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Globalization of Defense Industries: China

John Frankenstein

Senior Fellows Publication

February 2003



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EXECUTIVE SUMMARY

(Note: This paper was originally commissioned for a conference convened by the Atlantic Council in Washington D.C. in December 2001 to consider process of globalization in the defense industries of the major powers. It has been updated since that meeting.)

The Chinese defense industrial complex (CDIC) can be looked at as a remarkable accomplishment, a worst-case example of Chinese state-owned enterprises and a strategic failure. When the People's Republic of China was established in 1949, its economy and industrial base was an ash heap, yet within 20 years the CDIC was producing a full range of relatively modern military equipment, including strategic weapons. But the sector did not keep pace with modernization, and today is regarded as an industrial dinosaur, unable to achieve that most meaningful metric in this era of economic reform: profitability. More importantly, the CDIC has not been able to design and produce the systems the Chinese military deems necessary for its future—with the result that China has become dependent on foreign sources for key technologies and weapons system. The Chinese are not unaware of the CDIC's shortcomings, but the various attempts to resolve the sector's problems — reorganization and “conversion” — have only been marginally successful. While some “converted” plants, mostly in aviation, have entered into the kinds of international chains of production that mark true globalization, Chinese observers deem benefits to have been minor. In short, the Chinese have a wary attitude toward globalization, and it is premature to think of the CDIC as a player in a global defense industry context.

Globalization of Defense Industries: China

Introduction: Three Views

The Chinese defense industrial complex (CDIC) is at once:

- A remarkable accomplishment
- A worst-case example of Chinese state-owned enterprises
- A strategic failure.

The CDIC today occupies a relatively small corner of the Chinese economy – the political economist Wang Shougang suggests that CDIC assets account for about four percent of the Chinese state's industrial assets;¹ CDIC employment of about three million is less than 10 percent of China's declining industrial workforce.²

But the CDIC did not always play such a minor role. As China's industry was rebuilt in the 1950s, 41 of the 156 "key projects" undertaken with Soviet aid were in defense. At the high point of the CDIC growth and expansion in the 1960s, it has been estimated that the CDIC consumed 50 percent of China's industrial investment for the construction of the so-called "Third Front." The outcome was an uneconomic distribution of 55 percent of China's defense plants in the remote interior, a legacy that still plagues the CDIC.³

Today the CDIC lags the rest of China's economy. With some signal exceptions, the CDIC has not taken part in the "great leap outward" that has fueled China's rapid economic growth in the last two decades of the 20th century. Nor, with one exception, does one see – or anticipate – the CDIC participating in the kinds of international defense industrial consortia that developed in the 1980s and 1990s.

Before turning to the three perspectives outlined above, it is necessary to consider two preliminary questions: How do the imperatives that drive Chinese political behavior, the current and projected state of the Chinese economy, and the needs of the CDIC's most important (and often only) customer, the Chinese People's Liberation Army (PLA), fit together; and, in these contexts, what does "globalization" mean?

¹ Wang 1999, p. 342.

² Like many Chinese numbers, this figure is open to dispute. The three million employed is cited by at least two Chinese sources (Chen 1993; Zhu 2000), but defense industry officials say that attempts at conversion "stabilized" the situation for 12 million people (Ng, 1997); perhaps the larger figure includes dependents. China's economic reforms have led to severe industrial rationalization: in 1995 the total industrial work force was about 54.4 million; by 1999/2000, it had fallen to 34.4 million (State Statistical Bureau, 2000). Despite some claims that CDIC jobs have been saved, no doubt the CDIC has been affected as much as any other sector. Indeed, there have been scattered reports of demonstrations by laid-off workers at defense plants through the country. See, for instance, AFP 2002.

³ See Frankenstein 1999 for a comprehensive view of the CDIC, Naughton 1988 for a detailed and classic analysis of the "Third Front". A colleague visited one of these "Third Front" plants in Sichuan in the spring of 2002 and reports, "The [workers] have nothing to do. From time to time they put some paint on spare parts... It is still the socialist nightmare. The company still owns apartments, a school, a hospital and 'no hope.' One guy was even wearing a Mao button and they played soldier songs from the good old times..." (Private communication).

Political Imperatives

Since the middle of the 19th century, Chinese elites have been grappling with four basic problems:

1. How to rule a large country with a large population from a single place.
2. How to make China great again.
3. How to transform Chinese society so as to assure China's greatness.
4. How to deal with the outside world.

This essay is not the place for a history lesson, but it is important to remember that the Opium War of the 1830s ushered in more than a century of continuous and disastrous conflict in China, culminating in the struggle against Japan and the subsequent Chinese civil war. Chinese elites were socialized in this era of conflict. The first generations of Chinese communist leaders were active participants in the wars of the 20th century. Vicious political campaigns, sometimes verging on civil war, followed the communist triumph of 1949. In other words, these four questions are not safe, academic issues; millions of people have fought and died in China's various attempts to resolve them, and the debate continues.

In the debate, however, there is one constant: regardless of how various factions of the Chinese leadership struggle over questions of rule, transformation and foreign policy, they all agree that China must be strong. The slogan *fu guo, qiang bing* (富国强兵), or "rich country, strong army," remains as current today as it was when it was coined in the 19th century. In other words, Chinese elites, whether mandarins or cadres, have long seen national security as a function of economic strength.

The Economy

In part, therefore, the current Chinese drive to modernize its economy has roots in China's search for security. Published economic results have been substantial: GDP reaching US\$1 trillion; exceptionally high growth rates; major sector-related shifts from agriculture and heavy industry to hi-tech; consumer goods and services; monetary stability; massive and growing foreign investment (China is the second largest destination of direct foreign investment, surpassed only by the United States); great improvements in urban standards of living; and an openness to international trade and steady progress towards marketization. All of these have led to a profound transformation of the Chinese economy.

