

The Slow Death of Japanese Techno-Nationalism? Emerging Comparative Lessons for China's Defense Production

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ABSTRACT Japan's defense production model is often portrayed as an exemplar of techno-nationalism, but can it serve as a model for China to follow in pursuit of technological military catch-up? Japan in the past has exploited civilian industrial strengths to create a defense production base with footholds in key technologies. However, Japan's defense production model is now displaying structural limits – constrained defense budgets, deficient procurement management, limited international collaboration – with the risks of civilian industry exiting the sector, the loss of even basic competency in military technologies, and the consequent weakening of national security autonomy. Japan's case thus offers emerging comparative lessons for China to study in what to do and not to do in pursuing civilian–military integration.

KEY WORDS: Defense Production, Techno-nationalism, Kokusanka, Political Economy, JSDF, Japan, China

Japanese Techno-Nationalism as a Model for China?

Japan's defense production model has been depicted for much of the post-war period as an exemplar of successful 'techno-nationalism,' especially in regard to the benefits of embedding military capacity within a dynamic civilian sector.¹ Indeed, Japanese defense production

¹For the paradigmatic work on Japan's techno-nationalism, see Richard J. Samuels, *Rich Nation, Strong Army: National Security and the Technological Transformation of Japan* (Ithaca, NY: Cornell UP 1994). Other key works include: Reinhard Drifte, *Arms Production in Japan: The Military Applications of Civilian Technology* (Boulder, CO: Westview Press 1986); Michael E. Chinworth, *Inside Japan's Defense: Technology, Economics and Strategy* (Washington DC: Brassey's 1992); and Michael J. Green,

has been thought to offer China important comparative lessons and a model for partial emulation in the quest to modernize its own defense industries.² In recent years, though, Japan's techno-nationalist model has come under increasing scrutiny in reaching the limits of capacity to maintain a leading-edge and autonomous defense technology base. Japan's policymakers now fret that the existing techno-nationalist model is no longer sustainable; without major reforms the domestic defense industry faces a 'slow death'; and the subsequent impact will be to further undermine Japanese national technological and comprehensive strength and thus autonomy in security policy. Japan's reappraisal of the viability of its own defense production model demands, in turn, a reappraisal of the model's potential lessons for and applicability to China. For while there is arguably still much for China to learn from Japan's techno-nationalist trajectory, and particularly the interrelationship of civilian and military industry, now is the moment to consider as well the emerging drawbacks of the Japanese model.

Japan's recognition of the problems of its own model provides the context and objectives for this paper in presenting comparative insights with China's defense industrial base. The paper seeks to elucidate the characteristics, structure, and not inconsiderable achievements of the Japanese model, and to present these as an exemplar which demonstrates the potentialities for China of a techno-nationalist model predicated on civilian–military technological integration (*yujun yumin*; locating military potential in civilian capabilities). At the same time and departing from much of the dominant previous literature on Japan's techno-nationalism, which tends to emphasize successes, this paper seeks to demonstrate the pitfalls and dangers of Japan's model. Through the case of Japan the paper highlights emerging comparative lessons for China relating, in a sense, to both what to do and not to in pursuing 'catch-up' in defense production.

The paper does not provide a strict or direct side-by-side comparative analysis of Japan's defense production model with that of China. The great differences between Japan and China's political economy and strategic situation would make this too extensive a task for a paper of this length, and probably yield broad comparative dissonance rather than coherence and lessons to pinpoint. Instead the paper concentrates primarily on Japan's defense production model itself and focuses on the issue of civil–military integration as the core component which is

Arming Japan: Defense Production, Alliance Politics, and the Postwar Search for Autonomy (New York: Columbia UP 1995).

²For a very insightful comparison between China and Japan, see Tai Ming Cheung, *Fortifying China: The Struggle to Build a Modern Defense Economy* (Ithaca NY: Cornell UP 2009), 227–34.

thought to be of most interest for China to emulate. The paper highlights three key areas – budgets and long-term military demand, procurement management, and international collaboration – where Japan is encountering major structural obstacles to the maintenance of a viable model of civilian–military integration.

It might be argued that many of these structural problems are unique to Japan and its anti-militaristic strategic culture, or at least of more immediate relevance to Japan than to comparator states. Nevertheless, it is equally arguable that many of these same issues apply to varying degrees already to other states seeking to modernize their defense production systems, thus making the lessons of Japan transferable to other cases. Most importantly, it is foreseeable that China will find several of these issues come to apply to its defense production efforts in the medium- to long-term, and that it will need to contemplate them if it seeks to adopt the best and avoid the worst of a Japanese-type civilian–military technological model.

However, as the final part of the paper argues, one of the remarkable features of the developing Chinese defense production model is that it appears to have begun to learn lessons from the pitfalls of the Japanese model, whether by deliberate design or fortuitous circumstance. Somewhat ironically perhaps, then, China right now appears better placed than Japan, the archetype of the techno-nationalist state, to circumvent the potential drawbacks evident in the model.

Japan's Techno-Nationalism: Civilian and Military Complementarities

Since its entry into the modern international system in the Meiji period (1868–1912), Japan has pursued as part of an overall grand strategy a tradition of maximizing military technological autonomy in order to maximize national strategic autonomy. A key and constant feature of this drive for autonomous defense production has been to promote indigenous production (*kokusanka* [国産化]) in tandem with the integration where possible of civilian and military defense production.

Japanese policymakers in the post-war period, even if acquiescing after the disastrous defeat of the Pacific War (1941–45) to a relatively demilitarized stance and dependency upon US security guarantees, did not abandon entirely their belief in the importance of national military power and technological autonomy and thus have sought to rebuild the defense industrial base. The main stakeholders – the Japan Ministry of Defense (JMOD), Ministry of Economy and Industry (METI), Ministry of Foreign Affairs (MOFA), and Defense Production Committee (DPC) of the Japan Business Federation (*Nippon Keidanren*) as the umbrella organization for a variety of defense producer associations and

individual enterprises – articulate a series of objectives for defense production:

- **Deterrence.** The key stated objective, as might be expected, is to develop a defense production system capable of maintaining the Japan Self Defense Force's (JSDF) national deterrent capabilities. In addition, military technology should meet Japan's 'unique' defensive needs, and especially its policy of exclusively 'defense-oriented defense' (*senshu bōei* [専守防衛]) and geographical particularities of long coast lines and deep surrounding sea space.
- **Bargaining power.** Japan's defense production should provide a technological base that augments its negotiating leverage in the broader international community, but especially provides it with technology to bring into the context of alliance cooperation with the United States.
- **Latent capabilities and self-sufficiency.** Japan should ensure stable supplies of defense equipment and retain the necessary highly-skilled workers in a market environment of relatively low order numbers to the sole customer of the JSDF, while at the same time be able to ramp up production in a time of national emergency.
- **Industrial policy.** METI and the DPC, in particular, have promoted Japan's small but technologically advanced defense production base as a means to generate 'dual-use' technology for the civilian sector. At times, METI and the DPC appear to have prized defense technology not for its inherent contribution to deterrence, but for its potential contribution to overall national industrial policy focused on the civilian sector.

In turn, Japan's government and private industry have been in rough agreement for most of the post-war period that the ultimate objective of the defense production model in pursuing these techno-nationalist goals should be the pursuit of *kokusanka*. Japan's policymakers see a role for general imports and Foreign Military Sales (FMS) from the United States, as these often provide relatively fast, low-cost, and low-risk technology for the JSDF's immediate needs. Similarly, licensed production is seen to provide the advantages of fast acquisition of equipment and opportunities for learning and innovating upon already tested defense technology. These advantages need to be weighed against the usually higher and now increasing costs of licensed production, especially from the United States, and the fact that Japan may not be allowed to receive transfers of the very latest foreign weapons systems, thus limiting opportunities for technological learning.

Hence, Japan's defense planners have sought the 'holy grail' of pure indigenous defense production and consequent technological autonomy

(*jishu gijitsu* [自主技術]), even if these present development risks and high procurement costs. Japan nurtured *kokusanka* in part through the government's direct and indirect subsidization of defense industry, but also in large part through attempts to harness together military and civilian technology within large civilian conglomerates. Japan's model of civilian–military technological integration is driven by a continued belief in the advantages of the larger civilian sector drawing technological ‘spin-off’ from the military sector, and where necessary the smaller military sector would derive ‘spin-on’ from civilian industry.

