

ACCESS ASIA REVIEW

STATE OF THE FIELD REPORT:

RESEARCH ON
THE CHINESE MILITARY

June Teufel Dreyer

Summer 1997

Vol. 1, No. 1

THE SOURCES OF EAST ASIA'S
ECONOMIC GROWTH

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THE NATIONAL BUREAU OF ASIAN RESEARCH

FOREWORD

AccessAsia, the first clearinghouse to track the expertise and current research of specialists on policy-related issues in the Asia-Pacific region, was established in 1990 by The National Bureau of Asian Research (NBR). In 1991, NBR published the contents of the AccessAsia database in the first annual edition of *AccessAsia: A Guide to Specialists and Current Research*. The *AccessAsia Guide* is a phone, fax, email, and address directory, a source of biographical information, and, most notably, a listing of the current policy-relevant research projects of the world's leading experts on contemporary Asian affairs.

During the past seven years AccessAsia has grown from a modest, in-house operation to an extensive, multilateral enterprise. In cooperation with the International House of Japan and with the support of the Center for Global Partnership (CGP) of the Japan Foundation, the Microsoft Corporation, and The Henry M. Jackson Foundation, NBR has joined with fourteen other major research and exchange institutions throughout Asia, Australia, Europe, and North America to form the AccessAsia Global Consortium. Consortium members track policy-relevant Asia specialists and their current research worldwide and submit this data to NBR.

The project maintains two international databases. One, from which the *AccessAsia Guide* is derived, now contains nearly 3,000 leading academic, government, and private-sector experts on Asia, making it the most comprehensive resource of its kind. The second tracks private and public institutions in the United States and abroad that conduct Asia research. In addition to publishing the annual guide, AccessAsia also provides customized reports and makes its databases available on the World Wide Web.

It is with great pleasure that we announce the most recent undertaking in the AccessAsia project: the *AccessAsia Review*. The *AccessAsia Review* will be published biannually, in summer and winter, and will contain articles that review and assess current research on policy-relevant issues in the field of contemporary Asian

affairs. Depending on the topic, these “state of the field” studies may also explore current debates, evaluate the progress of current research, and identify promising areas for future research. Once a year, the *AccessAsia Review* will include a quantitative, global analysis of research on Asia. This report will draw upon the AccessAsia database to determine trends in research and identify emerging and declining fields. The *Review* will also contain information about developments in the AccessAsia project.

In this inaugural issue of the *AccessAsia Review* we are proud to present two essays by distinguished Asia specialists. In the first essay, “State of the Field: Research on the Chinese Military,” June Teufel Dreyer assesses current research on the Chinese military and examines the numerous differing accounts of the People’s Liberation Army’s international capabilities and intentions. In “The Sources of East Asia’s Economic Growth,” Stephan Haggard and Euysung Kim probe the debate on the causes of and prospects for economic growth in East Asia, and offer their own interpretations of established theories and popular explanations.

For their generous support of the *AccessAsia Review*, NBR wishes to thank the Center for Global Partnership (CGP) of the Japan Foundation and The Henry M. Jackson Foundation.

STATE OF THE FIELD REPORT: RESEARCH ON THE CHINESE MILITARY

June Teufel Dreyer

In this essay, Professor June Teufel Dreyer reviews the recent literature on the People's Liberation Army's international capabilities, doctrine, and policy role in China. Scholars agree that the military's budget has increased significantly over the past decade, but the extent of this increase and its ramifications are sharply debated. In 1985 the PLA began to concentrate on scenarios involving local, limited wars on China's periphery. This was in marked contrast to the previous strategy which prepared for an "early, major, and nuclear" war with the Soviet Union. However, Dreyer points out that the content, methods, and evaluation of training have yet to be standardized. And while China's military capability is also weakened by older and less powerful warships and aircraft, the one area the experts agree the PLA is making progress in is the development of missiles and nuclear weapons. Research on the military's new commercial activities suggests that growing corruption is having a deleterious effect on morale and combat capabilities. In addition, PLA specialists agree that economic reforms have opened the possibility that military interests could combine with local economic interests and operate at least partially independently of central government control. At the same time, the literature suggests that the PLA may be playing an increasingly active role in the formation of national security policy. Current research indicates that while the PLA has made good, if uneven, progress in modernizing over the past decade, its force projection capabilities remain limited and are unlikely to allow China to claim the status of regional military power within the next decade.

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Introduction

Rapid economic growth in the People's Republic of China (P.R.C.) coupled with Beijing's increasingly assertive nationalism has raised questions about the country's international intentions. The existence of numerous territorial disputes in Northeast and Southeast Asia has been a particular cause of apprehension among China's neighbors. This in turn has stimulated interest in the study of China's military establishment. Research on China's People's Liberation Army (PLA; the term includes naval, air, and marine units as well as ground forces) has been fostered by a variety of organizations, including:

- the American Enterprise Institute (AEI) of Washington, D.C., through its annual conferences on the PLA and publication of the proceedings thereof;
- the Chinese Council for Advanced Policy Studies (CAPS) of Taipei, which, in cooperation with the Sun Yat-sen Center for Policy Studies (SCPS) of National Kaohsiung University, Taiwan, has sponsored a series of conferences and publications, including a PLA Yearbook in 1987, 1988-89, and 1990, plus occasional papers and monographs on the Chinese military;
- the Center for Naval Analyses (CNA), Alexandria, Virginia, through an ongoing series of papers, primarily on Chinese naval development;
- the Institute of International Relations, Taipei, sponsor of an annual Sino-American conference and the quarterly Issues and Studies, with significant attention to Chinese defense issues;
- the International Institute for Strategic Studies (IISS), London, which publishes research on the Chinese military in its Adelphi Papers series as well as assessments of Chinese capabilities in its annual reviews Strategic Survey and The Military Balance;
- the Institute for National Strategic Studies of the United States National Defense University (NDU), Washington, D.C., which disseminates research on the Chinese military in its publications the monthly Strategic Forum, The McNair Papers monograph series, and NDU Press books;

- the RAND Corporation, Santa Monica, California, through the preparation of monographs funded by the U.S. Air Force and the Department of Defense;
- the Stockholm International Peace Research Institute (SIPRI), in conjunction with its project on security and arms control in East Asia;
- the Strategic Studies Institute (SSI) of the U.S. Army War College, Carlisle, Pennsylvania, which sponsors ongoing research on all aspects of the Chinese military; and
- the School of Oriental and African Studies (SOAS), London, - which recently published a special issue of the *China Quarterly* (June 1996) focusing on “China’s Military in Transition.”

Major topics of interest in recent years have included the size of the Chinese military budget; military strategy; the organization and training of the PLA; weapons acquisition; the economic role of the military; and the PLA’s influence over domestic and foreign policy decision-making. In addition to the inherent interest of the topics themselves, researchers have been concerned with the question of the projection capabilities of the Chinese military: whether, under what circumstances, and with what probability of success might the People’s Liberation Army be used in combat.

Budgets

There is no doubt that the PLA’s expenditures have increased substantially over the past decade. The official defense budget increased fourfold between 1987 and 1997, from 20.37 billion yuan to 80.57 billion yuan (US\$ 9.7 billion, at the April 1997 exchange rate of 8.3 yuan to the dollar). There is, however, considerable controversy over the actual size of military spending, what is included therein, and the efficiency with which the monies are allocated and spent.

Until the P.R.C. issued its first defense White Paper in November 1995, the state budget provided only a single aggregate figure for defense. The defense White Paper was but slightly less opaque, listing three classes of spending: personnel, equipment, and opera-

tions and maintenance. Other major expenditures for nuclear research and development, paramilitary forces such as the militia and People's Armed Police (PAP), and allocations for the defense industry were not included. Recent purchases of weapons from Russia were financed through a special fund supplied by the State Council, and hence do not appear in the defense budget either. Nor does the defense budget account for the PLA's earnings from its large and varied business holdings, or from the produce of its farms.

Lacking credible and detailed information, analysts have expended considerable energy in trying to determine the size of China's actual defense expenditures.¹ In addition to problems of trying to quantify expenditures that have not been made public, they face the problem of differences in the purchasing power between the yuan and the dollar. Since, for example, an enlisted person in the PLA is paid a few dollars a month compared to several thousand paid to his counterpart in the average Western military, any comparison between the military spending of these countries and China will show an unrealistically low figure for the P.R.C. There have been a number of attempts to devise a purchasing power parity (PPP) exchange rate that would estimate a dollar value for the yuan if the P.R.C.'s economic output were priced at prevailing

¹ See, for example, Richard Bitzinger and Chong Pin Lin, *Off the Books: Analyzing and Understanding Chinese Defense Spending*, Washington, D.C.: Defense Budget Project, 1994; Stockholm International Peace Research Institute, "World Military Expenditure: China," *SIPRI Yearbook 1994*, Oxford: Oxford University Press, 1994, pp. 441-447; Paul H.B. Godwin, "PLA Incorporated: Estimating China's Military Expenditures," and David Shambaugh, "Wealth in Search of Power: the Chinese Military Budget and Revenue Base," papers presented at the Institute for International Security Studies/Chinese Council for Advanced Policy Studies conference on Chinese Economic Reform and Defense Policy, Hong Kong, July 1994; "China's Military Expenditures," *The Military Balance 1995/96*, Oxford: Oxford University Press, 1995, pp. 270-75; Arthur Ding, "China's Defense Finance: Content, Process, and Administration," *China Quarterly*, no. 146 (June 1996), pp. 428-442; Shaoguang Wang, "Research Note: Estimating China's Defense Expenditure: Some Evidence From Chinese Sources," *China Quarterly*, no. 147 (September 1996), pp. 889-911; Richard Bitzinger, "A Comparison of Military Spending and Foreign Aid by the PRC and Taiwan," paper presented to the AEI conference on the People's Liberation Army, Coolfont, West Virginia, September 1996; Richard Bernstein and Ross H. Munro, *The Coming Conflict With China*, New York: Alfred Knopf, 1997, pp. 70-72.

dollar rates, but different researchers have produced different PPP rates. Some estimates of Chinese defense expenditures utilize PPP; others do not.

