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JAPANESE DEFENCE INDUSTRIALIZATION

by

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Introduction

Outside of the domestic political arena, where it has been a topic of policy debate since the early 1950s, the rebirth and possible expansion of Japan's defence-related, or arms-production, capabilities in the country's industrial base has become an issue of increasing interest only during the past decade.[1] Particularly in the United States, this new interest in the subject of Japanese defence industrialisation results as much from concerns over its potential economic impact on American industry as from analyses of its meaning for the postwar security relationship, or for Japanese defence policy in its own right.

First, the Japanese 'economic miracle' and the relative economic decline of the United States have led both Congress and successive U.S. Administrations, rightly or wrongly, to focus on the massive and persistent annual trade deficits incurred with Japan.[2] In turn, their macroeconomic policy disputes have spilled over into the realm of U.S.-Japanese defence 'trade', production and technology-transfer agreements. On the U.S. side this has been reflected in the increasing involvement of the Department of Commerce in negotiations over bilateral defence production Memoranda of Understanding (MOUs), traditionally left in the hands of the Defense Department, and in the vocal and effective criticisms of such agreements by Congress. The discussion below of the controversy which surrounded the FSX MOU amply illustrates this spillover.[3]

The second reason for the attention now being paid to Japanese defence industrial capabilities straddles both economic and defence policy issues. Since the early 1980s, the Department of Defense (DOD) and Congress have recognized the many problems facing their 'ailing defence industrial base', and the need to consider the implications of a growing military dependence on foreign critical technologies. Even prior to the Gulf War the latter subject was becoming widely debated, and the brief but intense campaign against Iraq highlighted again the importance of Japanese (and other states' technologies for a number of major DOD weapon systems.[4] This dependence could grow further if dual-use technologies or commercial quality control standards and products are adopted in order to reduce procurement costs for the U.S. military in an era of diminishing defence budgets.

Finally, another effect of declining U.S. defence budgets in the wake of the ending of the Cold War has been a careful re-evaluation of America's overseas military commitments, and renewed demands for more equal burden-sharing by its allies. In the case of the U.S.-Japan security relationship, this has emerged as a call for the latter to do more to monitor and control its sea lines of communication (SLOCs), and to review its potential role in future regional peacekeeping initiatives. Whatever the outcome of these requests, the debate over future Japanese defence policy will necessarily raise the question of how to supply, equip, and support a possibly more active and independent defence force.[5]

Against the background of this heightened interest, our chapter begins by offering an historical review of the Japanese postwar renaissance of defence-related research, development and production capabilities, as well as procurement plans, up to the mid-1980s. Following this review, we discuss the current structure, composition, and main products of the industry supplier base, and the key industry groups or government agencies that play a role in shaping Japanese defence industrialisation. A subsequent section will touch on Japan's research, development, and production strategy (or strategies) in the aerospace industry--including airframe and parts, engines and avionics--through an examination of the key contemporary aircraft program, the next generation close support fighter, the FSX.

An underlying issue informing our analysis, and one that makes our topic both interesting and difficult, is this: in any conventional understanding of the term, there is no Japanese 'defence industrial base', nor can Japan properly be said to have an 'arms industry'. Japanese companies involved in defence work lack at least three of the principal characteristics generally associated with Western (or 'Soviet') defence industries. Specifically, they lack a significant dependence on:

1) the production of arms or other related products;

2) large government-financed or -supported R&D programmes as the primary incentive for their involvement in defence production; and

3) the export of arms (to increase economies of scale and thus reduce costs).[6]

The final section of our chapter addresses itself briefly to the future prospects for Japanese defence industrialisation. Here, we raise the question of whether the pressures on both the defence-related industries and the Japanese government are likely to lead to the adoption of those activities or policies more closely associated with a 'Western' defence industrial base, or whether the reverse is likelier: namely, that dual-use technologies and commercial standards lead other countries' defence industries to emulate what we might call a 'Japanese model'.

The Growth of Defence Production and Procurement in Japan

The production of arms or related equipment within Japan had been prohibited by the Allied occupation authorities in September 1945, but by 1947 American weapons already were being shipped to Japan for repair and overhaul as General Douglas MacArthur made use of the skilled, cheap labour force available in that country. The re-emergence of defence production in Japan, however, received its first significant boost when the outbreak of the Korean War in 1950 led the U.S. Military Supply Agency in Japan to begin letting out contracts for the production of ammunition, firearms, vehicles, and other supplies to Japanese companies. Between 1952 and 1957 it spent approximately ¥52 billion on these contracts, while the Japan Defence Agency (formed in July 1954 from the Security Agency and Police Reserve) spent an additional ¥1.6 billion on domestic production. By 1957, the Defence Agency had some 38 private companies on its books capable of producing weapons and ammunition.[7]

During this same period the legal basis for the production of military equipment in Japan also was established, with the Law for the Production of Weapons (1 August 1953) and most importantly the Japan-U.S. Mutual Defence Assistance Agreement (MDAA) of March 1954. The MDAA set out terms for exchanges of 'equipment, materials, services, or other assistance' and included reference to American financial and technical support 'of Japan's defence-production industries'.[8] From this agreement Japanese coproduction of weapons systems developed in the US became a key component in the growth of domestic defence industrial capabilities. One scholar, Reinhard Drifte, estimates that over the next 30 years Japan obtained some $10 billion worth of advanced defence-related technology from the United States under the terms of the MDAA.[9]

In July 1954, four months after the MDAA's signing, the Defence Agency Establishment Law and the Self-Defence Forces Law created the Defence Agency and the Ground, Maritime, and Air components of Japan's defence forces. The creation of the National Defence Council in 1956 and the adoption of the Basic Policy for National Defence in May 1957 completed the construction of Japan's national security structure. With this structure in place, the Defence Agency announced in June 1957 what was to prove to be the first of four plans to build up the military.[10]

The first plan, implemented in FY 1958, had a total budget of ¥6.5 billion; its successors in July 1961 and February 1966 grew to ¥13.7 billion and ¥23.5 billion, respectively, although the actual force goals set in these plans were never attained. In each of these first three initiatives, the force- and equipment-improvement goals were quantitative in nature, and it was not until the fourth plan in October 1972 that qualitative improvements were set as a key objective, mainly for the Maritime Self-Defence Forces. However, despite a total defence expenditure double that approved for the previous plan, the unexpected international oil crises and rapidly rising inflation severely curtailed the possible impact of this new plan, which again failed to meet its procurement goals.

The difficulties consistently encountered by these defence plans in attempting to fix detailed defence expenditures over several years led the National Defence Council and the cabinet in 1976 to adopt a new approach. The National Defence Programme Outline (NDPO) specified no fixed date for the achievement of its force goals for the Self-Defence Force (SDF).[11] Instead the NDPO, which has continued to form the basic national defence policy of Japan throughout the 1980s up to the present, is complemented with more specific procurement schedules through successive Mid-Term Defence Programme Estimates, better known by the Japanese abbreviation of Chugyo.