Japanese Defense Industry: Structure and Organization

Japan's defense industry in relation to overall national economic size is moderate in scale, accounting since the 1980s for less than one percent of total industrial production.³ Additionally, defense production since 1982 can be seen to account for only a small proportion of total national production in key industrial sectors; for instance, registering less than one percent in electronics communications and vehicles. Ammunition and aircraft (although even military aircraft production

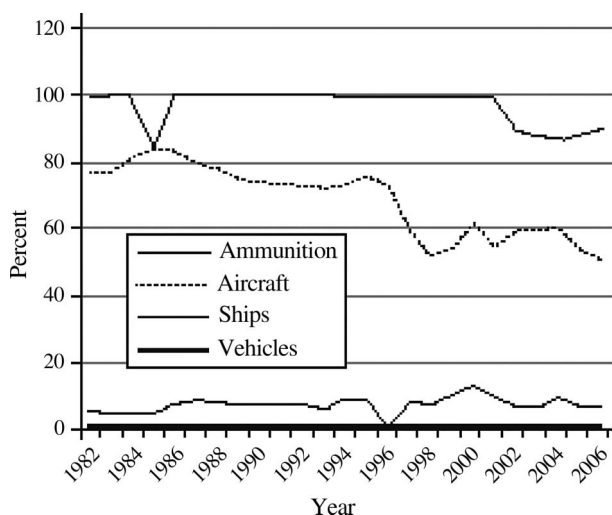


Figure 1. Japanese Defense Production by Sector as a Percent of Total Industrial Production, 1982–2006.

Source: *Defense of Japan*, various years.

³Bōeichōhen, *Nihon no Bōei* (Tokyo: Zaimushō Insatsukyoku 2006), 395.

has declined as a proportion of national production from more than 80 percent in the 1980s to around 50 percent in 2006), and to some extent shipbuilding, are exceptions with much higher percentages (Figure 1).

In accordance with Japan's techno-nationalist strategy, defense production has been concentrated within a relatively small number of conglomerates largely focused on civilian production. Mitsubishi Heavy Industries (MHI) has remained the leading defense contractor over the last decade and before that in terms of sales and numbers of contracts (generally securing up to 20 percent of all contracts).⁴ The top 20 contracts have been dominated by the 'heavies' such as Kawasaki Heavy Industries (KHI), Fuji Heavy Industries (FHI), Sumitomo Heavy Industries (SHI), Toshiba, Ishikawajima Harima Industries (IHI), Mitsubishi Electric Corporation (MELCO), NEC, and Komatsu, and with trading companies such as Itōchū and Sumitomo involved in the importation of defense equipment. These enterprises dominate Japanese defense procurement with more than 70 percent of total contracts, but defense tends to be a small share of their overall business. MHI, despite taking near a fifth of the defense sector, derives less than ten percent of its total sales from this. The story is similar for KHI, and for others the share is less still at below four percent.⁵

However, outside the top 20 defense contractors there exists a range of small and medium enterprise (SME) primary and secondary subcontractors more heavily vested in defense production. The DPC and JMOD calculate that the production of a Maritime Self Defense Force (MSDF) destroyer requires up to 72 direct contractors, 1,378 primary subcontractors, and 1,073 secondary subcontractors; a Ground Self Defense Force (GSDF) Type-90 main battle tank (MBT) 52 direct, 842 primary, and 568 secondary contractors; an Air Self Defense Force (ASDF) F-15J fighter 13 direct, 530 primary, and 593 secondary subcontractors; and an ASDF *Patriot* surface to air missile (SAM) 4 direct, 125 primary, and 1,093 secondary contractors.⁶ The Shipbuilders' Association of Japan (SAJ) estimates that more than 80 percent of the work for destroyers, submarines, and minesweepers is carried out by SMEs.⁷ SMEs are in part engaged in metal-bashing and component manufacture, but many possess highly-skilled specialist

⁴Bōei Nenkan Kankōkaihen, *Bōei Nenkan 2010* (Tokyo: DMC 2010), 521–4.

⁵'Defense News Top 100 for 2009,' *Defense News*, <http://defensenews.com/static/features/top100/charts/rank_2009.php?c=FEA&cs=T1C>.

⁶Bōeishō, *Bōei Seisan, Gijutsu Kiban*, April 2010, 5, <www.kantei.go.jp/jp/singi/shin-ampoboueie2010/dai5/siryou1.pdf>.

⁷Nihon Keizai Dantai Rengōkai Bōei Seisan Iinkai, *Waga Kuni Bōei Sangyō no Genjō Nado ni Tsuite*, 13, presentation provided by personal contact at DPC, July 2007; Bōeishō, *Bōei Seisan, Gijutsu Kiban*.

manufacturing capabilities for certain technologies. For instance, SMEs produce many of the key components of the Standard Missile (SM)-3 missile upgrades jointly developed between Japan and the United States.⁸ Many of these SMEs, in contrast to the top 20 contractors, are highly dependent on defense; whereas the overall level of dependency on defense of all companies that have some engagement in this sector is approximately four percent, there are a considerable number of companies with an annual total turnover of less than ¥500 million Japanese yen (approximately US\$5 million) which are between 50–90 percent dependent on their defense business.⁹

Japanese corporations have been willing to engage in defense contracting, even as something of a sideline to their more substantial civilian business, for at least three reasons:

- **Government nurturing.** Although JMOD has offered an increasing number of competitive procurement bids since the early 1990s, the monetary value of competitive bids has been below ten percent of the total work put out for contract. Japanese defense manufacturers have become accustomed to the award of contracts largely free from major domestic or foreign competition. Even if they fail to secure the lead contractor award they are likely – through a process known as *sumiwake* (棲み分け) – to receive a share of subcontracting work. JMOD and METI have used the contracting system to build national champions in the defense sector, with MHI emerging as the leader in fighter aircraft, KHI and IHI in transport aircraft, and IHI in aircraft engines. The Japanese government in the past has also provided de facto subsidies for R&D of key weapons systems, even though it has preferred private companies to bear these costs wherever possible. These national *kokusanka* projects in the past have included the YS-11 commercial airliner with eventual military applications in the 1950s; the T-1 fighter trainer in the 1960s; the C-1 transport in the 1960s and 1970s; the F-1 fighter in the 1970s; and attempted indigenous production of the FSX support fighter in the 1980s.
- **Steady profits.** Defense production has in the past provided, if not spectacular, then stable profits. An element of risk is involved as JMOD does not provide a down payment upon ordering, or even full payment with the first deliveries of defense equipment, preferring instead a deferred payment system over several years to increase its budget flexibility. In addition, the Japanese government in the past has set a cap of 6.5 percent on profits from defense

⁸Asahi Shimbun Jieitai 50nen Shuzaiha, *Jieitai Shirarezaru Henyō* (Tokyo: Asahi Shimbunsha 2005), 263.

⁹Bōeishō, *Bōei Seisan, Gijutsu Kiban*, 4.

contracts.¹⁰ Nevertheless, defense contractors have operated with a strong sense of security. JMOD has been a dependable customer, always paying on time, and there have been no incidents of the government backing out of a contract.

- **Spin-off and spin-on.** Japanese corporations have been confident that embedding smaller-scale defense production within their large civilian operations enables them to maximize R&D and manufacturing benefits for spin-on and spin-off.

Japan's Successful Techno-Nationalism Story?

Japan has thus made significant headway in the post-war period in developing an archetypal model of autonomous techno-nationalism and civilian–military integration. Japan's defense production model has received direction and support from the central government, but also has been devolved in the main to private corporations, with crucial technological and physical interchange between the civilian and military divisions of these corporations. The government through national *kokusanka* projects, but more importantly through the careful nurturing of a select group of private defense contractors and a system of steady but deferred payments, has created a very capable defense R&D and production base whereby much of the initial cost and technological risk of weapons development is borne by the private sector.

The system's provision of a strong physical civilian–military infrastructure for defense production is demonstrated by the fact that it was estimated in the early 1990s that 90 percent of MHI's capital equipment for military production in its plants was available simultaneously for civilian use. MHI famously utilizes the same workers to assemble military and civilian aircraft in the same facilities, and its M-90 MBT is built in the same final assembly area as its forklift trucks and bulldozers.¹¹ This same mechanism of civilian plants sustaining military production has further enabled the maintenance of 'hotbed' facilities for the rapid expansion of MBT production from normal, low annual production runs to higher levels in national emergencies. Japanese corporations are convinced that there has been significant inter-diffusion of civilian and military technologies: semi-conductors developed for civilian industry find their way through 'spin-on' into Japanese missiles and radars; composites for fighter aircraft find 'spin-on' into use for civilian airliners; and milling techniques for mobile artillery have been adopted in electricity turbine manufacture.¹²

¹⁰Chinworth, *Inside Japan's Defense*, 52–5.