China has become a workshop to the world. It is hard not to buy something made in China these days, from cheap clothing to Cuisinarts. And do not ask where the motherboard in your laptop came from. In the political economy of the Asia-Pacific region, China is no longer a technology laggard, but perhaps in the same position as 1960s Japan or 1970s South Korea.⁴ China's membership in WTO will not only open up its market, but also provide new opportunities for exports, a sector which in many ways has been the most dynamic portion of the Chinese economy.

There remain many problems, not the least of which is the politically skewed inaccuracy of China's rosy statistics. Other issues include: widespread corruption; a "scissors crisis" that has led to

⁴ Some political economists suggest that Asia-Pacific economic development has followed a "flying geese" model. Just as migrating geese fly in a V following a leader, so too have Asia-Pacific economies followed the United States (or Japan), with technologies cascading down through the ladder of development as they go through their product life cycle in the various economies of the region. Thus automobile, steel, shipbuilding and consumer electronics technologies cascaded from the United States to Japan to Korea and Taiwan and now to China; VCRs first made in Japan are now made in Korea and Taiwan; shoes from Taiwan to China, etc. In other words, as a "first generation" technology is supplanted in the leaders by even more advanced technology, it migrates downward. But the important point here is not so much that technologies migrate, as it is that the model describes continuous forward technological advance. China used to be at the tail end of the V; it is there no longer, and is raising economic anxieties among its Asian neighbors. See, for instance, Andrew Ward, "China's economic might strikes fear in Seoul," *Financial Times*, 20 Nov 2001; James Brooke, "Tokyo Fears China May Put an End to 'Made in Japan'," *New York Times*, 20 Nov 2001.

wide distributional disparities between city and countryside (and considerable social instability in rural areas); a compromised banking system; a weak tax system; labor problems, including the lack of a social safety net for the increasing number of laid off (and unemployable) workers; rule *by* rather than *of* law (and thus difficulties of enforcing civil judgments); and great difficulties in transforming the stagnant state-owned industrial sector of which the CDIC is a part.

China's participation in the WTO regime will no doubt accelerate these socioeconomic trends, both positive and negative. How China, which guards its sovereignty jealously, will deal with the transparency demands and international scrutiny of internal practices that will come with participation in the border-eroding WTO will only become clear over time. The resolution of these tensions, including those between a nascent civil society engendered by economic transformation and a rigid Leninist political system, will be one of the key political and economic dramas of this century.

PLA Needs

The PLA is in the midst of a protracted modernization program designed to overcome its problems of “short arms and slow legs” – that is, lack of power projection and mobility – and transcend its inherited status as a “junkyard army.” Now directed to be able to fight a “limited war under high-tech conditions,” its short-term priorities focus on the contingency of a “Taiwan scenario” which Chinese analysts believe will bring confrontation, if not conflict, with the United States. At the same time, the PLA faces a daunting menu of long-term strategic challenges. China proposes to assert its offshore surface and air rights claims in the East China and South China Seas. These claims are particularly complex: they not only overlap those of Japan, Korea, Indonesia, the Philippines, Vietnam and Malaysia, but also involve the complicating issue of sea-lanes for oil shipments from the Persian Gulf to Northeast Asia. The PLA must also be able to respond to problems that might arise from the strategic challenges posed by a nuclear South Asia, problems in the Russian “Far East,” potential energy imports from Central Asia and, more recently, instability in the Caucasus.⁵

To these ends the PLA has undergone extensive reorganization and manpower reform. It has started replacing aging equipment with more modern (but still not state of the art) China-produced systems and has substantially beefed up its command and control, communications, computers, and intelligence (C4I) infrastructure. More immediately it has located intermediate-range ballistic missile (IRBM) batteries within close range of Taiwan. But the CDIC has not been successful in filling the PLA's wish list.

Chinese Views of Globalization

“Globalization” is a term that by its very nature encompasses so many variables as to be both useful and useless at the same time; true believers talk of “hyperglobalization” and skeptics of “globaloney.” Samuel Kim writes that, “globalization is a worldwide revolution with far-reaching but differing consequences for people's security, well-being and identities. It is a boundary-expanding or boundary-penetrating process, intensifying the levels of interaction and interconnectedness within and among states and societies.”⁶ The process is fueled by the communications revolution; the underlying assumption is that it is driven by the inexorable spread of market economics. Global firms respond to this dynamic by attempting to exploit the particular advantages of their international networks. As one senior electronics executive once remarked, “A global company sources everywhere, finances everywhere, designs everywhere, manufactures everywhere and markets everywhere.”⁷

⁵ See Mulvenon and Yang, eds., 1999 and 2001, for comprehensive analyses of the status of the PLA.

⁶ Kim 2000, p 10.

⁷ Personal communication to the author.

Not surprisingly, Chinese writing on globalization offers many definitions of this slippery term. Thomas G. Moore points out in his extensive review of Chinese perspectives that the Chinese term for globalization, *quan-qiu-hua* (全球化), is a fairly new entry in the Chinese lexicon.⁸ What distinguishes even those Chinese most disposed to welcome globalization is their focus on the political and economic dimensions of the process. The social and other integrative functions may not be ignored, but they do not play an important role in Chinese commentaries. Moore comments that, “For most Chinese observers, globalization is understood to be an ‘objective condition’ in the world economy characterized by increased flows of capital, goods and technology.”⁹ Many Chinese economic commentators see globalization as “an inevitable trend of the era” that will enhance China’s economic reform efforts. In any case, they argue, countries have no choice but to engage in the world economy.¹⁰ Chinese President Jiang Zemin, speaking at the 15th Party Congress in 1997, gave the authoritative view:

Opening to the outside world is a long-term basic state policy. Confronted with the globalization trend in economic, scientific and technological development, we should take an even more active stance in the world by improving the pattern of opening up in all directions...developing an open economy, enhancing our international competitiveness, optimizing our economic structure and improving the quality of our national economy.¹¹

In other words, for China the globalization process is at the service of state interests. National security is the paramount concern. The political dimension of economic policy is never far away. And it is this political dimension that fuels some Chinese perceptions that globalization may not be entirely to China’s benefit. Writers termed “economic nationalists” or “neo-leftists” see globalization as “Americanization.” For them, the process is “American poison” that seduces countries to surrender their self-interest to that of the United States, “a grand conspiracy of American political and financial elites.”¹²

Official views sometimes take pains to point out that globalization is not necessarily a benign process and may even contribute to conflict. The Chinese Defense White Paper issued in 2000 notes:

In today’s world, factors that may cause instability and uncertainty have markedly increased. The world is far from peaceful. There is a serious disequilibrium in the relative strength of countries. No fundamental change has been made in the old, unfair and irrational international political and economic order. Hegemonism and power politics still exist and are developing further in the international political, economic and security spheres. Certain big powers are pursuing “neo-interventionism,” “neo-gunboat policy” and neo-economic colonialism, which are seriously damaging the sovereignty, independence and developmental interests of many countries, and threatening world peace and security.... As modern science and technology and economic globalization continue to develop, competition among countries has become fiercer than ever before. Financial and economic risks are increasing, and economic security has become a concern for all countries. As the gap in development and the disparity between rich and poor countries continue to widen all over the world,

⁸ Moore, 2000, p. 105. Literally, “complete globe/sphere change”; 化 *hua* [change] is often attached to compound words as a suffix meaning “-ization”, thus “globalization”].

⁹ Moore 2000, p 111.

¹⁰ Wang Yong 2001.

¹¹ Cited in Moore 2000, p. 105.

¹² Wang Yong 2001, quoting the economist Han Deqiang from his book *Pitfalls of Globalization and China’s Realistic Alternatives*.

particularly between the South and North, polarization has become an increasingly serious problem.¹³

Thus the Chinese approach to globalization is somewhat wary. The debate, as is the case with any debate in China, can be easily politicized. In terms of the specific situation of the CDIC it is clear that globalization in China's defense sector will have to wait.

The CDIC's Dilemma

The process of globalization, largely framed in terms of the civilian economies, does not fit defense industrial sectors very well. Defense industries tend to be highly concentrated, monopsonistic and protected. International trade regimes, such as the WTO or the single market protocols of the European Union, usually exempt defense industries on national security grounds. In the Chinese case, regulations prohibit foreign investment in the weapons industry. But to see how the CDIC might fit into a future world defense industry order, it is necessary to consider the three perspectives sketched above.

CDIC as a Substantial Accomplishment

In one sense, the CDIC, broadly defined, represents a substantial accomplishment. In 1949 the Chinese industrial economy was an ash heap. Within 20 years, the CDIC was able to roll out jet fighters in serial production, start down the road toward sophisticated missiles, develop naval combatants, including submarines, and achieve nuclear capabilities. To be sure, as was have noted above, China's first steps were greatly aided by the Soviet Union. China's nuclear forces, including its attempts at nuclear-power submarines, were developed as special projects that required extraordinary political protection. These examples, plus the Third Front effort, demonstrate that given the political will, China can divert substantial resources to the CDIC.

Despite the difficulties that will be discussed below, the CDIC has continued to produce for the PLA. Actual domestic production rates of China's conventional weapons can only be estimated by admittedly inexact methods based on inexact (and usually non-sourced) numbers. For instance, the generally accepted production rate for China's IRBM/SRBMs is around 50 per year, an open-source number of missiles added to those already in place opposite Taiwan. The data for some major weapons systems from IISS's *Military Balance* for the 1990s show the following:¹⁴

Number/System 1990	Number/System 1999/2000
Tanks: 200 T-69, "some" T-79, T-80	Tanks 800 T-69/T-79, 500 T-80, 800 T-85
Jet fighters/interceptors 50 J-8	Jet fighters/interceptors 250 J-8
Destroyers/frigates 16 Luda DDG* 26 Jianghu FFG**	Destroyers/frigates 2 Luhu DDG 16 Luda DDG 31 Jianghu FFG 4 Jiangwei FFG

*Guided Missile Destroyers

** Guided Missile Frigates

¹³ Chinese Defense White Paper, FBIS-CHI-2000-1016, 16 Oct 2000.

¹⁴ International Institute for Strategic Studies, *Military Balance*, 1990 and 1999/2000.

The Institute for Defense & Disarmament Studies database suggests that T-85 production in the 1990s ranged between 100-150 tanks per year; that J-8 inventory went from 60 in 1992 to 180 in 1999 (plus an additional 24 J-8 III variants). While the numbers don't quite match, the trend lines are similar and are consonant with what might be termed the "normal modernization" of a backward military establishment; as these newer weapons systems are deployed, obsolete systems are retired.¹⁵

At the same time, more modern systems are entering the force in small numbers: the T-98 tank, the Luhai DDG, and perhaps J-10 jet fighters (the power plants for the more modern ships and jets, however, come from Ukraine and Russia). The IRBM build-up in southern China across the straits from Taiwan should not be neglected. The Western defense industry press regularly reports on new weapons systems available from the ordnance industry – e.g. new "Red Arrow" anti-tank missiles, a new multiple-launch rocket system, a "fast attack" jeep-type vehicle with mounted machine guns, new types of cruise and anti-ship missiles. Many of these appear to be demonstration models designed as much for export as for PLA deployment.¹⁶

Still, there are signs that the Chinese leadership is dissatisfied with the CDIC's performance. Since the 1980s there has been a constant chorus of commentary urging PLA modernization and the acquisition of modern weapons systems. As this continues, one can only assume that such a need persists. In its more extreme forms, this kind of commentary calls for the development of weapons that can deliver sudden knock-out blows to a technologically superior enemy – commentary that recalls the desperation of 19th century mandarins who, faced by overwhelming Western forces, called for "superb and magic weapons."