The first of these procurement schedules, 56 Chugyo, was established in mid-1979 and ran from 1980 to 1987. Each Chugyo is a five-year plan, though it is reviewed annually and redrawn every three years. Defence equipment scheduled to be procured under the 56 Chugyo was estimated to total approximately ¥4.5 trillion in 1982 prices (about $18 billion), from total defence-related expenditures of some ¥16 trillion (roughly $63 to $64 billion). As with the earlier expansion initiatives, the goals of 53 and 56 Chugyos were not met 'because a Chugyo is not binding on the compilation of the annual defence budget and political conditions made it impossible to make sufficient budgetary allocations'.[12]

Clearly, then, Japanese industrialisation and equipment procurement plans throughout this period from 1950 to 1985 (when the evident shortfalls in 56 Chugyo led the National Defence Council and cabinet to establish new objectives in 59 Chugyo for the latter half of the decade) repeatedly failed to achieve the goals endorsed in any of the various defence plans. Formal and, of equal or perhaps even of greater importance, informal constraints acted to curtail procurement schedules, and to circumscribe the associated potential development of a more 'typical' defence industrial base. Before we describe the current structure and chief characteristics of the defence industry, it might be well to consider the nature and scope of these domestic constraints on defence industrialisation in Japan.

Historical Constraints on Japanese Defence Industrialisation

Probably the most widely known formal constraint placed upon the expansion of Japan's military forces--and hence upon its supporting industrial capabilities--has been Article 9 of the 1947 Constitution, the so-called 'no-war' clause. Although frequently quoted it is worth repeating here, since the pacifist sentiments it reflects remain predominant in contemporary Japanese views on defence and security policies:

> Aspiring 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 a means of settling international 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.

The continuing strength of these pacifist sentiments was at least one major reason why, in 1991, Prime Minister Toshiki Kaifu had such difficulty in persuading the Japanese Diet to permit the deployment of peacekeeping forces to the Persian Gulf following Operation Desert Storm. In fact, the Diet gave Kaifu permission only to send minesweeping vessels, which were to be used in a limited capacity.[13]

While the no-war clause retains a central place in discussions of the constraints surrounding defence policies and defence industrialisation in Japan, it is important to note that these two paragraphs are the only bona fide constitutional restrictions, and that they do allow for some degree of flexibility. That is, to understand current Japanese defence policies it is essential to analyse Article 9 in light of both domestic public support and the international security climate. Restrictive policies put into place since 1947--or more precisely, since the 1954 laws establishing the SDF and the Japan Defence Agency (JDA)--are chiefly the consequence of cabinet decisions rather than constitutional legislation.[14]

One related policy practice that was adopted during the same period, and which certainly had a major influence in limiting the postwar rearmament of Japan, is perhaps only slightly less well-known than Article 9. During the negotiation of the peace and security treaties with the United States, Japanese Prime Minister Shigeru Yoshida argued strongly that the economic revitalisation of his country should be given priority over efforts at rearmament. The 'Yoshida doctrine' emphasized economic recovery and growth, and reliance on the United States to ensure military security. This strict separation of economics from security continued until the 1980s, though even then the latter was often subsumed within a broader concept of 'comprehensive security', which emphasized the economic dimension.[15]

A third important constraint on the further development of Japan's defence industrial base resulted from the involvement of some of the country's industries in supplying the U.S. forces engaged in Vietnam during the 1960s. Potentially massive contracts from the American Department of Defense--reminiscent of the original impetus given by similar orders during the Korean War--and the cooperative attitude of the government raised public concerns over the possibility of Japan becoming embroiled in the Vietnam conflict. Sensitive to such public opposition, in 1967 Prime Minister Eisaku Sato announced new restrictions on defence-related exports by Japanese manufacturers. Reinforcing the 1949 Export Trade Control Order, the new policy prohibited arms exports to communist countries, to countries involved in international disputes, or to those believed to be on the verge of international disputes. Nine years later, in February 1976, strong public protests against the possibility of sales of the C-1 military transport aircraft to governments in the Middle East and Latin America led Prime Minister Takeo Miki to announce additional constraints on defence equipment sales to all other countries, as well as on the export of defence-related technology.[16]

The prohibition on exports--though subject again to interpretation by the government as well as to 'leakage', or circumvention by industry--means that defence production in Japan faces difficult diseconomies of scale. To some degree this problem is resolved by structuring production facilities in such a way as to integrate commercial and defence-related manufacturing, a topic we discuss in the concluding section. However, it has also led some business groups in Japan, most notably the Defence Production Committee of the Federation of Economic Organisations (Keidanren), to issue well-publicised statements favouring a relaxation of the export restrictions. Trevor Taylor's chapter in this book examines the subject of arms exports in greater detail, but we also offer a few observations in the concluding section of our chapter, which considers the future prospects of Japanese defence industrialisation.

The last major limitation on defence procurement and production is a non-constitutional policy practice that is, nevertheless, deeply ingrained in Japanese politics and in public opinion. Subsequent to the decision to scrap the post-war remilitarisation plans and replace them with the National Defence Programme Outline, Japanese policy makers decided that some quantitative limit should be established to restrain defence spending during periods of slower national economic growth. In keeping with the spirit of the 1947 Constitution and the Yoshida strategy, therefore, in September 1975 an advisory committee under Michita Sakata--then Director

General of the JDA--issued a report recommending that a ceiling of one percent of GNP be set on future defence budgets.[17]

As Table I indicates, the one-percent ceiling had not in practice been exceeded since the mid-1960s. Following the 1975 report and its endorsement by the cabinet, however, it quickly became a political taboo, which remained untouched until Prime Minister Nakasone began pressing to broach the limit in the mid-1980s.

Table I: Defence Expenditures in Japan: selected years, FY 1955-present

Fiscal Year	Defence Budget ¥ billion	General Account %	GNP %
1955	134.9	13.61	1.78
1960	156.9	9.99	1.23
1965	301.4	8.24	1.07
1970	569.5	7.16	0.79
1975	1327.3	6.23	0.84
1976	1512.4	6.22	0.90
1977	1690.6	5.93	0.88
1978	1901.0	5.54	0.90
1979	2094.5	5.43	0.90
1980	2230.2	5.24	0.90
1981	2400.4	5.13	0.91
1982	2586.1	5.21	0.93
1983	2754.2	5.47	0.98
1984	2934.6	5.80	0.991
1985	3137.0	5.98	0.997
1986	3343.5	6.18	0.993
1987	3517.4	n.a.	1.004
1988	3700.3	n.a.	1.013
1989	3919.8	6.50	1.006
1990	4159.3	6.30	0.997

Source: Japan Defence Agency, Defence of Japan 1990 (Tokyo, 1900), p. 291.

