The Military Expenditure of China, 1989-1998

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It is now an open secret that the official defense budget is just a part of the resources used to support the military establishment of China. Most analysts believe that China's published budget substantially understates its actual spending on national defense, though there is no consensus with regard to where China's "hidden sources" of military financing lie and how large China's actual defense spending really is. Estimates of China's real ME vary widely, ranging from $20-140 billion.[1]

A major problem with any analysis of China's ME is the veil of secrecy shrouding military allocations. Of course, the difficulty of gathering statistical data of sufficient reliability in this area is not peculiar to the case of China.[2] But Chinese leaders' traditional preoccupation with secrecy makes them extremely reluctant to publish details of the country's ME even in the crudest aggregated form. Until China published its first defense White Paper in 1995, the outside world had only known a single-line entry for defense in the annual state budget. Even the White Paper did not tell us much about the country's real ME either.[3] For instance, defense spending outside the official military budget was not mentioned at all.

The absence of systematic data on defense spending, however, does not mean it impossible to generate estimates of an acceptable accuracy. One needs only to look a little further to find a surprisingly large amount of materials published in China on defense economics. Examples include professional newspapers, journals, books, and national and provincial statistics books of various kinds.[4] Although one often has to search through dozens of such publications in order to find a few useful references, these sources nevertheless represent a gold-mine from which we may find many missing pieces of China's ME puzzle.

This chapter attempts to tap these Chinese sources in the hope of clarifying certain key issues about Chinese ME and, wherever possible, using

concrete figures to replace impressionistic guesstimates. The following three sections examine in turn items in each of the three major components of Chinese ME: (1) the officially published defense budget; (2) defense-related spending that is imputed to other government ministries; and (3) the various sources of extrabudgetary earnings of the People's Liberation Army (PLA). The final section uses the findings of these three sections to construct estimates of China's defense spending for the period of 1989-1998.

China's Official Military Budget

Before making any estimate, we must first clearly define what exactly constitutes defense expenditure. Without a uniform accounting structure for ME, different analysts would come up with very divergent estimates. In this paper, the term "military expenditure" is defined as total resources available for national defense purposes regardless of the source of funding. To make the definition operationable, the following categorization of ME suggested by the Stockholm Peace Research Institute (SIPRI) is adopted:[5]

1. Pay and allowances of military personnel
2. Civilian pay
3. Operations and maintenance (O&M)
4. Procurement
5. Research and Development (R&D)
6. Construction
7. Pensions to retired military personnel
8. Military aid
9. Civil defense
10. Paramilitary forces
11. Military aspects of atomic energy, space

With the SIPRI classification serving as a framework of reference for checking all kinds of defense spending, the sources of each group of expenditure can be identified, starting with the categories in the official military budget and then adding the components of defense spending that are not included in the official figure.

China's Public Finance Yearbook, however, divides the official defense budget into two parts: central and local (Table 1). The local portion apparently covers the costs of maintaining the militia, because it is also

referred to as "militia operation funds" (minbing shiyefei).[6] Although the central portion gives no breakdown by categories of expenditure, Chinese publications suggest that it covers the following major spending categories:[7]

Personnel (Shenghuo fei)--pay and fringe benefits for PLA personnel; food, uniforms and other living expenses; pensions for retired senior officers; settlement allowances for demobilized officers and soldiers.[8]

Maintenance (Gongwu fei)--power and other utilities; allowances for business trips; special allowances; other running expenses.

Operations (Shiye fei)--intelligence; meteorological observation; topographic survey; the provision and management of housing, medical care, and other services for PLA personnel; communications and transportation; fuels and other basic materials; political work.

Education and Training (Jiaoyu xunlian fei)--military academies, training equipment and installations, the operational costs of the military training establishment.

Procurement (Zhuangbei gouzhi fei)--weapons and equipment from domestic and foreign suppliers.

Maintenance of Weapons and Equipment (zhuangbei weichi guanli fei)--spare parts, tools and auxiliary materials; repair and maintenance of weapons and equipment.

Construction (Jiben jianshe fei)--military buildings, facilities, civil air defense and other national defense works.

Military Scientific Research (kexue yanjiu fei)--research in military science; military medical research; testing and evaluating weapons and equipment.

Stockpiling Strategic Defense Materials (Zhanlue wuzi chubei fei).

Combat Costs (Zuozhan fei).

Miscellaneous Costs (Qita jingfei)--foreign affairs; money awards for surrendered military personnel of enemy; others.

The heading of "Personnel" covers all those serving in the PLA, including all its defense forces, military service mobilization organs, administrative organ of military-run agricultural and sideline production, civilian employees of the PLA and active service personnel in the reserve forces.[9]

In China, former officers and soldiers normally receive no money from the government after being demobilized, except a one-off payment of a demobilization allowance. While former officers do maintain their salaries,

such money comes from their new employers rather than from the government budget, as do their health and hospital expenses. Only a very small percentage of senior officers who have already passed retirement age when demobilized receive pensions, housing allowances, and perhaps other kinds of benefit. The official defense budget bears all of these expenses as well as the aforementioned demobilization allowances.[10]

"Procurement" is an important category in the official defense budget. According to Chinese sources, the defense budget covers the following three categories of weapons and equipment: space equipment, aircraft, missiles, nuclear warheads and bombs, ships and boats, tanks, and armored vehicles; artillery, other ordnance and ground force arms, and ammunition; electronics and communications, transportation vehicles, reconnaissance equipment, and logistic support.[11] Incidentally, this list includes all the items listed under the heading of "procurement" of the United Nations' definition of ME.[12]

Whereas there is little doubt that the official defense budget pays for ordnance procurement from domestic suppliers, it is not clear how the Chinese military account for arms purchases from foreign suppliers. In order not to underestimate China's real ME, we assume that major foreign weapon purchases are funded through special appropriations outside the defense budget.

