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Economic Factors Shaping China's Defense Spending:

HISTORICAL TRENDS AND RECENT DEVELOPMENTS



Jason Wood
Science Applications International Corporation

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Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

Jason Wood
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September 2010

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Much of the academic literature on the relationship between defense spending and economic growth focuses on addressing a single question: How does an increase or decrease in defense spending affect growth of the overall economy?¹ While this is certainly an important question, given the potential opportunity cost of diverting vast resources from the civilian economy into defense, comparatively little attention has been dedicated to the reverse question of economic growth as a driver of military spending.² Nowhere is this interaction potentially more significant than in China—a nation that has coupled unprecedented economic growth with sizeable annual increases in military spending.

In an effort to address the gap in the academic literature and better understand how the economy affects defense spending and priorities, this study examines two central questions on economic growth as a driver of Chinese military spending:

- 1) How have economic conditions in China shaped past patterns of investment in military capabilities—to include science and technology (S&T), military industry, and strategic capabilities? Can discontinuities (e.g., change) in investment based on economic factors be discerned?
- 2) To what degree is China revising earlier forecasts for economic growth based on recent developments in the global economy? How may this affect strategic military programs?

Additionally, the study briefly considers how the evolving relationship between the military and private sector could alter the future relationship between the Chinese economy and the defense budget.

Bottom Line Up Front. While China's remarkable economic growth of recent decades has underwritten its increased military spending, there is no year-to-year correlation between the two trends. Causal linkages cannot be discerned with any certainty. This is due to a variety of factors, the most significant being the lack of clear insight into the Chinese defense budget, the poor quality of Chinese economic statistics, and the inherent limitations of bivariate (i.e., two variable) models when applied to the complex relationship between the economy and defense spending—a relationship that is influenced by a number of inputs, both tangible and intangible.

Despite the 2008 global economic downturn, China has maintained high projections for growth in both Gross Domestic Product (GDP) and military spending alike. While official 2010 budget numbers indicate a 7.5 percent increase in defense spending,³ this below-trend growth is not necessarily tied to below-trend GDP growth, nor is it indicative of a downward trend. Finally, overall economic growth trends may be a particularly weak influence on investment decisions in

¹ Richard Samuels has provided a review of theoretical perspectives on “the economic foundations of military power and the military foundations of economic power.” See: Richard J. Samuels, *“Rich Nation, Strong Army”: National Security and the Technological Transformation of Japan*. (Ithaca, NY: Cornell University Press, 1996), 1-32.

² The question has been treated at a broad, theoretical level. Notable examples include: Charles Doran, “War and Power Dynamics: Economic Underpinnings,” *International Studies Quarterly*, Vol. 27 (1983):419-41; Paul Kennedy, *The Rise and Fall of Great Powers: Economic Change and Military Conflict from 1500 to 2000*, (New York: Random House, 1987); Thomas J. McCormick, *America's Half-Century: United States Foreign Policy in the Cold War* (Baltimore: Johns Hopkins Press, 1989).

³ Wendell Minnick, “China's Defense Spending Growth Slows,” *Defense News* (March 5, 2010).

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

strategic systems, which are considered a high-priority area enjoying a high level of leadership patronage.⁴

Why is this argument important? This study is important for two primary reasons. First, understanding how changes in the Chinese economy have historically correlated with PRC defense expenditures and why specific causal-linkages cannot be discerned provides valuable perspective for weighing the significance and likely impact of future economic developments on defense spending. This insight is further enhanced by examining China's immediate reaction to recent volatility in the global economy.

Second, understanding exactly why we cannot today form a detailed grasp of the relationship between Chinese economic growth and defense spending provides a road-map to certain forms of transparency that U.S. policy-makers should seek in their recurring dialogues with Chinese counterparts. The problem at hand touches on sensitive issues of economic governance, state budgeting, and national security, so comprehensive results cannot be expected soon. With these obstacles in mind, government officials, non-governmental organizations, and academics can engage their Chinese counterparts on key topics where enhanced transparency, exchange, and analysis could provide the insights needed to conduct more conclusive analysis.

Scope and Methodology. This analysis examines the effect of an independent variable (rate of economic growth) on a dependent variable (rate of military spending growth). Because each of these variables could conceivably be measured by a wide number of indicators, it is necessary to limit the scope of this inquiry to achieve as much specificity as possible. Accordingly, this study uses gross domestic product (GDP) as the indicator of Chinese economic growth or decline; official defense budget numbers are used to indicate military spending. The lack of outside insight into the Chinese defense budget is the major obstacle to identifying causal linkages between economic discontinuities and fluctuations in military spending.

At the macro level, it is simple to observe a correlation between China's GDP and defense spending in recent decades: in every year since 1978, GDP has risen; in most years, so has defense spending. At the micro level, year-to-year fluctuations can be observed; in some years, GDP growth has been below other years, or defense spending has fallen. Because of the unreliability of both economic and budget statistics in China—a problem discussed in greater detail below—this study analyzes discontinuities in the official figures rather than the figures themselves. For example, while the trend in GDP has been upward, there have been periods where GDP did not increase as much as the previous year. This “below-trend” period is then compared to the trend in defense spending, which may have risen, fallen, or stayed level in absolute terms. An economic discontinuity does not

⁴ For the purposes of this study, the terms “strategic” and “strategic system” are broadly defined as the military capabilities or systems that support China's national interests and grand strategy (ends, ways, and means). Clearly, this definition goes beyond nuclear weapons and strategic nuclear delivery vehicles, and is highly dependent on China's perception of their national interests and threats to those interests. In a 2005 RAND study, *Modernizing China's Military*, scholar Keith Crane notes three “conditions” that China has articulated for its survival and prosperity – national unity, stability, and sovereignty. The most pressing threats to these conditions, according to PLA assessments cited by Crane include: U.S. military and foreign policies (especially those related to Taiwan), Japan's resurgence as a military power, India's rise to regional influence, border and coastal defense, and defending territorial waters and airspace.