However, the CDIC's weapons system production capabilities should not be written off. Furthermore, there may be substantial unused capacity in the CDIC.¹⁷ But being able to make weapons systems – even with imported components – is only part of the story.

The CDIC as State-Owned Enterprise (SOE)

Just as the PLA requires modernizing, so does the CDIC. Despite the CDIC's continuing production, Chinese commentaries describe it as a worse-case example of the state-owned enterprise system: over-staffed, burdened with obsolete technology producing obsolescent weapons, a "closed society" isolated from the dynamic civilian economy, poorly located ("the Third Front"), plagued with over-capacity and duplication and with poor linkages to R&D, declining customer and product bases, in debt, unable to attract the human resources it needs, poorly managed, and worst of all, unprofitable.

To be sure, there are some areas of advance, such as missiles and electronics. But those "pockets of excellence" are limited. Considering that the two generals who have overseen the CDIC since the 1980s – Ding Henggao and Cao Gangchuan – are both graduates of Soviet missile academies, it is no accident that China has made advances there.

In the early 1990s Zhu Rongji was reported as saying that the majority of SOEs in trouble were from the defense sector. In the mid-1990s *People's Daily* noted that the number of loss-making defense plants was increasing as PLA procurement declined. In 1996 the State Planning Commission official in charge of defense called the situation facing the CDIC "grim," with weapons production employing only about one-third of the sector's capacity.

¹⁵ See the extensive data tables at <http://www.idds.org>.

¹⁶ See, for instance, the numerous examples available in Janes Online, <http://www.janes.com>.

¹⁷ The issue of unused capacity is complex. The combination of conversion and declining procurement resulted in the CDIC retaining about one-third of its production capacity for military goods by 1990; Brömmelhörster & Ng estimate that only 15 percent of total CDIC capacity is required for current defense needs. But it is an open question whether idle plants could economically shift back to defense work since many, if not most, have been shuttered and not maintained. Converted plants, still active, might more easily shift back to defense work. That at least would seem to be the Chinese view, for which "conversion" swings both ways. See Wang Li, 1993.

In the meantime, the CDIC will continue to receive subsidies, since the Chinese banking system, already burdened by non-performing loans in the civilian sector, considers the CDIC to be a poor risk. Wang Shougang estimates the new weapons production was subsidized to the tune of about RMB 4 billion in the late 1990s (approximately US\$482 million). In Brömmelhörster and Ng's estimate, total 1997 subsidies ran about RMB 93 billion (US\$11.2 billion).¹⁸ But given the size of the CDIC's problems, including conversion, total subsidies were probably much higher.

CDIC as Strategic Failure

The biggest problem the CDIC faces is that it has been unable to design and produce the advanced weapons the PLA needs for its future. Indeed, as noted above, China has to import key components of the obsolescent systems it makes domestically. Thus China has been forced to buy more modern systems from outside suppliers – primarily Russia. China has purchased Su-27 and Su-30 fighters, Sovremenny DDGs and Kilo submarines, plus assorted advanced munitions, missiles and surveillance technologies. In addition, China has entered into licensed kit production of Su-27s. It has acquired relatively advanced avionics and electronics from Europe and Israel. Whatever the eventual military implications of these developments, it should be noted that there is a long road between acquisition and capability. Advanced weapons require advanced maintenance and logistics; the fact that China has to return advanced jet fighter engines and ship propulsion systems to the original foreign suppliers for maintenance and repair provides a sense of where China stands in that regard.

There is a greater issue for China: self-reliance. Looking back over the development of China, there is a psychological tension between borrowing from the outside world and creating from within China. Over at least the past twenty years Chinese leaders have been exhorting the CDIC to create and adopt modern technologies. That this is a constant thread of commentary suggests that the goals are not being met. Thus, there is a contradiction between dependency on the outside world and the imperative of self-reliance. China once relied heavily on the USSR and remembers what happened in 1960, when the Soviets packed their bags. In the aftermath of September 11 and the strategic realignments that seem to be taking place as the Central Asian republics and Russia – all members of China's "Shanghai Cooperation Organization" – jump on Washington's anti-terrorism bandwagon, might not China be abandoned again?

Reforming the CDIC

China is not totally passive about the problems facing the CDIC. Several solutions have been attempted: reorganization, "conversion" and exports. As Figure I on page 12 of this paper shows, the CDIC has been undergoing almost constant reorganization since the late 1970s, when the Deng Xiaoping economic reforms were kicked off. Equally important, as Figures II and III on pages 13 and 14 show, the internal lines of control have changed considerably following the 1998 9th National People's Congress, when the Commission on Science, Technology and Industry for National Defense was "civilianized," the defense industrial ministries were abolished (as were all other industrial ministries in the civilian economy) and the various defense producers were organized into ten separate enterprise groups.¹⁹ Figure IV on page 15, drawn from data available on the Internet, gives an indication of the size of these industrial groups.

¹⁸ See Wang 1999, and Brömmelhörster & Ng 2000.

¹⁹ An English language *People's Daily* article from 2003 mentions, "11 military industrial group corporations in the nuclear, aerospace, aviation, shipbuilding and weaponry sectors" but does not specify the sector in which the additional firm lies. The Chinese language version of the article does not mention the number of enterprise groups. Speculation is (1) that the number is a typographical error or (2) that the additional unit is in the fast-growing electronics industry. *People's Daily*,

The logic of this last reorganization is to make these defense enterprise groups subject to market forces (thus the introduction of contracts and similar practices) and, hopefully, both profitable and competitive. The proliferation of firms under each enterprise group is in part a result of the diversification that arose from China's "defense conversion" effort and in part from China's taking the Korean *chaebol* as a model for industrial organization. But the reorganization goes against the worldwide trend of consolidation, rationalization and increased competition. Rather, as Figure V on page 16 suggests, it looks like the organization was designed to preserve jobs and bureaucratic fiefdoms.