The heading of "construction" covers ground force bases, naval bases, airbases, missile projects (erpao gongcheng), communication centers, scientific research centers, warehouses and depots, training bases, barracks, quarters for families of military personnel, and shelters.[13]

The official defense budget does not cover the costs of research and development (R&D) on new weapons and equipment. There is a distinction in Chinese usage between "military research" (junshi kexue yanjiu) and "defense research" (guofang kexue yanjiu). The former means primarily research in military science, but probably also includes medical research for military purposes, the testing and evaluation of weapons and equipment, and research for the minor improvement of weapons and equipment currently used by the PLA. In any case, "military research" is done exclusively by PLA research institutes. "Defense research" refers to all kinds of defense-related research carried out by research institutes that belong to other government agencies. The official defense budget funds only the former.[14] The next section will discuss the latter.

Military Expenditures Listed in Other Budgetary Categories

It is clear from the above section that, except a small portion spent on militia maintenance, the official defense budget is essentially the budget for the PLA.[15] Some important defense-related outlays are actually excluded from it and instead listed under other headings in the central and local government budgets. According to a recent internal publication, key defense-related items funded from other national and local government sources include: the paramilitary PAP; some research, development, testing and evaluation (RDT&E) costs; and capital construction of defense projects.[16] To this list should be added some demobilization and military pension costs and subsidies to defense industries that help lower the cost of indigenous arms procurement for the armed forces. In addition, arms acquisitions from abroad may also be financed by funds listed under other budget categories.

People's Armed Police (PAP)

Established in mid-1983, the PAP's main function is to maintain domestic order as well as protect the country's frontier.[17] It has a separate budget, which is published in China Public Finance Yearbook, though most outside observers seem to be unaware of this. As Table 1 shows, the PAP had been financed solely by the central government before 1995. Since 1996, however, the provinces have also been asked to bear some of its expenses.

Defense RDT&E

In much of the 1980s, government funding for defense RDT&E was declining. By 1990, government spending in this category was only equivalent to less than one-tenth of the official defense budget.[18] The falling trend was probably reversed after the 1990-91 Gulf War. The high-tech weapons used in the war served as a wake-up call to the Chinese military leadership, reminding them how far China was behind in its armaments. Since then, defense RDT&E might have received more attention than before. However, analysts cannot agree on how much China is devoting to this sector.[19]

In order to make an estimate realistic, one has to know where defense RDT&E funds come from. According to well-informed Chinese military economists, defense RDT&E is financed from two sources: the general R&D fund and the "new product promotion fund."[20] The former is defined as "all actual expenditure

made for R&D (including basic research, applied research and experimental development)."[21] It pays for both direct and indirect expenditure on R&D (including management expenses, administrative expenses and capital construction investment relating to R&D). The latter refers to "the expenses appropriated from the government budget for the scientific and technological expenditure, including new product development expenditure, expenditure for intermediate trial and subsidies for important scientific researches."[22] Both include allocations for defense purpose, but the bulk of them is devoted to civilian programs. The defense portion of the general R&D fund is called "the expenditure on research" (yanzhi jingfei) and its counterpart in the new product development fund "the expenditure on test, evaluation and prototypes" (shizhi jingfei).[23]

Based on the assumption that 10 percent of the general R&D fund was spent on national defense for the period of 1989-91 and 15 percent for the period of 1992-98, both of which are unlikely high estimates, the Column 1 of Table 2 calculates China's defense-related R&D expenditure from 1989 to 1998. The defense-related T&E figures shown in the Column 2 are estimated by a similar method, though it is assumed that the defense portion of the new product development fund was higher, 30 and 35 percent for the pre- and post-Gulf War subperiods, respectively, again unlikely high estimates. Why is the defense portion of the latter believed to be so high? Because, ranging from two-thirds to three-quarters, the central share in this government outlay is much higher than in almost all budgetary categories except national defense, the PAP and few others. There is no reason for the central government to monopolize the development of new "products" unless a significant proportion of "products" to be developed are defense-related. China's space and atomic projects are probably covered under this category.

The figures presented in Table 2 seem to confirm the estimates made by Arnett and Gill & Kim: China's spending on defense-related RDT&E is in the vicinity of $1-$1.5 billion.[24] It is very unlikely for the actual spending to be higher than this level.

Construction of Defense Projects

As pointed out in the preceding section, the official defense budget covers most, if not all, construction costs of military facilities directly controlled by the PLA. However, expenditure on other types of defense

projects, including research facilities and military production lines operated by civilian institutions, is listed under the budget category of "capital construction."