¹¹Samuels, *Rich Nation, Strong Army*, 294–7.

¹²Bōeishō, *Bōei Seisan, Gijutsu Kiban*, 10; Keizai Sangyōshō, *Bōei Sangyō ni Tsuite*, April 2010, 9, <www.kantei.go.jp/jp/singi/shin-ampoboueie2010/dai5/siryou2.pdf>.

Japan has achieved notable successes in *kokusanka* and closed the gap in certain technological areas with other, larger developed economies and military powers. Japan demonstrated that it was capable of building advanced destroyers, although it has remained dependent on licensed production of engines and FMS for *Aegis* air radar.¹³ Japan succeeded in rebuilding its aircraft defense production in the post-war period, using a mix of licensed and indigenous production for the F-86F, F-104J, F-4EJ, and F-15J fighters, the T-1, T-2, and T-4 trainer aircraft, and C-1 transport. Japan demonstrated considerable success in missile programs, first purchasing direct or employing licensed production and then replacing it with indigenous production. Japan thus has been able to claim shares of domestic procurement at around 90 percent or above in much of the post-war period.¹⁴

Japan's policy of *kokusanka* has clearly not been without problems, including problems of cost that have raised questions about the sustainability of the defense production model. Much of the equipment produced has not reached the highest international standards; most notably, the F-1 became obsolete almost as soon as it went into production. Japan has also been frustrated in attempts to indigenize systems by pressure from its US ally. Japan in the end refrained from production of its own PXL patrol aircraft and settled for licensed production of the P-3C, and had to settle for co-development of the F-2 with the United States. But despite Japan's failure to produce completely indigenous or internationally competitive major weapons platforms, it has nevertheless scored important successes in an overall strategic industrial sense, in that it has managed to indigenize the most important component technologies of these platforms. This has enabled Japan, in spite of its relatively small defense production base, to at least keep in step with international competition, and provides it with the latent potential to leap ahead into producing fully independent weapons systems in the future if so demanded.

Japan's Techno-Nationalism on the Rack?

Defense Budgets and Long-Term Military Demand

Japan's defense planners in the post-Cold War era have been obliged to try to maintain JSDF missions and capabilities and the inter-linked

¹³Arthur Alexander, *Of Tanks and Toyotas: An Assessment of the Japan's Defense Industry* (Santa Monica, CA: RAND 2003), 44–8.

¹⁴Bōeichō, *Nihon no Bōei* (Tokyo: Zaimushō Insatsukyoku 2006), 395.

defense production system within an increasingly severe budgetary environment, brought about by the Japanese economic downturn since the early 1990s and heavy government pump-priming and debt. For much of the post-war era, steady economic growth ensured that, even when confined to one percent of the gross national product (GNP), Japanese defense budgets were large enough to sustain the defense production model and its relatively high costs. Japan's growing budgetary squeeze is now also severely squeezing the funds available for defense production.

Japan's defense budget, if calculated in nominal yen, can be seen to have stagnated and actually fallen since the late 1990s, with around ¥5 trillion, or US\$40 billion, accepted as a de facto ceiling on expenditure (Figure 2). Japan's defense budget has not seen the large-scale growth of the United States, other major powers, and China in the post-9/11 period, staying rooted at less than one percent of annual growth. Moreover, Japan's government has maintained its one percent of GNP limit on annual allocations of defense expenditure; as a proportion of annual government expenditure it has remained constant at around six percent, declining in relative importance as a government priority in comparison to the increasing proportion devoted to social security and public works in the last decade.¹⁵

Japan faces even greater long term pressures on its defense budget due to its practice of deferred payments (*saimu futan kōi*

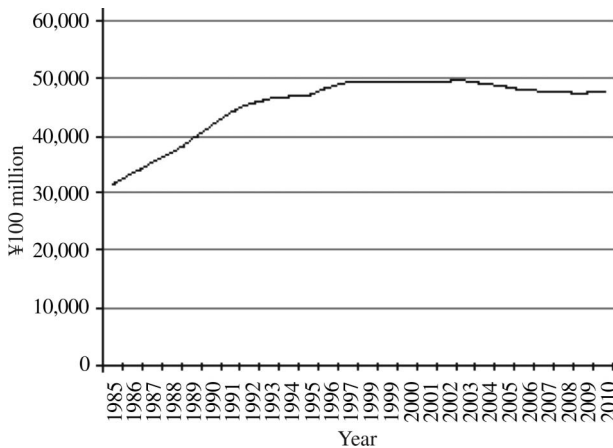


Figure 2. Japanese Defense Expenditure in JPY, 1985–2010.

Source: *Defense of Japan*, various years.

¹⁵*Bōei Handobukku 2010* (Tokyo: Asagumo Shimbunsha 2010), 350.

[債務負担行為]). Since the 1970s this practice has enabled Japan to afford highly expensive weapons systems but still keep within the one percent of GNP limit on spending.¹⁶ However, it means that it is building up large-scale payments equivalent to 60 percent plus of defense expenditure that have to be serviced from the current defense budget, thus limiting the potential for future budgetary growth.¹⁷

Finally, the amounts available within this tightening defense budget specifically for the procurement of new weapon systems are under severe pressure. The defense budget breakdown demonstrates the trend over the last 20 years of an increasing proportion of funds, up to 45 percent by 2009, directed towards personnel and provisions (with rising salary and pension costs), whereas the proportion directed to equipment acquisition has declined from around 23 percent of the budget in 1988 to around 16.5 percent in 2010 (Figure 3). Compounding these pressures is Japan’s decision to opt for the procurement of Ballistic Missile Defense (BMD) systems, now accounting for the largest budget share of any individual weapons systems and crowding out other large-scale acquisitions.

The result of this budgetary crunch, and probable long-term decline of the defense budget, has been to choke off orders for frontline weapons platforms, with fewer fighters, MBTs, and destroyers on order to help maintain already artificially extended production runs and

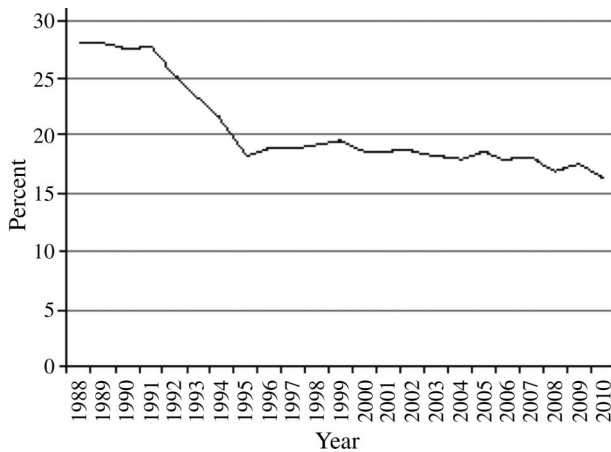


Figure 3. Percentage of Japanese Defense Budget for Equipment Spent, 1998–2010.

¹⁶Harrison M. Holland, *Managing Defense: Japan’s Dilemma* (New York: UP of America 1988), 34–5.

¹⁷Bōei Nenkan Kankōkaihen, *Bōei Nenkan 2010* (Tokyo: DMC 2010), 345–7.

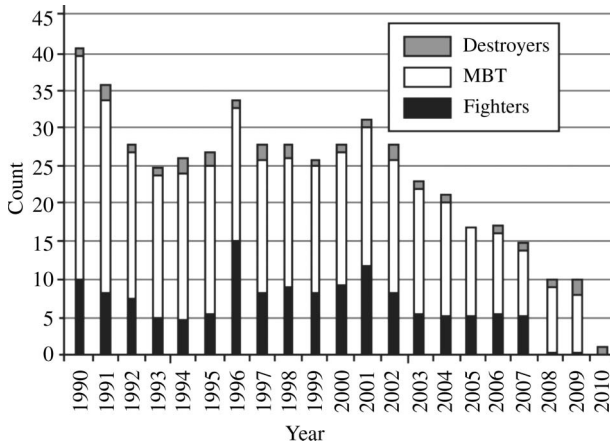


Figure 4. Major New JSDF Platform Procurement, 1990–2010.