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

necessarily mean a period when aggregate output (GDP) declines—a period where it is below trend is sufficient.⁵

For comparative purposes, the independent and dependent variables are assigned dummy values of 1 and -1, representing year over year above-trend growth and below-trend growth, respectively.⁶ For a given year, the same dummy value across the two variables reflects a direct relationship. Differing values evidence an indirect relationship.

Macro-Analysis: Direct Correlation Between GDP and Military Spending. As noted earlier, the overall direct correlation between China's economic rise and its increasing defense budget is clear. Figures 1 and 2 below juxtapose Chinese defense spending and GDP. Aside from this graphic representation, the underlying numbers also point to an overall correlation between GDP and defense spending, progressing through three phases—with rates of GDP growth and defense spending increases fluctuating relative to one another. Most recently, according to a 2009 study by Sean Chen and John Feffer, "Chinese government figures indicate that from 1998 to 2007, the average growth of its [GDP] was 12.5 percent. Military expenditures, meanwhile, grew at an average of 15.9 percent and total state expenditures increased by 18.4 percent. These statistics suggest that China's military spending remains consistent with the rate of its economic growth..."⁷ Earlier, the PRC underwent "a period of slightly slower defense budget increases averaging 14.5 percent from 1988-97, which nearly matched increases in state financial expenditure at 15.1 percent, but amid GDP growth of 20.7 percent and significant inflation." That period was a significant shift from the 1978-87 era, when the priority given to economic development stalled defense expenditure growth at 3.5 percent and government budgets at 10.4 percent while focusing on GDP growth of 14.1 percent.⁸

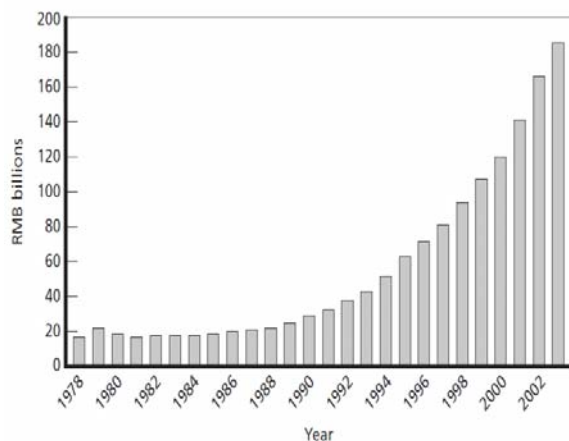


Figure 1 – Chinese defense spending 1978-2003.
Source: RAND, *Modernizing China's Military*.

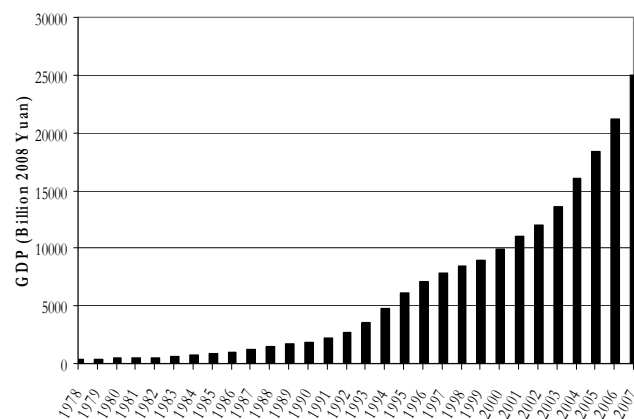


Figure 2 – Chinese GDP 1978-2007.
Source: Chinese Statistical Yearbook 2008.

⁵ James Laurenceson and Corrine Dobson, "China's Business Cycles Since 1979: A Chronology and Comparative Analysis," East Asia Economic Research Group Discussion Paper No. 17 (University of Queensland, August 2008): 2-3.

⁶ For this study, dummy values are useful for comparative purposes – primarily because the direction (i.e., direct or indirect) of the relationship between defense spending and GDP is the focus, rather than the magnitude of the correlation.

⁷ Sean Chen and John Feffer, "China's Military Spending: Soft Rise or Hard Threat?" *Asian Perspective* Vol. 33 No. 4 (2009): 50.

⁸ Andrew S. Erickson, "Chinese Defense Expenditures: Implications for Naval Modernization," *China Brief* Vol. 10 No. 8 (April 16, 2010): 12.