While Nakasone finally succeeded in breaking the one-percent ceiling in 1987, the amount involved was negligible and was achieved only in the face of strong political opposition and public debate. By 1990, expenditures again had fallen below one percent. Despite recent pressures from the United States to accept a greater share of the financial and military burden for national and regional security, the end of the Cold War and the subsequent revision of JDA threat assessments and equipment requirements has reinforced support for the expenditure ceiling and even added a downward impetus. The recent announcement of a 3.87 percent increase in the JDA draft budget for FY1992 represents the smallest increase in defence spending for 32 years, and an overall decrease in defence expenditures to 0.941 percent of GNP, the lowest level since 1981.[18]

Structure and Organisation of Japan's Defence Market

Let us now turn to the current structure and composition of the defence industry supplier base in Japan, and to the roles played by industry organizations and the several governmental agencies that together influence the demand-side factors affecting that base. Associated with most if not all analyses of this subject is an ongoing debate over whether there exists in Japan an influential 'military-industrial complex' pressing for ever greater defence expenditures, and (depending on the nationality and predilections of the particular author) whether a 'growing' arms production capability in Japan foreshadows the emergence of a powerful new competitor in the international defence market.[19] This latter debate we deal with in greater detail elsewhere; here, our comments are directed to the question of structure and composition, for we lack both the inclination and space either to confirm or dispel the notion of a Japanese 'military-industrial complex'. It is our supposition, however, that this concept is really not a useful one for taking the measure of either the structure of, or the relationships within, the Japanese defence market.[20]

As a comparison of Tables II and III reveals, the composition of the top 20 Japanese defence contractors has changed considerably between 1950 and the latter part of the 1980s. Only Mitsubishi Heavy Industries, Kawasaki, and Japan Steel Works have survived into the current period, with the other companies amalgamating into larger corporate groupings or else abandoning the defence market altogether.[21]

Table II. The 20 Leading Japanese Defence Contractors (Early 1950s)

Rank	Company	Contracts (in US$)
1	Fuji Automobile	37,159,567
2	Japan Steel Works	18,702,862
3	Mitsubishi Heavy Industries	17,113,784
4	Victor Automobiles	8,237,308
5	Shôwa Aircraft	8,215,245
6	Japan Steel	4,375,289
7	New Mitsubishi Heavy Industry	4,048,524
8	Hino Diesel	3,386,675
9	Kawasaki Shipping Industries	2,946,455
10	Japan Steel Construction	1,638,892
11	Japan Shipbuilding	1,424,319
12	Uraga Docks	1,350,279
13	Tokyo-Yokohama Industry	1,297,644
14	Yamamoto Machine Works	883,907
15	Kawa Minami Works	717,593
16	Kyohama Automobile	662,460
17	Kanewa Docks	547,500
18	Yokohama Shipbuilding	491,853
19	Toyota Auto Sales	463,542
20	Sasebo Shipbuilding	432,483

Source: Tetsuya Kataoka and Ramon H. Myers, Defending an Economic Superpower: Reassessing the U.S.-Japan Security Alliance (Boulder, Colo.: Westview Press, 1989), p. 64.

Table III. The 20 Leading Japanese Defence Contractors

FY 1988 (FY 1983 in parentheses)

Company Ranking FY 1988 (FY 1983 in parentheses)		Number of contracts	Amount (¥b)	Total Defence Contracts (%)
1 (1)	Mitsubishi Heavy Industries, Ltd.	225	364.2	26.1
2 (3)	Kawasaki Heavy Industries, Ltd.	130	150.3	10.8
3 (5)	Mitsubishi Electric Corp.	236	100.8	7.2
4 (6)	Toshiba Corp.	187	83.1	5.9
5 (4)	Ishikawajima-Harima Heavy Industries Co.Ltd.	66	77.4	5.5
6 (2)	NEC Corp.	365	73.6	5.3
7 (7)	Japan Steel Works, Ltd.	46	31.1	2.2
8 (10)	Komatsu, Ltd.	69	23.6	1.7
9 (9)	Fuji Heavy Industries Ltd.	45	22.1	1.6
10 (14)	Fujitsu, Ltd.	203	16.8	1.2
11 (20)	Oki Electric Industry Co., Ltd.	97	16.4	1.2
12 (13)	Hitachi, Ltd.	71	16.2	1.2
13 (-)	Nissan Motor Co.	49	15.1	1.1
14 (15)	Daikin Industries, Ltd.	66	13.2	0.9
15 (-)	Tokyo Keiki Co., Ltd.	65	11.4	0.8
16 (-)	Shimadzu Corp.	85	10.1	0.7
17 (-)	Nihon Kohi, K.K.	80	9.1	0.6
18 (-)	Cosmo Oil Co., Ltd.	271	8.2	0.6
19 (-)	Kokusai Electric Co., Ltd.	169	7.9	0.6
20 (-)	Japan Radio Co., Ltd.	137	7.9	0.6
Total		2,662 (n.a.)	1,058.3 (816.9)	75.7 (73.5)

Sources: Compiled from: Kataoka and Myers, Defending an Economic Superpower, p. 62; and US Congress, Office of Technology Assessment, Arming Our Allies: Cooperation and Competition in Defense Technology, OTA-ISC-449 (Washington, DC: US Government Printing Office, May 1990), p. 105.

Over the last decade, however, membership of the top 20 defence contractors has stabilized, particularly among the leading 10. As Table III shows, nine of the top 10 contractors in 1988 had also been in that group in 1983. For FY 1990, the top four contractors by value in Japan were Mitsubishi

Heavy Industries Ltd. (MHI), which obtained 238 contracts from the JDA worth 440.8 billion yen (US$3.3b); Kawasaki Heavy Industries Ltd. (KHI), with 132 contracts valued at 146.4 billion yen (US$1.08b); Mitsubishi Electric Corp., with 268 orders totalling 100.3 billion yen (US$743.3m); and Ishikawajima-Harima Heavy Industries Co. Ltd., which obtained 70 JDA contracts worth some 78.6 billion yen (US$465.2 million).[22] It has been argued by analysts who find little evidence to support concerns over a 'military-industrial complex' in Japan that this large-scale turnover of defence manufacturers since the 1950s works against the development of powerful lobbying interests. Conversely, it may turn out that the stability in the contractors' ranks over the past decade will lead to a growing voice and increasingly influential role for the country's defence industry.[23]

One enduring characteristic of the Japanese defence market has been that of oligopoly. In FY 1983 the top five contractors obtained 54.1 percent by value of all orders from the JDA. In FY 1988, as Table III illustrates, the top five companies received 55.5 percent of JDA contracts. The top 20 companies together won 73.5 percent and 75.7 percent of all JDA contracts in those same years. More recently, for FY 1990, the top four companies by themselves obtained 48.8 percent of all defence contracts, with MHI alone accounting for almost 30 percent. Such dominance raises doubts regarding the degree of competition taking place during the process of awarding JDA contracts, and it certainly provides grounds for suspicion on the part of analysts worried about increasing ties and coordination between defence manufacturers and procurement or other policy officials in the government agencies.[24]