In the first 30 years of the People's Republic, the defense-related portion of capital construction averaged around 5 percent.[25] After 1980, the government substantially reduced its budgetary allocations to defense projects.[26] Thus, it is reasonable to assume that the portion of capital construction expenditure allocated to defense projects was below 4 percent for the period of 1989-91. Even if China has decided to devote more resources to defense project after the Gulf War, the share is probably still no higher than 5 percent. The Column 3 of Table 2 reports our estimates of China's spending on the construction of defense projects.

Subsidies to Demobilized Military Personnel and Their Dependents

The official defense budget pays for part of expenses on pensions to retired military personnel and demobilization allowances, but not all. The Ministry of Civil Affairs (MCA) also bears the responsibility of supporting former servicemen and their dependents. Within the MCA's budget, there is an item call the "compensation expenditure" (fuxu zhichu), which is designated to help mainly but not exclusively veterans and their families.[27] In 1998, for instance, 490,000 revolutionary martyrs' dependents, 890,000 disabled army men and 2.54 million veterans living in the countryside received regular subsidies from the MCA.[28] A small part of the "compensation expenditure" under the MCA is also used to assist demobilized servicemen to resettle. The Column 4 of Table 2 reports the data on the "compensation expenditure" for the period of 1989-98, assuming that it is spent entirely on former military personnel and their families.

Subsidies to Military Production

It is essential to distinguish two distinct categories of enterprises: (1) *jungong* enterprises or those managed by ministries and corporations under the State Council; and 2) *jundui* enterprises or those run by the PLA.[29] While *jungong* enterprises are frequently portrayed as being controlled by the PLA, this, in fact, is not the case. Each system has its own budget. The focus here is on *jungong* enterprises. *Jundui* enterprises are discussed in detail in the next section.

In the early-1980s, China's defense industry (aerospace, aeronautics, electronics, ordnance, nuclear and shipbuilding) comprised roughly 1,000 large- and medium- sized firms and over 200 research institutes, which altogether employed nearly 3 million staff and workers, including about 300,000 scientists, engineers and technicians.[30] Since then, due to a substantial drop of military procurement from the PLA, this part of the state sector has been in serious decline. Now China's defense sector is at best a small player in the context of the national economy. Its asset value accounts for only about 4 percent of the state industrial total.[31] In terms of output value and employment, its shares were even smaller.[32]

To cope with difficulties arising from declining procurement orders, China's defense industry has been undergoing conversion since the early 1980s.[33] By the mid-1990s, civilian production had constituted 80 percent of total output value of the defense industries. In some sectors such as electronics, the civilian share of total production is nearly 100 percent.[34] Overall, more than 40 percent of defense producers have converted completely to civilian production, no longer producing any defense goods and another 40 percent are engaged in both military and civilian production. Only around 10 percent produce solely for the military market.[35]

Conversion, however, is a very painful process. Currently, only a handful of defense enterprises are profitable. Most are in trouble.[36] The ordnance industry is the biggest money-loser, while the situation in the aeronautics and astronautics industry is only slightly better.[37] Overall, profits generated from civilian production by China's defense industries fall far short of covering losses from their military operations.[38] Thus, government subsidies are necessary to keep the defense sector afloat.

The data on state subsidies for loss-making productive enterprises in general are available. It is highly unlikely for more than one-third of such subsidies to go to the defense sector alone. Even if one-third do go to the defense sector, a large portion of these funds (say 60 percent) must have been allocated to either keeping defense producer idle or facilitating military conversion. Such costs of demilitarization should not be considered as defense-related expenditure. Based on these two assumptions, the Column 5 of Table 2 provides the estimates of state subsidies used to underwrite the production of weaponry. Why is it assumed that the share of state subsidies to military production did not increase after the Gulf War in 1991? Because since

the earlier 1980s, China has adopted a guideline for its domestic arms production, that is, "more research and development but less production" (duokaifa, shaoshengchan).[39] In other words, even if spending on RDT&E has increased, new weapon systems are not necessarily built and deployed. "Very little evidence exists that the Chinese government will invest heavily in modernizing the defense industrial plant."[40]

Special Appropriations for Arms Acquisitions from Abroad

China meets most of its weapon requirements from domestic production. "Dependence on foreign arms suppliers is considered a political handicap," because the Chinese have learned from their experience in dealing with the former Soviet Union (in the 1950s) and the USA (in the 1980s) that "in the eventuality of a crisis, China could become subject to foreign political influence or embargo."[41]

Despite its desire for self-reliance, however, China is clearly aware of the necessity of importing arms from abroad. Otherwise, it would not be possible to accelerate the pace of military modernization. Since the mid-1970s, China has shown a great interest in purchasing weapons and weapons technologies from the advanced countries. But, before the 1990s, while the Chinese did a good deal of "window shopping," the country's actual arms imports were modest even compared with some of its much smaller neighbors,[42] which could probably be attributed to cutbacks in China's overall defense spending in the period. After the Gulf War, China speeded up its arms acquisitions from Russia.[43] The total costs of China's purchases of Russian weapons and equipment since 1990 are estimated to be equivalent to approximately $10 billion. However, according to some analysts, "the actual cash outlay is perhaps one third to one half less as early purchases were covered in part by barter, and some deals have not been completed."[44]