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

Official commentary on top-line budget numbers further underscores this macro-level correlation, noting that “in the past three decades of reform and opening up, China has insisted that defense development should be both subordinated to and in the service of the country’s overall economic development, and that the former should be coordinated with the latter.”⁹ Additionally, recent high-level official statements also evidence the role of China’s economy as a driver of defense spending. Speaking on the anniversary of the founding of the People’s Liberation Army (PLA), President Hu Jintao noted that “[China] will gradually increase input in national defense as the economy grows, and continue to modernize national defense and the armed forces in a way that serves the interests of our national security and development.”¹⁰

In addition to official documents and pronouncements, Chinese academic literature has contributed several studies examining the relationship between the economy and defense spending. In a 2000 study, Xia Jiren of the PLA Institute of Military Economics argued that “the economic foundation for increasing the national defense budget is the level of growth of China’s GDP.”¹¹ Earlier during China’s economic ascendancy, two separate studies analyzed the effect of the economic environment and a change in defense strategy on China’s defense expenditure policy, both using descriptive statistical techniques.¹² “Their findings suggested that the Chinese economic reform and the shift of defense strategy provide the main causes for the changes in China’s defense budget before and after 1980.”¹³ During this same period, the correlation between economic growth and defense spending in China was also noted in Western analyses. In a 1993 *Foreign Affairs* article, Nicholas Kristof noted that “while most countries have been cutting military budgets over the last five years, China has been using its economic boom to finance a far-reaching buildup.”¹⁴

Micro-Analysis: Inconsistency in Both Year-to-Year Growth and Variable Correlation. While China’s GDP has grown dramatically over a thirty-year period, in some years, it has grown more (or less) than in previous years—what this study refers to as off-trend growth. Figure 3 highlights quarterly instances of above and below-trend growth, assigning the former a value of 1 and the latter a value of -1.

⁹ *China’s National Defense in 2008*, (Beijing, China: Information Office of the State Council of the People’s Republic of China, January 2009): 46.

¹⁰ Statement of President Hu Jintao on the Anniversary of the Founding of the PLA, August February 7, 2007 as quoted in “President Hu: PLA Budget to Rise with the Economy,” *China Daily* (February 8, 2007).
http://www.chinadaily.com.cn/china/2007-08/02/content_5447330.htm

¹¹ Xia Jiren, “Circumstances Affecting China’s Defense Budget Increase,” *Military Economics Study* (PLA Institute of Military Economics, December 2000): 1.

¹² See Chen Bing-Fu, “Jin Shinian Zhongguo Junfei Zhichu Bianhua de Jingji Fenxi” (An Economic Analysis of the Changes in China’s Military Expenditures in the Last Ten Years) *Jingji Yanjiu* (*Economic Research Journal*) No. 6 (1990): 77-81; and Yuan Minquan, “China’s Defense Spending,” in *Research on Military Spending Worldwide*, Yuan Minquan and Tao Jinlong, eds. (Beijing, China: Lantian Press, 1994): 488-513.

¹³ Chen Bing-Fu and Zhao Liming, “The Determinant of China’s Defense Expenditure Before and After Transition,” *Conflict Management and Peace Science* Vol. 23 (2006): 227-244.

¹⁴ Nicholas D. Kristof, “The Rise of China,” *Foreign Affairs*, Vol. 72 No. 5 (November/December 1993): 65.

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

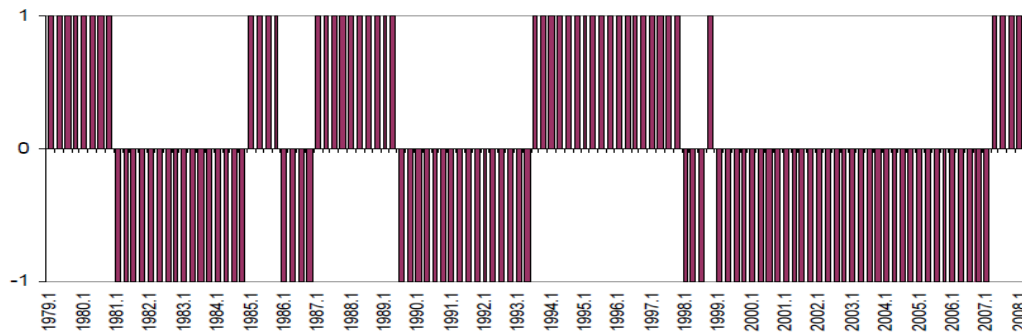


Figure 3 – Above and Below-Trend Growth in Chinese GDP.

Source: James Laurenceson and Corrine Dobson, “China’s Business Cycles Since 1979.”

The same dynamic holds true for defense spending, though there have been instances where official defense spending has decreased year-to-year in real terms. As noted earlier, the Chinese defense budget has progressed through three phases relative to GDP: (1) 1978-87, where defense spending grew in nominal terms 3.5 percent relative to 14.1 percent GDP growth; (2) 1988-1997, with 14.5 percent average defense spending growth amid 20.7 percent GDP increases; and (3) 1998-2007, where the annual defense increased average 15.9 percent, overtaking GDP growth at 12.5 percent. Figure 4 documents the percent-change in both nominal and real terms of the Chinese defense budget. For purposes of comparison, a larger year-to-year increase in the real-term defense budget is assigned a value of 1, with a smaller increase (or decrease/negative percent change) in spending valued at -1.