Not surprisingly, conclusions differ substantially. The lowest estimate is that of Wang Shaoguang who argues that the profits from the PLA's business enterprises do not go toward weapons purchases and that the products from its farms are mainly consumed internally. Using the 1994 budget as a typical example, Wang calculates that it was 62.5 billion yuan, or one-third larger than the reported 42.5 billion yuan.²

At the other extreme, Richard Bernstein and Ross Munro place actual military spending at ten to twenty times the reported amount. Their estimate includes proceeds from China's arms sales abroad; the cost of weapons purchased from abroad; and expenditures on the People's Armed Police. The authors reason that although the stated purpose of the 600,000-strong PAP force is the maintenance of domestic order, its membership is overwhelmingly composed of demobilized military men, and hence the PAP serves as a reserve force which is intended to be used in times of international conflict.³

The majority of estimates fall into the range of four to seven times the officially reported figures. One of the more dispassionate analyses concludes that the Chinese defense budget probably absorbs only about 3.5 percent of the P.R.C.'s gross national product, a percentage that is quite similar to that of the United States and a number of other countries. However, the author adds that "in terms of purchasing power, China's military budget could be the largest in Asia, bigger than India or even Japan."⁴

² Shaoguang Wang, "Research Note: Estimating China's Defense Expenditure: Some Evidence From Chinese Sources," *op. cit.*

³ Richard Bernstein and Ross H. Munro, *The Coming Conflict With China*, *op. cit.*, pp. 70-71.

⁴ Bitzinger, "A Comparison of Military Spending and Foreign Aid by the PRC and Taiwan," *op. cit.*, p. 7.

Chinese sources have consistently denied these claims, insisting that military budgets have barely kept pace with inflation, and that therefore it is absurd to contend that the P.R.C. harbors aggressive intentions against its neighbors. However, whatever the discrepancy between high and low estimates of defense expenditures, there is consensus that they have been substantially underrepresented. Several non-Chinese studies have pointed out that, while there is no necessary link between higher budgets and aggressive intent, the PRC leadership's unwillingness to provide greater budgetary transparency may contribute to an image of untrustworthiness.⁵

Strategy

In contrast to the sharp debates on the size of China's military budget, there is relative consensus among scholars of the PLA on its strategic posture. Throughout the Mao era, the P.R.C.'s military strategy remained that of People's War. A doctrine originally developed during the 1920s and 1930s for use in the civil war against Chiang Kai-shek's Kuomintang (KMT) forces and, to a lesser extent, against the Japanese invaders, People's War is a highly mobile strategy that involves avoiding the defense of fixed points; trading space for time ("enemy advances, we retreat"); heavy reliance on the support of the peasantry ("the army is the fish and the people are the water; the fish cannot swim without the water"); the primacy of ideologically indoctrinated troops over weapons ("men over arms"); and a substantial role for guerrilla formations. People's War remained the official doctrine after the communist party's victory on the mainland, despite limitations which became increasingly apparent. For example, Chinese troops in the Korean war during the early 1950s discovered that Korean peasants were not always supportive of their forces. During China's conflict with India in 1962, the PLA's invasion route passed through Tibet, which had been the site of a rebellion against Chinese rule only three years before; voluntary cooperation was not to be expected there either.

⁵ *Ibid.*, p. 6; see also John Caldwell, *China's Conventional Military Capabilities, 1994-2004: An Assessment*, Washington, D.C.: Center for Strategic and International Studies, 1994, p. 13.

A new strategy began to take shape shortly after Deng Xiaoping's second rehabilitation⁶ in 1977. It received added impetus as a result of the PLA's lackluster showing during China's confrontation with Vietnam in February 1979. Called People's War Under Modern Conditions (PWUMC), the new strategy asserted a significant role for positional warfare. Important industrial bases and civilian population centers hence would be defended rather than abandoned, as would have been implied by the mobile warfare tenets of People's War. PWUMC also relied for the most part on regular troops, without ever specifically repudiating the role of guerrillas, the militia, and the civilian population. Foreign analysts were divided as to whether PWUMC was really a derivative of People's War, or whether it was a stunning departure therefrom that had been given a similar name to disguise its radical nature and confer an aura of Maoist legitimacy on the new strategy.

China's most probable enemy at that time, indeed the only state that might plausibly have attacked the P.R.C., was the Soviet Union. Given the U.S.S.R.'s massive nuclear arsenal, PWUMC assumed that the P.R.C.'s own nuclear deterrent might have to be employed as well. In addition to threatening to "drown the invaders in a sea of People's War" (or PWUMC), and to give "tit for tat" if attacked with nuclear weapons, Chinese planners also expressed interest in the AirLand strategy that the U.S. had developed against the Soviet Union. This envisioned aerial attacks on the enemy's rear echelons and long-range artillery. Defenders would leapfrog over Soviet front lines with the aim of cutting off supplies and reinforcements from the front. American analysts were not convinced that the U.S. military could prevail against the Soviet Union with this strategy. There was consensus that the Chinese, with their less well-developed technology, clearly could not.

⁶ Purged during the Cultural Revolution, Deng was rehabilitated in August 1973 and became head of the PLA's General Staff Department, during which time he was quite critical of the condition of the military. He was purged again in April 1976, shortly after the death of his mentor, Zhou Enlai, and re-rehabilitated in July 1977, after leading military figures had interceded with Mao's successor, Hua Guofeng.

The inappropriateness of AirLand strategy aside, there was much to recommend PWUMC. It no longer seemed advantageous to trade space for time. The P.R.C.'s only tank production facility at that point was located not far from China's northern border; failure to defend it would have serious consequences for any subsequent war effort. Moreover, the major part of the P.R.C.'s industrial base and rail network was located in the northeast. "Luring deep" would mean sacrificing this as well.

PWUMC was, however, controversial within the Chinese leadership, with some critics pointing out that the U.S.S.R. was likely to cut off the northeast, which is essentially an exposed salient, from behind, thus dividing the defending PLA forces and trapping a portion of them within the salient. Presumably for reasons of morale and face, the crucial question was never publicly addressed: whether, given the disparity between the military strength of the Soviet Union and that of China in the late 1970s and early 1980s, *any* strategy could have been successful.

In any event, relations with the Soviet Union began to improve, and there was no need to put PWUMC to the ultimate test. In 1985, a new strategy was announced. The PLA was told that the need to prepare for an "early, major, and nuclear" war with the U.S.S.R. had ended. Henceforth, strategy would concentrate on scenarios involving local, limited wars on China's periphery. The United States gradually replaced the Soviet Union as the P.R.C.'s chief enemy in the eyes of the Chinese leadership, though the strategy of preparing for wars on the country's periphery recognized that any confrontation was likely to be through an American proxy rather than directly between the two powers. Although the defense buildup undertaken by the Reagan Administration was perceived as giving the United States an advantage in any confrontation, Chinese strategists also believed that there was a trend toward a multipolar world in which regional powers were growing in military strength and becoming more assertive. Hence the incidence of local wars was likely to increase as well.⁷

⁷ Nan Li, "The PLA's Evolving Warfighting Doctrine, Strategy, and Tactics, 1985-95: A Chinese Perspective," *China Quarterly*, no. 146 (June 1996), pp. 443-63; Paul H.B. Godwin, "From Continent To Periphery: PLA Doctrine, Strat-

Though left unstated, there were factors specific to China that might have prompted the expectation of military conflict on the P.R.C.'s periphery. Several outstanding border disputes, including conflicts over the Spratly Islands and the Senkaku/Diaoyutai Islands, existed between the P.R.C. and its neighbors. The rapid democratization of Taiwan, which included an assertion of Taiwanese as opposed to Chinese identity, made peaceful unification of the island and the mainland increasingly less likely. And there was a resurgence of separatism among several of the P.R.C.'s more restive minorities: Tibetans, Muslim groups, and Mongols. Muslim Chinese, who belong to a number of different ethnic groups, received aid from Islamic fundamentalist groups as well as more moderate entities outside China. They were further encouraged when the disintegration of the Soviet Union resulted in the creation of historically Islamic independent republics on China's periphery. Likewise, the transformation of Mongolia from a client state of the Soviet Union to an independent republic encouraged China's Mongols to assert solidarity with their cross-border kin. Tibetans also received help from abroad.