In any event, while these firms can no doubt generate revenues, answering the question whether they actually produce profits is perhaps best left to the more skilled in the accounting profession. A January 2001 *Xinhua* article titled, "China's Military Industry Last Year Decreased Losses by a Large Margin" notes that in 2000 eight of the ten major CDIC enterprises achieved "reductions in losses;" it can be assumed that the other two (unidentified) enterprises did not. "Many difficulties and issues that severely constrain development have yet to be basically resolved... the overall efficiency of military industries is fairly poor... reform measures are relatively stagnant." The best the CDIC can hope for, the January 2001 *Xinhua* report concluded, is to "strive in 2002 to cast off the hat of all-industry losses."²⁰

A year later, *Xinhua* gave a little more detail. In 2001, the CDIC overall still lost money, but reduced losses "by a margin of more than 30 percent." Most profitable were the two China aerospace corporations. Firms that "turned losses into gains" (finally?) were Aviation Industries Corporation I (AVIC I), the two shipbuilding corporations and the China Nuclear Engineering Corporation. Though not identified by name, the loss makers were both ordnance corporations, AVIC II and the China National Nuclear Corporation.²¹ Given several years of large increases to the PLA budget, up by more than 17 percent in 2002, the CDIC just might make its "all-industry" financial goals, but margins will most likely remain slim. *People's Daily* reported in early January 2003 that the industry, as a whole, just managed to break even; those sectors which were profitable balanced out losses elsewhere.²²

Is "Conversion" the Answer?

"Defense conversion" is another strategy adopted by the CDIC in its attempts to reform itself. The original strategy proposed to manufacture civilian goods using defense industrial assets so as to generate funds to upgrade the CDIC.²³ The mantra was Deng Xiaoping's famous and somewhat Delphic "16-Character Slogan," to "combine the military and the civil, combine peace and war, give priority to military products, let the civil support the military." The outcome, however, was both less and more than the strategy envisaged.

There is no doubt that the "converted" CDIC can produce goods for the civilian market. Some 80 percent of the CDIC's "output value"—a command economy accounting term, not physical output—is usually claimed to be in civilian goods. Wang Shougang notes that about 40 percent of the CDIC has entirely converted to civilian production, with an additional 40 percent split between civilian and military production, and only 10 percent producing solely for the PLA.²⁴ Whether "conversion" could be accomplished at a profit remains a question, but an important one, since the process has to be looked at as a business proposition. Some progress may have been made, as conversion is partly credited with the CDIC reaching the break-even point in 2002.²⁵

In fact, defense plant managers found their market savvy and their production technologies inadequate to serve the civilian market. There was considerable "blind market chasing" and

"China's Defence Industry Breaks Even in 2002," <http://english.peopledaily.com.cn>.

²⁰ See Frankenstein 1999 and *Xinhua* 2001(a).

²¹ *Xinhua*, 2002.

²² *People's Daily*, "China's Defence Industry Breaks Even in 2002," <http://english.peopledaily.com.cn>.

²³ Or, as Folta succinctly puts it, "Swords into plowshares...and better swords." Folta 1992, p. 1.

²⁴ Wang 1999, p. 342.

²⁵ *People's Daily*, "China's Defence Industry Breaks Even in 2002," <http://english.peopledaily.com.cn>.

inappropriate production: one helicopter plant's initial conversion effort involved the production of horseshoe nails. The upshot was the creation of separate production lines, if not entire factories, to serve the cash-generating civilian market, an arrangement termed by some "One Factory, Two Systems." Who could blame the managers when the choice was between small and irregular defense orders at fixed prices or the potential of large production runs for the civilian market? Whether profits were made became secondary to the generation of cash flow, since cash flow could go to payroll.

Eventually, "converted" defense plants moved to produce "pillar products," that is, products that had a market and made use of the plants' core competencies. Interestingly, defense managers now looking at the impact of China's entry into the WTO believe that increased competition will impact their civilian "pillar products" such as automobiles and motorcycles (in the case of the ordnance industries), but are confident about meeting the challenge. Some defense managers, in press interviews, have suggested that WTO membership will be an overall plus, providing opportunities for increased access to foreign technology, perhaps even allowing ways around technology-export restrictions.²⁶

Thus "defense conversion" in the Chinese case really is diversification. With the aim of maintaining China's precious "social stability," "conversion" is credited with saving a large number of jobs. Still, a macro-economic analysis of the effort suggests that the economic results were modest; conversion contributes less than two percent of total production. China has been at the process for more than 20 years and yet, in mid-2001, China's State Commission of Science, Technology, and Industry for National Defense (COSTIND) chief Liu Jibin was still urging the CDIC to implement "a major effort to bring about a military-to-civilian transition."²⁷ Ironically, in the effort, defense production, rather than becoming integrated with civilian production, became further separated from it. Chinese "conversion" is a good demonstration of how strategic intent and realized outcome often do not match.²⁸

The CDIC and Globalization: Foreign Cooperation and Exports

Still, parts of the CDIC have become engaged in international activities. Some aviation plants have become enmeshed in global chains of civilian production through cooperative production, licensing and joint ventures. AVIC provides civilian aircraft assemblies for Boeing and BAE Systems. Harbin Helicopters has licensed "Dauphine" helicopter production from Aerospatiale. A highly critical 2002 report from the State Statistical Bureau, however, indicates that the financial outcomes and technology transfer benefits of these cooperative deals has not been satisfactory, and urges massive state support for aviation research and development.²⁹ Parts of North China Industries (ex-ordnance ministry) have been involved with motorcycle and automobile production with licenses from Japan and investment from Thai entrepreneurs. While perhaps the money earned from these arrangements has been good, the real benefit has come through exposure to modern management and manufacturing technologies. Most of the funds earned from these deals are thought to be retained by the plant doing the work, though a portion is remitted to provincial and central authorities.