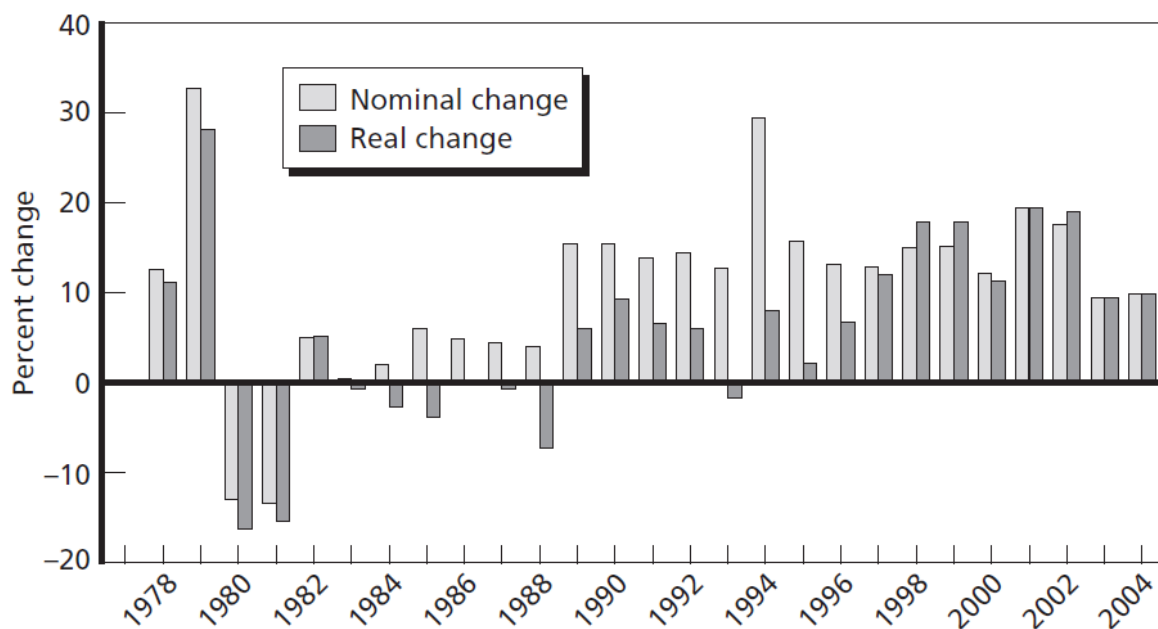


Figure 4 – Positive and Negative Change in Chinese Defense Spending.

Source: RAND, *Modernizing China's Military*.

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

Year	Defense Spending (+/- in real terms)	GDP (above/below trend)	Single-Year Correlation	Year	Defense Spending (+/- in real terms)	GDP (above/below trend)	Correlation
1979	1	1	Positive	1992	-1	-1	Positive
1980	-1	1	Negative	1993	-1	-1	Positive
1981	1	-1	Negative	1994	1	1	Positive
1982	1	-1	Negative	1995	-1	1	Negative
1983	-1	-1	Positive	1996	1	1	Positive
1984	-1	-1	Positive	1997	1	1	Positive
1985	-1	1	Negative	1998	1	-1	Negative
1986	1	-1	Negative	1999	1	-1	Negative
1987	-1	1	Negative	2000	-1	-1	Positive
1988	-1	1	Negative	2001	1	-1	Negative
1989	1	1	Positive	2002	-1	-1	Positive
1990	1	-1	Negative	2003	-1	-1	Positive
1991	-1	-1	Positive	2004	1	-1	Negative

Lag	Correlation
No Lag	0
1 year	0.35955
2 year	0.50709
3 year	0.03817
4 year	-0.1
5 year	-0.14545

Figure 5 - Correlation between fluctuations in Chinese defense spending and GDP, 1979-2004.

After assigning dummy values to both GDP and defense spending year-to-year, inconsistency in the relationship between the two variables is observable. Though the overall direct correlation between GDP and defense spending is readily apparent, no such correlation is apparent on a year-to-year basis or when factoring in a lag of 1-5 years. As Figure 5 shows above, there have been a number of instances in which there was an increase in real defense spending alongside below-trend GDP growth (or vice-versa). This negative correlation occurred 13 times from 1979-2004. While a correlation of nearly 36 percent and 51 percent at the one and two year marks may indicate a relationship between the two variables, given the limited dataset, this correlation is not definitive.

A Causal Linkage between Discontinuities in Defense Investment and GDP Growth?

According to a study of Chinese economic cycles since 1979, periods of below-trend GDP growth “correspond closely to known macroeconomic developments in China during the reform period.” For example, James Laurenceson and Corrine Dobson observe that “in September 1988 the central government initiated an austerity program in response to rising inflation....This program, in conjunction with the Tiananmen Square incident in June 1989, shattered confidence in China’s economic reform program.”¹⁵ While peaks and troughs in above- or below-trend GDP growth may be linked to known macroeconomic developments, linking increases or decreases in real defense spending to these GDP fluctuations is a far more tenuous proposition—one that is perhaps impossible to substantiate. This is primarily due to three factors:

1) *Lack of Insight into the Chinese Defense Budget.* First and foremost, there is very little understanding into what is and is not included in the official Chinese defense budget announced each year. Absent a definitive statement on inclusions and exclusions, it is broadly acknowledged that the official budget released annually by the Chinese government accounts for only a fraction of actual defense spending. According to Bitzinger, “whole categories of military expenditure are believed to be missing from official figures, seriously undervaluing real PLA spending and reinforcing beliefs that

¹⁵ Laurenceson and Dobson, “China’s Business Cycles Since 1979,” 11.