This concern may be reinforced by the fact that the major companies, especially MHI and KHI but also Ishikawajima-Harima Heavy Industries, are key participants across several of the product sectors. In shipbuilding, for example, Kawasaki Heavy Industries is involved in the production of steam engines and boilers, diesel engines, and (under licence from Rolls Royce) gas turbines. KHI also produces airframes--though this is dominated by MHI--and aircraft engines for military and commercial aircraft. The largest participant, of course, is Mitsubishi Heavy Industries, which builds 75 percent of all Japanese-produced military airframes, and is a major competitor in the shipbuilding and the space and missiles sectors.[25]

The importance of these contractors within the defence market, however, must also be seen within the context of their very limited dependence on defence-related business, and the equally limited impact of defence production either within individual market sectors or as a proportion of total Japanese industrial production and employment. While Mitsubishi Heavy Industries for most of the last decade has received a quarter or more of the total value of all JDA contracts, the proportion of MHI's total business accounted for by defence has been approximately 15 percent. Only six of the top 20 contractors looked to the defence market for more than 10 percent of business, and for the majority of the others the figure was below 5 percent. Such figures are a sharp contrast to those for the major defence contractors in the United States and Europe.[26]

Two sectors of Japanese industry that are dependent either heavily or entirely on defence-related contracts are the weapons and ammunition sector (not surprisingly) and the aircraft industry. For reasons that cannot be reviewed here, previous attempts by successive Japanese governments to develop an internationally competitive commercial aircraft industry have proven unsuccessful, whether by domestic research and development or through collaboration with international partners such as Boeing, Pratt & Whitney, and Rolls Royce. The aircraft industry continues to depend on equipment contracts for the SDF for approximately 80 percent of total industry sales.[27] This level of dependence, however, is not characteristic of Japanese industry, and the remaining sectors are far less reliant on defence-related production. The shipbuilding industry, which is in a condition of general decline, might consider new naval contracts a boon but still looks to defence for only approximately 5 percent of total production. The figure is less than one percent for vehicles, electronics and communications equipment, and other industries (e.g., coal, chemicals, petroleum products, provisions). As a proportion of total Japanese industrial production, defence accounts for about 0.54 percent, having risen from 0.37 percent in 1975.[28]

A final characteristic of the Japanese defence industry frequently identified by a number of commentators, and used to support a variety of arguments, is the high degree of subcontracting occurring on equipment orders from the JDA.[29] The diffusion of work through subcontracting can be as high as 80 percent: while the top 20 contractors obtain almost three-quarters of all JDA contracts by value, the Defence Agency has well over 2,000 qualified companies registered with its Central Procurement Office. As many as 800 of these firms, or more, can be involved in the production of most defence-related equipment.[30] In the context of the debate over a military-industrial complex, such subcontracting could be argued to demonstrate that a burgeoning galaxy of firms is gaining a stake in supporting defence production and hence in new procurement orders.

Alternatively, it also could be used to support the argument that the diffusion of business in such a manner undermines, or at least greatly reduces, the prospect of oligopoly leading to government-industry collusion.[31]

Defence Procurement and Production: Major Policy Actors

In keeping with the arrangements of the 1947 Constitution and the Yoshida doctrine, the role of the JDA in the process of defence procurement planning--consistent with the position of defence policy itself within the broader scheme of Japanese security policy--is highly circumscribed, and tightly regulated.

> The Japan Defence Agency (JDA) occupies a secondary station in the overall security bureaucracy. It is not a major cabinet position, but rather a secondary state agency. Officials on detail from the Ministries of Foreign Affairs (MOFA), Finance (MOF) and International Trade and Industry (MITI) are involved in key decisions in policy planning and procurement.[32]

In the formulation of its procurement plans, the JDA must constantly keep in mind how its policy preferences will enhance (or detract from) its status and bargaining leverage vis-à-vis other elements of the bureaucracy.[33] The result of such bureaucratic politics for the formulation and implementation of procurement and production plans--and thus for the defence industry, which fulfils procurement requirements--is discussed in general terms below, and is illustrated more specifically in the case study that follows this section.[34]

The details of the procurement planning process within the JDA itself have been amply discussed elsewhere, and need not be repeated.[35] Of the three internal JDA bureaus that review original procurement requests from the staff offices of the GSDF, ASDF, and MSDF, the Bureau of Equipment is of most direct relevance to our analysis here, since it is through this bureau that MITI--even at such an early point in the planning process--begins to impress its perspective and interests on the JDA.

The Bureau of Equipment is responsible for input concerning the possible industrial impact of any procurement plans under review, and it must then recommend the method of procurement to be undertaken. Should it be off-the-shelf imports, licenced production, co-development or domestic production (or, at times, a mixture of several of these approaches)? MITI's presence is felt in the person of the Director General of the bureau, who traditionally has served as Director of MITI's Aircraft and Ordnance Division before being seconded to the JDA. This previous post also directly involves MITI in JDA procurement on the basis of the 1952 Law for Enterprises Manufacturing Aircraft and the 1953 Law for Manufacturing Weapons and Munitions. Through these, MITI controls the production of 'all aircraft and parts, weapons, and munitions in order to control defence procurement'.[36]

MITI's influence on the formulation as well as the implementation of defence procurement plans and production decisions is likely to continue to increase if the trend towards growing use of dual-use technologies in military systems persists. So far, the emphasis on new electronics packages to upgrade existing platforms, rather than the production of entirely new platforms or weapons systems in most states' defence budgets, suggests that this trend will not be reversed.[37] The appearance of major Japanese electronics companies such as Toshiba in the top 20 ranks of defence contractors also supports this claim (see Table III).

As was indicated earlier, MITI is not the only bureaucratic actor with its finger in the defence procurement pie. The Ministry of Finance, as is the norm with its counterparts in North America and Europe, casts a critical eye over all JDA equipment or other budget requests, and considers them in the light of overall government budget priorities and outlays. In the context of Japanese defence-related expenditures, however, the MOF's budgetary priorities are set against the history of tight constraints on both the growth and the absolute level of defence spending, imposed by the spirit of the 1947 Constitution, the Yoshida doctrine, and the continuing public support for at least very close approximation to, if not complete observation of, the one-percent GNP ceiling. As one report states, 'while concern with a specific GNP/defence spending ratio is not a major fixation at the ministry, restraining total defence spending is still an article of faith at MOF'.[38]

The remaining bureaucratic actor with interests and influence in defence policies, including procurement, is the Ministry of Foreign Affairs. MOFA is the principal government ministry for establishing security policy in its broadest context, with the general guidelines and priorities of the JDA being set by it. More concretely, however, MOFA can also influence the nature of defence industrialisation through the negotiation of, for example, bilateral technology transfer agreements. The 1983 exchange of notes with the United States on technology transfer (to allow the export of military technologies to the U.S.) was negotiated by MOFA, and has been linked clearly by analysts to the Ministry's broader economic and trade policy interests. The agreement was followed three years later by another, establishing more detailed regulations pertaining to transfers of military technology.[39]

The degree to which the JDA's authority is circumscribed or even superceded in formulating defence procurement plans, and in implementing such plans through specific production policies and contract awards, is such that it renders the notion of a compact and influential military-industrial complex problematic. The ability to press one's case with JDA officials may mean less than one's reading of MITI, MOF, and MOFA interests. Even then, students familiar with the 'bureaucratic politics' model of decision making also will recall the uncertainty of outcome from that process.[40] Against the popular misconception of 'Japan, Inc.' is the reality that the Japanese government and its several main defence-related bureaucratic actors are by no means a cohesive group, even concerning the comparatively narrow questions of defence procurement and production policies. Before pursuing this last point, however, we should briefly like to examine the role played by the other elements of the so-called military-industrial complex--that is, the industry organizations and major corporations involved in defence production.