²⁶ In March and April 2000 PLA Daily (Jiefangjun Bao) published a series of interviews with the senior CDIC managers, e.g., "Crossing Frontier Passes and Mountains With Golden Spears and Armored Horses – Interviewing Ma Zhigeng, president of China Ordnance Group Corporation," JFJB 17 April 2000, and "Developers Have No Fears – Interview With Zhang Yanzhong, president of the China Aviation Industry Corporation II", JFJB 10 April 2000. These interviews were translated by FBIS.

²⁷ Xinhua 2001(b).

²⁸ See Fu & Cheng in Brömmelhörster & Frankenstein 1997 for the macro-economic analysis and other essays in the same volume for additional analyses of Chinese defense conversion.

²⁹ See Liu Cheng, "WTO Entry: Is China's Civil Aviation Industry Ready?" State Statistical Bureau, 7 November 2002, in FBIS CPP20021212000144.

Exports, however, have been problematic. During the 1980s, China outfitted both sides of the Iran-Iraq war. Missile sales to Iran and Pakistan (including transfer of nuclear technology to Pakistan) have raised more questions about proliferation and China's international citizenship than they have about cash flow. In any event, in the 1990s the value of China's arms exports dropped from its high points in the 1980s, when Iraq alone bought US\$5 billion worth of Chinese arms. During the 1990s, according to the Congressional Research Service, China's contracted arms sales to the developing world (virtually its only market) fell to less than US\$1 billion per year, although they hit \$2.7 billion in 1999. The following year, however, China's arms sales agreements dropped to US\$400 million. The fall-off may be attributed to poor quality, but more likely many former customers are buying Russia's much more capable (if more expensive) arms offerings. Still, China continues to have some loyal customers in Africa, North Korea, Myanmar, Thailand and, most of all, Pakistan.³⁰

In what might be seen as an attempt to globalize, Beijing and Islamabad reached agreements to co-produce the K-8 jet trainer and co-develop the Super-7 fighter (a refit of the J-7, the Chinese version of the MiG-21) for possible sale to other customers (Medeiros and Gill note that the Chinese air force refused to buy the Super-7). Pakistan also co-produces T-69 tanks and some anti-tank and anti-aircraft missiles. Precisely where the funds from these agreements go is not clear. As a source of support for the industry, however, exports probably do not provide much cover for general industry shortfalls.

Implications

Overall, the internal reforms and international efforts attempted by the CDIC had mixed results. CDIC reform had some successes, such as civilian shipbuilding, electronics, parts of the aviation industry. A modernizing PLA is forcing the CDIC to consider its own modernization. Furthermore, Chinese procurement spending is increasing at a slightly higher rate than overall defense spending: an analysis of Chinese defense budget numbers provided in China's Defense White Papers reveals that while announced defense spending grew nominally by about 50 percent from 1997 to 2000, the equipment budget was up 52 percent over the same period. The successes of China's dynamic electronics and information technology industries stand apart from CDIC's record and may provide an impetus for change in the traditional CDIC.³¹ The pressure is on the CDIC to upgrade, and the quick-fix paths open to the CDIC, such as reverse engineering and licensed production, are not only expensive paths, but ones with no guarantee of success. Institutional change will not be easy and until the sector modernizes further, the CDIC's participation in the global defense industry is hardly guaranteed.

The issue of modernizing the CDIC poses additional strategic questions for China. If the PLA has to depend on foreign technologies, it faces a future of small-scale, episodic acquisitions and slower modernization.³² At a deeper level, how can China reconcile the potentially explosive tensions that a consideration of globalization brings? These tensions can be seen just under the surface of Chinese commentaries on globalization and defense industries. Chinese analysts see globalization and WTO membership as a "double-edged sword": advancing China's defense industrial capability through the forces of international competition, technology transfer and management modernization on one hand,

³⁰ See Grimmett, 2001, Chapman 2001 and Medeiros & Gill 2000 for extensive reviews and data on Chinese arms exports.

³¹ These industries have their roots in the defense sector but have been organized into the holding company known as the China Electronics Corporation (CEC) – an enterprise group which, significantly, does *not* report to the CDIC structure, but rather to the Ministry of Information Industry. Since many of CEC's subsidiaries produce military and dual use goods, one might consider it the 11th defense enterprise group. I thank Richard Bitzinger, James Mulvenon and Tai Ming Cheung for sharing these insights with me.

³² Paul Godwin makes this point from another perspective: "China's military planners face an increasingly difficult dilemma. A national strategy focused on limited, local war along its borders and its maritime claims, accompanied by the requirement to sustain its nuclear forces, has created requirements for technologies that the military technology base cannot yet produce.... For the foreseeable future...China's armed forces will have to continue to plan on the basis of the assumption of obsolescence," Godwin, 1997.

but bringing dangers of dependency and cultural pollution on the other.³³ The imperative of self-reliance clashes with the reality of foreign dependence. Techno-nationalism conflicts with globalism; if globalization is a process, part of the evolution of a “post-modern” state that has porous borders and has surrendered some of its sovereignty to international regimes, how will China, a fiercely nationalistic state, adapt to the requirements of the evolving global political/economic order? Until these deeper issues are resolved – a reflection of China’s long-term *problématique* of dealing with the outside world – it is premature to think of the CDIC as a player in a globalized defense industry context.

³³ See, for example, Gong Chuanzhou & Ai Hua 2001; Ye Weiping 2000; Chen Donghua et al [n.d.]; Fan 2002.

