit authority but not to members of parliament, since this would only be misused in the domestic political battle.

CHARI, P. R., 'India's weapons acquisition decision-making processes and Indo-Soviet military cooperation', SIPRI Arms Procurement Decision Making Project, Working Paper no. 19 (1995), 18 pp.

Despite the extensive military cooperation arrangements between the Soviet Union/Russia and India, India is still free to shift its procurement sources at will between Eastern and Western arms manufacturers. Although there are serious difficulties with this relationship, especially with regard to finances, cooperation with Russia is likely to continue in the future since it is based on mutual interests.

SERGOUNIN, A. A. and SUBBOTIN, S. V., 'Indo-Russian military cooperation: the Russian perspective', SIPRI Arms Procurement Decision Making Project, Working Paper no. 20 (1995), 19 pp.

After the collapse of the USSR, Indo-Russian military ties were jeopardized by the decline of Russian arms production and down-sizing of the defence industry, and by the lack of a clear and stable Russian foreign policy towards South Asia. However, today the reassessment of its strategic and economic interests with regard to India and its need for hard currency to support the defence industry are the driving forces of Russia's arms sales policy.

MERON, M., 'Threat perceptions in Israel's strategic environment and their impact on the decision process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 21 (1995), 16 pp.

A strategic and military doctrine of quick and decisive operations has been adopted by the Israel Defense Forces (IDF) to avoid long and protracted wars. The IDF's equipment has been adapted accordingly, with an emphasis on armoured and mobile ground forces, an air force with a high quality of fighter aircraft, and missile boats in the navy. In the past, Israel aimed to become independent of equipment that was difficult to procure elsewhere. Its present arms procurement policy is economy-oriented, owing to the opening of markets.

ORTASSE, M., 'The Israeli defence industry and export', SIPRI Arms Procurement Decision Making Project, Working Paper no. 22 (1995), 9 pp.

Israeli state-owned defence companies are making losses. Increasing globalization requires that the government replace its support to the domestic defence industry and focus on infrastructure and support to adaptation of domestic industrial capabilities to global market forces.

PINKAS, A., 'Domestic considerations, élite motivations, the bureaucracy and the political culture of arms acquisitions in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 23 (1995), 23 pp.

Security is arguably the most prominent concern of the Israeli political culture. The public rarely question the basic tenets of the defence belief system and consider that decisions on security matters are best made by the military authorities. This has created a closed arms procurement decision-making process, which only involves the Israel Defense Forces, the Ministry of Defense and the defence industry, and excludes outside actors such as the cabinet, the Knesset Committee on Foreign Affairs and Security, the media and academia.

STEINBERG, G., 'The influence of foreign policy and international agreements on arms procurement decision making in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 24 (1995), 14 pp.

Secrecy was a major factor in Israeli efforts to procure weapons and technology between the late 1940s and the mid-1960s, and this has created a negative view of transparency with respect to arms transfers. In addition, Israel has, in the past, been able to use arms sales to gain freedom for Jews in various countries, including Ethiopia. However, recent political changes have led to increased public discussion and interest in global and regional arms limitation and transparency.

SHARAN, Y. and NAAMAN, D., 'Technology assessment and methods in procurement procedures', SIPRI Arms Procurement Decision Making Project, Working Paper no. 25 (1995), 18 pp.

Israel's unique security and military circumstances have necessitated a streamlining of the arms procurement decision-making process. Technology assessment is an essential parameter at all stages of evaluation, from threat analysis to the decision to prioritize technology investment to respond to a specific threat. Special attention has been given to methods which encompass the interdisciplinary input of many specialists in a short time-frame, such as Delphi surveys, decision tree analysis and brainstorming workshops.

TROPP, Z., 'Economic aspects in military procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 26 (1995), 8 pp.

Several factors influence the economic aspects of arms procurement in Israel, such as national priorities, resource allocation, high levels of uncertainty and the question what kind of conflict to be prepared for. These considerations affect not only the defence budget but also the structure of the military forces. Optimum utilization of the defence budget requires analyses of cost-effectiveness and a comparison of alternatives. A major problem of arms procurement decision making is the inherent lack of public accountability.

BONEN, Z., 'The Israeli defence industry', SIPRI Arms Procurement Decision Making Project, Working Paper no. 27 (1994), 9 pp.

The competitiveness of the Israeli defence industry depends mainly on its ability to offer high-performance and high-quality equipment which is adapted to the customers' requirements. This ability is jeopardized by the reduction of R&D budgets since the early 1980s, which has led to a bias towards shorter-term projects and to a decline of long-term R&D and core competencies. The present situation calls for a coordinated government policy to advance long-term strategic research and national technological infrastructure to the benefit of all users—civilian and military, academia and industry.

BEGIN, Z. B., 'Parliamentary supervision of military procurement in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 28 (1995), 6 pp.

Owing to the complexities of the Israeli security environment, strict confidentiality is preferred in the parliamentary supervision of military activities in lieu of an open or partly open public debate. Within the Knesset Committee on Foreign Affairs and Security, a Subcommittee on Defense Policy and Israeli Defense Forces Build-up has been established, providing a forum for discussion on arms procurement. Although the subcommittee does not allocate funds, approve arms procurement or engage in public discussion, its most efficient instrument is its prestige.