For the P.R.C.'s strategists, local wars differ from full-scale wars not only in scope but in objectives. In contrast to full-scale wars where the ultimate objective is to destroy enemy forces, limited wars are fought for specific political, economic, or strategic purposes. The escalation of such a war, they believe, is not determined by military needs but rather by the needs of politics or diplomacy. Chinese strategists list five likely scenarios for a limited war:

- (1) military conflict with neighboring countries in a limited region
- (2) military conflict in territorial waters
- (3) undeclared air attacks by enemy countries
- (4) territorial defense in a limited military operation
- (5) punitive offensive with a minor incursion into a neighboring country.

egy, and Capabilities Toward 2000," *China Quarterly*, no. 146 (June 1996), pp. 464-87; Andrew Lai, "Preparation for High-Tech Regional Wars: Beijing's Strategic Shift in Military Policy and its Impact on the Modernization of China's Arms," *China Strategic Review*, vol. 1, no. 5 (August 5, 1996), pp. 2-6.

The performance of U.S. military forces in the Gulf War led to a further reassessment of strategy, shifting it from limited regional conflict to limited high technology war, with emphasis on information warfare. There was also interest in the “revolution in military affairs” (RMA) concept. As defined by American analysts, the RMA is a synergy of developments that includes significant progress and change in the related areas of technology, systems, operations, organization, and strategy. This synergy formally alters the nature of warfare.

In independently prepared papers presented to the Army War College’s Strategic Studies Institute and subsequently published in SSI’s monograph series, Bates Gill of the Monterey Institute of International Studies (formerly of SIPRI), and Lieutenant Lonnie Henley of the U.S. Army describe the difficulties facing the Chinese military in effecting the RMA. Gill emphasizes the Soviet/Maoist legacy of China’s industrial base, in which industry relies heavily on “copy production”—a production system which is vertically-oriented and highly redundant, with few horizontal linkages across production sectors or between research and production facilities. It is also a system which, since it is run by bureaucrats and party officials concerned with meeting production and political quotas rather than the development of scientific knowledge, lacks strong incentives for broad-based technological innovation.

In Gill’s view, the greatest obstacle to effecting a revolution in military affairs in China is the inefficient approach to innovation, integration, flexibility, and organization. He concludes that the P.R.C.’s efforts to master “high technology warfare with Chinese characteristics” cannot be entirely dismissed, but that it is unlikely to occur within the next decade. Henley, reasoning from similar premises, sees PLA strategists trying to replicate U.S. actions in the Gulf War, and predicts that it is likely to take them a quarter-century to work through the problems inherent in doing so.⁸

⁸ Bates Gill, “China and the Revolution in Military Affairs: Assessing Economic and Socio-Cultural Factors,” and Lonnie Henley, “China’s Capacity for Achieving a Revolution in Military Affairs,” in *China and the Revolution in Military Affairs*, Carlisle, PA: May 20, 1996, Strategic Studies Institute Monograph Series, pp. 1-42 and 43-57, respectively.

While Chinese military publications routinely stress the need for “emancipating thought” and throwing off the fetters of outdated strategic concepts, it has proven difficult to do so. For example, one recent article justified at some length the proposition that high technology regional wars were really people’s wars, since “people’s war had two basic characteristics: one is justification for the war, which means it is in the interests of the broad masses of the people; and two, the mass character of the war, which means it can be supported by the broad masses and is solidly founded on mobilizing and relying on the masses of the people.”⁹

Organization and Training

Changes in strategy demanded modifications in organization and training. A military service law promulgated in 1984 reinstated the rank system¹⁰ that had been abolished twenty years before. In subsequent years, a network of military academies was founded, with the assumption that all officers would someday have attended either these academies or some other institution of higher education. The P.R.C.’s eleven military regions were reduced to seven, with concomitant reductions in staff. Retirement ages were enacted for officers and enlisted personnel. Although men in their seventies and eighties are not uncommon at the very pinnacle of the military, those at the region level and below normally retire by age 63. The size of the PLA was reduced by one-quarter, from approximately four million to three million, with the stated purpose of having a smaller but better-trained force.

Due to the insistence of Cultural Revolution ideologues that military training was part of the poison spread by bourgeois capitalist revisionists to take time away from political studies, the Chinese military emerged from the Mao era well-indoctrinated but poorly drilled. As Deng Xiaoping predicted in 1975, the PLA fared poorly in battle against Vietnam in February 1979. Rigorous train-

⁹ Wang Ch’un-fang and Yang Hsin, “On the Basic Characteristics of a People’s War Under Circumstances of a High-Tech Regional War,” *Hsien-tai chun-shih*, Hong Kong: Conmilit Press, no. 240 (January 1997), pp. 28-40.

¹⁰ Military ranks did not actually reappear until late 1988, due in large part to disagreements in the upper echelons of the PLA over who would get which rank.

ing was reinstated to take into account a variety of scenarios, including cold weather, jungle conditions, and mountainous terrain. Exercises also involved larger numbers of troops than previously.

Training received increased emphasis after the Gulf War.¹¹ In 1992, the PLA's General Staff Department initiated a three-year cycle of training reforms based on its analysis of the Gulf confrontation. As analyzed by Western military professionals, these reforms:

- (1) *were experimental*; specific small units were selected to carry out exercises in different aspects of modern warfare such as night operations and live fire exercises. Their experiences were analyzed and discussed, with the exercises modified and refined on the basis of what had been learned. At this point, the exercises could be gradually expanded to involve larger units;
- (2) *emphasized combined arms and joint operations* to a greater degree than prior to the Gulf War; and
- (3) *involved low-cost training techniques* such as simulators, computerized war games, and command post exercises. These allow new skills and methods of operation to be practiced without actually putting men in the field.¹²

¹¹ Dennis Blasko, "Better Late Than Never: Non-Equipment Aspects of PLA Ground Force Modernization," in C. Dennison Lane, Mark Weisenbloom, and Dimon Liu, eds., *Chinese Military Modernization*, Washington D.C.: American Enterprise Institute, 1996, pp. 125-143; Kenneth W. Allen, "PRC Exercises, Doctrines, and Tactics Toward Taiwan: the Air Dimension," paper presented to the Conference on the People's Liberation Army, September 1996, Coolfont, West Virginia; Dennis Blasko, Philip T. Klapakis, and John F. Corbett, Jr., "Training Tomorrow's PLA: A Mixed Bag of Tricks," *China Quarterly*, no. 146 (June 1996), pp. 488-524; June Teufel Dreyer, "The New Officer Corps: Implications for the Future," *China Quarterly*, no. 146 (June 1996), pp. 315-335; Kenneth W. Allen, Glenn Krumel, and Jonathan D. Pollack, *China's Air Force Enters the 21st Century*, Santa Monica, CA: The RAND Corporation, 1995, pp. 127-133.

¹² Dennis Blasko *et al.*, "Training Tomorrow's PLA," *op. cit.*, pp. 490-91.

What this means in terms of the PLA's actual combat capabilities is debatable. Some observers, a group likely to include both journalists and analysts for right-of-center think tanks, see the PLA as an emerging threat.¹³ Military officers tend to discount the ability of even today's better-trained PLA to mount a credible threat.¹⁴ One officer feels that too few units have trained sufficiently in combined arms operations at the division level and above to post a sustained, large-scale threat to China's neighbors. Tanks are not organic to Chinese infantry regiments, and the PLA's limited number of tank regiments and battalions is subordinate to divisional headquarters. Hence, because most PLA training occurs at the regimental level or below, combined arms training of tank units with infantry and other supporting forces is the exception rather than the rule.¹⁵

Others observe that joint arms training often only means that forces from different services arrive in the same area at the same time and conduct exercises separately from one another.¹⁶ Air force pilots train many fewer hours than are considered necessary to develop combat skills, training over water is quite rare, and in-flight refueling is rudimentary.¹⁷ The training cycles of all the services face budgetary constraints.

Other problems result from the PLA's conscription and demobilization system. Between a quarter and a third of the troops in any given unit are first-year soldiers. Officers must therefore spend much of their time on the most basic of training techniques. Not until this has been completed can the unit progress to more sophisticated training exercises—and each time an exercise is conducted,

¹³ See, e.g., Richard Bernstein and Ross H. Munro, *The Coming Conflict with China*, *op. cit.*, pp. 64-65.

¹⁴ For example, Karl Eikenberry, "China's Challenge to Asia-Pacific Regional Stability," in Richard J. Ellings and Sheldon W. Simon, eds., *Southeast Asian Security in the New Millennium*, Armonk, N.Y.: The National Bureau of Asian Research/M.E. Sharpe, 1996, pp. 89-122.

¹⁵ Dennis Blasko, "Better Late Than Never: Non-Equipment Aspects of PLA Ground Force Modernization," *op. cit.*, p. 128.

¹⁶ Dennis Blasko *et al.*, "Training Tomorrow's PLA," *op. cit.*, p. 517.

¹⁷ Kenneth W. Allen *et al.*, *China's Air Force Enters the 21st Century*, *op. cit.*, pp. 127; 170; 183.

units will be made up of between one quarter and one third new recruits, thus limiting the degree of proficiency that can be expected from repetition of the exercise.