As one might expect, there are a number of industry organizations representing the interests of particular sectors, the major groups being the Japan Ordnance Association, the Society of Japanese Aerospace Companies, and the Japanese Shipbuilding Industry Association. The members of these groups include older defence-related companies such as MHI and KHI, more recently involved and growing companies such as Toshiba, and producers of purely commercial consumer goods such as Honda and Sony. The principal representative body for defence producers, however, is the Defence Production Committee, founded in August 1951 and now part of the Keidanren (Federation of Economic Organizations).[41]

The Keidanren is consulted by the JDA at an early stage in the latter's formulation of equipment procurement plans, and thus has access to the decision making process by which it can inject the views and interests of its members. Drifte draws our attention to the DPC's complaints in 1985 concerning the absence of a coherent Japanese arms industry policy, as well as to the tangled and sometimes contradictory administrative requirements regarding defence production. Several other analysts have also remarked upon industry efforts to persuade the government to relax its prohibition on arms exports.[42]

Thus far, the lobbying efforts of the DPC and other industry organizations appear to have a not-inconsiderable influence on the details of particular procurement decisions and contracts, but only a very limited effect on the more politically sensitive issues of arms exports or the lifting of the one-percent of GNP defence-expenditure ceiling. On these issues, the industries themselves are divided, and are especially concerned not to cultivate a poor public image, since the bulk of their business is in non-defence areas.[43]

One point on which there does appear to be consensus among governmental organizations and defence industries--although this is hardly either surprising or unique to Japan--is that procurement and production policies should emphasise the use of domestic sources as much as possible. Even before July 1970, when then-Director General of the JDA Yasuhiro Nakasone announced his 'Five Principles' for the development and production of defence equipment, a preference for domestic production was as evident in Japan as it was in the United States or other NATO countries.[44] Discussing the heated controversy surrounding the choice of procurement methods for the next-generation Japanese fighter aircraft, the FSX, one report from the US Office of Technology Assessment noted that although there existed different views between MITI, MOF, MOFA and the JDA, and even within the internal bureaus of MITI and the JDA, regarding domestic development versus licenced production, the arguments were part of a broader trend:

> There can be no doubt that policy divisions have existed in the past and will continue in the future. However, the long-term trend is toward autonomy at this point and represents a continuum throughout the postwar period.[45]

To complete the main body of our discussion of Japanese defence industrialisation, we now turn our attention to a more specific examination of Japanese research, development and production strategies, and present a short case-study of the controversial and widely reported FSX programme.

The New Fighter Aircraft and Japanese-American Relations

As we noted in our introductory section, Japanese defence-industrial base issues have been attracting more attention outside of Japan in recent years. In part, this has stemmed from a concern about a potential resurgence of Japanese militarism--a concern we have tended to minimize in our chapter. A more significant reason for the upturn in interest in the Japanese defence industrial base is to be found in the arena of international trade, especially in the bilateral trading relationship with the United States. There have been two particularly problematical categories in this regard, each of which can be illustrated by the case study of this section: the FSX procurement controversy.

The first of these categories inheres in the state of the annual deficit run by the United States, currently some $40 billion, in its trade with Japan.[46] Theories abound as to why Japanese-American trade should be so imbalanced, and it is not our purpose here to enter into an explanatory quagmire that has already engendered such a profusion of bitter mutual recriminations, especially since President Bush's Asian visit in early 1992, which one writer has labelled 'The Trip from Hell'.[47] Whatever may be responsible, for instance, for the declining competitiveness of the American automotive sector, there can be no disputing that US defence industry turns out a decidedly 'competitive' range of combat aircraft.

Thus was occasioned, in the Washington of the mid-1980s, some astonishment and no little bitterness, when the Japanese began to intimate that in replacing their soon-to-be obsolete F-1 fighters (the first Japanese-built supersonic warplanes) they might opt for domestic sourcing, instead of off-the-shelf procurement from the US, or at least a co-production/codevelopment project with the Americans. Anger in Washington was hardly limited to Congressional precincts. Indeed, the Pentagon and the Reagan White House, each reasonably disposed both to Japan and to free trade, were by 1987 lobbying the Japanese to drop whatever plans they might have to develop autonomously the FSX (Fighter Support Experimental). It is not hard to understand the Pentagon's position. To begin with, there was a concern, on 'burden-sharing' grounds, about Japan's doing what so many other US allies had done: opting for costly domestic procurement of systems that could be acquired more cheaply from the US. This was seen to have a potentially injurious impact on US and allied security, because it would further aggravate 'interoperability' problems at the same time as it reduced the real purchasing power of constrained allied defence budgets.

The Pentagon and White House also worried, understandably, about the longer-term potential of Japan developing an arms industry that might, at some future date, be in a position to compete with American companies in both the domestic Japanese market and in third-country markets, should

Tokyo liberalise its policy on arms exporting. A similar concern had triggered the Pentagon's opposition, at roughly this same time, to an Israeli plan to construct a domestic fighter, the Lavi. Since Israel would likely be forced to seek export markets for the Lavi to make it less of a financial burden, American economic interests would be, it was assumed, doubly hurt: US manufacturers would lose sales in Israel itself, and they would find themselves facing competition elsewhere from the Lavi. The Lavi eventually died, in no small measure (but not entirely) a casualty of American opposition to it.[48]

Making the FSX even more of a source of friction than the Lavi were two other contextual factors, specific to the Japanese-American relationship. The first of these, of course, was the bilateral trade imbalance, by 1985 running at about $50 billion a year in Japan's favour. To many Americans, in and out of Congress, it would have simply defied logic were the Japanese to opt for protected and inefficient domestic production of a combat aircraft at a time when they were making such inroads into the US market for civilian products.