PEDATZUR, R. and WEISBLUM, C., 'The decision-making process and public awareness', SIPRI Arms Procurement Decision Making Project, Working Paper no. 29 (1995), 13 pp.

Given its unique security situation, it is crucial that Israel acquires the right weapon systems. This calls for a well-formulated decision-making process. However, an analysis of specific arms acquisition cases, such as the Lavi project, the IMI-designed 120-mm artillery piece and the Dotan affair, indicates the absence of a rational policy-making process. Especially evident is the unprecedented autonomy of the defence establishment on issues of national security and the absence of effective control over their actions.

LIFSHITZ, Y., 'Budgeting for defence and development of the domestic military industrial base', SIPRI Arms Procurement Decision Making Project, Working Paper no. 30 (1995), 20 pp.

Since the late 1960s, the defence industry in Israel has grown rapidly. At the macro-economic level, it has been instrumental in accelerating high-technology and science-based economic growth. At the techno-economic level, scientific and technical skills that have matured within the military sector have positively affected developments in other industries, in most cases indirectly through skilled personnel leaving for the civilian sector.

YA'ARI, A., 'The role of the auditor in the purchase, production and development of arms', SIPRI Arms Procurement Decision Making Project, Working Paper no. 31 (1995), 17 pp.

In recent years, the scope of auditing has expanded to include the Israeli arms procurement decision-making process. Auditing has a particularly important role to play in the various stages of basic and specific R&D. Recent developments in auditing include its increasing use parallel to implementation of specific stages of arms procurement, the employment of trained professionals in evaluation and the review of specific issues to ensure that failures have been corrected.

HALPERIN, D., 'The impact of American military aid on decision making in Israel', SIPRI Arms Procurement Decision Making Project, Working Paper no. 32 (1995), 8 pp.

The $1.8 billion military assistance that Israel receives annually from the US Government has been a dominant factor in Israeli arms procurement decision making. The availability of $475 million out of this sum to the Israeli defence industry has enabled the government to make long-term procurement decisions. The decision to cancel the Lavi project was only taken once it was clear to the government that there would be no loss incurred to the defence industry and that the Lavi money would be made available to other projects.

SHIKATA, T., 'Threat assessment in the Japanese arms procurement process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 33 (1995), 7 pp.

The Japanese defence budget is unrelated to threat assessment owing to two factors: the Japan–US security treaty, which stipulates that Japan can rely on US military assistance in the case of large-scale aggression, and the decision that the defence budget should not exceed 1 per cent of GNP. Japan has mostly procured US weapon systems and only prioritizes domestic production in the case of weapons which need to be adapted to local conditions.

OSHIMA, N., 'Defence production in Japan', SIPRI Arms Procurement Decision Making Project, Working Paper no. 34 (1995), 9 pp.

The basic policy of the Japan Defense Agency's Equipment Bureau is to produce arms domestically in the case of equipment exclusively used in Japan or when the necessary technology for development and production is available in Japan. Decisions on how to procure—through domestic production or import—are based on life-cycle costs (i.e., a calculation of all costs from production to operation, maintenance and decommissioning) and on a comprehensive assessment of factors such as cost–benefit and operational requirements.

TAOKA, S., 'Domestic considerations and élite motivation in arms procurement decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 35 (1995), 13 pp.

The process of drafting the five-year Mid-Term Defense Programs, as part of which the major arms procurement decisions are made, includes intense negotiations between officers and civilian bureaucrats. The media follow this process through the Japan Defense Agency (JDA) press club which gives its members the right to interview JDA officials at any time. However, this does not ensure openness in the media since the press club is somewhat of a 'closed society' and members often come to share the views of the officials.

MATSUMOTO, M. and IWASHIMA, H., 'Arms procurement budget planning process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 36 (1995), 4 pp.

The Japanese Mid-Term Defense Program defines the type and quantity of equipment deemed necessary for procurement for a five-year period. The figures for procurement costs and quantity are then based on the Annual Working Plan and the Annual Defence Plan, which are concluded in negotiations with the Ministry of Finance and approved by the Diet. The Board of Audit carries out a strict and fixed annual audit of the defence procurement budget, pointing out illegal or irrational expenditures.

SUZUKI, T., 'Defence R&D in Japan', SIPRI Arms Procurement Decision Making Project, Working Paper no. 37 (1995), 6 pp.

In Japan, most defence-related research is conducted within the civilian sector. Defence R&D is constrained by the small scale of production, owing to the country's banning of arms exports. Consequently, technological spin-ons from civilian research to defence technology are more common than spin-offs from defence research to the civilian sector. Despite the importance afforded to long-term basic R&D, the current budgeting system is based on single fiscal-year allocations, making long-term R&D planning difficult.

HAMADA, Y., 'Building public competence and accountability in the national security arena', SIPRI Arms Procurement Decision Making Project, Working Paper no. 38 (1996), 8 pp.

Several of the key actors in the Japanese national security arena need to rethink their roles if they are to build public competence and accountability: the government needs to disclose the necessary information in order to enable the public to understand the security situation correctly; the media and academia must seek to promote a public debate on security issues; and politicians have to start a constructive and frank debate in the Diet, leaving futile ideological confrontation behind.