Figure I

CDIC Evolution

MBI (a)	Ministry / Corporation (1982)	Ministry / Corporation under State Council (1988)	Ministry / Corporation under State Council (1993)	Corporation / Group under COSTIND (b)	“One into Two” 1999
2	Nuclear Energy Ministry	Ministry of Atomic Industry	China National Nuclear Corporation (CNNC)	China Nuclear Industry Group	
3	Aviation Ministry	Ministry of Aerospace (MAS) (combines Aviation & Space Industry Ministries)	Aviation Industries of China (AVIC) (MAS separated into AVIC and CASC)	AVIC	AVIC #1 AVIC #2
4	Electronics Ministry	Machine Building and Electronics Industry (MMBEI)	Ministry of Electronics Industry (MEI) (MMBEI divided into MEI and [civilian] Ministry of Machine Industry)	Merged with Ministry of Posts and Telegraphs to form Ministry of Information Industry	China Electronic Corporation (CEC) (“civilianized”, reports to MII, stands somewhat outside the CDIC structure)
5	Ordnance Ministry	MMBEI	North Industries Group (Norinco)(Ex-Ordnance, MMBEI)	NORINCO	China Ordnance Equipment Group China Ordnance Industry Group
6	Ship Construction Corporation (CSSC)	CSSC	CSSC	CSSC	China Shipbuilding Industries China Shipbuilding Heavy Industries
7	Space Industry	MAS	China Aerospace Corporation (CASC)	CASC	China Aerospace Science & Technology Group China Aerospace Machinery & Electronics Group
8	Missiles (Merged with #7 in 1981)	—	—	—	—

(a) #1 MBI dealt with civilian production.

(b) COSTIND shifts from military chain of command to come under State Council.

Figure II

The CDIC – pre 1997-98 Reforms

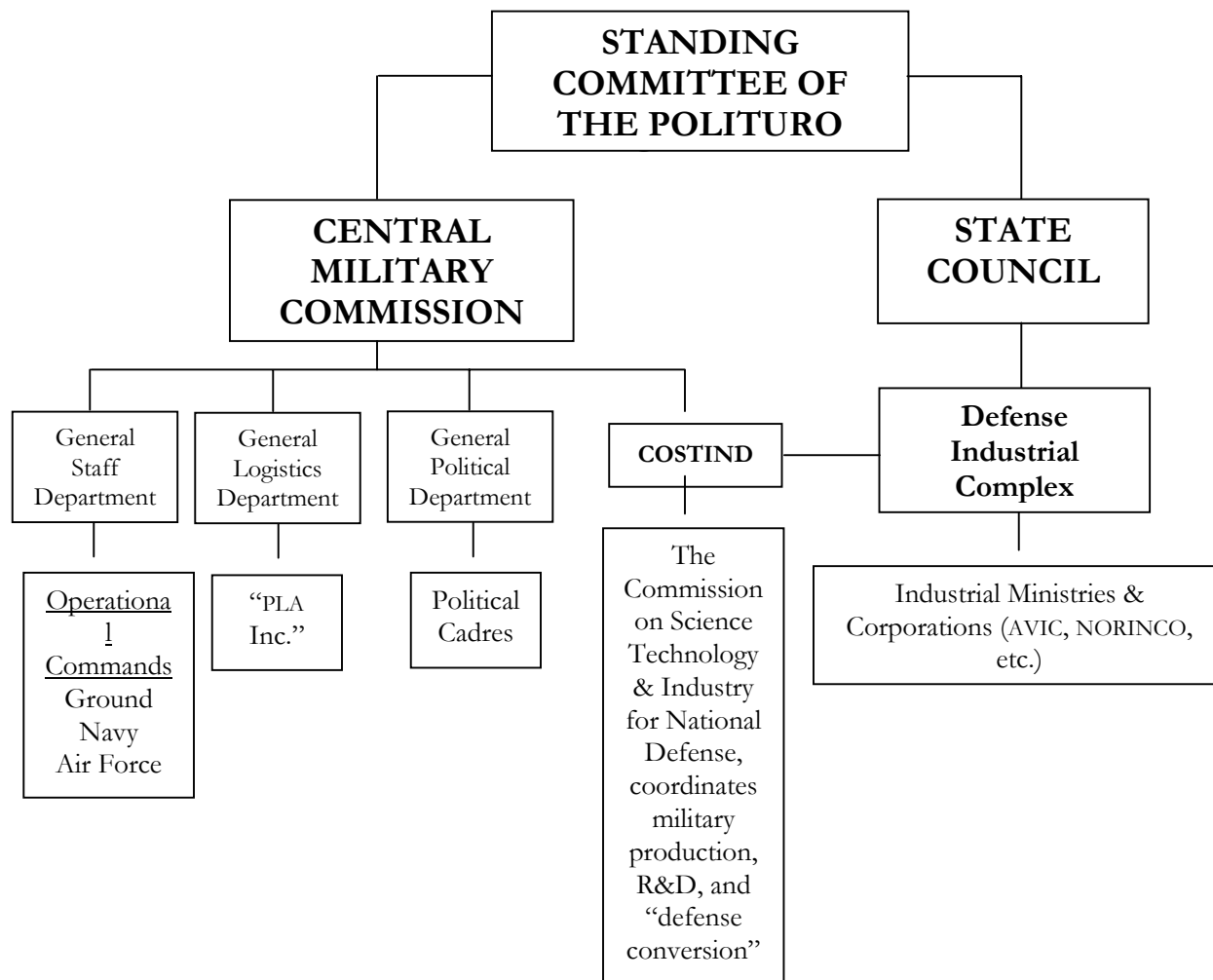
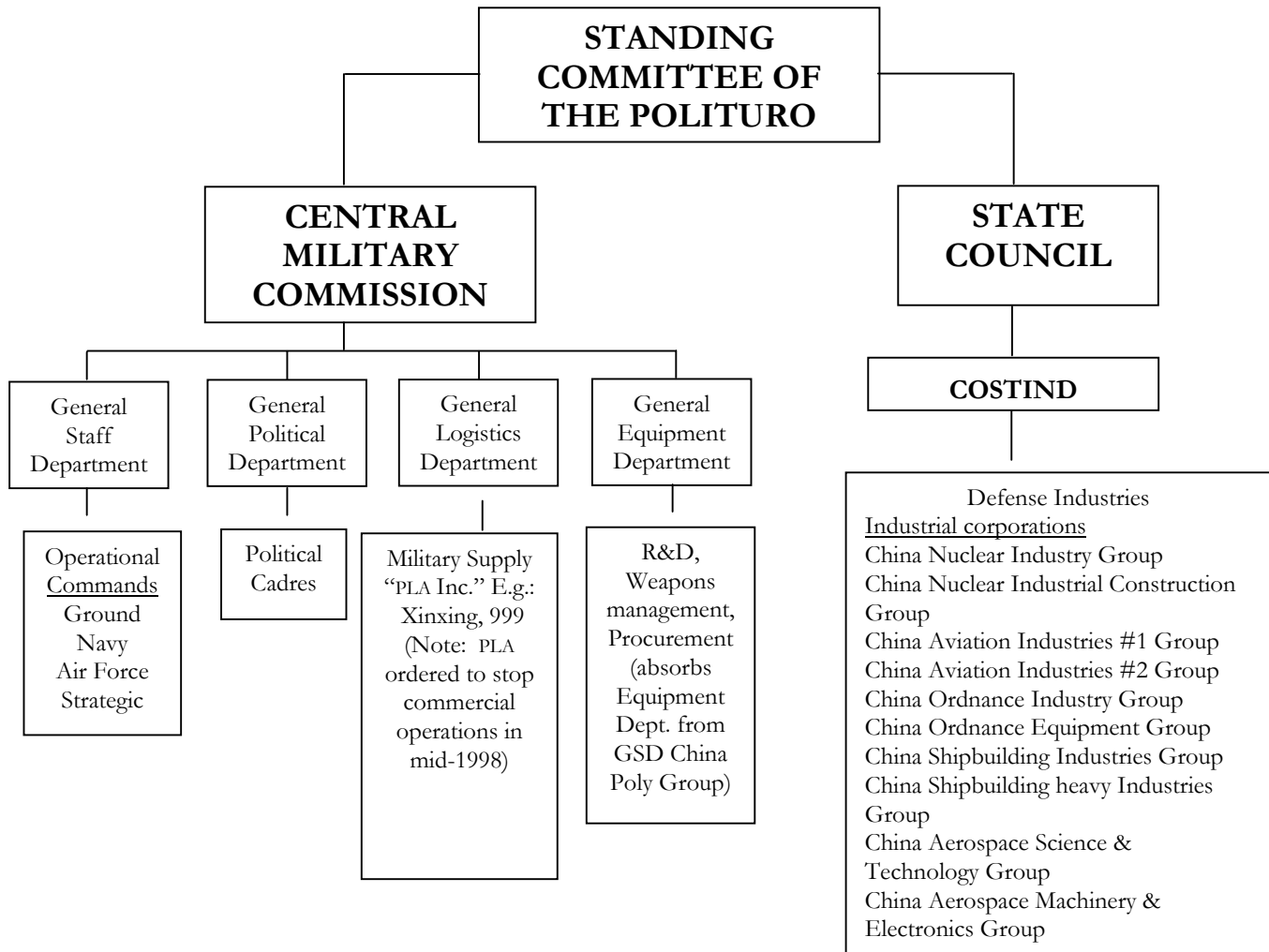