Complicating the efforts of Mitsubishi Heavy Industries, the leading proponent and main potential beneficiary of the indigenous-production option, was the eruption of a public scandal involving the leakage of sensitive Japanese (and Norwegian) technology to the Soviet Union. In early 1981, Toshiba Machine, a subsidiary of Toshiba Corporation, struck a deal that contravened both COCOM regulations and Japan's own export-control laws. It agreed to supply Moscow with four multi-axis milling machines that would enable Soviet shipyards to turn out quieter propellers for submarines, thereby making them more difficult to detect by the West's acoustical anti-submarine warfare (ASW) systems. Although the first milling machine would arrive in Leningrad late in 1982, it would take several years for the details of the transaction to surface.[49]

The Norwegian state-owned (!) enterprise, Kongsberg Vaapenfabrikk, also had a part in the drama, illegally supplying the numerical computers needed to guide the milling machines. But it was almost exclusively the Japanese who attracted Americans' ire, so much so that the incident is nearly always referred to as the 'Toshiba Affair'. When details of the leakage became public in the US in the spring of 1987, they were followed by a series of sanctions and recriminations against the Japanese. The administration was hardly pleased, but the mood in Congress was truly ugly, and produced perhaps the most well-publicised instance of 'Japan bashing' ever to occur in postwar America, when nine members of the House of Representatives took a sledgehammer to a Toshiba radio-cassette recorder on the Capitol lawn, in full view of the US and international media.

The Toshiba affair alone did not make the FSX domestic-option impossible; by 1987, too many other considerations were involved, leading decision makers in Tokyo to agree to some kind of joint development and production with American interests. But the Toshiba affair did render, or so it seemed at the time, the coup de grace to MHI's hopes of profitting handsomely from the F-1 replacement contract--a point illustrated by Prime Minister Nakasone's apt remark in an August 1987 television interview that 'we should place the highest priority on stabilized security ties with the United States when we think about the Toshiba case and the next fighters'.[50]

The second problematical category, also related to trade, is the politics of technology transfer in sophisticated weaponry. If the FSX case is a good one for the study of tension between military allies who carry on an unfortunately imbalanced trading relationship, it is no less useful for probing the implications of the growing US dependence upon imported 'dual-use' technology (i.e., know-how at least partly intended or suitable for military applications). Once it was decided that domestic production of the FSX would be inconvenient if not impossible, Tokyo and Washington hammered out a Memorandum of Understanding (MOU) establishing the terms for codeveloping what would be an upgraded version of the General Dynamics F-16. The November 1988 MOU called for each country to make available to the other, under a 1983 bilateral sharing accord, certain technologies.

The US was expected to supply computerised-control technology, as well as some (the amount was disputed) sensitive technology related to the FSX's engines; for their part, the Japanese were to transfer their know-how on composite-wing manufacturing, as well as the technology they were developing on active phased-array radar. Although critics in Japan, especially at MHI, worried about being 'forced' to surrender valuable information about building wings from composite materials, it was really in the US where opponents of the technology-transfer provisions had the greatest impact. The US critics believed the FSX project would only exacerbate the hemorrhaging of US technical and military skills and secrets, further exposing the country to the twinned dangers of economic underdevelopment and import vulnerability in time of war or national emergency.

Although American foes of the FSX accord (who preferred simply that Japan buy the F-16 or some other advanced craft off-the-shelf) did differ as to their motivation, for our purposes here the most relevant charge they made was that the White House, first under Ronald Reagan, then under George Bush, had continued to demonstrate an agonizing inattentiveness to the security implications of trade. Acting without appreciating the extent to which economics and defence were interrelated, the White House had, to the critics, blindly sacrificed US techno-economic interests for the presumed sake of enhanced security and alliance harmony. In effect, charged the critics, the US would find it had safeguarded neither its security nor its economic interests in permitting--to some, encouraging--the further deterioration of the country's defence industrial base.[51]

Thus for US 'techno-nationalists', the real dilemma symbolised by the FSX arrangement was that it did nothing to halt the erosion of the capabilities on which America's economic and physical security were based. Quite apart from the cost to the economy, the critics stressed, was the potential impact on US defence autonomy in an era in which more and more of the sophisticated components of its high-tech weaponry were being sourced from abroad. Who could know whether in some future crisis Americans might find themselves constrained by the decision of a foreign supplier to say 'no' to US demands for untrammeled access to desperately needed inputs for weapons manufacturing?

The 'Japan Model' of Defence Industrialisation

As our discussion of the growing significance of dual-use technologies indicates, much of the debate over whether there exists a politically powerful military-industrial complex in Japan misses a fundamental point. It is certainly helpful to begin by recognizing, as does Reinhard Drifte, that Japanese producers lack a number of key characteristics of a defence industrial base or 'arms industry' as understood in Europe or North

America. But one must then take the next logical analytical step, and instead of asking, as do many commentators, whether Japan is developing such a defence industrial base, we should ask if there might not be apparent an alternative path of defence industrialisation, one that we might label the 'Japan model'? Support for such a notion can be taken from similar arguments to be found in the broader literature on international relations, where Japanese post-war economic growth is said to demonstrate the 'rise of the trading state', or the development of the 'new civilian powers'.[52]

The principal characteristics of this 'Japan model' are the emphasis on the development and application of dual-use technologies such as semiconductors, microelectronics, and robotics for defence as well as commercial products; the dominance of private-sector commercial R&D, with the cliché of 'spin-offs' from defence R&D into civilian sectors being replaced by 'spin-on' in the opposite direction; the increasing acceptance of commercial product specifications or quality standards for use in the defence sector; and the widespread integration of defence and civilian production within single manufacturing plants, even off the same equipment and production lines.[53]

If we look to the international armaments market and to the defence manufacturers of the US and Europe, the last half-decade in particular has shown trends towards the adoption of these characteristics, or at least increasingly serious attention to their possible utility. The growing importance of dual-use technologies has led to numerous government, industry, and military studies, and some well-known legislative initiatives--studies and initiatives that frequently refer to the new phenomenon of 'spin-on'. Moreover, the US Department of Defense has been pressed to expand its use of commercially developed and tested products wherever feasible in order to reduce costs. Many American corporations involved in both civilian and defence production are at the same time seeking to reduce their defence exposure and are voicing complaints over the inefficiencies resulting from their need to observe strictly enforced DOD regulations maintaining the complete separation of defence R&D, production facilities, and even workforces from those of their commercial operations.[54] These trends are being further reinforced as declining defence budgets throughout NATO, and a smaller and more competitive international market, affect orders for new weapons platforms and major systems.[55]

We do not suggest that the 'Japan model' of defence industrialisation is entirely new or unfamiliar. The policy of kokusanka, or preference for domestic development and production over other forms of international collaboration and procurement, has well-documented and firmly entrenched counterparts in the policies of all of the major NATO states, as well as many of the smaller ones.[56] However, we do suggest that it is necessary to consider carefully how we look at questions relating to defence production in Japan.

The example of the export issue may be used to illustrate our point here. It is by no means clear whether advocates of increased Japanese defence exports (or critics in the West) will ever overcome the very strong barriers that they face, both formal and informal. However, if the increasing emphasis on dual-use technologies does offer growing export opportunities to Japanese companies and they are able to take advantage of this market, it may be more accurate to discuss this not in terms of the adoption in Japan of a 'Western' defence industrial base but rather as a result of the changing nature of technology and of the international defence market. In that case, perhaps debates over military-industrial complexes and exports should be superceded by consideration of the lessons of Japanese defence industrialisation for Western manufacturers seeking new corporate strategies in the 1990s.