Where does the PLA get funds to pay for arms imports? One Chinese source claims that the money is already included in the "procurement expenses" of the official defense budget.[45] But most Chinese publications are silent on this issue, while Western analysts generally suspect that China's foreign weapon procurement is funded through special appropriations. Assuming that spending on foreign purchases lies outside the defense budget, it is possible for such additional allocations to come from the budget category "other expenditures."[46] But because details of this category are not specified, there is no way for us

to speculate how large a proportion of it is devoted to arms imports. For this reason, rather than relying on Chinese sources, the estimated values of China's arms acquisitions from abroad in this study are derived from the time series data provided by the U.S. Arms Control and Disarmament Agency (ACDA), which are shown in Table 3.[47]

Military Expenditures Deriving from Extrabudgetary Sources

"The overriding financial fact in the development of the PLA throughout the Deng period has been inadequate funding."[48] Most of the expenditures discussed in the above section, however, are beyond the direct control of the PLA. Whether these expenditures go up or down, they cannot help alleviate the PLA's financial difficulties. To compensate for the PLA's budgetary shortfalls, beginning from 1985, the central leadership gave the PLA a go-ahead to engage itself in various kinds of business activities. Revenues generated by such activities are generally referred to in China as "extrabudgetary earnings" of the PLA, which do not appear in the state budget at all.[49] The PLA has two main sources of extrabudgetary revenue.

Earnings from Domestic Business Activities

The PLA has a long tradition of participation in self-supporting economic activities. But it was not until 1985 that the PLA was given the permission to conduct for-profit commercial activities. The military's expanded involvement in economic activities soon bore fruit. By 1987, the total turnover and profits of PLA-affiliated enterprises had reached 9.59 billion and 2.41 billion yuan (equivalent to 11.5% of the country's published defense budget), respectively.[50] While such extrabudgetary incomes certainly helped improve the army's financial situation, the negative effects of being involved in commerce also became evident before long. In 1989, the central government was compelled to take measures curtailing the military's business activities. The PLA then began to withdraw from the commercial front.

However, the retreating process was disrupted by Deng's trip to southern China in the beginning of 1992, which was followed by two years of "high-speed, free-wheeling growth for the military-business complex."[51] Total profits from military business operations reportedly reached 5 billion yuan (equivalent to 13.3% of the country's published defense budget) in 1992[52] and 6

billion yuan (equivalent to 14.2% of the country's published defense budget) in 1993.[53] The military's enthusiasm for money-making again quickly gave rise to serious problems, including rising corruption, worsening civil-military relations, lax discipline, ebbing morale, falling levels of professionalism, widening gaps between coastal and inland units and etc. Alarmed by these dangerous trends, the central leadership launched another rectification campaign at the end of 1993. Combat units were banned from running business except farming and sideline production. Their enterprises were either closed, transferred to higher level military units, or handed over to local governments. This time, the order was more rigorously enforced. By the beginning of 1995, according to a Chinese report, 40 percent of PLA business entities had already been closed down,[54] which led to leveling off of PLA's commercial earnings. The PLA's profits from economic activities in 1997, for instance, was reportedly around 4-6 billion yuan (at most equivalent to 7.4% of the country's published defense budget).[55]

In July 1998, China's President Jiang Zemin issued an order to remove the PLA and the PAP from business altogether.[56] By the early December of 1998, the PLA and PAP units in 7 provinces (Beijing, Shanghai, Jiangsu, Guangdong, Guangxi, Hainan and Jiangxi) had completely withdrawn from the commercial world. A total of 580 enterprises with the gross asset value of 8-9 billion yuan were handed over to local governments.[57] Since, among China's 31 provinces, those provinces except Jiangxi were where military enterprises had been most flourishing, the total value of military business assets in the country was estimated at around 50 billion yuan, or around 1-1.5 percent of the total asset value of the state sector. The central government has promised to compensate the military in the defense budget for its lost business revenues.

Based on the above discussion, we assume that the total earnings from the PLA's domestic commercial activities were equivalent to 10 percent of the country's published defense budget from 1989 to 1991, 15 percent for the two years of 1992 and 1993, and 12 percent in the period of 1994-98. These assumptions allow us to obtain the figures in Column 6 of Table 2. It is highly unlikely that such incomes have contributed to the PLA's coffers by anything more than 15 percent of official budgetary allocations to the PLA. In fact, internal Chinese publications insist that it has rarely exceeded 10 percent.[58]

Regardless of how much profit the PLA makes from its commercial activities, it is debatable whether such revenue should be included in calculations of China's real ME at all. There is abundant evidence that the PLA's deep involvement in economy greatly "weakened its professionalism and cohesion, undermining rather than enhancing China's military capabilities,"[59] which explains why the Chinese leadership has incentive to force the military out of business. For this reason, it does not seem appropriate to count the PLA's earnings from business activities as part of the country's ME.

Arms Sales

Earnings from overseas arms sales have been said to be another main source of extra-budgetary revenue for the PLA. However, the role of arms sales as a source of the PLA's income should not be exaggerated for three reasons.