The greater emphasis on training in recent years tends to move through cycles. For example, there was a dip after the Tiananmen disturbances of 1989 as the party and the government emphasized the need for military loyalty to the central authorities, and another downturn at the time of Deng Xiaoping's death, when much time was spent indoctrinating the troops on the need for loyalty to Jiang Zemin. This lack of sustained attention to training degrades the results that can be expected.

Training, content, methods, and evaluation have not been standardized. Units in different areas of the country train in accordance with conditions in that area, with only the most basic of common standards, despite the avowed commitment to disseminate the results of training experiments throughout the PLA. There is as yet no true non-commissioned officer (NCO) corps to help officers with training tasks.

Some of these problems are being addressed—for example, military academies have introduced training courses for NCOs. Airborne troops have been participating in exercises requiring them to conduct raids behind enemy lines and to establish blocking positions to cut off an enemy's escape route, indicating that they are intended to be part of a larger operational plan rather than envisioned as an independent force.¹⁸ And some PLA units, most notably the “fist” (*quantou*) or rapid reaction units (RRUs) are better trained. RRUs, however, constitute only 15 to 25 percent of the PLA.¹⁹ Yet, overall, advances are definitely being made in joint and combined arms operations training.

Solutions to other problems, such as the turnover of personnel in basic units, would require major changes in the PLA's conscription and demobilization laws, which are unlikely to occur, at least in peacetime. A thorough training reform would entail a funda-

¹⁸ Dennis Blasko *et al.*, “Training Tomorrow's PLA,” *op. cit.*, p. 517.

¹⁹ John Caldwell, *China's Conventional Military Capabilities, 1994-2004*, *op. cit.*, p. 5.

mental change in thinking away from the strictures imposed by the need to validate Mao-Deng-Jiang Zemin military thought and toward steady, ongoing attention to the training cycle. Most analysts feel that, despite improvements in training, the PLA has not attained the proficiency necessary to conduct and sustain medium- or large-scale operations, even in limited actions, beyond the Chinese mainland.

A minority warns that the PLA is catching up quickly, and that too little attention is being focused on the problems it could cause.²⁰ Others point out that the PLA, despite its deficiencies, is nonetheless capable of disrupting the stability of Asia through actions in the Taiwan Strait or the Spratly Islands. Its advantage in numbers is huge; even the small number who are well-trained would amount to a larger force than could be fielded by any likely adversary.²¹

Weapons Acquisitions

Much of the PLA's ability to successfully carry out the strategy of high-technology regional war depends on the quality of its weapons.²² The new strategy implies acquisitions that contribute

²⁰ Lloyd R. Vasey, *China's Growing Military Power and Implications for East Asia*, Honolulu: Pacific Forum/Center for Strategic and International Studies, 1993, pp. 12-17; William C. Triplett, *East Wind*, manuscript in preparation.

²¹ See, for example, Chong-Pin Lin, "The Military Balance in the Taiwan Strait," *China Quarterly*, no. 146 (June 1996), pp. 577-595.

²² Kenneth W. Allen, "PRC Exercises, Doctrine, and Tactics toward Taiwan: the Air Dimension"; Bates Gill, "Chinese Military Hardware and Technology Acquisitions of Concern to Taiwan"; Richard Fisher, "China's Missiles Over the Taiwan Strait: A Political and Military Assessment"; and Eric McVadon, "PRC Exercises, Doctrine, and Tactics Toward Taiwan: the Naval Dimension," papers presented to the 1996 Conference on the People's Liberation Army, Coolfont, Virginia, September 1996; June Teufel Dreyer, *China's Strategic View: the Role of the People's Liberation Army*, Carlisle, Pennsylvania: Strategic Studies Institute, U.S. Army War College, April 1996; Christopher D. Yung, *People's War at Sea: Chinese Naval Power in the Twenty-First Century*, Arlington, Virginia: Center for Naval Analyses, March 1996; Bates Gill and Taeho Kim, *China's Arms Acquisitions From Abroad: A Quest For "Superb and Secret Weapons"*, Oxford: Oxford University Press, 1995; John Caldwell, *China's Conventional Military Capabilities, 1994-2004*, *op. cit.*; Larry M. Wortzel, "China Pursues Traditional Great-Power Status," *Orbis*, (Spring 1994), pp. 157-175; Harlan Jencks, "Some Political and Military Implications of Soviet Warplanes Sales to the PRC," Kaohsiung: Sun Yat-sen Center for Policy Studies, 1991.

to speed, flexibility, and concentration of firepower. Since many of the anticipated confrontations involve contested island chains and ethnic minority regions with relatively poor transportation systems, the air force and navy have received the bulk of these new acquisitions. Some systems have been developed domestically; some are manufactured under license from other countries; and others have been purchased from abroad. Reaction to the killing of unarmed civilian demonstrators in June 1989 made the West's reliability as a supplier of military equipment less certain, and in recent years Russia and Israel have emerged as the main suppliers of the PLA.

With regard to air assets, China has purchased ten Ilyushin-76 transport planes, each said to be capable of conveying 125 paratroopers or forty- to fifty-ton payloads over a distance of 5000 kilometers (approximately 3100 miles) in little more than six hours. The P.R.C. will, however, need many more such planes before its troops can be transported in the numbers required for sustained operations.

With regard to fighter planes, three different options are being pursued. The purchase of Sukhoi-27s from Russia has attracted the most attention. Three separate purchases totaling 72 planes were made between 1992 and 1996, and more Su-27s may be manufactured in China under license. The FC-1, a lightweight fighter based on the design for the MiG-33 (previously rejected by the Soviet air force) is being developed. Israel and several European countries are being considered as suppliers of the avionics. The J-10 (F-10)²³, a multi-role fighter derived from technology that originated with the canceled Israeli *Lavi*, is also being developed. A reporter for *Jane's Defence Weekly* noted that China was funding three major combat aircraft programs while the whole of Europe could barely afford two, and predicted that China's economic growth would lead to an impressive aerial combat capability.²⁴

²³ J-10 is the Chinese name, F-10 is the name used by NATO to designate it as a fighter plane.

²⁴ Nick Cook, "Lifting the Veil on China's Fighters," *Jane's Defence Weekly*, London, (January 31, 1996), p. 52.

Yet this does not represent the majority opinion. A former military attaché with lengthy China experience points out that the FC-1 is a joint project with Pakistan on a plane designed for export, not for use in the PLA air force. Since the cost of producing two separate fighters is high and China has many other pressing concerns, it is unlikely that technology for both the J-10 and the Su-27 will be procured. The attaché sees the J-10 as the more plausible choice, since it involves a larger role for indigenous design bureaus. However, there are problems in translating the plane from design to serial production. Poor workmanship and labor discipline are endemic in China's aircraft manufacturing facilities. A China representative for one Western aviation company adds that "...[they] do not have a master plan that builds their aircraft from the bottom up. Instead they try to take parts off the shelf that were never designed to be part of any particular end product and try to make them fit."²⁵

There are also problems with the existing Su-27s. During protracted negotiations between the first and second purchases, the planes were stored outdoors, where they were exposed to harsh Russian weather and suffered considerable deterioration. The planes arrived without manuals, and proved too heavy for Chinese runways. Given the inefficiency of Chinese aircraft production, licensed production of new Su-27s within the P.R.C. is apt to cost between a third and a half more than buying the planes. *Jane's* correspondent aside, there is relative consensus that the air force still faces grave difficulties in modernizing its equipment.

There is less unanimity among analysts of the PLA navy. This may be due less to genuine disagreement than because those who praise the PLA navy tend to take note of what it has accomplished, while its detractors concentrate on how far the navy has to go. For example, one source states that the effectiveness of Chinese warships has been improved since they have been equipped with HY-2 (Sea Eagle) radar homing surface-to-surface missiles,²⁶ while

²⁵ Kenneth W. Allen, "PRC Exercises, Doctrines, and Tactics Toward Taiwan: the Air Dimension," *op. cit.*, p. 24.

²⁶ Larry M. Wortzel, "China Pursues Traditional Great-Power Status," *op. cit.*, p. 163.

another notes that the liquid-fueled HY-2 missiles are dangerous to handle, and that reloading must be done in port.²⁷ There is unanimity among analysts that the navy's anti-submarine warfare and anti-air warfare capabilities remain weak. Negotiations over the purchase of an aircraft carrier have taken place with several foreign powers for more than a decade, with no results thus far.

By the early 1990s, China had nonetheless developed and built four new classes of ships: Luhu- and Luda III-class destroyers, Jiangwei-class frigates, Dayun-class resupply vessels, and Houjian- and Houxin-class missile patrol craft, though none is highly regarded by maritime experts.²⁸ Four Kilo-class submarines were subsequently purchased from Russia and there are plans to upgrade China's Song-class boats with the more sophisticated radar systems carried by the Kilos. This should considerably enhance their capabilities. In December 1996, Russia sold two Sovremenny-class guided-missile destroyers equipped with advanced SS-N-22 anti-ship cruise missiles; the U.S. Defense Department estimates the total cost of the deal at between eight and ten billion dollars.²⁹

While these are clearly steps forward in the development of a more militarily capable navy, the majority of China's ships and equipment remain antiquated. A major study by the Center for Naval Analyses concluded that the P.R.C. could neither build, buy, nor reverse engineer a regional naval capability by 2010. The author, Christopher Yung, observed that China's defense industry produces weapons systems that are decades behind those of the developed countries, and that to design, build, and maintain a regional navy by 2010, the PLA navy would have to compete with the private economy and other services for the talents of a relatively small group of engineers and technicians. While buying a regional navy

²⁷ John Caldwell, *China's Conventional Military Capabilities, 1994-2004*, *op. cit.*, p. 9.