KAMATA, S., 'Defence procurement in Japan', SIPRI Arms Procurement Decision Making Project, Working Paper no. 39 (1995), 15 pp.

The interaction between the Japan Defense Agency (JDA), the Self-Defense Forces, the Ministry of Finance and the defence industry in the arms procurement decision-making process has resulted in balanced procurement. In a similar way, the checks and balances within the JDA, and between the Bureau of Finance, each Chief of Staff of the SDF and the Central Procurement Office, have avoided concentration of competence and ensured balance in carrying out procurement tasks.

IKEGAMI-ANDERSSON, M., 'Sociology of national decision-making behaviour in Japan', SIPRI Arms Procurement Decision Making Project, Working Paper no. 40 (1995), 16 pp.

Certain sociological traits undermine public accountability in defence-related decision making in Japan. Senior bureaucrats tend to take the autonomy of security decision making for granted and monopolize information. Collectivism and factionalism make their decisions conservative and less responsive to new and changing situations. The low profile of the Japan Defense Agency also means that defence-related decision making is open to the influence of external actors.

MIN YONG LEE, 'Security policies, defence planning and military capability', SIPRI Arms Procurement Decision Making Project, Working Paper no. 41 (1995), 25 pp.

Public support for force build-up programmes has been strong in South Korea, but competing demands have also been made in the interests of social welfare and economic development. The budget for force improvement has faced severe constraints from both internal and external sources. However, the Ministry of National Defense is willing to develop projects for force improvement on a mid-term basis in order to confront perceived military threats from North Korea.

BYUNG ROK SONG, 'Arms procurement decision making in selected countries: building a national defence industrial base', SIPRI Arms Procurement Decision Making Project, Working Paper no. 42 (1995),17 pp.

The policy guidelines established by the South Korean Ministry of National Defense in 1993 state that domestic models of weapon systems are to be developed, even if they are more expensive and of lower quality than imported systems. However, the South Korean defence industry faces serious managerial difficulties because of saturation of the domestic market, the under-utilization of defence production capacities and the rapid decline in defence exports. Furthermore, the government has gradually withdrawn subsidies from defence contractors.

SEOK SOO LEE, 'The domestic dynamics of the decision-making process for arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 43 (1995), 21 pp.

Under the military dictatorships, South Korea's arms procurement process was largely dominated by a small group of power holders. Military security was a top priority and was justified by an overestimation of the threat posed by North Korea. The recent democratization will not lead to immediate reforms in security management since the conservative ideology is deep-rooted, threats continue to be posed by North Korea and civilian control over the military has not been achieved.

TAE WOO KIM, 'The impact of US arms export control on South Korea's arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 44 (1995), 14 pp.

South Korea's defence industry is endangered by a shortage of capital, the small size of the domestic market, the lack of government strategy and US control over arms exports to third countries. In the 1990s the USA has recognized South Korea as a competitor and has restricted the transfer of military technologies. This challenges South Korea's long-term arms procurement policies. With regard to future cooperation, it is important for both countries to understand each other's national interests.

SUNG BUM HONG, 'Procedures for technology assessment and the selection of equipment in South Korea', SIPRI Arms Procurement Decision Making Project, Working Paper no. 45 (1995), 9 pp.

The Defense Acquisition Agency in the Ministry of National Defense decides the methods for arms procurement in South Korea. These include domestic R&D and production, technology licensing and imports. In the case of domestic R&D, technology assessment is carried out at each R&D stage. In the case of technology licensing or imports, the Weapon Systems Examination Committee decides the method of tests, which are then carried out by the armed forces and the Agency for Defense Development.

MYUNG KIL KANG, 'The budget planning process in arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 46 (1995), 15 pp.

South Korea's arms procurement is based on a planning system comprising five closely interrelated phases: planning, programming, budgeting, execution and evaluation. This system takes between one and five years to complete and enables a review of defence projects but obstructs prompt responses to urgent requirements because of its long time-frame. Offset policies prioritize the acquisition of advanced critical technologies and are linked to R&D policies.

CHIN SOO BAE, 'Transparency in South Korea's arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 47 (1995), 13 pp.

In the past, the low level of transparency and public accountability in South Korea's arms procurement process resulted in delays, performance dilution and cost overruns. However, the process has become increasingly transparent since the special inspection of the Yulgok Plan (the long-term force improvement plan) in 1993. The degree of transparency in arms procurement should increase gradually, for example by revealing non-classified projects to the public, until North and South Korea's military capabilities are equal.

CHUL WHAN KIM, 'The perspectives and changes of national defence research and development policies', SIPRI Arms Procurement Decision Making Project, Working Paper no. 48 (1995), 25 pp.

The modernization of South Korea's defence aims to boost R&D through two approaches. First, defence research capabilities should be enhanced in the form of industry–university–laboratory cooperation. Basic research at the universities should be encouraged in order to upgrade key technologies and to support the defence industry with highly trained staff. Second, technological cooperation with other countries should be increased for co-development of weapon systems.