Thus it really does not so much matter that Japan is <u>not</u> becoming like the Western defence industrial powers; much less is it significant that Japan will not breach the one-percent-of-GNP ceiling. Increasingly, the technology of weaponry, and the processes through which states procure their armaments, will make Japan of <u>necessity</u>, and perhaps even willy-nilly, a more dominant factor in global defence production. It simply cannot avoid this, even if it would wish to.

Notes

[1]For a report that summarizes the reasons for this growing interest within the United States, and also provides useful references to previous studies, see U.S. Congress, Office of Technology Assessment, Arming Our Allies: Cooperation and Competition in Defence Technology, OTA-ISC-449 (Washington, DC: U.S. Government Printing Office, May 1990). A European analysis of Japan's potential to develop as a competitive arms exporter is Jean-Marc Domange, Le Réarmement du Japon: Le Japon peut-il devenir un exportateur d'armement? (Paris: Fondation pour les Etudes de Défense Nationale, 1985).

[2]General recent commentaries on U.S.-Japan economic relations include Michael Mastanduno, 'Do Relative Gains Matter? America's Response to Japanese Industrial Policy', International Security vol. 16, no. 1 (Summer 1991), pp. 73-113; and Commission on U.S.-Japan Relations, The 1990s: Decade of Reckoning or a Decade of a New Partnership? (Washington, DC: Department of Commerce National Technical Information Service, March 1991).

[3]The combination of national economic, political, and technological interests that surfaced in the FSX project is discussed in David G. Haglund, with Marc Busch, '"Techno-Nationalism" and the Contemporary Debate over the American Defence Industrial Base', in The Defence Industrial Base and the West, David G. Haglund, ed. (London: Routledge, 1989), pp. 234-77.

[4]A comprehensive, though now dated, expression of anxieties over the condition of the U.S. defence industry is U.S. Congress, House Committee on Armed Services, The Ailing Defense Industrial Base: Unready for Crisis, 96th Congress, 2nd session (Washington, DC: U.S. Government Printing Office, 1980). A more recent review is Report to the Secretary of Defense by the Under Secretary of Defense (Acquisition), Bolstering Defense Industrial Competitiveness: Preserving Our Heritage, Securing Our Future (Washington, DC: Department of Defense, July 1988). An interesting examination of how to specify and operationalise the concept of foreign dependence is provided by Theodore H. Moran, 'The Globalization of America's Defense Industries: Managing the Threat of Foreign Dependence', International Security, vol. 15 no. 1 (Summer 1990), pp. 57-99. More specific reviews of the issue may be found in Report to the Chairman, Subcommittee on Technology and National Security, Joint Economic Committee, U.S. Congress, Industrial Base: Significance of DoD's Foreign Dependence, GAO/NSIAD-91-93 (Washington, DC: United States General Accounting Office, January 1991); and Report to the Honorable Helen Delich Bentley, House of Representatives, Defense Procurement: DoD Purchases of Foreign-Made Machine Tools, GAO/NSIAD-91-70 (Washington, DC: United States General Accounting Office, February 1991).

[5]A useful discussion of the efforts of Prime Minister Nakasone to engage Japan in a more active defence policy and in regional security issues is provided by S. Javed Maswood, Japanese Defence: The Search for Political Power (Singapore: Institute of Southeast Asian Studies, 1990). Such efforts inevitably also raise concerns amongst other Asian states, as highlighted in George Leopold and Naoaki Usui, 'Japan Policy Threats Revive Old Fears', Defense News, 30 September 1991, pp. 17 and 22.

[6]These characteristics are suggested in Reinhard Drifte, Arms Production in Japan: The Military Applications of Civilian Technology (Boulder, CO: Westview Press, 1986), p. 3. The concept of a defence industrial base is discussed in Haglund, Defence Industrial Base, pp. 1-2. A very valuable contribution to analyses of defence industries from a U.S. perspective, of course, is Jacques S. Gansler, The Defense Industry (Cambridge, MA: MIT Press, 1980).

[7]From Drifte, Arms Production in Japan, pp. 9-10, and Tetsoya Kataoka and Ramon H. Myers, Defending an Economic Superpower: Reassessing the U.S.-Japan Security Alliance (Boulder, CO: Westview Press, 1989), pp. 55-56.

[8]'Mutual Defence Assistance Agreement Between Japan and the United States of America (Excerpts)', Japan Defence Agency, Defence of Japan 1990 (Tokyo: Defence Agency, 1990), p. 300.

[9]Drifte, Arms Production in Japan, p. 11.

[10]The figures below are taken from Drifte, Arms Production in Japan, pp. 13-17; and Kataoka and Myers, Defending an Economic Superpower, p. 56.

[11]The force goals set out in 1976 remain those of the current Self-Defence Force. See, for example, Japan Defence Agency, Defence of Japan 1990, p. 252.

[12]Drifte, Arms Production in Japan, p. 16.

[13]On the 1947 Constitution and its continuing relevance, see Maswood, Japanese Defence, pp. 2-3; the entire text considers the continuing strength of Japanese pacifist sentiments into the 1980s. The current Prime Minister, Kiichi Miyazawa, has been defeated in his recent attempt to pass legislation permitting overseas deployment of troops for peacekeeping operations: see Naoako Uiui, 'Miyazawa Loses a Round', Defense News, 16 December 1991, p. 3.

[14]Office of Technology Assessment, Arming Our Allies, p. 108.

[15]Maswood, Japanese Defence, pp. 38-42. See also Kenneth B. Pyle, 'Japan, the World, and the Twenty-first Century', in The Political Economy of Japan, vol. 2: The Changing International Context, Takashi Inoguchi and Daniel I. Okimoto, ed. (Stanford: Stanford University Press, 1988), pp. 454-57.

[16]Drifte, Arms Production in Japan, pp. 73-74; and K.V. Kesavan, 'Japanese Defence Policy Since 1976: Latest Trends', Canberra Papers on Strategy and Defence No. 31 (Canberra: The Australian National University, 1984), pp. 24-25.

[17]Maswood, Japanese Defence, pp. 28-33, offers a thoughtful background on the development of post-war Japanese defence budgets and the one percent GNP ceiling.

[18]See Kensuke Ebata, 'Japan's Spending Curbed for FY 92', Jane's Defence Weekly, 11 January 1992, p. 41.

[19]Support for the thesis that a growing defence industry lobby exists in Japan capable of exerting pressure on legislative restrictions against arms exports can be found in Drifte, Arms Production in Japan, especially chapters six and seven. The opposite view is expressed by Kataoka and Myers, Defending an Economic Superpower, chapter five. Also see Domange, Le Réarmement du Japon, especially chapter ten.

[20]We have been interested to note that existing analyses of the structures of defence-related industries, of government-industry relations, and other issues in Japan generally have not considered whether the terminology they employ may in fact be appropriate in this context at all. Although our alternative description is by no means complete, we consider it at least of some value to question whether the process of defence industrialisation in Japan could be taking an entirely novel direction, a 'Japan model'. This theme is developed further in the conclusion of our chapter.