First, China's total gross revenue from arms sales has suffered substantial declines since 1988, the peak year of arms exports for China. According to the ACDA's estimates, the total gross income from arms exports fell from $3.75 billion in 1988 to $0.58 billion in 1996.[60] In 1997, China arms exports dipped 75 percent again and the year 1998 expects to see another big drop (see the Column 3 of Table 3).[61]

Second, the arms sales figures were simply gross income, which did not discount the cost of production. Since the cost was unknown, it was impossible to calculate the net earnings realized.[62] Nevertheless, the profit was unlikely to exceed 20% of the gross income (see the Column 4 of Table 3).

Third, it is important to distinguish PLA's arms sales from those conducted by the defense industrial ministries. Most of the Chinese arms sales agents are affiliated with the defense industrial ministries rather than with the PLA. Only arms sales made by PLA companies would benefit the PLA. But such sales are unlikely to account for more than a half of China's total.[63] If this assumption was correct, then the earnings from arms sale added little to the military coffers, so little that they were almost negligible (see the Columns 4 and 5 of Table 3).

China's Real Military Expenditure

Table 4 provides figures on China's official defense budget and real ME, the latter of which are calculated from the data presented in Table 1, 2 and

3. Comparing the two time series, it appears that the real ME has consistently been about 1.7-1.8 times the official defense budget. Measured in current prices, the real ME seems to have undergone double-digit increases all along ever since 1989. However, nominal figures could be misleading, and even useless when inflation is high, for inflation might significantly discount the effects of the expenditure increases. China experienced relatively high inflation between 1992 and 1995. While the real ME rose by 51.8 percent in these three years, commodity prices went up 66.6 percent during the same period. As inflation more than consumed the increase in defense spending, China's real ME actually decreased rather than increased in value.

Since nominal figures give no proper indication of the real trend, we need to deflate nominal time series data by a suitable price index to make them reflect intertemporal variations in China's real defense expenditure. In principle, the best method for price deflation would be to derive a series of military price deflators which could then be used to show the real change in terms of the expenditure mix of the armed forces. Unfortunately, no such deflator series is available in China. This study, therefore, uses the overall consumer price index as a deflator to convert the nominal defense expenditure series into real terms. Measured in 1989 constant prices, China's real ME increased by 73.1 percent for the whole period of 1989-98. The increases occurred mainly in two subperiods, namely, 1989-92 and 1996-98, while the subperiod of 1992-95 witnessed downslides rather than upsurges.

This study makes no attempt to provide estimates of Chinese ME in U.S. dollars. The usual practice of making international comparison has been to use the official exchange rate for conversion. However, the exchange rate seldom reflects the ratio of aggregate or "average" price levels between the two countries concerned and thus could lead to enormous distortions in comparing defense efforts. To devise a more reliable measure of comparison, the "Purchase Power Parity" (PPP) concept has been developed.[64] However, it is easier to talk about the PPP method than to actually apply it. One of the principal requirements of PPP is to have as wide a representative sample of products for the expenditure categories as can be obtained, with due consideration being given to common and comparable characteristics. Thus, to construct a PPP explicitly for the defense sector, one needs detailed information about military expenditure data at a sufficiently disaggregated level and about the quality and price of each component of this expenditure in

both countries concerned. For instance, any attempt to apply the PPP conversion to the study of the Chinese ME has to take into consideration the fact that the PLA increasingly relies upon the importation of weapon systems or military technology that must be paid for in hard currency. International differentials thus must be relatively low in the military sector as compared to the economy as a whole. Failing to take this factor into account could lead to serious distortions.[65] Putting it differently, the estimate of Chinese ME in dollar terms would be somewhat lower were a PPP rate specific to ME used.

Clearly, the PPP method is very information intensive. But, in the study of China's ME, it is information that is in short supply. In the absence of explicit military PPP, one of course could use "short-cut" methods instead, namely, converting military expenditure by gross domestic product (GDP) parity or government expenditure PPP. But no time series on either is available in the case of China. At best there are only some rough estimates of the $PPP yuan value for few specific years. And these estimated $PPP value of the yuan vary considerably, ranging from 3 to 9 times the exchange-rate conversion. There is no consensus among economists on which one of them is most realistic. Thus, the PPP-adjusted estimates of Chinese ME would be extremely sensitive to the choice of PPP yuan/$ rate.[66] In fact, much of the variance in estimating of Chinese ME in the West is indeed attributable to differing PPPs.[67]

Given the difficulty in making judgment about which $PPP value of the yuan is most appropriate, this study makes no estimate of Chinese ME in dollar terms. Nevertheless such estimate can be derived from the basic data provided here, as long as one is sure that s/he has better idea about how to make PPP yuan/dollar conversion. But if what is at issue is international comparison of defense burden, no conversion seems to be necessary. The share of ME in GDP can serve as a very good indication of the military burden. Whether converting ME at the GDP-wide PPP, by exchange rates or making no conversion at all, the ME/GDP ratio would stay the same.

In the period of 1989-98, China's economy was booming with GDP growing at an average annual rate of 9.4 percent. Certainly, the country could have afforded a defense expenditure that kept pace with the general economy, had it chosen to do so. But that did not happen. Rather, the ratio of the real ME to GDP was falling from 1992 to 1995, while it remained more or less unchanged for the other two subperiods of 1989-92 and 1995-98. By 1998, the ratio was 0.6 percent lower than it had been in 1989. China currently spends less than 2

percent of GDP on national defense as compared with 3.7 percent in Taiwan, 2.5 percent in India, 3.2 percent in South Korea. 3.7 percent in Russia and 3.6 percent in the United States.[68]

Conclusion

1. China's real ME has consistently been about 1.7-1.8 times its official defense budget (comparing the Column 1 and 3 of Table 4).