NOH SOON CHANG, 'The role of the National Assembly in the process of arms procurement', SIPRI Arms Procurement Decision Making Project, Working Paper no. 49 (1995), 13 pp.

The South Korean National Assembly is responsible for budgeting and auditing in arms procurement. Faced with the threat from communist North Korea, South Korean leaders have, until recently, preferred to maintain a high level of secrecy in military affairs. Under military–authoritarian rule the Ministry of National Defense was not adequately monitored owing to the National Assembly's lack of information and a lack of staff with security specializations. However, the situation has improved slightly with the end of the military regimes.

JIN W. MOK, 'The organizational structures and characteristics of the South Korean weapon procurement process', SIPRI Arms Procurement Decision Making Project, Working Paper no. 50 (1995), 14 pp.

The force improvement plan (the Yulgok Plan), initiated by the late President Park in 1974, has only had limited success owing to the difficulty of coordinating procurement plans with long-term strategic considerations; ignorance of procedural rules; significant role conflicts between civilian and military agencies; dispersed and overlapping project responsibilities; excessive secrecy; and the more than necessary involvement of the president.

YONG SUP HAN, 'South Korea's defence industrial base', SIPRI Arms Procurement Decision Making Project, Working Paper no. 51 (1995), 11 pp.

South Korea's defence industrial base underwent significant changes during the early 1990s. In 1991–92, it shrank drastically owing to the government policy of increased imports of advanced weapons from abroad. In 1993, the government significantly revised its defence industrial policy and it is now promoting a modernization of defence technology and aiming to diversify its acquisition sources.

JIN HWOAN HWANG, 'The dilemma of supplier control and recipient autonomy in arms transfers: a case study on the US–Korean arms transfers relationship', SIPRI Arms Procurement Decision Making Project, Working Paper no. 53 (1995), 16 pp.

Changes in the nature of its relationship with the USA have increased South Korea's vulnerability to US control. Arms transfers from the USA to South Korea are granted on the condition that South Korea acquiesces to US foreign policy objectives and abandons the development of certain weapon systems. The USA has also restricted the export of Korean weapons made with US technical assistance. South Korea has sought to counter this vulnerability, with limited success.

SUPALUCK, S., 'Force planning', SIPRI Arms Procurement Decision Making Project, Working Paper no. 54 (1995), 7 pp.

The Thai defence strategy is drawn up by a group of high-ranking officers and the general staff of the three armed services. It is then sent to the Ministry of Defence Auditorium, composed of the top military élite, for consideration and is finally approved by the cabinet. The National Assembly has no influence over the process. The armed services' policy of total defence is to maintain an adequate level of deterrence by establishing a multi-dimensional land–sea–air capability.

SURASAK, B., 'National arms procurement policies/decision-making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 55 (1995), 4 pp.

For the past two decades considerable effort has been made to establish a defence industry to support the Thai armed forces' policy of self-reliance. However, this has not been successful owing to the uncertainty of the government's joint venture policies and a lack of effective management of defence R&D. Thailand has only succeeded in building capacities for small arms and other light equipment, which are insufficient for the armed forces' needs in terms of quantity and quality.

SURASAK, B., 'Arms procurement decision making', SIPRI Arms Procurement Decision Making Project, Working Paper no. 56 (1995), 7 pp.

The Thai arms procurement process is coordinated within the three armed services with a horizontal flow of information to avoid inter-organizational conflicts. The most serious questioning of the military's proposals comes from the parliamentary Committee on Public Accounts and from the media. The military are facing increasing difficulties in persuading the parliament to approve their procurement proposals.

CHAIWAT, S-A., 'Defence budgeting', SIPRI Arms Procurement Decision Making Project, Working Paper no. 57 (1995), 33 pp.

The Thai defence budget is prepared by the Bureau of the Budget and needs the approval of the parliament. If the House of Representatives does not accept the bill, the government must resign or the House be dissolved. If the bill is accepted, parliamentary debates follow. In practice, not many MPs express opinions on the budget and those who do are careful not to criticize the military.

CHUMPHOL, S., 'Perspectives on national security, military security and military capability', SIPRI Arms Procurement Decision Making Project, Working Paper no. 58 (1995), 8 pp.

Public insight into arms procurement and defence budgeting in Thailand is still limited. The bureaucracy has a stronger influence than the House of Representatives and the political parties, who rarely question the military's budget proposals. With steady economic growth and increasing international trade Thailand is increasingly aiming to achieve greater regional cooperation, confidence-building and stability.

SUNTAREE, K., 'National decision-making behaviour in Thailand', SIPRI Arms Procurement Decision Making Project, Working Paper no. 59 (1995), 38 pp.

While real-life decision making rarely follows the rational textbook model, national culture complicates it even further. The decision-making behaviour of the Thai bureaucratic élite is affected by the Thai value-system and its behavioural patterns, in which personal relationships dominate over principles and systems.

PANITAN, W., 'US–Thailand arms transfers dependence', SIPRI Arms Procurement Decision Making Project, Working Paper no. 60 (1995), 13 pp.

As a result of external threats in the early years of the cold war, Thailand sought security commitments from and became dependent on the USA as a primary source of weaponry. Since the late 1970s Thailand has sought to counter this arms dependence by import substitution and by diversifying its sources of imports.