Source: *Defense of Japan*, various years.

facilities (Figure 4). Japan's policymakers and industrialists are especially worried about finding a candidate to replace its aging F-4J fighter aircraft due for retirement. Japan had hoped the United States would release a licensed production version of the F-22, enabling it to learn some of the technology of a fifth-generation fighter and to sustain its fighter production capability. However, the United States's refusal to release the F-22 in a licensed production version, let alone a less advanced version for FMS export, has frustrated Japanese plans. Japan's ban on the export of arms technology has in effect barred it from participation in the F-35 and it may be too late to buy into a development role in this project. This leaves open only the option of buying the fighter off-the-shelf. Japan appears reluctant for reasons of interoperability and US–Japan alliance considerations to choose an option such as the Eurofighter as the principal replacement for the F-4J, even though it offers licensed production and development work.

Japan has intimated interest in indigenous development of its own stealth fighter. In 2009, JMOD apportioned ¥8.5 billion for the Technical Research and Development Institute and MHI to conduct research into an Advanced Technology Demonstration-X (ATD-X) stealth fighter prototype.¹⁸ But it seems improbable that Japan could shoulder the costs of indigenous development alone. Japan thus appears for the time being to have settled on upgrades to its F-15Js, deferring a decision on the F-X until mid-2011. Japan's indecision is risky, though,

¹⁸Bōeishō, *Waga Kuni no Bōei to Yosan, Heisei 21nendo Yosan no Gaiyō*, 23, <www.mod.go.jp/j/library/archives/yosan/2009/yosan.pdf>.

as its defense industry, once orders for the F-2 (already curtailed in overall numbers due to the inflated cost) are fully complete, will have no new fighter to build in a few years' time (from 2008–10 no new fighters were built, and only upgrades implemented for F-15Js), thus jeopardizing the maintenance of any indigenous capacity.

Japanese government concerns about the potential for the erosion of the defense production base has led it to augment demand through new *kokusanka* projects. The objective of these projects is to maintain leading edge and systems integration technology so as to hold open future opportunities to develop major weapons platforms. Hence, in spite of US pressure to purchase the Multimission Maritime Aircraft to replace its P-3Cs, Japan has opted for an indigenous replacement. JMOD has devoted ¥340 billion for the development of the P-X patrol aircraft and C-X transport, its largest ever development project. It is also devoting ¥250 billion for the XF7 engine for the P-X.

There remains one other potential area for major *kokusanka* projects, which is Japan's growing military use of space. Japan's government, driven to improve autonomous intelligence capabilities in the wake of North Korea's missile tests in 1993 and 1998, and by defense industry interests keen to exploit procurement opportunities, moved to introduce intelligence-gathering satellites (IGS).¹⁹ The Prime Minister's Office's Strategic Headquarters for the Development of Outer Space and JMOD's Committee on the Promotion of Outer Space both produced reports in 2009 arguing that Japan should investigate means to protect its satellites from anti-satellite (ASAT) weapons, improve IGS capabilities and acquire infrared early warning satellites to improve the effectiveness of BMD.²⁰ The program is highly ambitious, estimated to require in the first five-year phase up to ¥2.5 trillion (c. US\$26 billion). If implemented, it might do much to boost defense industry demand and *kokusanka*, but doubts remain over whether Japan can really devote such resources to space development and other *kokusanka* projects when ranged against competing budgetary demands.²¹

¹⁹Sunohara Tsuyoshi, *Tanjō Kokusan Supai Eisei: Dokuji Jōhō to Nichibei Dōmei* (Tokyo: Nihon Keizai Shimbunsha 2005).

²⁰Bōeishō Uchū Kaihatsu Riyō Iinkai, *Uchū Kaihatsu Riyō ni Kansuru Kihon Hōshin ni Tsuite*, 15 Jan. 2009, 4, 6, <www.mod.go.jp/j/info/uchuukaihatsu/pdf/kihon_houshin.pdf>; Uchū Kaihatsu Senryaku Honbu, *Uchū Kihon Keikaku*, 2 June 2009, <www.kantei.go.jp/jp/singi/utyuu/keikaku/keikaku_honbun.pdf>.

²¹For Japan's space defense industry, see Saadia M. Pekkanen and Paul Kallender-Umezu, *In Defense of Japan: From the Market to the Military in Space Policy* (Stanford, CA: Stanford UP 2010).

Procurement Management

Japan's defense budget is further strained by the procurement practices and high costs endemic to its production model. Japan's nurturing of an indigenous defense production base among a few manufacturers and absence of meaningful competition has inflated equipment prices. For example, it is thought that *kokusanka* has resulted in the F-2 costing three times more than an off-the-shelf equivalent such as the F-16C; and the M-90 is the most expensive MBT in the world due its low production runs.

The previously cozy relationship between defense producers and their sole customer the JSDF has added to costs. The infamous practice of *amakudari* (literally 'descent from heaven' [天下り]), or the placing of retired bureaucrats and uniformed officers on the boards of defense contractors, has raised suspicions that this interchangeable network of policymakers and industrialists may have few incentives to negotiate for the most competitive prices. JMOD revealed in 2008 that over the previous five years there had been around 500 cases of retired JSDF personnel requiring permission under the JSDF Law to take up positions with commercial enterprises, including close to 200 former officers of colonel/captain rank and above, and that companies involved in JMOD recruitment were the most popular destinations, with MHI, NEC and MELCO ranking at the top.²² JMOD's predecessor, the Japan Defense Agency (JDA), was forced in 2006 to reveal in the National Diet that in 2004 there had been a total of 718 retired JSDF personnel working in firms with JDA contracts, again mostly concentrated in MHI affiliates.²³ Japan's combination by international standards of relatively young retirement ages and delayed pensions for JMOD bureaucrats and JSDF officers means that defense contractors have no shortage of candidates seeking reemployment in return for information on military procurement.²⁴

Moreover, these practices are thought not only to increase unit costs but also to give rise to structural corruption. The JDA's Central Procurement Office Defense and then its Defense Facilities Administration Agency were hit by corruption scandals in the late 1990s and

²²Bōeishō, *Bōeishō Kaikaku Kaigi Dai4kai Setsumei Shiryō*; Bōeishō, *Dai4kai Bōeishō Kaikaku Kaigi Sankō Shiryō*, 1 Feb. 2008, <www.kantei.go.jp/jp/singi/boue/dai4/pdf/siryou2.pdf>.

²³'Bōeichō amakudari ōi kigyō juchū mo mashi,' *Shimbun Akahata*, 12 April 2006, 15; Shūkan Kinyōbihen, *Mitsubishi Jūkō no Seitai: Kokusaku Bōei Kigyō* (Tokyo: Kinyōbi 2008), 26–32.

²⁴Bōeichōhen, *Bōei Hakusho 2006* (Tokyo: Ōkurashō Insatsukyoku 2006), 276–80; Nakatani Gen, *Daremo Kakenakatta Bōeishō No Shinjitsu* (Tokyo: Gentōsha 2008).

2000s relating to officials encouraging defense contractors to pad out (*mizumashi* [水増し]) procurement contracts. JMOD's most serious scandal came in 2007 when former Administrative Vice-Minister Moriya Takemasa, the ministry's top official, was prosecuted for receiving a total of around ¥12 million in golf hospitality and cash bribes from Miyazaki Motonobu, a former employee of the Yamada Corporation and president of the Nihon Mirise Corporation trading companies, in order to influence JMOD procurement decisions in favor of Miyazaki. Moriya was found guilty of having used his influence to steer JMOD towards signing discretionary contracts with Nihon Mirise for the supply of General Electric engines for the C-X transport aircraft and the 19DD destroyer. In addition, Moriya received bribes from an Itōchū subsidiary to secure a discretionary contract for the importation of two Eurocopter EC225LP helicopters for the GSDF.²⁵

Japan's defense planners have attempted to tackle high unit costs and corruption in a variety of ways. One major imperative has been to secure more 'bang for the buck' in the defense budget. JMOD sought a ten percent reduction in acquisition costs between 1999 and 2001, and defense contractors have achieved unit price reductions of between 6 and 12 percent in their unit prices for major weapons systems between 1997 and 2000.²⁶ The DPC reports that between 1995 and 2000 there has been a 14 percent increase in the proportion of defense orders handled by each defense worker.²⁷ JMOD since 2006 has begun to increase significantly not only the number but also for the first time the value of competitive contracts awarded, which stretched to more than 36 percent in 2008, up from only 8 percent in 2005.²⁸

JMOD's Acquisition Reform Promotion Project Team produced a report in 2008 outlining a range of measures to try to constrain equipment costs and promote value for money. These include a system of lifetime cost cycles; an R&D evaluation system; centralizing procurement of common items across the JSDF's three services; improving the efficiency of FMS through less reliance on trading companies as costly mediators with foreign defense firms and through increasing the number of cost assessors inside JMOD and the United States; investigation of private finance initiatives; and the introduction of more incentive contracts for producers. This last measure would allow JMOD to reimburse producers for half the costs saved from the

²⁵For a full analysis of Japan's defense industry scandals, see Christopher W. Hughes, *Japan's Remilitarization* (London: Routledge 2009), 67–72.