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

Beijing's lack of candor and transparency regarding its defense budget is yet another indicator of its aggressive and irredentist intents."¹⁶

Excluding defense-related spending from the official defense budget is not unique to China. Taiwan provides an example of how government authorities can manipulate a stated annual defense budget for domestic (or international) political consumption. In the late 1980s and 90s, the Taiwanese leadership apparently removed segments of the public defense budget (e.g., retired officers' pensions) and placed them under the purview of other bureaucracies in order to quell growing public criticism over excessive defense spending. Additionally, the U.S. Department of Defense (DoD) budget does not include funding for the Department of Energy's National Nuclear Security Administration (NNSA)—charged with ensuring the safety, security, and effectiveness of the U.S. nuclear weapons stockpile. The key difference between U.S. defense-related spending and that of the Chinese is transparency. Indeed, it is no secret that the U.S. government spends taxpayer dollars on non-DoD programs that may be considered defense-related. Rather, it is simply a matter of tracking down additional appropriations for other departments or independent agencies. It is not so with China, where a lack of transparency has traditionally been viewed as a virtue. Commenting on China's penchant for concealment, a group of five American scholars of China have noted that "for decades, the PLA viewed secrecy and opacity about its capabilities and operations as an essential component of its strength, causing foreign adversaries to underestimate Chinese military weakness and to overestimate PLA capabilities. China has become more open in recent years but foreign observers still lack more than rudimentary understanding of what military and military-related spending is contained in the PLA budget."¹⁷

To make matters more difficult, within the overall defense budget, there is little insight into how that money is distributed, aside from highly aggregated spending numbers for personnel, O&M, and equipment. As Bitzinger's study notes, "We do not know, for instance, how much funding is going specifically to the army, air force or navy, how much is being spent on which particular weapons programs, how many of what kind of weapons (aircraft, ships, tanks or missiles) are being procured annually, or how much support is being specifically accorded to categories such as training or logistics, or towards improving soldiers' living standards."¹⁸

Outside analysts and NGOs have tried to improve upon Chinese defense spending estimates with numbers that adjust for a number of variables, including inflation and variance in purchasing power from one economy to another.¹⁹ The results have done little to increase confidence in the reliability of information on Chinese defense spending. Indeed, "Western attempts to fill in the gaps in Chinese military expenditures—however much they are good faith efforts to be scientific and

¹⁶ Richard A. Bitzinger, "Just the Facts Ma'am: The Challenge of Analyzing and Assessing Chinese Military Expenditures," *China Quarterly* No. 173 (March 2003): 165-166.

¹⁷ Dennis J. Blasko, Chas W. Freeman, Jr., Stanley A. Horowitz, Evan S. Medeiros, and James C. Mulvenon, "Defense-Related Spending in China: A Preliminary Analysis and Comparison with American Equivalents," (Washington, DC: The United States-China Policy Foundation, May 2007): 3.

¹⁸ Bitzinger, "Just the Facts Ma'am," 170.

¹⁹ For a discussion of purchasing power parity (PPP) and issues surrounding outside Chinese spending estimates, see Michael R. Pakko and Patricia S. Pollard, "Burgernomics: A Big Mac Guide to Purchasing Power Parity," *Review* (Federal Reserve Bank of St. Louis, November/December 2003): 9-28; Keith Crane, Roger Cliff, Evan Medeiros, James Mulvenon, and William Overholt, *Modernizing China's Military: Opportunities and Constraints* (Santa Monica, CA: RAND, 2005); and "Chinese Defense Expenditure: Calculating its True Extent," *IISS Strategic Comments* Vol. 13 No. 10 (December 2007).

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

'reasonable' – still largely consist of 'guesstimates' piled on top of 'guesstimates,' and hence contain considerable margin of error.” Furthermore, these estimates vary significantly from each other, a fact that has only further clouded the issue of analyzing and assessing Chinese defense spending. As a result, Western efforts at Chinese defense budget analysis have largely reached a methodological dead end.²⁰

Within DoD, the Office of the Secretary of Defense (OSD) produces an annual report to Congress on Chinese defense-related developments. The most recent iteration—released in August 2010—titled “Military and Security Developments Involving the People's Republic of China,” asserts “China's total military-related spending for 2009 to be over \$150 billion, using 2009 prices and exchange rates.”²¹ This annual estimate is frequently used as a benchmark for U.S. government analyses. Using data furnished by China to the United Nations, the report contains estimated breakdowns of personnel, operation and maintenance, and equipment expenditures.

The lack of solid data to inform analyses is a significant hurdle to arriving at defensible conclusions about spending, strategic intent, and long-term priorities. According to Freeman, “The result of all these gaps in our knowledge is analysis from incomplete, flawed data, based on crude speculation and empirically unsubstantiated methodologies. No one, not even those in the intelligence and academic communities who labor to produce estimates of Chinese military spending, has any confidence in the numbers or any certainty about their significance.”²²

A frequently cited RAND study from 2005 provides an example of how a lack of insight into the Chinese defense budget—what it includes/excludes and how it is distributed—precludes causal linkages between one variable and another:

The 2003 budget [increase of 9.6 percent] represented the first time in 14 years that the PLA did not receive a double-digit year-on-year increase. One official source offered a reason for the smaller-than-normal increase, arguing that slower overall economic growth required caps on central budget spending. A hint of another reason can be found in the fact that only official English-language sources, such as *China Daily*, highlighted the drop in the rate of increase as the 'lowest in 14 years' whereas Chinese language sources merely stated the numbers without editorial comment...What is going on here? Although the official budget numbers were already widely viewed as incomplete, it is entirely possible that the Chinese government, weary of the annual public relations debacle in the Western media over double-digit increases in its defense budget, decided to hide a greater share of the increase in other accounts in 2003. Using this logic, 9.6 percent was a reasonable compromise between previous high-profile increases of nearly 18 percent and lower amounts, such as 5 percent, that would have been politically embarrassing to the important military constituency.²³

Barring increased transparency in the PRC defense budget, Bitzinger argues that “we need to be honest with ourselves. Given the current (and likely-to-continue) paucity of data, we should acknowledge the severe limitations of any effort to analyze and assess Chinese military expenditures.” Until we have additional, more reliable data, defense budget analysis of the Chinese

²⁰ Bitzinger, 165-166.