Annexe C. About the contributors

China

Chai Benliang (China) is Senior Analyst at the China Defence Science and Technology Information Centre, Beijing. He conducts research on weapon systems acquisition, defence R&D and defence industries and is Deputy Chief Editor of *China High and New Technology Enterprise Assessment*. His recent publications include two research reports sponsored by the China Natural Science Foundation: [Large-scale engineering project management] (1993, in Chinese) and [Technological changes and productivity] (1993, in Chinese). He has also contributed to the government White Paper on disarmament and arms control (1996).

Fan Wei (China) has a Ph.D. from the Peace and Development Research Institute at Gothenburg University, Sweden. He previously served as Instructor at the Air Force College of Engineering in China.

Ku Guisheng (China) is Professor of Economics at the National Defence University of the People's Liberation Army, Beijing. His recent publications include [China's defence construction] (1993, in Chinese) and [National economic mobilization] (1995, in Chinese).

Ling Ruyong (China) is Senior Engineer at the Marine Systems Engineering Research Institute at the China State Shipbuilding Corporation, Beijing. He is co-author of [Handbook of management sciences] (1994, in Chinese) and [Ship lifetime costs analysis and ship survivability] (forthcoming, in Chinese) and a member of the editorial committee of the [Dictionary of ship-borne weapons and electronic technologies] (1993, in Chinese).

Luo Fengbiao (China) was Senior Engineer at the Research and Development Department of the China State Shipbuilding Corporation, Beijing, in 1976–93. He previously served as Chief Engineer of the Turbine and Boiler Research Institute of the China Ship Research and Development Academy.

Sun Zhian (China) is Director of the Policy Study Division at the General Staff Weapon and Equipment Integrated Analysis Institute of the People's Liberation Army, Beijing, studying weapon- and equipment-developing policies and participating in plan and programme preparation work.

Yan Xuetong (China) is Director of the Centre for Foreign Policy Studies at the China Institute of Contemporary International Relations in Beijing and Adjunct Professor at the Institute of International Relations at Beijing University. He is Commentator of *Outlook Weekly* and author of [Analysis of China's national interest] (in Chinese, 1995).

India

Gurdev Singh Ahuja (India), Brigadier, is a technical and defence adviser to industrial enterprises and national and international associations. He formerly served in the Corps of Electrical and Mechanical Engineers and in the Department of Defence Production where he was Chairman of the Technical Committee of Combat Vehicles. He is author of *Doing Business with Defence* (1992) and 'Transfer of technologies from Indian small and medium enterprises' in *India: An Economic Overview* (1992).

Kapil Dev Chadha (India), Air Marshal, has served in the Indian Air Force and retired as Chief of the Eastern Air Command. He was also an instructor at the National Defence College, New Delhi, and at the Defence Services Staff College, Wellington. He is author of 'Air power in the Indian context', *Trishul*, no. 1 (1993).

Padmanabha Ranganath Chari (India) is Visiting Fellow at the Centre for the Study of Developing Societies and Co-director of the Institute for Peace and Conflict Studies, New Delhi. He formerly served as Additional Secretary in the Ministry of Defence and as Director of the Institute for Defence Studies and Analysis, New Delhi. He is author of *Indo-Pak Nuclear Stand-off: The Role of the United States* (1995), and co-author of *Brasstacks and Beyond: Perception and Management of Crisis* (1995) and *Nuclear Non-Proliferation in India and Pakistan: South Asian Perspectives* (1996).

Virendra Singh Jafa (India) was formerly Secretary of Defence Finance in the Ministry of Defence. He has also served as Chairman of the Bureau of Industrial Costs and Prices, as Adviser in Public Administration in the West Indies under the United Nations Development Programme and as Chairman of the Finance Commission of the Union Territories.

Prem Shankar Jha (India), an economist, is Economic Editor of *The Hindu*. He formerly served as Press and Information Adviser in the Prime Minister's Office.

Dharam Vir Kalra (India), Lieutenant-General, is a consultant in logistics and material management. He formerly served as Director-General Ordnance Services and Major-General Operational Logistics at one of the Indian military Command Headquarters. He is author of 'Logistics: the lifeline of the army', *Indian Defence Review*, no. 4 (1993) and 'Ammunition logistics: in search of identity', *Indian Defence Review*, no. 1 (1994).

Veena Ravi Kumar (India) is Head of the Department of Political Science at Lady Sriram College, New Delhi. She is author of *Indian Foreign Policy: Nuclear Politics* (forthcoming).

Pulipra Kuttickat Kumaran (India) was formerly Director-General of the Defence Estates in the Ministry of Defence. He has dealt with administration of real estate, human resource development in the Indian Army and Air Force, procurement of weapons and equipment for the Indian Air Force, production planning and corporate restructuring of the Ordnance Factories.

Krishnan Parameswaran Nayar (India) is Diplomatic Editor of *The Telegraph*, New Delhi. He previously held the same position at the *Business Standard*, the *Economic Times* and the *Indian Express*, all in New Delhi, and has been a Visiting Fellow at Queen Elizabeth House, Oxford.