²⁶Bōeichō, *Chōtatsu Kaikaku Gutai-teki Sochi*, <www.mod.go.jp/j/library/archives/chotatu/soti/soti.pdf>.

²⁷Nihon Keizai Dantai, *Waga Kuni Bōei Sangyō*, 32.

²⁸Bōei Nenkan Kankōkaihen, *Bōei Nenkan 2010* (Tokyo: DMC 2010), 519.

originally agreed contract.²⁹ More competition has also been introduced with open competition in submarine construction for the first time rather than comfortable alternation between the two key builders MHI and KHI.³⁰

Japan has furthermore, in the wake of the Moriya scandal, sought to remedy problems of defense industry–bureaucratic collusion. The Cabinet Secretariat’s Ministry of Defense Reform Council (*Bōeishō Kaikaku Kaigi* [防衛改革会議]) report in 2008 emphasized the need for improved professionalism of the JSDF and JMOD to prevent further corruption scandals, and in regard to reform of the procurement system largely endorsed JMOD’s Acquisition Reform Promotion Project Team recommendations.³¹ Japan’s attempt at procurement reform may pay some dividends in extracting more for less out of the defense budget. However, Japan’s poor record to date of introducing competition and incentive schemes, and the structural problems of collusion in the defense industry, do not augur particularly well.

Limits to International Collaboration

METI, JMOD, and the DPC point to the initial cuts in defense expenditure among developed states at the end of the Cold War, coupled with the upward spiraling cost and risks associated with the development of new weapons systems, and how this then triggered mergers and acquisitions and the consolidation (*shūyaku* [集約]) of defense contractors both intranationally and transnationally to limit these risks. Japan now finds itself unable to tap these benefits of globalization, with its arms export bans, imposed since 1967 and 1976, meaning that it can neither find new markets overseas to compensate for declining domestic markets, nor can it easily form international alliances to access economies of scale for developing highly expensive Revolution in Military Affairs-type weapons systems.³² Moreover, Japan’s Foreign Exchange and Trade Control Law largely prohibits

²⁹For the Acquisition Reform Promotion Project Team’s full reports, see Japan Ministry of Defense, <www.mod.go.jp/j/approach/others/equipment/sougousyutoku/index.html>.

³⁰Sensuikan: Hajimete no Juchū Kyōsō e, Mitsubishi to Kawasaki Zōsen “Ichinen Kōtai” Zushiki Kuzure, Bōeishō Hacchū, *Mainichi Shimbun*, 15 Dec. 2010, <<http://mainichi.jp/select/seiji/news/20091215dde041020017000c.html>>.

³¹Bōeishō Kaikaku Kaigi, *Hōkokushō: Fuyōji no Bunseki to Kaikaku no Hōkōsei*, 15 July 2008, <www.kantei.go.jp/jp/singi/boue/dai11/pdf/siryō.pdf>.

³²For the background to the introduction of the arms export bans, see Andrew L. Oros, *Normalizing Japan: Politics, Identity and the Evolution of Security Practice* (Stanford, CA: Stanford UP 2008), 90–122.

overseas investment in the domestic defense industry for reasons of national security.³³

Japan is keen to retain the licensed production route as a means to exploit international collaboration, but also sees increasing limitations. Its policymakers are aware that the United States in particular has become more stringent on granting licensed production and safeguarding its technologies, and charges a hefty premium for what technology it is prepared to transfer (many defense contractors felt that the F-15J was especially expensive).³⁴ Moreover, Japanese industry estimates that the domestic content under licensed production of US systems has progressively decreased, from 85 percent of the F-104, to 90 percent of the F-4EJ, and 70 percent of the F-15J, with a high black-boxed content for the F-15J, and 60 percent for the F-2.³⁵

Japan's shrinking licensed production possibilities mean that since the end of the Cold War it has increasingly been forced to consider the option of co-development with its US ally. Although Japan originally intended the FSX project in the mid-1980s to be an almost fully indigenous successor to the F-1, initially modeled on the F/A-18, it eventually succumbed to US congressional and industrial pressure for co-development. MHI as the lead contractor began development from 1988 onwards of the F-2, based on the General Dynamics F-16. The program incurred considerable overspends, increasing the budget by 70–100 percent; the first prototypes did not fly until 1996; and the first aircraft entered service in 2000. JMOD originally planned to acquire 140 F-2s but this has been reduced to 94, in part due to the high cost of each aircraft (around ¥12 billion) and its relatively poor performance. Nevertheless, Japanese industry concluded that the FSX experience was a useful one as, even though it was unlikely again to produce indigenously its own fully-fledged fighter, it was able to secure around 60 percent of the work share, to access US F-16 technology, and to incorporate several of its own non-derived technologies.³⁶

Japan has since embarked on 13 other co-development projects with the United States, the most significant of which is the upgrading since 1999 of the SM-3 BLK-IIA interceptor missile for the *Aegis* BMD system. Japan's work share consists of four key BMD interceptor

³³Keizai Sangyōshō, *Bōei Sangyō ni tsuite*, 8 April 2010, 16, <www.kantei.go.jp/jp/singi/shin-ampobouei2010/dai5/siryoushu2.pdf>.

³⁴Bōei Sangyō Gijutsu Kiban Kenkyūkai, *Bōei Sangyō Gijutsu no Iji Ikusei ni Kansuru Kihon-teki Hōkō: Nijū Isseiki ni okeru Kiban no Kōchiku ni Mukete*, Tokyo, Nov. 2000, 10.

³⁵Chinworth, *Inside Japan's Defense*, 127, 137.

³⁶For the full outcome of the FSX, see Mark Lorell, *Troubled Partnership: A History of U.S.–Japan Collaboration on the FSX Fighter* (Santa Monica, CA: RAND 1995).

missile technologies: infrared seekers in missile nose cones; the protection of infrared seekers from heat generated in flight; the kinetic kill vehicle for the destruction of ballistic missiles; and the second stage rocket motor of the interceptor missile.

Japan's policymakers and defense industry are increasingly disposed to co-development with the United States, seeing the advantages of producing highly interoperable equipment with their ally, the opportunities to access advanced technology, and the overall contribution to maintaining the Japanese defense production base. For its part, the United States favors co-development in order to share rising costs and to access Japanese advanced manufacturing techniques and certain technologies. The US–Japan Industry Forum for Security Cooperation, comprising the key defense contractors on both sides, has argued that the United States should loosen its restrictions on licensed technology and that both sides should look to exploit more co-development and co-production programs.³⁷ Future new US–Japan projects might include development of Unmanned Aerial Vehicle technologies, where Japan has some civilian strengths already, and even possibly the export of jointly developed components of the upgraded SM-3 to third parties in Europe collaborating with the United States on BMD.³⁸

Nevertheless, despite Japan's realization of the necessity to push forward with US–Japan bilateral cooperation as a means to preserve its military technology base, it does not do so without considerable caution regarding the risks of overdependence on the United States. The National Institute of Defense Studies, JMOD's academic research arm, produced a report in 2006 which questioned the degree to which the United States can be trusted to allow Japan to maintain autonomous technology even in the case of co-development and co-production, arguing that the F-35 project demonstrates the US's disinclination to share technology fully with even its closest allies and partners.³⁹ Japanese policymakers have been especially frustrated at the US's refusal to release the F-22, and there is concern that the United States is intent in future licensed production and co-development projects to allow Japan to produce only castoff weapons systems or to become essentially a subcontractor for larger US projects such as BMD – all

³⁷Keidanren, 'IFSEC Joint Report: Revised U.S.–Japan Statement of Mutual Interests', 21 Jan. 2003, <www.keidanren.or.jp/japanese/policy/2003/005e.html>.

³⁸Japan, US Plan Drone R&D Study', *Japan Times*, 22 Feb. 2010, <<http://search.japantimes.co.jp/print/nn20100222a6.html>>; 'US Urges Japan to Export SM-3s', *Japan Times*, 25 Oct. 2009, <<http://search.japantimes.co.jp/print/nn20091025a6.html>>.