²¹ *Annual Report to Congress on Military and Security Developments Involving the People's Republic of China 2010*, (Washington, DC: Office of the Secretary of Defense, August 2010): 43.

²² Blasko, et al., “Defense-Related Spending in China,” 4.

²³ Crane, et al., *Modernizing China's Military: Opportunities and Constraints*, 106-107.

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

military will function best as a supplement to other types of empirical research—"areas where the arguments are likely to be more impressionistic and less quantitative."²⁴ For example, empirical analysis of personnel in each branch of Chinese military could be used to estimate relative service-level expenditures.

To enable better analysis of Chinese defense spending and comparisons with other national defense budgets, four steps must be taken: (1) specification of what should be included in total defense-related spending; (2) specification of the categories into which total defense-related spending should be disaggregated; (3) presentation of spending according to an agreed-upon taxonomy; and (4) the use of an agreed-upon methodology to convert spending into a common currency.²⁵

2) *Poor-Quality Official Economic Statistics.* Modern China's National Bureau of Statistics (NBS) traces its lineage to the State Statistical Bureau (SSB)—a massive apparatus designed to collect information on China's centrally-planned economy. Today, the NBS system employs more than 60,000 statistical workers to gather economic and social data. However, despite its size, "China continues to be one of the poorer performers in terms of quality and regularity of data releases." A 1999 study by the U.S.-based Institute of International Finance (IFF) found that China managed to meet only six of the 25 stringent data-release standards used by IFF. Of 12 major emerging market economies, only Egypt performed worse than China in meeting international statistical standards.²⁶

Poor-quality statistics in China are not due to a top-down, government-led conspiracy or padding exercise. Rather, distortions enter the equation at all levels of the process. For example, mid-level officials fake figures to hide economic problems or to avoid the ire of central planning authorities. On the local-level, deficiencies in data compilation may be due to the use of under-qualified statistical workers. The poor-quality initial data points would then taint any subsequent analysis regardless of how good the statistician's methodology may be. Post-reform economic prosperity has also given rise to a new form of statistical manipulation, where some enterprises under-report profits to evade taxes, or perhaps hide losses to maintain investor confidence.²⁷

While poor-quality statistics do preclude more definitive analysis of the Chinese economy, some general conclusions are still possible, but should be approached with caution. Indeed, as Friedrich Wu observes, "to make the best use of Chinese statistics, users still need to be keenly aware of their limitations. Perhaps the best that can be said about Chinese data is that they correctly show the direction of the growth trend. But analysts should not be overwhelmed by headline growth rates. When it comes to Chinese statistics, the watchword will continue to be '*caveat emptor*.'"²⁸ For this reason, this study has relied on analysis using dummy variables, where the direction of a trend is more important than the magnitude of a particular increase or decrease.

3) *Limitations of Bivariate Models.* The small sample of data (26 years) is insufficient to test the correlation between GDP and defense spending relative to other independent variables using a multivariate regression analysis. For that reason, this study uses a bivariate model. However, there are several limitations to using a bivariate causality model to correlate GDP and the size of a

²⁴ Bitzinger, 175.

²⁵ See Blasko, et al.

²⁶ Friedrich Wu, "Chinese Economic Statistics – Caveat Emptor!" *Post-Communist Economies*, Vol. 15 No. 1 (2003): 144.

²⁷ Ibid.

²⁸ Ibid.

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

particular nation's defense budget. Most importantly, bivariate models exclude other important variables likely to factor into national decisionmaking besides GDP or any other single variable.²⁹ Indeed, "the substantial literature on the determinants of defense expenditure in developing countries indicates that the defense expenditure of a country depends on a variety of economic, political, and military factors from both the internal and external environment. Economic factors and the overall economic environment may provide a constraint on the military budget over time, but the importance of the strategic factor, security, and threat perception, both internal and external, must also be recognized."³⁰

These non-economic shocks certainly have the potential to influence defense spending more than GDP alone. In 2006, Kurt Campbell and Richard Weitz argued that the mistaken 1999 bombing of the Chinese Embassy in Belgrade by U.S. forces is linked to major purchases of Russian arms by the PLA.³¹ Additionally, a 2008 article by Gregory Kulacki and Jeffrey Lewis links the same incident to an across-the-board increase in Chinese military research and development (R&D) investment.³² Other similarly-threatening events like the 2003 invasion of Iraq, major arms sales to Taiwan (or perhaps more significantly, deepening operational ties between the U.S. and Taiwan), or increased defense spending in India could also shape thinking in Beijing about appropriate defense spending levels, regardless of GDP. As alluded to in the introduction, a number of studies have considered the impact of defense spending on GDP—essentially spending on defense to spur growth in the civilian economy.

Recent Developments. In response to the global financial crisis of 2008, China rapidly developed an economic stimulus plan focused on investments in 10 major areas, while maintaining relatively high projections for GDP growth. More specifically, "China was the first, in November 2008, to announce an economic stimulus package—\$586 billion over two years—chiefly intended to realize China's goal of an 8 percent annual growth rate" according to a recent U.S. Chamber of Commerce study.³³ The plan represents an investment equivalent to roughly 7 percent of GDP and is the largest economic stimulus ever undertaken by the Chinese government.³⁴ In addition to direct investment, the government directed its state-owned banks to dramatically loosen credit. Roughly \$1.3 trillion was lent out in the first nine months of 2009, much of it going to state-owned and state-controlled enterprises.³⁵ While a significant share of the stimulus spending focused on developing low-income housing, rural infrastructure and other domestic social projects, science and technology innovation was one of the 10 major areas targeted by the stimulus.