M. N. Panini (India) is a sociologist and Professor at the Centre for the Study of Social Systems at the Jawaharlal Nehru University, New Delhi.

Samir K. Sen (India), Air Vice-Marshal, was formerly the Director of India's Terminal Ballistics Research Laboratory. He is now visiting lecturer and analyst of international security and technology issues. While serving in the Indian Air Force and the Department of Defence R&D of the Ministry of Defence, he was involved in the formulation of weapon and equipment plans and in the management of weapon development and acquisition programmes of the armed forces. He has published extensively in journals in India and the USA.

Alexander A. Sergounin (Russia) is Professor of Political Science at the University of Nizhniy Novgorod, Russia. He is author and co-author (with Sergey Subbotin) of two chapters in the SIPRI volume *Russia and the Arms Trade* (1998) and of 'Indo-Russian military cooperation: Russian perspectives', *Asian Profile* (Feb. 1996).

Jaswant Singh (India) is a member of the Indian Parliament representing the Bharatiya Janata Party (BJP) and serves as Deputy Chairman of the National Planning Commission. He formerly served as Minister of Finance and has been chairman of several prestigious committees of the Indian Parliament. He is author of *National Security: An Outline of our Concerns* (1996) and *Defending India* (forthcoming, 1998).

Ravinder Pal Singh (India) is Leader of the SIPRI Arms Procurement Decision Making Project. He was formerly a Senior Fellow at the Institute for Defence Studies and Analysis, New Delhi, where he worked on issues relating to technology export controls and conventional arms transfers. As a Ford Fellow at the University of Maryland, he examined US foreign policy processes in developing the MTCR. His most recent publications include a chapter on accountability in arms procurement policies in *Developing Arms Transparency: The Future of the United Nations Register* (1997) and a chapter in the UNIDIR publication *The Transfer of Sensitive Technologies and the Future of Control Regimes* (1997).

Sergey V. Subbotin (Russia) is Assistant Professor of Political Science at the University of Nizhniy Novgorod, Russia. He is co-author (with Alexander Sergounin) of a chapter in the SIPRI volume *Russia and the Arms Trade* (1998) and of 'Indo-Russian military cooperation: Russian perspectives', *Asian Profile* (Feb. 1996).

Israel

Ze'ev B. Begin (Israel) has been a Member of the Israeli Parliament (Knesset) since 1988. He is a member of the Knesset Foreign Affairs and Defense Committee and has formerly served as Minister of Science and Technology and as Chairman of the Knesset Subcommittee for National Security Policy.

Zeev Bonen (Israel) was formerly President of Rafael, the armament development authority of the Israeli Ministry of Defense. He has taken part in the development of weapons and has published several reports on weapon development and the evolution of battlefield systems. He is now Senior Associate at the Begin–Sadat (BESA) Center for Strategic Studies at Bar-Ilan University.

Dan Halperin (Israel) was, when he retired from government service, Minister of Economic Affairs at the Embassy of Israel, Washington, DC. He was previously a government official in the Ministry of Finance and Deputy Director-General of the Treasury for International Affairs. He is now managing director of a consulting firm dealing with international trade and investment.

Yaacov Lifshitz (Israel) is presently Chairman of the Board of the arms manufacturing company Ta'as (formerly IMI). He formerly served as Director-General in the Ministry of Finance and as Economic Adviser in the Ministry of Defense. He has held several senior managerial assignments in the private industrial and financial sectors, and lectured for several years on defence economics at the Ben-Gurion University.

Menachem M. Meron (Israel), Major-General, was formerly Director-General in the Ministry of Defense where he dealt with supervision of the defence industry, defence R&D and arms procurement. He has also served in the Israeli Defense Forces and as Defense and Armed Forces Attaché at the Embassy of Israel, Washington, DC. He is now general manager of a consulting firm dealing with international trade and investment.

Dan Naaman (Israel) was formerly a researcher at the Interdisciplinary Centre for Technological Analysis and Forecasting at Tel-Aviv University working on defence matters, national infrastructures and economics. He has also served in the Israeli Defense Forces as Lieutenant-Colonel. Presently he is a consultant to the Israeli Ministry of Defense.

Moshe Ortasse (Israel) was formerly Vice-President of Israel Aircraft Industries, General Manager of the Electronics Group and Chairman of the Association of Electronics Industries.

Reuven Pedatzur (Israel) is Director of the Galili Center for Strategy and National Security. He has also worked as a journalist, specializing in defence and security issues. His publications include *Rearming Israel: Defence Procurement through the 1990s*, with co-author Aharon Klieman (1991), 'Coming back full circle: the Palestinian option in 1967', *Middle East Journal,* no. 2 (1995) and *The Triumph of Embarrassment: Israel and the Territories, 1967–1969* (1996).

Alon Pinkas (Israel) is Foreign Policy Adviser to the Chairman of the Labour Party, Ehud Barak. He formerly served as Policy Adviser to the Minister for Foreign Affairs, Shimon Perez, and has been a journalist at the *Jerusalem Post* and *Davar*, specializing in defence and security issues.