³⁹Bōei Kenkyūjo, *Waga Kuni no Bōei Gijutsu Kiban ga Sōbihin Shutoku ni oyabasu Kōka ni Kansuru Chōsa Kenkyū* (Tokyo 2006), 34.

reinforcing Japan's technological and strategic dependence on the United States⁴⁰

Japanese policymakers have thus begun to consider the partial or total lifting of the arms export ban as a key means to reverse the decline in the domestic defense production base and preserve a degree of *kokusanka* through international cooperation, with the United States but also by the prospect of collaboration with producers in other countries.⁴¹ Liberal Democratic Party (LDP) administrations, supported by the Keidanren's DPC, have consistently challenged the ban from the early 2000s onwards.⁴² The Prime Minister's Council on Security and Defense Capabilities in preparing in 2004 for the revision of the National Defense Program Guidelines (NDPG), the document that sets out Japanese defense doctrines alongside the necessary capabilities, commented that expanding technological military cooperation with states other than the United States should not be seen as Japan acting as a 'merchant of death.'⁴³

The government did in part move to breach the ban in December 2004 in order to facilitate co-development with the United States on BMD. The Chief Cabinet Secretary's statement stressed that BMD would not conflict with the arms export ban because the project was designed for the smooth functioning of the US-Japan alliance and thus Japan's own defense.⁴⁴ The United States has also pressured Japan on its arms exports ban. A bipartisan report of alliance opinion makers in 2007 advocated the lifting of all restrictions on Japanese arms exports to further defense production cooperation with the United States.⁴⁵

⁴⁰Handa Shigeru, *Bōei Yūkai: Shinshin Naki Nihon no Anzen Hoshō* (Tokyo: Junpōsha 2010), 182–90.

⁴¹Junichi Nishiyama, 'Nihon no Bōei to Gijutsu Kaihatsu', in Morimoto Satoshi (ed.), *Kiro ni Tatsu Nihon no Anzen: Anzen Hoshō, Kikikanri Seisaku no Jissai to Tenbō*, (Tokyo: Hokuseidō 2008), 353.

⁴²For example, see Defense Policy Studies Subcommittee, National Defense Division, Policy Research Council, Liberal Democratic Party, 'Recommendations on Japan's New Defense Policy: Toward a Safer and More Secure Japan in the World,' 30 March 2003, <www.jimin.jp/jimin/main/seisaku.html>; Nihon Keizai Dantai Rengōkai Bōei Seisan Iinkai, *Teigen: Kongo no Bōeiryoku Seibi no Arikata ni tsuite: Bōei Seisan Gijutsu Kiban no Kyōka ni Mukete*, 2004, reported in Nihon Keizai Dantai Rengōkai Bōei Seisan Iinkai, *Bōei Seisan Gijutsu Kiban ni Tsuite: Kokunai Kiban no Jūjutsu to Kokusai Kyōryoku*, Tokyo, Sept. 2005, 6.

⁴³Anzen Hoshō to Bōeiryokyu ni Kansuru Kondankai, *Anzen Hoshō to Bōeiryokyu ni Kansuru Kondankai ni Okeru Kore Made no Giron to Gaiyō 2004*, 5, <www.kantei.go.jp/jp/singi/ampoboue/dai7/7siryou1.pdf>.

⁴⁴Bōeishōhen, *Bōei Hakusho 2008* (Tokyo: Zaimushō Insatsukyoku 2008), 388.

⁴⁵Richard L. Armitage and Joseph S. Nye, 'The US-Japan Alliance: Getting Asia Right Through 2020', CSIS Report, Feb. (Washington DC: CSIS 2007) <www.csis.org/media/isis/pubs/070216_asia2020.pdf>.

Japan's policymakers and industrialists have been unrelenting in their campaign to revise the export ban. The LDP in its final phases in office in June 2009 again proposed lifting the ban to promote international collaboration and preserve the defense production base.⁴⁶ In August the Prime Minister's Council on Security and Defense Capabilities, in preparation for the scheduled revision of the NDPG in 2009 (delayed to late 2010 due to the change of governing administrations), once again argued for revising the export ban at least on a case-by-case basis to allow Japanese participation in international joint development projects with the United States and European partners, or otherwise the risks would increase of Japan being left behind in defense technology.⁴⁷

The new Democratic Party of Japan (DPJ) government since 2009 has also been obliged to reconsider the export ban under pressure from JMOD, METI, and the defense industry. Defense Minister Kitazawa Toshimi remarked at a conference held by the Japan Association of Defense Industry in January 2010 that there was a need to review the ban to promote international defense projects. Kitazawa was rebuked by then Prime Minister Hatoyama Yukio, who stated immediately afterwards that Japan had no intention of lifting the ban, mindful of his governing coalition's dependency on the anti-militaristic Social Democratic Party of Japan (SDPJ).⁴⁸ However, the Council on Security and Defense Capabilities in a New Era, a new advisory panel formed under Hatoyama and then reporting under his successor Prime Minister Kan Naoto in order to prepare for the 2010 NDPG, again reported in August 2010 in favor of a partial lifting of the arms export ban with a licensing system to facilitate international joint development and production projects.⁴⁹

⁴⁶Jiyū Minshutō Seimu Chōsakai Kokubōbukai Bōseisaku Kentō Shōiinkai, *Teigen Shinbōeiseisaku ni Taikō ni Tsuite*, 9 June 2009, 13–14, <www.jimin.jp/jimin/seisaku/2009/pdf/seisaku-012.pdf>.

⁴⁷Anzen Hoshō to Bōeiryoku in Kansuru Kondankai, *Anzen Hoshō to Bōeiryoku ni Kansuru Kondankai Hōkokusho*, Aug. 2009, 64–7, <www.kantei.go.jp/jp/singi/ampo bouei2/090928houkoku_e.pdf>.

⁴⁸'Minaosu? Buki Yushutsu Sangensoku, Bōeishō wa "Mondai Teiki" to Shakumei', *Asahi Shimbun*, 13 Jan. 2010, <<http://asahi.com/politics/update/0113/TKY201001120504.html>>; 'Shushō "Buki Sangensoku o Mamoru, Bōeishō Hatsugen o Hihan"', *Yomiuri Shimbun*, 13 Jan. 2010, <www.yomiuri.co.jp/politics/news/20100113-OYT1T00079.htm>.

⁴⁹Council on Security and Defense Capabilities in a New Era, *Japan's Visions for Future Security and Defense Capabilities in the New Era: Toward a Peace-Creating Nation*, Aug. 2010, 45–7, <www.kantei.go.jp/jp/singi/shin-ampobouei2010/houkokusyo_e.pdf>.

Over the ensuing months in the run-up to the NDPG, the JMOD continued to press for a revision of the arms export ban, supported by the domestic defense industry and US policymakers.⁵⁰ The DPJ's Policy Council on Diplomacy and Security by November had formulated a plan and gained intra-party consensus to propose to Prime Minister Kan the lifting of the export ban in the NDPG. The DPJ called for a return to the 1967 foundation principles of the ban that Japan should not purvey arms to Communist states, states under United Nations sanctions, or states involved in conflict. In turn, Japan would now only export weapons and military technology in line with international arms control regimes, for 'peace building and humanitarian' purposes, and for joint development and co-production with states intending to use weaponry for purely deterrent purposes.⁵¹

Just as Japan finally approached the issue of lifting the arms export ban, in the end it shied away from a final decision in the new NDPG. Prime Minister Kan, preoccupied with domestic politics and the need to once again try to persuade the SDPJ to ally with it outside a coalition in the impending budget battles in the National Diet, took the decision in December 2010 to shelve the issue.⁵² Consequently, the 2010 NDPG omitted any reference to the lifting of the ban and simply stated that in order to maintain a stable defense production base it was necessary to 'continue to investigate policies for ... joint development and production.'⁵³

The JMOD was frustrated in 2010 but nevertheless has made it clear that it will continue to argue for an overturning of the ban. In any case, it has long searched for means to breach the arms export ban in de facto terms. The Chief Cabinet Secretary's statement of 2004 has now been interpreted by JMOD as providing grounds for investigation with other countries into joint research and development of technologies to respond to terrorism and piracy.⁵⁴ Japan has already exported 'demilitarized' Japan Coast Guard (JCG) patrol craft to Indonesia for anti-piracy activities, and begun new, if small-scale international

⁵⁰'Buki Yushutsu Sangensoku Beikoku Bōchōkan ga Kitaikan', *Asahi Shimbun*, 14 Oct. 2010, <www.asahi.com/politics/update/1014/TKY201010140115.html>.

⁵¹'Buki no Kokusai Kyōdō Kaihatsu, Minshu ga Sanka Yōnin, Bōei Taikō e no Teigenan', *Asahi Shimbun*, <www.asahi.com/politics/update/1130/TKY201011290585.html>.