Two years after the financial meltdown, Chinese government officials claimed success for their response to the crisis, noting that GDP growth has returned to historic norms. Indeed "by most

²⁹ Chung-Nang Lai, et al., "Defense Spending and Economic Growth Across the Taiwan Straits: A Threshold Regression Model," *Defense and Peace Economics* Vol. 16 No. 1 (February 2005): 46.

³⁰ Bing-Fu and Liming, "The Determinant of China's Defense Expenditure," 228.

³¹ Kurt M. Campbell and Richard Weitz, "The Chinese Embassy Bombing: Evidence of Crisis Management?" in Michael Swaine, Tuosheng Zhang, and Danielle Cohen, eds., *Managing Sino-American Crises: Case Studies and Analysis*, (Washington, DC: Carnegie Endowment for International Peace, 2006): 334-335.

³² Gregory Kulacki and Jeffrey G. Lewis, "Understanding China's Antisatellite Test," *Nonproliferation Review* Vol. 15 No. 2 (July 2008): 335-347.

³³ "China's Role in the Origins of the Global Financial Crisis and China's Response," *2009 Report to Congress of the U.S.-China Economic and Security Review Commission* (Washington, DC: U.S. Chamber of Commerce, 2009): 39.

³⁴ David Barboza, "China Unveils Sweeping Plan for Economy," *New York Times* (November 10, 2008).

³⁵ "China's Role in the Origins of the Global Financial Crisis and China's Response," 39.

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

accounts, the stimulus has reversed China's economic slide, boosting GDP and setting off a domestic construction spree."³⁶ The International Monetary Fund (IMF) predicted that China's real GDP would grow at 8.5 percent in 2009.³⁷ According to the NBS, China posted an 8.7 percent increase for the year.

As noted previously, for the first time since 2003 (9.6 percent), China did not announce a double-digit increase in defense spending for 2010 (7.5 percent). In response to Beijing's announcement, "much has been made of the 2010 reduction in growth, with American scholars citing internal politics, domestic priorities in the 12th Five Year Plan, low inflation, corruption crackdowns and PLA achievements of mid-range goals."³⁸ Senior PLA scholars, including Major General Luo Yuan, stressed the need to surge resources into the civilian economy during the financial crisis. He went on to state that PLA budget should not be based on international opinion, "perhaps implying that he believes this consideration may have influenced the PLA's 2010 budget."³⁹ The variety of opinions about the direct cause of China's off-trend defense spending in 2010 accurately reflects the diversity of inputs that factor into national decisionmaking and the difficulty of establishing cause-and-effect relationships between geopolitical events and defense investment.

Regardless of the reasons behind off-trend growth in defense spending for 2010, it is important to keep in mind that a 7.5 percent increase for the PLA remains sizeable, and could be augmented by economic stimulus spending on technological innovation projects. As one of the 10 major areas of focus emphasized in China's 2008 economic stimulus plan, science and technology R&D investments could be sizable. More importantly, these investments would probably not be reflected in subsequent defense budget numbers for 2009 or 2010. Indeed, "it is generally believed that military R&D is funded from other parts of China's state budget. Wang Shaoguang, in fact, argues that the Chinese openly acknowledge this fact (although China's white papers state just the opposite), and that defense R&D is specifically covered under the country's general R&D funding and a special fund for "new product promotion."⁴⁰ Thus, while China officially posts off-trend growth in military spending, it is simultaneously pouring stimulus resources and credit into S&T research and development—which could have dual-use (if not exclusively military) potential. In order to better-understand how R&D investments in the broader economy benefit defense programs—or perhaps how defense R&D projects are funded outside of the official defense budget—further study is necessary, perhaps focusing on a single program and analyzing how the budgeting process would work (or using older systems as case studies).

Effect on Strategic Systems. The effect of the financial crisis on China's strategic military programs is difficult to delineate. Aside from a lack of insight into the Chinese defense budget and poor quality economic statistics, strategic systems and programs tend to be an analytical outlier within the already convoluted defense budget due to the high-degree of leadership priority ascribed to strategic systems. As James Mulvenon and Rebecca Samm Tyroler-Cooper have observed,

³⁶ Ibid, 49.

³⁷ Ibid, 39.

³⁸ Erickson, "Chinese Defense Expenditures," 12.

³⁹ Ibid. Citing Chen Zin, et al. "Experts Analyze the Appropriate Level of Increase in Chinese Defense Spending," *China National Radio* (5 March 2010). http://www.cnr.cn/china/newszh/yaowen/201003/t20100305_506102320.html and "Luo Yuan: China Does not Seek Hegemony," *Xinhua* (9 March 2010). http://news.xinhuanet.com/mil/2010-03/09/content_13133725.htm

⁴⁰ Bitzinger, 169 citing Wang Shaoguang, "The Military Expenditure of China, 1989-98," *SIPRI Yearbook 2000* (Oxford, UK: Oxford University Press, 2000): 339.

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

China's "nuclear weapons program [has] enjoyed top-level government priority and therefore virtually unlimited access to resources combined with an unusually capable cadre of Western-trained nuclear physicist."⁴¹

Due to the atypical commitment of personnel, facilities and funds, Chinese strategic programs are likely to be insulated from any influence that GDP growth fluctuations might have on the defense budget. Additionally, strategic systems budgets lack the agility to surge or shrink in-step with year-to-year macroeconomic events, due to the significant lead time needed to research, develop, and produce nuclear weapons. If such agility exists anywhere in the PLA budget, it is far more likely to be in less strategic coffers—though here too, specifics would be difficult to discern.