²⁸ For example, a retired Western admiral interviewed by the author described the Luhu as "probably the best [the P.R.C.'s naval design bureaus] can do but it is almost a joke in terms of what it hasn't got and can't do."

²⁹ Bill Gertz, "Pentagon Says Russians Sell Destroyers to China," *The Washington Times*, January 10, 1997, pp. A1, A10; Richard Fisher, "Dangerous Moves: Russia's Sale of Missile Destroyers to China," *Backgrounder*, Heritage Foundation Asian Studies Center, Washington, D.C., February 20, 1997, pp. 1-14.

would in theory be a more realistic possibility, it would also place the P.R.C.'s national security and military capability in the hands of foreigners in a way that Chinese leaders consider both dangerous and humiliating. Reverse engineering would take an average of 15 years from the time that weapons and platforms are acquired to the onset of serial production. At this point, the items are apt to be 15 years out of date, since other countries will have moved on to more technologically sophisticated models. Assuming a continuation of present trends, including an average 8 percent economic growth per year, Yung hypothesizes that China could have a regional navy by 2020.³⁰

With regard to missiles, analysts generally feel that the P.R.C. has made creditable progress. It is beginning to use global positioning satellite technology on its ballistic missiles, though it will probably take another decade for China to build true precision munitions. With regard to ballistic missiles, Chinese scientists are working on multiple independently-targetable reentry vehicles (MIRVs). The P.R.C. could also purchase such technology from Russia. In addition, China is developing smaller and longer-range cruise missiles that are cheaper to build than ballistic missiles and have the flexibility of being able to use multiple launch platforms.³¹ With regard to nuclear weapons, China is believed to have made progress in the miniaturization of nuclear detonators by mid-1996, when it agreed to stop testing.

The Economic Role of the Military

Reasoning from the eminently sensible premise that one cannot easily graft a strong military onto a weak economic base, Deng Xiaoping relegated the military to fourth in his Four Modernizations program. The PLA was told that only when the economic modernization of the country had been effected would its own modernization become a priority. Meanwhile, he enjoined the military to do its utmost to bring about the economic prosperity of the

³⁰Christopher D. Yung, *People's War at Sea*, *op. cit.*, pp. 49-53.

³¹Richard Fisher, "China's Missiles Over the Taiwan Strait," *op. cit.*, pp. 22-24.

state, including starting its own businesses.³² Most military leaders enthusiastically began to engage in a wide variety of business. A few voiced concern that defense production might be adversely affected, but their concerns were overridden. Military budgets were indeed austere in the early 1980s, providing incentives to engage in commerce. Moreover, there was considerable idle capacity in the P.R.C.'s defense industries, many of which were located far from their consumers.³³

By 1985, military-affiliated enterprises numbered over 10,000, and had doubled again by 1988. Each military region and service arm, as well as the Commission on Science, Technology, and Industry for National Defense (COSTIND) and the People's Armed Police established its own comprehensive corporations, as did some province-level military districts and even some units. Some of these, such as the General Staff Department's Poly Corp Group (originally known as Poly Technologies), the General Logistics Department's Xinxing Corporation, and the air force's Lantian (Blue Sky) Industry Corporation are enormous, and are composed of many smaller companies. Lantian, for example, runs its own commercial airline. In 1992, the head of the PLA's General Logistics Department said he did not know how many businesses were subordinate to it, since they were constantly going out of business, spinning off new subsidiaries, or changing their names.³⁴

³² John Frankenstein and Bates Gill, "Current and Future Challenges Facing Chinese Defense Industries," *China Quarterly*, no. 146 (June 1996), pp. 394-427; Tai Ming Cheung, "China's Entrepreneurial Army: the Structure, Activities, and Economic Returns of the Military Business Complex," in C. Dennison Lane et al., *Chinese Military Modernization, op. cit.*, pp. 168-197; June Teufel Dreyer, "Corruption in the People's Liberation Army: For Good or For Evil?" in *Proceedings of the Conference on the People's Liberation Army*, James R. Lilley, ed., Washington, D.C.: American Enterprise Institute, 1995, pp. 1-24.

³³ Locating and, in some cases, relocating defense industries to the hinterlands had been a conscious decision of Mao so that they would (a) be more difficult for the Soviet Union or any other enemy to destroy and (b) would help to distribute economic development away from its concentration in coastal areas. However, this meant that factories were often far from their consumers and serviced by a poor infrastructure. A U.S. naval officer described to the author his surprise at finding a torpedo factory located in the hills of Shanxi, several thousand miles from the fleet its products were intended for. They had to travel over long stretches of narrow, dangerous, bumpy roads before reaching their destination.

³⁴ Tai Ming Cheung, "Serve The People," *Far Eastern Economic Review*, October 14, 1993, pp. 64-65.

Nor did the central government know how much money the businesses were taking in, much to the dissatisfaction of those who were concerned with tax collection. So-called “small treasuries” proliferated; units used these as they—or more accurately, their senior officers—saw fit.³⁵ Money that military enterprises remitted to their parent units was intended to be spent on training and improving the living standards of troops (e.g., barracks repair, the purchase of staple food, and medical expenses). However, official sources complained that too often the money was spent on lavish eating and drinking, luxury cars for the officers—Mercedes sedans were the cars of choice—or that it quietly disappeared into the officers’ personal bank accounts. “Small treasuries” had the advantage of easing the pain of austerity budgets for officers and men. But they had the disadvantage of conferring a degree of financial autonomy to the units possessing them, enabling the units to more easily evade or ignore orders from above.

Some of the military’s businesses were respectable: mines, horse farms, motorcycle production facilities and the like. Others were patently illegal, such as military boats being used to smuggle stolen cars from Hong Kong to the mainland. In Chongqing, the PLA was found to be hoarding raw silk in its warehouses, hoping to reap huge profits by holding the material off the market while prices rose. Military “guest houses” sometimes functioned as brothels.³⁶ Corruption also caused problems within the military, since soldiers in large cities, particularly those on the coast, had better opportunities for income enhancement than those who were stationed in the rural hinterlands.

Even where military businesses were perfectly respectable, civilian businesspersons complained that PLA enterprises enjoyed

³⁵ *Xinhua* (Beijing), July 21, 1993, in United States National Technical Information Service (NTIS), *Foreign Broadcast Information Service: Volume I: China* (FBIS-CHI), July 26, 1993, pp. 32-33.

³⁶ Willy Wo-Lap Lam, “The PLA Marches On Its Wallet,” *South China Morning Post* (Hong Kong), July 17, 1993, p. 4; Li Ming-li, “Crisis of the Military’s Participation in Economic Activities,” *Hsin Pao* (Hong Kong), November 22, 1993, p. 8, in FBIS-CHI, December 3, 1993, pp. 32-33; Sheila Tefft, “China’s Military Grapples With Conversion,” *Christian Science Monitor* (Boston), February 7, 1994, p. 4.

unfair advantages. Their vehicles could pass through checkpoints without paying tolls; their factories were not subject to the usual inspection procedures; and they could get priority in utilizing the country's badly overcrowded railways in order to get their goods to market.

Regulations were issued to better supervise the PLA's enterprises in 1985 and again in 1988. The fact that many of the practices that the 1988 rules sought to prohibit were already banned under the 1985 regulations seems to indicate that the earlier laws had not been effective. The army's General Logistics Department (GLD) has general responsibility for overseeing military enterprises, although day-to-day management is the responsibility of the GLD's production and management department. These departments also exist at lower levels. However, they lack the manpower and resources to properly monitor the enterprises they are responsible for, and in the early 1990s, party committees were given a larger role in enterprise management.

By mid-1993, concern over corruption in military enterprises led the Central Military Commission (CMC) to issue a circular entitled "Opinions On Strengthening Management Over the Military's Finance and Economy," which once again ordered that finances be managed according to law. In a front-page article in the July 26 *People's Daily*, two vice-chairs of the CMC, Liu Huaqing and Zhang Zhen, complained that the military's obsession with making money was eroding its capacity to fight. In early 1994, the Chinese Academy of Sciences issued a draft report calling for the complete separation of the military from business and that its expenses be met entirely through tax revenues.³⁷ However, given present constraints on the state treasury, including the huge subsidies that must be paid to money-losing state enterprises, this cannot easily be done.

³⁷ See, for example, "Mainland Academics Call for Strict Prohibition of Military Units Engaging in Business," *Lien Ho Pao* (Hong Kong), February 17, 1994, p. 10; Hu Angang and Kang Xiaoguang, "Creating New Systems to Eradicate Corruption Once and For All," *Lien Ho Pao*, February 21, 1994, pp. 6, 11.