2. The resources available to the Chinese military have been on the rise since 1989 (see the Column 4 of Table 4).

3. The growth rates of Chinese ME are much lower when measured in constant prices than when measured in current prices (comparing the Columns 1 and 2, and 3 and 4 of Table 4).

4. Measured as a share of GDP, Chinese military spending has steadily declined (see Column 6 of Table 4).

5. China's defense burden is modest, with the ME/GDP ratio lower than those of all major powers and its neighboring countries except Japan.

Endnotes

[1] International Institute for Strategic Studies, "China's Military Expenditure," in *The Military Balance 1995/96* (Brasseys for IISS, UK 1996)

[2] Remy Herrera, Statistics on Military Expenditure in Developing Countries: Concepts, Methodological Problems and Sources (Paris: OECD, 1994), p. 23.

[3] State Council News Office, "Zhongguo di junbei kongzhi yu caijun [China's Arms Control and Disarmament], Renmin ribao [People's Daily], 17 November 1995.

[4] Examples are Zhongguo Jungong Bao [Chinese Defense Industry Tribune], Zhongguo Junzhuanmin Bao [Chinese Defense Conversion Tribune], Junshi Jingji Yanjiu [Research in Defense Economics], Jundui Caiwu [Military Finance], and dozens of books on defense economics published since 1985.

[5] There are of course other ways of categorizing ME, such as those proposed by the International Monetary Fund (IMF), the North Atlantic Treaty Organization (NATO), the United Nations (UN), and the US Department of Defense (DOD). For more information, see Somnath Sen, "Military Expenditure Data for Developing Countries: Methods and Measurement," in Geoffrey Lamb, ed. Military Expenditure and Economic Development: A Symposium on Research Issues (Washington, DC: World Bank, 1992); Saadet Deger, Military Expenditure in Third World Countries: The Economic Effects (London: Routledge & Kegan Paul, 1986). The SIPRI definition of disaggregation is preferable for three reasons. First, it is in line with the general definition I gave above. Second, while it is fairly close to the IMF, NATO, UN, and DOD categorizations, it is more comprehensive. Third, the SIPRI's yearbook, World Armaments and Disarmament, provides more detailed statistics on national defense for more countries than any of the above organizations.

[6] The Ministry of Finance, Zhongguo Caizheng Nianjian 1997 [China Public Finance Yearbook] (Beijing: China Public Economics Press, 1997), p. 395.

[7] According to an author from the PLA's Air Force, China's "Ordinance on Military Budget Categorization" requires the PLA to adopt a detailed accounting matrix of ME, which includes 11 broad categories, which are further divided into 59 items. See Fan Gonggao, Guofang jingjixue [Defense Economics] (Fuzhou: Fujian People's Press, 1988), pp. 296-98. Other authors, however, mention different ways of categorization. For instance, Li and Wan suggest that the defense budget falls into 21 categories, while Sun hints that

budgeted defense expenditure consists of 61 items under 13 categories. Li Lin and Wan Dongrong, Junshi jingjixue yanjiu [Studies in Military Economics] (Wuhan: Wuhan University Press, 1987); and Sun Bolin, "Guofangfei zhiding de xincelue" [A New Strategy in Drawing Defense Budget], ed. Beijing Society of Defense Economics, Guofang jingji fazhan zhanlue lunwenji [A Collection of Essays on the Development of Defense Economy] (Beijing: PLA Press, 1987), pp. 350-52. For other works that discuss what China's defense budget covers, see Liu Dajun, Zhongguo shehui zhuyi guofang jingjixue [Chinese Socialist Defense Economics] (Beijing: PLA Press, 1987), pp. 118-137; Yang Yongliang, Zhongguo junshi jingjixue gailun [An Introduction to Chinese Defense Economy] (Beijing: Chinese Economic Press, 1987), pp. 110-20; and Jiang Baoqi and Zhang Shengwang, Zhongguo guofang jingji fazhan zhanlue yanjiu [A Study of China's Strategy of Defense Economic Development] (Beijing: National Defense University Press, 1990), pp. 24-25. For writings in English that extensively use Chinese sources, see Ka Po Ng, "China Defense Budgeting: Structure and Dynamics," eds. Lo Chi-kin, Suzanne Pepper, and Tsui Kai-yuen, China Review 1995 (Hong Kong: The Chinese University Press, 1995), p. 9.10, and Arthur S. Ding, "China's Defense Finance: Content, Process and Administration," China Quarterly, No. 146 (1996).

[8] For a detailed discussion about what this category covers, see Lin Xiaocheng, et al, Jundui caiwu guanli nanti baijie [Explanations to 100 Difficult Question Regarding Military Accounting] (Beijing: China Economic Press, 1990), pp. 23-25.

[9] Information Office of the State Council, China's National Defense (Beijing: Information Office of the State Council, 1998), p. 26. Also see PLA's "Wenzhi ganbu zanxing tiaoli" [Provisional Regulations on Civilian Employees] cited from Luo Dejun, et al, Da guofang lun [On Comprehensive National Defense] (Changsha: Hunan People's Press, 1988), pp. 287-92.