⁵²'Buki Yushutsu Sangensoku, Minaoshi Meiki Sezu Bōei Taikō, Shamin ni Hairyō', *Asahi Shimbun*, 7 Dec. 2010, <www.asahi.com/politics/update/1207/TKY201012070180.html>.

⁵³Bōeishō, *Heisei 23nendo ikō ni Kakawaru Bōeikeikaku no Taikō ni tsuite*, 17 Dec. 2010, 16, <www.mod.go.jp/j/approach/agenda/guideline/2011/taikou.pdf>.

⁵⁴Bōeishōhen, *Bōei Hakusho 2008* (Tokyo: Zaimushō Insatsukyoku 2008), 388; Kankōkai Henshūbu, *Bōei Nenkan 2006* (Tokyo: Kankōkai Henshūbu 2006), 147–8.

defense technological cooperation.⁵⁵ JMOD's Technical Research and Development Institute has dispatched observers to Sweden's nuclear biological and chemical warfare research facilities, and used French facilities to calculate stealth technologies. JMOD is looking for new loopholes in the ban, investigating exemptions for exports of weaponry to be used for 'humanitarian' purposes, such as the domestically manufactured US2 search and rescue seaplane.⁵⁶

The Slow Death of Japan's Defense Production Model

JMOD policymakers now talk of a sense of 'crisis', or slow *hara-kiri* (腹切り), in the Japanese defense industry.⁵⁷ Japanese domestic procurement has dropped below the 90 percent level for the first time since the early 1980s. Since the late 1990s, Japan's government has launched a series of reports into the future of national defense production.⁵⁸ The JDA's Committee for Promoting the Comprehensive Reform of Procurement, established in September 2003, took the first steps to designate in a more planned fashion the key technologies needed to preserve domestic production on the basis of whether they are strategic, secret, and specialist.⁵⁹ However, these reports and identification of key areas to foster *kokusanka* as yet appear to have had little impact on the downward structural trends.

Japan's formerly close government–industry relationship is coming under stress. Due to the budgetary squeeze, the Japanese government cancelled for the first time in the contemporary period a procurement order for a total of 62 AH64D *Apache* Longbow helicopters after only 10 were delivered, leading FHI to sue the government for ¥40 billion in

⁵⁵Kubota Yukari, 'Japan's New Strategy as an Arms Exporter: Revising the Three Principles on Arms Exports', *RIPS Policy Perspectives*, no. 7 (Nov. 2008), 15–16, <www.rips.or.jp/from_rips/pdf/japans_new_strategy.pdf>.

⁵⁶Jindō Mokuteki no Sōbi nara Yushutsu Kaikin, *Buki Sangensoku no Reigai Kentō*, *Asahi Shimbun*, 14 March 2010, <<http://asahi.com/politics/update/0214/TKY20100212283.html>>.

⁵⁷Richard J. Samuels, *Securing Japan: Tokyo's Grand Strategy and the Future of East Asia* (Ithaca, NY: Cornell UP 2007), 147.

⁵⁸These reports include: Bōei chō, *Arata na Jidai no Sōbi Shutoku o Mezashite: Shin ni Hitsu yō na Bōei Seisan Gijutsu Kiban no Kakuritsu ni Mukete*, Tokyo, June 2005; Bōei Sangyō Gijutsu Kiban Kenkyūkai, *Bōei Sangyō Gijutsu no Iji Ikusei ni Kansuru Kihon-teki Hōkō: Nijū Isseiki ni okeru Kiban no Kōchiku ni Mukete*, Tokyo, Nov. 2000; Bōei Kenkyūjo, *Waga Kuni no Bōei Gijutsu Kiban ga Sōbihin Shutoku ni oyabasu Kōka ni Kansuru Chōsa Kenkyū*, Tokyo, 2006; and Nihon Keizai Dantai Rengōkai Bōei Seisan Iinkai, *Teigen 'Kongo no Bōeiryoku Seibi no Arikata ni tsuite': Bōei Seisan Gijutsu Kiban no Kyōka ni Mukete*, Tokyo 2004.

⁵⁹Asahi Shimbun Jieitai 50nen Shuzaiha, *Jieitai Shirarezaru Henyō*, 272.

licensing fees already paid to Boeing.⁶⁰ Japanese companies have become increasingly pessimistic about the prospects for continuing defense procurement activities in the absence of steady and profitable orders, and are unconvinced of government plans to encourage conversion of defense equipment to dual-use civilian exports, such as the C-X and P-X being produced in a civilian transport version.⁶¹

The result is that many Japanese companies are now beginning to exit the defense market altogether. MHI's SME subcontractors for the M-90 tank have shrunk from more than 1,300 firms to less than 230. Other smaller subcontractors have been forced to diversify into civilian products to keep their production lines intact; one Ōsaka SME, for example, as a result of a 20 percent drop in military orders, was forced to shift from ammunition manufacture to producing medical oxygen tanks.⁶² One report states that, since 2003, 20 subcontracting firms for fighter production have abandoned military procurements; and that for tank production 35 have withdrawn from subcontracting and 13 have gone bankrupt.⁶³ JMOD reported in 2010 that since 2005 another 56 subcontracting firms had exited fighter and tank production.⁶⁴ The DPC reports that private investment in defense production was down 1.5 percent between 1995 and 2000, and that the number of defense engineers and R&D technicians had declined by 15 and 9 percent respectively.⁶⁵ The DPC's membership has shrunk from 84 members in 1997 to 66 in 2002.⁶⁶

Japan has even experienced the exit from the defense market of large corporations seeking improved prospects in civilian sectors. Japanese

⁶⁰'Fujijū ga Bōeishō Teisō Heri Hacchū Chūshi de 350okuen Motomeru', *Asahi Shimbun*, 15 Jan. 2010, <<http://asahi.com/politics/update/0115/TKY201001150358.html>>.

⁶¹'Jieitai Kaihatsuki no Minkan Tenyō e Kentōkai Ryōsan de Kosutogen Hakaru', *Asahi Shimbun*, 31 March 2010, <<http://asahi.com/politics/update/0115/TKY201003310004.html>>; 'Jieitai Minsei Tenyō Kentō Ryōsan de Chōtatsuhi Asshuku', *Yomiuri Shimbun*, 2 May 2010, <www.yomiuri.co.jp/politics/news/20100502-OYT1T00182.htm>.

⁶²Asahi Shimbun Jieitai 50nen Shuzaiha, *Jieitai Shirarezaru Henyō*, 269–70.

⁶³Bōei Sangyō, Tettai Aitsugu Yosan Sakugen de Sōbihin no Hacchūgen', *Asahi Shimbun*, 24 Aug. 2009, <<http://asahi.com/politics/update/0820/TKY200908200165.html>>.

⁶⁴Bōeishō, *Bōei Seisan, Gijutsu Kiban*, April 2010, 7, <www.kantei.go.jp/jp/singi/shin-ampoboue2010/dai5/siryou1.pdf>.

⁶⁵Nihon Keizai Dantai Rengōkai Bōei Seisan Iinkai, *Bōei Seisan Gijutsu Kiban ni Tsuite: Kokunai Kiban no Jūjutsu to Kokusai Kyōryoku*, Tokyo, Sept. 2005, 4; Nihon Keizai Dantai Rengōkai Bōei Seisan Iinkai, *Waga Kuni Bōei Sangyō no Genjō Nado ni Tsuite*, 32.

⁶⁶Samuels, *Securing Japan*, 148.

corporations have increasingly eyed the benefits of civilian aerospace, with military production as a share of total aircraft production dropping from over 80 percent of total aircraft in the 1980s to around 60 percent in the 2000s. MHI, KHI and FHI, the national defense aerospace champions, are becoming more vested in the civilian aerospace market to compensate for the shrinking military market – the commercial market offering no barriers to international tie-ups and greater economies of scale. These three firms now account for around 35 percent of the global work share on the Boeing 787, bringing about a new policy of *jun-kokusanka* (quasi-indigenous production [準国産化]); the irony being that this shift in many ways reflects the success of METI's policy of 'spin-on' and 'spin-off' to nurture the defense industry, in that these companies are bringing to civilian airliners the composites originally developed for the F-2.⁶⁷

Indeed, it is the very structure of Japan's model of civilian–military integration, so responsible for major successes of *kokusanka* and techno-nationalism, which may also bring about the demise of these policies. JMOD has encouraged defense industry consolidation to realize economies of scale. Nissan Motors after its purchase by Renault exited the defense industry by transferring its aerospace division to IHI in July 2000, and Tōyō Tsūshinki transferred its defense electronics division to NEC in May 2004.⁶⁸ In October 2000 IHI and SHI moved their military shipbuilding activities into IHI Marine United; in September 2001 IHI, KHI and Mitsui Zōsen formed a work share agreement; in October 2002 NKK and Hitachi integrated their military shipbuilding into Universal Shipbuilding; and in October 2002 KHI formed Kawasaki Zōsen, a new shipbuilding subsidiary.⁶⁹ However, JMOD's consolidation policy has been frustrated in this endeavor by the fact that the small proportion of defense revenues gained by corporations and the close integration of their civilian and military production facilities means that they have few financial incentives and little physical plant flexibility to agglomerate into more exclusively defense-oriented activities. Moreover, the fact that defense is only a small part of these larger corporations' business means that in the absence of steady orders they find there is relatively little cost to their

⁶⁷“Jun-Kokusanka” Kōkūki, Ōsora e, *Asahi Shimbun*, 12 May 2007, 13; Seishi Kimura, *The Challenges of Late Industrialization: The Global Economy and the Japanese Commercial Aircraft Industry* (Basingstoke, UK: Palgrave Macmillan 2007), 134–71.