There are few areas of disagreement among analysts with regard to the economic activities of the PLA. Although it is generally conceded that the profits from the military's businesses are not devoted to weapons acquisition, one researcher suggests, without supporting evidence, that a sizable amount of their output may have contributed to the purchase of Russian arms.³⁸ And, while it is accepted that military corruption has had a deleterious effect on morale and combat capabilities, there is uncertainty on the degree to which it has affected them.

The PLA's Influence Over Foreign and Domestic Policymaking

Mao Zedong's often quoted aphorism that political power grows out of the barrel of a gun but that the party must always control the gun implies that a clear differentiation can be made between party and military. Since military and political power were closely intertwined, particularly during the early days of the communist movement when Mao made his statement, it was impossible to fix responsibility for a particular decision clearly on either party or gun. Over the years, the PLA nonetheless developed some corporate interests on matters such as its budgets, equipment, and number of officer billets. Still, entry and exit patterns between the military and government and party jobs remained quite fluid, particularly at the highest levels of power.

Deng Xiaoping's reforms included plans to clearly differentiate lines of responsibility among party, government, and army.³⁹ Distinctions did indeed become more noticeable. By late-1987, for the first time since the founding of the P.R.C., there was no mili-

³⁸ Tai Ming Cheung, "China's Entrepreneurial Army," *op. cit.*, p. 186.

³⁹ Ellis Joffe, "Party-Army Relations in China: Retrospect and Prospect," *China Quarterly*, no. 146 (June 1996), pp. 299-314; Michael Swaine, *The Role of the Chinese Military in National Security Policymaking*, Santa Monica, CA: The RAND Corporation, 1996; June Teufel Dreyer, "Regionalism in the People's Liberation Army," CAPS papers, no. 9, Taipei, Taiwan (May 1995); David Shambaugh, "The Soldier and the State in China: the Political Work System in the PLA," *China Quarterly*, no. 127 (September 1991), pp. 527-568; June Teufel Dreyer, "Civil-Military Relations in China," *Comparative Strategy*, (Winter 1985), pp. 27-49.

tary person in the Standing Committee of the communist party's politburo. However, after martial law was declared in Beijing in 1989, there was considerable reluctance within the PLA to enforce it, and some leaders concluded that the differentiation between the party and the gun had gone too far.

Deng Xiaoping seems to have been able to overcome the PLA's reluctance to deal with the demonstrators through his personal stature; most analysts feel that his successors would not be able to do the same if a comparable situation were to arise. After the army put down the demonstrations, it was subjected to an intensive indoctrination campaign on the theme that the PLA was the party's own army and must obey its orders unquestioningly. In 1992, a longtime Deng loyalist and career military man, Liu Huaqing, was added to the politburo's Standing Committee.

The subsequent removal of generals Yang Baibing and Yang Shangkun from their military positions, and the latter's retirement as China's president at the same time, was believed to have been carried out with the aim of ensuring that the PLA would not oppose Jiang Zemin's leadership after his mentor, Deng, died. This led to speculation that the PLA might play the crucial role in deciding who should succeed Deng. The Hong Kong press also imputed a growing foreign policy role to the PLA, alleging that it was urging a harder line on the P.R.C.'s civilian leadership on such issues as Taiwan; territorial claims in the Spratly Islands; and Sino-American relations.

Ellis Joffe summarizes three approaches to party-army relations in China as *party control*, *symbiosis*, and *professionalism*, opining that while each highlights a central facet of party-army relations, none by itself adequately captures their complexity. He attributes this to the contradictory characteristics of party-army relations in China. While the PLA is controlled by the party, its officer corps has acquired some basic characteristics of professionalism which have brought it into an enduring, if fluctuating, conflict with the party. At the top of the power structure, political and military leaderships are symbiotic, while at lower levels the modernization of the armed forces and its professionalism have produced a functional separation. He concludes that the PLA is influenced by fac-

tionalism and threatened by centrifugal tendencies, but that its command and control system has remained intact and its overall unity is unimpaired.⁴⁰ Others argue that the very symbiosis Joffe posits masks the appearance of factionalism and non-professional factors. Given the fact that the personnel at the top levels of each hierarchy have been so closely intertwined, divisions within the party inevitably are divisions in the military as well.⁴¹

There is agreement that economic reforms, including decentralization of the economic decision-making and commercial activities of the PLA, have opened the possibility that military interests could combine with local economic interests and operate at least partially independently of central government control. Jiang or whoever follows him, will not be able to take PLA compliance, or that of parts of it, for granted. Therefore, both regionalized militaries and a military with unprecedented influence on party decision-making are possible.⁴²

With regard to the PLA's influence in external affairs, Michael Swaine contends that senior party leaders play a complicated and nuanced game in their interactions with the military leadership. While striving to retain the initiative, they alternatively placate, resist, and dilute military views and pressures through a complex mixture of personal persuasion, the balancing of bureaucratic interests, and direct control over formal organs and policy channels. In contrast to the domestic sphere, where most analysts feel the PLA's influence has diminished, Swaine sees the dividing line between military and civilian spheres in national security policymaking as less clear and absolute than in the past. The military's role in shaping national security objectives and providing strategic analysis and intelligence to civilian leaders is, he believes, significant and apparently increasing. The PLA does not dictate; senior military leaders interact with their civilian counterparts in a generally collaborative, consultative fashion, though

⁴⁰ Ellis Joffe, "Party-Army Relations in China," *op. cit.*, pp. 299-300.

⁴¹ June Teufel Dreyer, *Regionalism in the People's Liberation Army*, *op. cit.*, pp. 26-27.

⁴² Ellis Joffe, "Party-Army Relations in China," *op. cit.*, p. 309; June Teufel Dreyer, *Regionalism in the People's Liberation Army*, *op. cit.*, p. 27.

Swaine contends that military views on certain clearly defense-related issues may often come close to directives. He holds forth the possibility that under a post-Deng regime, the national security policymaking process could become more civilianized, as long as a more professional outlook develops within the emerging military leadership. It is also possible, Swaine warns, that the senior leadership will be unable to avoid major threats from within or below, and that political authority in China will continue to fragment.⁴³

Future Research

Research has probably been conducted at or close to the extent possible given the limitations of data. Consideration of the topics above will be ongoing, with that of the size of the military budget and the intended use of the PLA's new capabilities being the sources of particular concern. Areas where little is known are the details of technology transfer agreements between the PLA and its foreign suppliers; the PLA's sales of weapons to other countries; and the precise nature of military leaders' interactions with their civilian counterpart decision-makers.

While the existence of *guanxi* (connection) networks is well known, relatively little is known about who belongs to which network, and under what circumstances loyalties might be tested. Regional factors within the military are also little understood: how meaningful is it that one province, Shandong, is the birthplace of high-ranking PLA officers in numbers far higher than its percentage of the Chinese population as a whole? Is the undisputedly greater power of provinces and localities being accompanied and/or reinforced by alliances with PLA organizations at comparable levels?

Not surprisingly, it is exactly the areas that are most sensitive where least is known and interest is highest. Even those researchers who manage to gain high-level access often find that their

⁴³ Michael Swaine, *The Role of the Chinese Military in National Security Policymaking*, *op. cit.*, p. xiii.

sources tell them what party and government officials want them to hear rather than speaking candidly. Until additional sources of information become available, research is likely to continue along the lines outlined above.

Conclusions

While the PLA has made good, if uneven, progress in modernizing over the past decade, its force projection capabilities remain limited and are unlikely to allow the P.R.C. to claim the status of regional military power within the next decade. Analysts tend to see technological obstacles as less of a barrier than psychological obstacles. The fact that China's decision-makers have to rationalize changes in strategy with reference to the writings of current or deceased leaders inhibits consideration of a problem on its own merits and constrains the development of innovative solutions. Perversely, the insecurity of the current Chinese leadership seems to impel it to fall back on communist tradition to bolster its own legitimacy. Interruptions in the PLA's training cycle for indoctrination sessions and distractions that arise from the military's involvement in business activities do not improve preparedness. Each diverts the attention of at least a portion of the PLA from its *raison d'être* of preparation for national defense. Nonetheless, as one researcher has phrased it, even a "junkyard army" can cause difficulties, as attested by the Philippines' discovery of Chinese bunkers and a radar installation on disputed areas of Mischief Reef in 1995 and the Taiwan Strait crisis of 1995-96. Improvements are taking place in, for example, the P.R.C.'s missile arsenal. And, although the military's best troops, the rapid reaction units, constitute only 15 to 25 percent of the PLA's total strength, this still amounts to 450,000 to 750,000 men—a formidable number by any likely adversary's standards.

The question of whether the PLA could be a world-class military in the future depends on a number of imponderables. Continuation of the P.R.C.'s robust economic growth can probably be safely assumed. What is less certain is the proportion of the revenue from this economic growth that will flow into central government coffers. The problem of tax evasion in the P.R.C. is serious and grow-

ing. Moreover, the percentage of tax revenue that has been going to provincial and local governments is increasing, while that rendered to Beijing has been dropping. This is apt to reinforce existing centrifugal forces. Meanwhile, the problem of central government subsidies to state enterprises remains intractable, even as China's citizens and their delegates to increasingly assertive representative bodies assert claims to revenue that rival those of the PLA. A situation of budgetary stringency does not bode well for efforts to extricate the military from its business enterprises. And the culture of corruption, once entrenched, is enormously difficult to change. A combination of some or all of these factors will create a drag effect on the PLA's ability to become a world-class military.