[10] Hong Xuezhi, the former deputy secretary-general of the Central Military Commission, once complained that those expenses constituted a heavy burden on the official defense budget. See "Hong Xuezhi's Speech at the Symposium of Defense Economics," ed., the Preparatory Group of the Chinese Society of Defense Economics, Guofang jingjixue lunwenji [A Collection of Research Papers on Defense Economics] (Beijing: PLA Press, 1986), p. 417.

[11] You Qianzhi et al, Zhongguo guofang jingji yunxing fenxi [A Functional Analysis of the Chinese Defense Economy] (Beijing: Chinese Financial Economic Press, 1991), p. 170.

[12] United Nations, "Reduction of Military Budget," Document A/40/421 (New York: United Nations, 1986).

[13] Fan Gonggao, Defense Economics, p. 199-201.

[14] Editorial Broad of the "Contemporary China" Series, ed., Dangdai zhongguo jundui de junshi gongzuo [The Military Works of the Chinese Armed Forces], 2nd Vol. (Beijing: Chinese Social Science Press, 1989), pp. 89-100; Liu Dajun, Chinese Socialist Defense Economics, pp. 123-136.

[15] That is why it is often referred to as "the expenses of the military" (junfei) in China.

[16] Li Yingcheng and Shi Xuzhong, "Lun guofang jianshe hongguan xiaoyi pingjia di keguan jichu" [The Basis for Cost-Benefit Analysis of Defense Building Up], Jingji yanjiu cankao [Reference for Economic Research], No. 1147, March 21, 1998.

[17] Information Office of the State Council, China's National Defense, p. 16. For a detailed discussion of the PAP's functions, see Tai Ming Cheung, "Guarding China's Domestic Front Line: The People's Armed Police and China's Stability," China Quarterly, No. 146 (1996).

[18] Shaoguang Wang, "Estimating China's Defense Expenditure: Some Evidence from Chinese Sources," China Quarterly, No. 147 (1996), pp. 896-898. Also see Eric Arnett, "Military Technology: The Case of China," SIRPI Yearbook 1995 (New York: Oxford University Press, 1995), pp. 375-77.

[19] SIPRI itself gave two very different estimates before. See David Shambaugh in Bergstrand, B. G. et al., "World Military Expenditure," SIPRI Yearbook 1994 (Oxford: Oxford University Press, 1994, chapter 12; and Arnett, "Military Technology: The Case of China."

[20] Li and Shi, "The Basis for Cost-Benefit Analysis of Defense Building Up," pp. 19-20; and Jiang and Zhang, A Study of China's Strategy of Defense Economic Development, p. 50.

[21] State Statistical Bureau, Zhongguo tongji nianjian 1996 [China Statistical Yearbook] (Beijing: China Statistical Publishing House, 1996), p. 700.

[22] Ibid., p. 248.

[23] Li and Shi, "The Basis for Cost-Benefit Analysis of Defense Building Up," pp. 19-20.

[24] Arnett, "Military Technology: The Case of China;" and Bates Gill and Taeho Kim, China's Arms Acquisitions from Abroad: A Quest for "Superb and Secret Weapons" (Oxford: Oxford University Press, 1995), pp. 100-101.

[25] Yang Yongliang, An Introduction to Chinese Defense Economy, pp. 148, 243. The defense-related share peaked in 1970 and 1971, reaching 17.2 percent and 12.5 percent, respectively. Jin Zhude and Chen Zaifang, "Zhongguo guofang jingji de jige wenti" [Issues Regarding China's Defense Economy], in A Collection of Research Papers on Defense Economics, p. 30.

[26] Sun Guangyun, "Guanyu xianxing junping jiage di gaige wenti" [Issues Concerning How to Reform the Price System of Military Products], in A Collection of Research Papers on Defense Economics, pp. 258-259.

[27] State Statistical Bureau, China Statistical Yearbook 1996, p. 246.

[28] New China New Agency, Beijing, 16 November 1998.

[29] Fan Gonggao, Defense Economics, pp. 163-64.

[30] Jin Zhude and Guo Tiejun, "Shilun zhenzhixin guofang" [On Profit-Making Defense], ed., Beijing Society of Defense Economics, A Collection of Essays, p. 46; Academy of Military Science, Weilai de guofang jianshe [Future Defense Construction] Vol. 1 (Beijing: Military Science Press, 1990), p. 177.

[31] It accounted for only 1.38 percent of the total state asset. The Ministry of Finance, China Public Finance Yearbook 1997, pp. 583-85.

[32] Feng-Cheng Fu & Chi-Keung Li, "An Economic Analysis," eds., Jorn Brommelhorster and John Frankenstein, Mixed Motives, Uncertain Outcomes: Defense Conversion in China (Boulder: Lynne Rienner, 1997), pp. 61-2.

[33] The SIPRI once praised China as "the first country in the world which made 'sword into ploughshares' an operational and effective concept." See Stockholm International Peace Research Institute (SIPRI), SIPRI Yearbook 1992, p. 249.

[34] Mel Gurtov, "Swords into Market Shares: China's Conversion of Military Industry to Civilian Production," China Quarterly, (1993), p. 214. Also see Paul Humes Folta, From Swords to Plowshares? Defense Industry Reform in the PRC (Boulder: Westview, 1992).