Figure III

Current PLA/CDIC Lines of Control



The PLA is deployed in 7 primary regions, which supply the infrastructure to the various commands. MRs and operational commands also participated in PLA Inc., but are now under orders to divest.

Figure IV

UNDER COSTIND:

HOW BIG ARE THE DEFENSE ENTERPRISE GROUPS?

China North Industries

131 Enterprises

456,000 Employees

China South Industries

64 Enterprises,

260,000 Employees

China Aerospace Corporation

130 Subordinate Organizations

110,000 Employees

AVIC I

53 Enterprises

31 Research Institutes

20 Specialized Firms

236, 000 Employees

AVIC II

81 Enterprises

210,000 Employees

NOTE: Here, “China North” is “China Ordnance Industry Group”; “China South” is “China Ordnance Equipment Group”; both are descendants of the arms firm NORINCO (Group). Source: www.techinfo.gov.cn. (By way of contrast, compare the number of employees in the top two US defense companies: Boeing and United Technologies: 198,000 and 153,000 respectively).

Figure V

CDIC Corporations & Product Lines*

<i>Enterprise Group</i>	<i>Major Products</i>
China Aviation Industry Corp. I (AVIC I)	Fighters, bombers, transports, trainers, commercial airliners
China Aviation Industry Corp. II (AVIC II)	Helicopters, attack aircraft, trainers, UAVs
China Aerospace & Science Technology Corp.	Space launch, satellites, missiles
China Aerospace Machinery & Electronics Corp.	Missiles, electronics, other equipment
China North Industries	Tanks, armored vehicles, artillery, ordnance
China South Industries	Misc. ordnance, automobiles, motorcycles
China State Shipbuilding	Small surface combatants, commercial ships
China State Shipbuilding Industry Corp.	Destroyers, commercial ships
China National Nuclear Corp.	Nuclear energy, nuclear fuels
China Nuclear Engineering & Construction Group	Power plant and other heavy construction

* Adapted from Bitzinger, 2000.

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