Attaining the status of a regional military power within the next twenty years is a more realistic goal, but the factors cited above will constrain the PLA's preeminence in the region as well. The countervailing force of military modernization by Asian neighbors, most notably Japan and India, cannot be discounted. Also, the perception of growing PLA power could induce China's heretofore complaisant neighbors to form a balancing coalition. In short, while the PLA could become Asia's leading military force in the coming decades, such an outcome is by no means a foregone conclusion.

THE SOURCES OF EAST ASIA'S ECONOMIC GROWTH

Stephan Haggard and Euysung Kim

In this essay, the authors review recent debates on East Asia's economic growth. Explanations for the region's high growth rate initially centered on market-oriented, and particularly export-oriented policies. However, these explanations rested ultimately on rapid productivity improvements. Recent evidence suggests that it is factor accumulation, rather than productivity, that has been the most important element in propelling these economies' development. In a controversial essay, Paul Krugman used this finding to argue that, as with Soviet growth before it, such "accumulation-led" growth would ultimately falter due to diminishing returns and low productivity growth. The authors dispute Krugman's hypothesis on two grounds. First, productivity growth, although less important than previously assumed, has been positive in Asia. Second, East Asian economies are not unique in relying on accumulation as the main source of growth; growth of inputs was the predominant source of economic growth for Western economies as well. The "miracle," therefore, is no longer why Asia grew so fast, but how Asian countries managed to invest at such a sustained and high level. As heterodox accounts have long argued, there is a growing consensus that some aspects of state intervention in East Asia had positive effects in this regard. At the same time, the central role previously given to exports is proving somewhat difficult to sustain. The article concludes with some reflections on the political economy, including the possibility that the entire growth experience rested on an extensive set of prior institutional and social foundations—from strong states and meritocratic bureaucracies to relative social equity. These conditions are not easily replicated by other emerging economies.

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For over two decades, the puzzle of East Asia's seemingly miraculous economic development has sustained lively and often contentious debate in the social sciences. Paul Krugman's widely-read 1994 article in *Foreign Affairs*, based on recent papers by Alwyn Young and Jong-il Kim and Lawrence Lau, has sparked a new round of controversy.¹ The Young and Kim-Lau papers employ different methods to find that rapid growth in the region was due not to productivity improvements—squeezing greater output from the same level of inputs. Indeed, they find that productivity growth in East Asia was surprisingly modest. Rather, growth could be traced largely to sheer accumulation of human and physical capital (so-called “factor accumulation”): employment growth, increases in education, and massive investment in physical plants and equipment.

If correct, the implications of these findings are momentous. Previous analysis of East Asia assumed that high growth was driven by improvements in efficiency associated with policy reform, openness to trade, and technological innovation. If the new growth accounting evidence is correct, these factors play only a supplementary role in the growth process. Rather, the key to development is a high level of investment—the willingness to sacrifice current consumption for the sake of future production. As Krugman argues, these findings also serve to deflate the idea that East Asia poses a fundamental economic challenge to the United States. If we assume that investment is subject to diminishing returns, the region's astronomical growth rates are destined to fall back to earth.

This essay provides an overview of the debate on East Asia's growth, beginning with interpretations that emphasize market-oriented reforms and an export-led growth strategy. Although these interpretations achieved the status of conventional wisdom in the

¹ Alwyn Young, “Lessons from the East Asian NICs: A Contrarian View,” *European Economic Review*, vol. 38, no. 3-4 (1994), pp. 964-73 and “The Tyranny of Numbers: Confronting the Statistical Realities of the East Asian Growth Experience,” *Quarterly Journal of Economics*, vol. 110, no. 3 (1995), pp. 641-680; Jong-il Kim and Lawrence J. Lau, “The Sources of Economic Growth of the East Asian Newly Industrializing Countries,” *Journal of the Japanese and International Economies*, vol. 8, no. 3 (1994), pp. 235-71; Paul Krugman, “The Myth of Asia's Miracle,” *Foreign Affairs*, vol. 73, no. 6 (1994), pp. 62-78.

1980s, their analytical foundation was surprisingly weak and rested in no small measure on casual empiricism and common sense. In the late 1980s, firmer theoretical support appeared to come from advances in the field of growth economics. But with this new growth theory came a multitude of possibilities, including that the export-led growth story may itself be misleading.

Notwithstanding these theoretical ambiguities, the real challenge to conventional interpretations comes from the empirical front. Despite methodological and measurement problems, the new growth accounting evidence supported the central role of factor accumulation in East Asia's growth, downgrading somewhat the role of efficiency gains implicit in the export-led growth account. Contrary to Krugman's argument however, this finding extended to the West as well. Moreover, efficiency improvements in East Asia were no worse than in the U.S. or Europe, making it somewhat misleading to characterize the region's productivity growth as "low"; in fact, productivity appears to be improving in East Asia.

The factor accumulation interpretation does not turn the miracle of East Asian growth into a myth. Rather, it begs the critical question of why East Asia was able to invest at such high rates. As the answer to this question remains hotly contested, herein lies the true mystery. Orthodox interpretations emphasize "fundamentals," such as stable property rights, small government, stable macroeconomic policy, and market-oriented reforms. Revisionists point to the pervasive role of the state in East Asia as *prima facie* evidence of the weakness of orthodox interpretations. Long dismissed by the economics profession as theoretically ungrounded, revisionist interpretations are now gaining some credence; even the World Bank's study of *The East Asian Miracle* makes grudging concessions to the revisionist line of analysis pioneered by Larry Westphal and Howard Pack, Alice Amsden, Robert Wade and others.²

²The World Bank, *The East Asian Miracle: Economic Growth and Public Policy*, New York: Oxford University Press for the World Bank, 1993; Howard Pack and Larry Westphal, "Industrial Strategy and Technological Change: Theory vs. Reality," *Journal of Development Economics*, vol. 22 (1986), pp. 87-128; Alice Amsden, *Asia's Next Giant: South Korea and Late Industrialization*, Oxford: Oxford University Press, 1989; Robert Wade, *Governing the Market: Economic Theory and the Role of Government in East Asian Industrialization*, Princeton: Princeton University Press, 1990.

Following an overview of the debate, the essay turns to a closer analysis of the role of trade and exports in the East Asian experience. Numerous studies have established a strong correlation between trade and growth, but skeptics point out that the link is not robust and the causal connection might even run the other way. Though we believe that there is evidence that trade and openness have played a role in East Asia's development, there is still some uncertainty about the mechanisms linking these factors to growth.

While economists were debating the role of accumulation, productivity, and the state, other social scientists and area specialists were developing approaches that put greater weight on political and social institutions. This work was also initially ignored by economists because it did not always present a clear causal story linking institutions with the core variables with which economists are primarily concerned. Such links were easy to draw, however, and by the early 1990s economists in all camps—from the World Bank, to new growth theorists, to revisionists—were returning to the political, institutional, and social foundations of the region's rapid growth. A full review of this literature would take us far beyond the scope of this essay, but we emphasize some distinctive features of political organization, the relationship between government and business, and social structure in East Asia; in particular, we highlight the role of “strong” governments and social equality in the region.

I. The Early Debates

The search for the taproot of East Asia's growth is hardly new. Japan's rapid postwar reconstruction drew substantial scholarly attention, but Japan was arguably unique. Rather, it was the emergence of the newly industrializing economies (NIEs) in the 1960s—Korea, Taiwan, Hong Kong, and Singapore—that suggested the spread of a distinctive East Asian model. The most singular feature of the NIEs when compared to other developing countries appeared to be their relatively early specialization in the export of labor-intensive manufactures, a strategy of “export-led” or “export-oriented” growth. Early interpretations of the NIEs by economists drew a strong causal link between trade liberalization and

pursuit of a realistic exchange rate policy, increased exports, and improved economic performance.³ Their experience appeared to provide empirical support not only for the benefits of trade but of market-oriented policies more generally;⁴ as a result, they were quickly appropriated by the anti-statist orthodoxy of the 1980s which exerted such a powerful sway over the development-policy community.

The consensus on the importance of an export-oriented economic strategy rested on a series of early studies that traced trade and exchange rate policies in particular countries.⁵ Countries persisting in import-substituting strategies were found to have low growth, a plethora of economic inefficiencies, and extensive rent-seeking and corruption. In high-growth economies, such as Taiwan and Korea, by contrast, governments liberalized trade and pursued more realistic exchange rate policies, initiated through substantial devaluations, the unification of complex multiple exchange rate systems, and corresponding fiscal and monetary policy adjustments.⁶ These reforms did not altogether eliminate state intervention in the economy. Nonetheless, it was argued that when various offsetting incentives were netted out, policy regimes were roughly neutral between import-substituting and export activities; policy “simulated” an open economy.⁷ The result in both Taiwan and Korea was increased investment, an expansion of exports, and a rapid increase in the growth rate.

³ See, for example, Bela Balassa, *Development Strategies in Semi-Industrializing Economies*, Baltimore: Johns Hopkins University Press, 1982.