China's Evolving Defense Industry, Future Trends, and Concluding Thoughts. China's defense industry—and the nation as a whole—is rapidly changing. These shifts will have a significant effect on the ability of the defense industry to provide the capabilities needed to underwrite China's great-power ambitions and the ability of the Chinese government to continue funding sizable annual increases to the defense budget.

Dennis Blasko and colleagues conclude that within the PLA and defense industry, "budgeting processes, accounting methods, and acquisition policies are, like the Chinese economy, in a state of rapid evolution."⁴² Over the last decade, China has worked to implement a grand strategy for improving the technological capabilities of the defense industry. The strategy focuses on three main priorities: (1) selective modernization, building on China's strengths in the manufacturing of missiles and electronics or concentrating on C4ISR, strike weapons, and other high-priority strategic programs; (2) civil-military integration, providing incentives and subsidies to private corporations that develop defense products and working to integrate civil-sector efficiencies into the defense industry; and (3) exploiting advanced foreign technology, including through off-the-shelf purchases and espionage.⁴³ Of particular note for this study, the strategy of selective modernization lends validity to the argument that Chinese leaders give particular priority to strategic systems, singling them out for resources to the exclusion of more expendable, less geopolitically significant, programs.

Current initiatives to implement the transformation strategy include steps to "introduce structural reforms to tackle the deep-seated obstacles that have held back [the PLA's] ability to absorb, create and diffuse technological innovation." This effort is aimed at reversing the legacies of the Maoist socialist planning era, characterized by a "highly conservative, uncompetitive, poorly motivated, inefficient and corrupted institutional culture." The Chinese government conceptualizes reform through the "Four Mechanisms"—competition, evaluation, supervision, and encouragement. This framework includes promoting "competition and creativity by reining back the reach of the state and encouraging enterprises to play the leading role in the running of the defense industry, developing a robust regulatory and standards regime that provides clearly defined benchmarks and rules, and

⁴¹ James Mulvenon and Rebecca Samm Tyroler-Cooper, "China's Defense Industry on the Path of Reform," U.S.-China Economic and Security Review Commission (Washington, DC: U.S. Chamber of Commerce, 2009): 33.

⁴² Blasko, et al., 3.

⁴³ See: Crane et al., *Modernizing China's Military: Opportunities and Constraints* and Tai Ming Cheung, "Dragon on the Horizon: China's Defense Industrial Renaissance," *Journal of Strategic Studies* Vol. 32 No. 1 (February 2009): 47.

Economic Factors Shaping China's Defense Spending: Historical Trends and Recent Developments

forging integration between the civilian and military portions of the economy through technological and industrial spin-offs.”⁴⁴

In addition to reform of the defense industry, which will shape China's ability to achieve great-power status, macro-level trends in Chinese society are underway that will likely influence future spending priorities of the Chinese leadership and their willingness to divert ever-increasing shares of GDP to the PLA. According to RAND, “China is becoming older, wealthier, and more urbanized. These changes are generating pressures for additional government spending in a number of categories: health care, pensions, public infrastructure, and the environment.” While China's economy will likely continue to grow in the coming decades, “the ability of the Chinese government to raise the share of output channeled into military spending will be tightly constrained because of these competing demands for government spending on social benefits and other nonmilitary expenditures.”⁴⁵

How the Chinese leadership decides to allocate resources in the future will depend on a number of factors—including, but certainly not limited to, GDP. As this study shows, the relationship between China's economic output and its military spending correlates at the macro level. However, year-over-year fluctuations in defense spending growth and GDP correlate weakly (and negatively). More importantly, a causal linkage between changes in GDP growth and fluctuations in defense spending cannot be discerned with any certainty. However, as defense-industry reforms proceed, it is possible that increased integration of the defense industry with the civilian economy will increase the significance of GDP growth changes from year to year, by affecting the resources available to private entities working on defense-related programs.

Going forward, increased transparency on the part of the Chinese government would enable Western analysts to better understand the nuances and complexities of the defense budget. As noted earlier, steps can be taken to facilitate U.S.-China defense budget comparisons, including common terms of reference and currency conversion methodologies. Additionally, an effort to promulgate and disseminate higher-quality economic statistics would yield a dual benefit, enabling economists and forecasters within China to identify and respond to areas of concern while also allowing outside analysts to draw more reliable conclusions. Government officials, non-governmental organizations, and academics should engage their Chinese counterparts in discussions on important issues where better transparency, exchange, and analysis could provide the insights needed to conduct more conclusive analyses. Whether in an official or Track II context, discussions must focus on better understanding the content of the PLA budget, the budgeting processes of the PLA, China's concept of defense spending, and the benefits of openness and transparency. These will not be easy discussions. Indeed, asking China to “open the books” on its military spending will be a difficult, if not impossible, sell—particularly if the only perceived benefit for China is confidence-building with foreign governments. To be effective, future discussions must emphasize the benefits of transparency within China, for its defense industry and economy. Finally, a number of variables influence Chinese defense spending beyond GDP and the economy. To be of greatest use, analysis of Chinese defense spending would benefit from a holistic approach that integrates inputs from demography, geopolitics, and strategic culture.

⁴⁴ Cheung, “Dragon on the Horizon; China's Defense Industrial Renaissance,” 30. Competition within the defense industry for major research and development and production contracts is a fairly new dynamic – one deserving of significant future study.

⁴⁵ Crane, et al.: 241.

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