Yair Sharan (Israel), a physicist, is Deputy Director and Senior Researcher at the Interdisciplinary Center for Technological Analysis and Forecasting at Tel-Aviv University. He is Colonel (in reserve) of the Israeli Defense Forces and has served in the Research and Development Division of the Ministry of Defense, specializing in technology assessment and systems analysis.

Gerald M. Steinberg (Israel) is Professor of Political Studies at Bar-Ilan University, where he heads the Middle East Arms Control and Proliferation Project of the BESA Center for Strategic Studies. He also participates in the 'Track Two' multilateral discussions on Arms Control and Regional Security and in the Mediterranean Seminars of the OSCE. He has previously been a Research Fellow at the United States Institute for Peace. He has published an analysis of the relations between the Middle East peace process and NPT extension in *Non-Proliferation Review* (fall 1996) and is currently completing a study of the dual-use aspects of commercial imaging satellites.

Zvi Tropp (Israel) is Vice-President of Finance and Business Development at a private company in Israel. He formerly served as Chief Economic Adviser at the Ministry of Defense.

Aviezer Ya'ari (Israel) is Deputy Director-General and Head of the Defense and Security Department at the State Comptroller's Office. He is Major-General (in reserve) in the Israeli Defense Forces.

Japan

Yasukazu Hamada (Japan) is a Member of Parliament, representing the Liberal Democratic Party in the House of Representatives. He is Director of the Standing Committee on Security, the Standing Committee on Audit, and the Special Committee on Okinawa and Northern Problems in the House of Representatives.

Masako Ikegami-Andersson (Japan) is a researcher at the Center for Pacific Asia Studies at Stockholm University and at the Department of Peace and Conflict Research at Uppsala University, both in Sweden. She conducts research on regional security in Asia–Pacific and on US–Japanese cooperation in military R&D. She is author of *The Military–Industrial Complex: The Cases of Sweden and Japan* (1992) and 'Japan: a latent but large supplier of dual-use technology', in H. Wulf (ed.), *Arms Industry Limited* (1993) as well as publications in Japanese on various security issues.

Hisao Iwashima (Japan) was formerly Director of War History Research at the National Institute of Defense Research at the Japan Defense Agency. He is now Vice-President of Allen International Jr. College and conducts research on regional security and arms control issues in Asia–Pacific.

Shinichi Kamata (Japan) is Professor of Organizational Behaviour and Management at the School of Social Sciences at the National Defense Academy. He has been a visiting scholar at Stanford University.

Munekazu Matsumoto (Japan) is Director-General of the Japan Defense Facilities Administration Agency at the Japan Defence Agency. He was formerly responsible for defence procurement as Director of the Central Procurement Office.

Naohiko Oshima (Japan) is a Research Associate at the Japan Federation of Economic Organizations (Keidanren) and a member of the Defense Production Committee. He formerly served as Director of the Fuchu Detachment of the Central Procurement Office, Tokyo district.

Toshiyuki Shikata (Japan), Lieutenant-General, is Professor at the Department of International Studies at Teikyo University. He formerly served in the armed forces and was, when he retired, Commanding General of the Northern Army Corps.

Teruo Suzuki (Japan) is Chairman of the Defense Technology Foundation. He has formerly served as Vice-President of Marine United Inc., Tokyo, and as Director-General of the Technical R&D Institute at the Japan Defense Agency. He holds a seat in the Board of Directors of the Defense Research Center.

Shunji Taoka (Japan) is Senior Staff Writer of Military Affairs for *Asahi Shimbun*. He is co-author (with Richard Fieldhouse) of the SIPRI volume *Superpowers at Sea: An Assessment of the Naval Arms Race* (1989).

South Korea

Chin Soo Bae (South Korea) is Senior Research Fellow at the Korea Institute for Military Studies, Seoul. His research focus is on international disputes, crises, war and analysis of North–South Korean military events. His recent publications include [Measuring hostility on the Korean peninsula: event–data analysis] (1996, in Korean) and [A scenario of the Tok-to Island territorial dispute between Korea and Japan] (1997, in Korean).

Noh Soon Chang (South Korea) is Senior Analyst at the Korean Overseas Information Service at the Ministry of Information working on the termination of international crises, the bargaining strategy of North and South Korea and alliance theory. He is author of [South Korea's foreign security policy: theory and practice], *Journal of Korean Political and Diplomatic History* (1996, in Korean).

Jong Chul Choi (South Korea) is Professor of Military and Security Studies at the Korea National Defense University, Seoul. He was formerly a member of the Committee for Promotion of Internationalization at the Office of the Prime Minister and a member of the Group of Advisers at the Ministry of National Defense. He is co-author of [The Republic of Korea's national defence towards the 21st Century] (1995, in Korean) and [International relations theory and the Korean Peninsula in a transitional period] (1996, in Korean), and author of [The ROK–US–Japanese triangular security cooperation system: yesterday, today and tomorrow] (1997, in Korean).

Yong Sup Han (South Korea) is Professor of Defense Policy at the Korea National Defense University, Seoul. He formerly served as Director of International Arms Control at the South Korean Arms Control Office and as Special Assistant to the Minister of National Defense. He has also been a Senior Visiting Fellow at the United Nations Institute for Disarmament Research and is the author of *Nuclear Disarmament and Nuclear Non-Proliferation in Northeast Asia* (1995) and [North Korea's nuclear policy decision-making process 1991–1995] (forthcoming, in Korean).