[21]Kataoka and Myers, Defending an Economic Superpower, pp. 61-65. MHI, KHI, and Japan Steel Works, of course, are key manufacturers with historical links to pre-1940 Japanese industry: see Office of Technology Assessment, Arming Our Allies, p. 104.

[22]Naoaki Usui, 'Mitsubishi, Kawasaki Lead Japan in Defense', Defense News, 22 July 1991, p. 21.

[23]A complicating factor here, however, is that it is difficult to decide the extent to which greater flexibility in the interpretation of, for instance, arms export and technology transfer restrictions by the Japanese government is the result of effective defence industry lobbying, versus the outcome of strong pressures from the United States government. On the latter, see Kesavan, Japanese Defence Policy Since 1976, pp. 22-32.

[24]Office of Technology Assessment, Arming Our Allies, p. 104.

[25]Drifte, Arms Production in Japan, chapters three to five, provides an examination of the shipbuilding, aircraft, and the space and missile sectors of the Japanese defence industry. See also, for example, Daniel Sneider, 'Mitsubishi Heavy Industries Tops List of Japanese Defense Firms', Defense News, 15 May 1989, p. 44.

[26]An instructive comparison is provided in Kataoka and Myers, Defending an Economic Superpower, pp. 62-63. While KHI in 1983 looked to defence for 16.9 percent of total sales, and MHI for 10.8 percent, the figures for General Dynamics Corporation, McDonnell Douglas Corporation, and Grumman Corporation were 80 percent, 70-80 percent, and 90 percent, respectively. Over-exposure to defence remains a difficult problem for US companies in the early 1990s.

[27]See Drifte, Arms Production in Japan, p. 24; Kataoka and Myers, Defending an Economic Superpower, p. 57.

[28]Japan Defence Agency, Defence of Japan 1990, p. 319.

[29]Office of Technology Assessment, Arming Our Allies, pp. 64-66, argues that the high degree of subcontracting provides Japanese companies with an opportunity to diffuse new technologies acquired from licensed production agreements rapidly throughout both defence and commercial industries.

[30]Kataoka and Myers, Defending an Economic Superpower, pp. 61-64; and Drifte, Arms Production in Japan, pp. 23-25 and footnote 18, p. 29.

[31]These arguments may be found in the two texts cited above, and in Kesavan, Japanese Defence Policy Since 1976, p. 31.

[32]Kataoka and Myers, Defending an Economic Superpower, p. 65.

[33]Although the OTA analysis suggests that there is a vigorous industry lobby with close ties to the Japanese government, it also notes somewhat paradoxically that there is a strong, competitive rivalry between sections of the bureaucracy, and even within individual branches, over the budget process and procurement plans. Office of Technology Assessment, Arming Our Allies, pp. 102-3.

[34]That defence procurement is an intensely political process will come as a surprise to nobody familiar with the wranglings frequently associated with U.S. defence budgets or those of the other NATO governments. For a text which examines this topic across several states, see Haglund, Defence Industrial Base.

[35]Kataoka and Myers, Defending an Economic Superpower, pp. 65-67.

[36]Ibid., pp. 67-68.

[37]Drifte, Arms Production in Japan, pp. 35-41.

[38]Office of Technology Assessment, Arming Our Allies, p. 103.

[39]Ibid., p. 102. The text of the note is reproduced in Japan Defence Agency, Defence of Japan 1990, p. 301.

[40]Further reviews of the making of defence and foreign policies in Japan which illustrate the complex nature of the process are Shuzo Kimura, 'The Role of the Diet in Foreign Policy and Defense', in The Japanese Diet and the U.S. Congress, Francis R. Valeo and Charles E. Morrison, ed. (Boulder, CO: Westview Press, 1983), pp. 99-111; and Donald C. Hellmann, 'Japanese Politics and Foreign Policy: Elitist Democracy Within an American Greenhouse', in Political Economy of Japan, vol. 2: 345-78.

[41]Drifte, Arms Production in Japan, pp. 25-26.

[42]Ibid., p. 26. Also, Office of Technology Assessment, Arming Our Allies, pp. 70 and 106; and Caleb Baker, 'Japanese Defense Firms Expect Robust Decade', Defense News, 18 February 1991, p. 16.

[43]Office of Technology Assessment, Arming Our Allies, p. 69.

[44]The OTA report discusses differences of opinion within the Japanese bureaucracy over the emphasis on domestic production versus international collaboration, ibid., pp. 66-68. Nakasone's statement of Japanese R&D and production policies is discussed in Drifte, Arms Production in Japan, pp. 12-13. More specific statistical details of domestic and foreign equipment purchases can be found in Japan Defence Agency, Defence of Japan 1990, p. 318.

[45]Office of Technology Assessment, Arming Our Allies, p. 68.

[46]David E. Rosenbaum and Keith Bradster, 'Candidates Playing to Mood of Protectionism', New York Times, 26 January 1992, pp. 1, 2.

[47]Jim Hoagland, 'For Bush, One More Stumble', International Herald Tribune, 10 January 1992, p. 6.

[48]See, for a comprehensive discussion, Galen Roger Perras, in Haglund, Defence Industrial Base, pp. 189-233.

[49]Haglund and Busch, '"Techno-nationalism" and the Contemporary Debate', pp. 257-58.

[50]Quoted in Clyde Haberman, 'Joint Project Is Seen on Japanese Fighter Jet', New York Times, 20 August 1987, p. 19.

[51]Stephen Kreider Yoder, 'Japan, U.S. Agree on Jet Based on F-16, But Technology Transfer Debate Persists', Wall Street Journal, 30 November 1988, p. 16.

[52]The latter term is used in Hanns W. Maull, 'Germany and Japan: The New Civilian Powers', Foreign Affairs, Vol. 69, No. 5, Winter 1990/91, pp. 91-106. The fullest discussion of the notion of trading states is found in Richard Rosecrance, The Rise of the Trading State: Commerce and Conquest in the Modern World (New York: Basic Books, 1986).

[53]See Drifte, Arms Production in Japan, pp. 35-41, 58-62 and 79-83; and Office of Technology Assessment, Arming Our Allies, pp. 63-66.

[54]Ibid., pp. 24-28 and 77-85. For useful reviews of corporate diversification and other strategies, see Laurens van den Muyzenberg and Godfrey Spickernell, Restructuring in the Defence Industry, A Report by HB Maynard Management Consultants, undated; and Bill Pietrucha, 'Contractors Cautiously Diversify Product Lines', Defense News, 22 July 1991, p. 20.

[55]The trend towards reduced numbers of new orders was recognized prior to the effects of more recent and domestic cuts in national defence budgets. See Thomas A. Callaghan, Jr., Pooling Allied and American

Resources to Produce a Credible, Collective Conventional Deterrent (Washington, D.C.: Department of Defense, 1988).

[56] A recent discussion of this preference is Ethan Barnaby Kapstein, 'International Collaboration in Armaments Production: A Second-Best Solution', Political Science Quarterly, Vol. 106, No. 4, Winter 1991-92, pp. 657-75.