[35] Jane's Defense Weekly, 19 February 1994, p. 31. Also see Nicole Ball, "Adjusting to Reductions in Military Expenditure and Defense Procurement,"

eds., Geoffrey Lamb and Valeriana Kallab, Military Expenditure and Economic Development: A Symposium on Research Issues (Washington, DC: World Bank, 1992), p. 72

[36] John Frankenstein, "Perspectives On China's Defense Industries," unpublished paper, Asia Research Center, Copenhagen Business School, 1998.

[37] Over 80 percent of the plants under China Ordnance Industry Corporation (COIC), the conglomerate that oversees the country's tank, artillery, munitions, and small-arms factories, are losing money. China News Agency, 1 December 1994.

[38] Zhang Yanzhong, "Guofang gongye zouxiang shichang jingji ruogan wenti de sikao" [Thoughts on Issues Concerning How to Integrate Defense Industries into Market Economy], Zhongguo jungong bao [Chinese Defense Industry Tribune], 5 July 1994, p. 3

[39] Chinese Country Study Group, "China," ed., Ravinder Pal Singh, Arms Procurement Decision Making, Volume I, (Oxford University Press, 1998), pp. 8-47.

[40] John Frankenstein and Bates Gill, "Current and Future Challenges Facing Chinese Defense Industries," China Quarterly, No. 146 (1996), p. 421.

[41] Chinese Country Study Group, "China," p. 33.

[42] Gill and Kim, China's Arms Acquisitions from Abroad, pp. 34-47.

[43] Ibid., pp. 48-70.

[44] Bates Gill, "Chinese Defense Procurement Spending: Determining Chinese Military Intentions and Capabilities," paper presented at the Conference on the People's Liberation Army, Wye Conference Center, Maryland, September 1997, p. 8.

[45] Fan Gonggao, Defense Economics, pp. 296-98.

[46] It may not be a coincidence that the size of the "others" category in the central budget almost quadrupled between 1992-96. Ministry of Finance, China Public Finance Yearbook, various years.

[47] U.S. Arms Control and Disarmament Agency (ACDA), World Military Expenditure and Arms Transfers 1997 (Washington, DC.: U.S. Government Printing Office, 1997). Since this agency may have access to classified sources of information, its figures are probably more reliable than alternative sources.

[48] Ellis Joffe, "The PLA and the Economy: The Effects of Involvement," a paper presented at IISS/CAPS conference "Chinese Economic Reform: The Impact on Security Policy," Hong Kong, 8-10 July 1994, p. 12.

[49] Fan Gonggao, Defense Economics, pp. 296-98; Sun Bolin, "A New Strategy," pp. 350-52.

[50] Fu & Li, "An Economic Analysis," p. 54.

[51] Tai Ming Cheung, "The Chinese Army's New Marching Orders: Winning on the Economic Battlefield," eds., Brommelhorster and Frankenstein, Mixed Motives, Uncertain Outcomes, p. 183.

[52] Ibid., p. 194.

[53] Tai Ming Cheung reported 6 billion yuan. Ibid., p. 195. However, Ka Po Ng suggested that the annual profit of 1993 was 5 billion yuan. Ka Po Ng, "China Defense Budgeting," p. 9.18.

[54] Tai Ming Cheung, "The Chinese Army's New Marching Orders," p. 184.

[55] Tai Ming Cheung, "The Chinese Army's Conversion to Supplement Defense Budgets," Bonn International Center for Conversion Bulletin, No. 8 (July 1998).

[56] New China News Agency, Beijing, July 28, 1998.

[57] New China New Agency, Beijing, various days in late November and early December, 1998.

[58] Wang Qinming and Wang Wenhua, "Lun Jiang Zemin tongzhi guanyu jundui chi huangliang di sixiang" [On Comrade Jiang Zeming's Idea of Supporting the Army by Central Budgetary Allocations], Junshi jingji yanjiu [Military Economic Research], No. 10 (1996), p. 58.

[59] Gill, "Chinese Defense Procurement Spending," p. 16.

[60] ACDA, World Military Expenditure and Arms Transfers 1997.

[61] SIPRI, SIPRI Yearbook 1998, p. 297.

[62] John Frankenstein, "The People's Republic of China: Arms Production, Industrial Strategy and Problems of History," ed., Herbert Wulf, Arms Industry Limited (Oxford: Oxford University Press, 1993), p. 311.

[63] Interview with a well-informed former employee of NORINCO, March 1995.

[64] The PPP is defined as "the number of units of a country's currency required to buy the quantity of goods and services that can be bought in the US with one US dollar." The PPP is believed to be able to provide a better measure for comparing volume indices of output, since it supposedly reflects the relative

purchasing power of domestic currency and the dollar. David K. Whynes, The Economics of Third World Military Expenditure (London: Macmillan, 1979_, pp. 49-50.

[65] Ibid., p. 15.

[66] Sen, "Military Expenditure Data for Developing Countries," pp. 10-11.

[67] Digby Waller, "Estimating Non-Transparent Military Expenditures: The Case of China (PRC)," Defense and Peace Economics, Vol. 8, pp. 236-239.

[68] SIPRI, SIPRI Yearbook 1998, pp. 228-235.