⁶⁸Nihon Keizai Dantai Rengōkai, *Teigen 'Kongo no Bōeiryoku Seibi no Arikata ni tsuite'*: *Shiryō*, 20 July 2004, 8.

⁶⁹Nihon Keizai Dantai Rengōkai Bōei Seisan Iinkai, *Waga Kuni Bōei Sangyō no Genjō Nado ni Tsuite*, 33.

overall bottom line in exiting military procurement. All in all, then, Japan's policymakers are now anxious that the national defense production and technological base are 'seriously weakening.'⁷⁰

Conclusion: China Dodges the Japan-Model *Kokusanka* Bullet?

Japan's techno-nationalism model appears to be hitting the buffers. Its original architects in METI, JMOD, and private industry increasingly accept that structural weaknesses have surfaced in the post-Cold War period and these pose questions about the model's very survival. Japan's defense production model has come unstuck in three key areas. First, Japan cannot afford financially, or at least lacks the financial will given other budgetary pressures, to nurture defense production in the same way as during the Cold War. Japan's constrained defense budget, rising development costs, and existing high unit costs are making for declining procurements and profits for civilian contractors. In some areas of production such as shipbuilding, there are probably sufficient orders, even with orders of one major asset per year, to sustain a defense base. In other areas, and most especially fighter aircraft – in many ways the apogee of hopes for national technological autonomy – there is the prospect of defense production disappearing altogether. Other projects such as BMD and military satellites offer some scope for future procurements, but even for these the long-term commitment of financial resources is questionable.

Second, Japan's procurement management continues to undergo reform, but the defense production system is saddled with inherently high unit costs due to low – almost bespoke – production runs of major equipment, which in turn compounds the problems of the constrained defense budget. The system also has to overcome problems of collusion built up over the years through cozy cooperation between bureaucratic, military, and industrial defense interests.

Third, Japan's arms export ban means that for the development of ever more costly weapons systems it cannot tap the economies of scale provided by international joint development and export markets. Japan's opportunities for licensed production are increasingly limited and may actually increase external technological dependency, especially on the United States. Its policymakers are eroding the prohibition on arms exports, but they are in a race against time (a race they have initially lost as of the start of 2011) to secure meaningful leeway in the

⁷⁰Bōeichō, *Arata na Jidai no Sōbi Shutoku o Mezashite: Shin ni Hitsuyō na Bōei Seisan Gijutsu Kiban no Kakuritsu ni Mukete*, Tokyo, June 2005, 1; interview with Director, Equipment Policy Division, Bureau of Finance and Equipment, Ministry of Defense of Japan, Tokyo, 20 July 2007.

principles versus the risks of a rapid decline in defense production to the point that there is no defense industrial base to exploit future international collaboration. Japan's techno-nationalism model hence faces possible collapse, to the point that not only is it unable to sustain a foothold in leading-edge military technologies, but that it might not even be able to maintain toeholds or basic competency.

In light of Japan's current problems, questions then emerge as to the lessons for China in pursuing a similar techno-nationalist trajectory. At first sight, it seems that China would share few of the same risks as Japan currently. Its rapidly expanding defense budget over the last two decades perhaps counters the prime problem Japan has encountered of insufficient funds to promote domestic procurement. However, as the signs of a potential relative recent slowdown in Chinese defense spending seem to illustrate, there will be longer-term limits and competing claims on budget appropriations for defense. It will thus presumably be important for China to identify at a relatively early stage which technologies and production capabilities it deems as essential to preserve for reasons of national autonomy and to focus resources in these areas, as otherwise declining budgetary capacity may choke off options for indigenous production in the future. Japan in the past has attempted to preserve footholds in all areas, which was possible under benign budgetary conditions. It is only now, and possibly too late, that it is focusing efforts on nurturing selective technologies which must be preserved. If China does not make these choices and provide directed and sufficient funding, then a civilian–military model of integration, just as for Japan, offers means for civilian contractors to exit the defense market in search of profits elsewhere.

Similarly, China will need to think early on about how to manage procurement under conditions of attempting to foster indigenous production. Japan's defense market has lacked genuine competition for most of the post-war period. Again, this worked well when the aim was to sustain just a few firms in the sector almost regardless of high unit costs, but has become very difficult under a tighter defense budget. China will thus need to keep an eye on promoting meaningful, if state-guided, competition to avoid Japan's pitfalls. At the same time, it is imagined that if collusion, spilling over into revealed corruption, is a problem in the Japanese context, then similar problems will also plague China's defense production if procurement structures are not managed to keep bureaucratic, military, and industry personnel and interests separate.⁷¹

⁷¹David Shambaugh, *Modernizing China's Military* (Berkeley/ Los Angeles: Univ. of California Press 2002), 239–44.

China clearly does not share Japan's unique circumstances among major developed industrial states of self-removal from international collaboration and a ban on arms exports. However, even if China does not experience exactly the same problems as Japan in international collaboration, it may come to experience these to a certain degree.⁷² China may find that licensed production opportunities become more expensive or even dry up as partners become less willing to share defense technology on the cheap. Russia's dissatisfaction with China's flagrant illegal reverse engineering may endanger one key source of technology, while at the same time the European Union arms embargo remains firmly in place and shuts off an alternative avenue for acquiring technology. International co-development and co-production may be an easier option for China than for Japan, but it carries for any state attendant risks of being allowed only limited access to the most advanced technologies and the possibility of dependence on an external power.

The apparent good news for China, though, in referencing the Japanese model, is that it is already beginning to tackle many of these key problem areas. By all accounts, China in putting in place the 'Four Mechanisms' seems to be actually in step, if not ahead, of Japan on introducing procurement reforms.⁷³ In addition, China appears to have realized the necessity of diversifying sources of funding away from just the state and to boost private investment in its defense industry.⁷⁴ Likewise, China is far ahead of Japan on international collaboration, which should provide access to foreign technology, capital, and production techniques. Exactly how well China has managed these tie-ups without the risk of foreign dependency is an area where this paper cannot make extensive judgments, but the impression is that China, through exploiting international civilian industrial linkages and 'spin-on' to its defense industries, is at least attempting to engage with a number of partners to maximize its options and minimize the risks of foreign technological dependency.⁷⁵ All of this forewarning and action

⁷²Keith Crane *et al.*, *Modernizing China's Military: Opportunities and Constraints* (Santa Monica, CA: RAND 2005), 155–7, <www.rand.org/pubs/monographs/2005/RAND_MG260-1.pdf>.

⁷³Tai Ming Cheung, 'Dragon on the Horizon: China's Defence Industrial Renaissance', *Journal of Strategic Studies* 32/1 (2009), 43–4.

⁷⁴Tai Ming Cheung, 'The Chinese Defense Economy's Long March from Imitation to Innovation', *The Journal of Strategic Studies* 34/3 (June 2011), 325–54.

⁷⁵James Mulvenon and Rebecca Samm Tyroler-Cooper, 'China's Defense Industry on the Path of Reform', report prepared for the US-China Economic and Security Review Commission, Oct. 2009, 38–52, <www.uscc.gov/researchpapers/2009/DGIRreportonPRCDefenseIndustry-FinalVersion_withUSCCseal_02Nov2009_2_.pdf>.

should then augur well for a Chinese defense industry that can learn the best from the Japanese model of civilian–military integration and tap its benefits of the indigenization of technology, but can also avoid its structural risks of civilian exit from defense and ultimately technological dependency on external partners.

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