Sung Bum Hong (South Korea) is Senior Research Fellow at the Science and Technology Policy Institute (STEPI), Seoul. His recent publications include [Effective system building for dual-use technology development] (1993, in Korean) and [Effective technology acquisition strategy with participation in defence conversion programmes and a focus on the Russian and Chinese programmes] (1994, in Korean).

Jin Hwoan Hwang (South Korea) is Associate Professor of International Relations at the Korea Military Academy, Seoul. He formerly served as a member of the Nuclear Crisis Management Team at the Ministry of National Defense. His current research is on international arms transfers, arms control and the defence industry of North Korea. He is co-author of [Today's Korean defence] (1994, in Korean), [A study of North Korea] (1996, in Korean) and [Korean defence policy and arms control in the 21st century] (forthcoming, in Korean).

Myung Kil Kang (South Korea) is Senior Researcher and Chief of the Defense Economics Research Group at the Korea Institute for Defense Analyses (KIDA), Seoul. His current research focus is on the defence industry, defence R&D policy, defence budget analyses and the defence procurement system and he has published widely on these issues.

Chul Whan Kim (South Korea) is Professor of Defense Science at the Korea National Defense University, Seoul. He also serves as consultant to the Joint Chief of Staff and the Ministry of National Defense and he is Chairman of the Korea Institute of CALS/EC (Commerce At the Light Speed/Electronic Commerce). He has published widely in the areas of engineering, science and technology as well as weapon system acquisition and defence R&D.

Tae Woo Kim (South Korea) is Senior Research Fellow at the Research Institute of Peace Studies, Seoul. He formerly served as the lead researcher of the Nuclear Study Group and as Director of Research Co-operation at KIDA, Seoul. He is author of [Why not a South Korean nuclear bomb?] (1994, in Korean) and co-editor of *Dealing with the North Korean Nuclear Problem* (1995).

Min Yong Lee (South Korea) is Associate Professor of International Relations at the Korea Military Academy, Seoul. He has formerly been a member of the research committees of defence projects at the Ministry of National Defense. His recent publications include [The common security of the Korean peninsula] (1993, in Korean), [Today's Korean defence] (1994, in Korean) and [A study of North Korea] (1995, in Korean).

Seok Soo Lee (South Korea) is Professor of International Relations at the Korea National Defense University, Seoul. He has formerly served as Senior Research Fellow at the Kim Dae Jung Peace Foundation, Seoul, and as Research Fellow at KIDA, Seoul. He is author of *Building a Multilateral Security Regime in Northeast Asia: Theory and Practice* (forthcoming) and 'The post-cold war security agenda of Korea: inertia, new thinking and assessment', *Pacific Review*, vol. 8, no. 1 (1995).

Jin W. Mok (South Korea) is Associate Professor of Public Administration at Kookmin University, Seoul.

Byung Rok Song (South Korea) is Research Professor in Political Science at Kyung Hee University, Seoul. He formerly served as a lecturer at the Korea Military Academy, Seoul. He is author of [Military reign in South Korea: a contribution to the debate on the role of the military in the third world in a development-theoretical context] (1992, in German), [Civil–military relations in Korea] (1995, in Korean) and [Cooperation methods for the Asian community: national security and military affairs] (1996, in Korean).

Thailand

Chaiwat Satha-Anand (Thailand) is Associate Professor in Political Science and Director of the Peace Information Centre, Foundation for Democracy and Development Studies at Thammasat University, Bangkok. His most recent publications include [Non-violence and Islam] (1997, in Italian) and, as co-editor, *The Frontiers of Non-violence* (1998).

Chumphol Sirinavin (Thailand), Captain of the Royal Thai Navy, is Deputy Director-General of the Naval Research and Development Office, Bangkok. He has previously served as Deputy Director-General of the Naval Strategic Studies Centre at the Institute of Advanced Naval Studies, Nakorn Pathom.

Panitan Wattanayagorn (Thailand) is a Researcher at the Department of International Relations and was formerly Director of the Defence Studies Programme at the Institute of Security and International Studies (ISIS), Chulalongkorn University, Bangkok. He is presently on leave from the university to work as an adviser to the Minister of Defence. He has published extensively on arms production and arms transfers in South-East Asia, including as co-author of a chapter in the SIPRI volume *Arms, Transparency and Security in South-East Asia* (1997) and as author of a chapter in *Asian Security Practice: Material and Ideational Influences* (1998).

Suntaree Komin (Thailand) is Associate Professor at the School of Administrative Technology at the National Institute of Development Administration (NIDA), Bangkok. She is a social and cross-cultural psychologist and a member of two research committees at the National Research Council of Thailand. She has published extensively on Thai social and cultural values and behavioural systems.

Supaluck Suvarnajata (Thailand), Colonel, serves at the Military Academy of the Royal Thai Army, Nakorn-Nayok.

Surasak Banjukeaw (Thailand), Colonel, is Deputy Chief of the Research and Development Division at the Strategic Research Institute of the National Defence Studies Institute, Bangkok.

Index