⁴ Though trade and exchange rate policy generally enjoyed pride of place in neoclassical accounts, attention was also given to a range of complementary market-oriented reforms, including financial market liberalization, openness to foreign investment, and highly flexible labor markets.

⁵ See, for example, Ian Little, Tibor Scitovsky, and Maurice Scott, *Industry and Trade in Some Developing Countries*, London: Oxford University Press, 1970.

⁶ See, for example, Anne Krueger, *Foreign Trade Regimes and Economic Development: Liberalization Attempts and Consequences*, New York: National Bureau of Economic Research, 1978.

⁷ The standard reference to the evidence of a “neutral” incentive regime is found in Charles R. Frank, Jr., Kwang S. Kim, and Larry E. Westphal, *Foreign Trade Regimes and Economic Development: South Korea*, New York: National Bureau of Economic Research, 1975.

Despite the ideological as well as intellectual appeal of the export-led-growth hypothesis, its empirical and theoretical underpinnings were surprisingly flimsy. First, there was substantial doubt about how significant Korea's and Taiwan's liberalization had been. Important books by Alice Amsden on Korea and Robert Wade on Taiwan not only chronicled the government's extensive intervention in the two economies, but sought to advance a "revisionist" theoretical approach in which industrial policy had a positive effect on economic growth.⁸ These accounts were dismissed by mainstream economists as theoretically ungrounded. But the sheer weight of the evidence of restrictive and distorted trade policies was difficult to ignore, and much of it came from country specialists and policymakers with detailed knowledge of policy regimes that were purposely opaque to outsiders.

Yet even if these empirical anomalies could be set aside, for example by arguing that the policy regimes in East Asia were less biased than in other developing countries or that they were effectively neutral between import-substituting and export activities, there were more fundamental theoretical problems with the emphasis on export-led growth. Traditional trade theory says that the liberalization of the domestic market could produce a one-time, or "static," gain associated with increased efficiency in the allocation of resources. Trade theory did not provide grounds to expect a change in the long-run growth *rate*. Moreover, most studies and simulations of the effects of trade liberalization on resource allocation yielded extremely modest effects. For example, a study by Srinivasan and Whalley pointed out that reasonable estimates of the welfare costs associated with protection and other forms of government intervention rarely exceeded one or two percentage points of GNP.⁹ Such findings made it difficult to reconcile the large and even growing performance gap between the East Asian NIEs and other developing countries.

⁸ Alice Amsden, *Asia's Next Giant*, *op. cit.*; Robert Wade, *Governing the Market*, *op. cit.*

⁹ T. N. Srinivasan, and John Whalley, eds., *General Equilibrium Trade Policy Modeling*, Cambridge: MIT Press, 1986.

For many years, advocates of export-led growth referred to a number of dynamic factors that went far beyond trade theory narrowly conceived. These included often casual and anecdotal arguments about how the rigors of international trade enhanced productivity growth by promoting innovation, cost cutting, employee efficiency, and acquisition of new technology. Despite the intuitive appeal of these arguments, their analytical underpinnings were not always firm. For example, export-led-growth advocates asserted that tariffs encourage entrepreneurial slack in import-competing industries because they raise these industries' relative prices. But by the same logic, they must *reduce* slack in export-oriented industries. In contrast to the central supposition of the export-led growth story, the net effect of trade protection on efficiency was not clear.¹⁰

II. Growth Theory: the Old vs. the New

Beginning in the late 1980s, advocates of export-led growth appeared to find a formidable, though not always comfortable, intellectual ally in the emergence of so-called "new" growth theories.

Neoclassical Growth Theory

The fundamental contribution to growth economics was made independently by Robert Solow and Trevor Swan in 1956.¹¹ In the simple Solow-Swan model, the main focus is on accumulation of capital. Under the assumption of diminishing returns, an economy accumulating more and more capital will ultimately see its per capita growth rate fall to zero. Of course, this prediction is contradicted by the historical fact that output per worker can increase over long periods of time with no clear tendency to decline. Solow solved this problem by introducing a key variable that was exogenous to

¹⁰ Dani Rodrik, "Closing the Productivity Gap: Does Trade Liberalization Really Help?" in *Trade Policy, Industrialization and Development: New Perspectives*, Oxford: Clarendon, 1990.

¹¹ Robert M. Solow, "A Contribution to the Theory of Economic Growth," *Quarterly Journal of Economics*, vol. 70 (1956), pp. 65-94; Trevor Swan, "Economic Growth and Capital Accumulation," *Economic Record*, vol. 32 (November, 1956), pp. 334-361.

the model: labor-augmenting technological change. Technological change postpones the onset of diminishing returns and thus provides the ultimate explanation for long-run growth.

The most important empirical implication of neoclassical growth theory concerns expected patterns of growth across countries. If economies differ only in their initial capital stock, they should grow at different rates: other things equal, the poorer a country is, the more quickly it should grow. This “convergence hypothesis” follows directly from the assumption of decreasing returns. Countries with a low stock of capital should have relatively higher returns from additional investment than those with larger stocks of capital. Unfortunately, other things are typically not equal, and the convergence hypothesis did not find strong empirical confirmation. Nonetheless, a weaker version of the hypothesis—“conditional convergence”—did find support.¹² This approach took into consideration factors that could offset or augment the effects of the initial capital stock, such as the savings rate, the population growth rate, and the level of technology.

A second implication of neoclassical growth theory is that government policy has no impact on long-term growth. Since growth is ultimately a function of technological change, which is assumed to unfold at some given rate, there is nothing that governments can do to accelerate long-term growth. Hence, even government policies that *permanently* increase the savings rate would only have an effect of increasing the growth rate in the short-run. Such “short-run” effects may in fact last longer than a decade. But as Krugman emphasizes, diminishing returns ultimately set in and growth slows to its steady-state rate.¹³ Indeed, the fixation on increasing savings

¹² N. Gregory Mankiw, David Romer, and David N. Weil, “A Contribution to the Empirics of Economic Growth,” *Quarterly Journal of Economics*, vol. 107, no. 2 (1992), pp. 407-437.

¹³ Robert J. Barro and Xavier Sala-i-Martin (*Economic Growth*, New York: McGraw-Hill, 1995, pp. 36-38) calculate that it takes about 12.5 years for an economy to eliminate one-half of the gap between its initial per capita GDP and its long-run level of real per capita GDP. The severity of diminishing returns, however, depends critically on the notion of capital employed. In one estimate, Barro and Sala-i-Martin (1995, pp. 80-87) calculate that, when a much broader notion of capital is used, the half-life can be long as 35 years.

and investment may even generate perverse results, as may have been the case in Singapore, where the savings rate approaches fully 40 percent of GDP. According to neoclassical theory, the only tangible result of increasing savings above the “Golden Rule” rate (which maximizes steady-state per capita consumption) is to increase capital stock at consumers’ expense.

The greatest weakness of neoclassical growth theory was the *deus ex machina* of technological change. While placing central causal weight for long-term growth on productivity increases, the model reflected the then-prevailing view that such improvements were largely due to scientific discoveries which were unrelated to market forces and hence outside the realm of economic analysis. As a result, the model had little to say about the ultimate source of variation in growth rates across countries.

New Growth Theory

The dissatisfaction with the neoclassical approach did not enter mainstream economics until growth theory was revived in the mid-1980s in influential papers by Paul Romer and Robert Lucas.¹⁴ The main objective of this new growth theory was to bring long-run growth back into the realm of economic analysis, explaining it *within* the model.¹⁵ Early proponents achieved this objective by theorizing that broad categories of investment activities, such as acquisition of knowledge and human capital, were not subject to diminishing returns because they generated productivity spillovers for the rest of the economy.¹⁶

¹⁴ Paul Romer, “Increasing Returns and Long-Run Growth,” *Journal of Political Economy*, vol. 94, no. 5 (October 1986), pp. 1002-37; Robert Lucas, “On the Mechanics of Economic Development,” *Journal of Monetary Economics*, vol. 22 (1988), pp. 3-42.

¹⁵ For this reason, the new theory was often referred to as “endogenous” growth theory.

¹⁶ Romer, for example, postulated that acquisition of knowledge is an inadvertent byproduct of accumulating physical capital. Because such knowledge has the characteristic of being non-rival—i.e. its use by one firm does not preclude others from using the same knowledge—the increase in knowledge spills over into the economy as a whole, increasing the productivity of capital held by every firm. Such a learning mechanism offsets the tendency for diminishing returns to capital accumulation.

A second round of theorizing in the early 1990s sought to recapture the neoclassical focus on advances in technology.¹⁷ Entrepreneurial firms were seen to invest resources in research and development activities to introduce new or more sophisticated products that yield some form of monopoly profits. As more and more products are introduced in a given market, the profits from additional investment in R&D activities should diminish. But the decreasing incentive for continued R&D investment is offset by the fact that private innovation contributes to society's stock of knowledge in a way that reduces future R&D costs for *all* innovators. The profitability of new R&D investments is thus maintained over time, and with it, long-run growth.

The new growth theory provided an escape from the neoclassical straitjacket of diminishing returns and an unsatisfactory conceptualization of technological change. It also provided a new rationale for why export-oriented policy reforms could have an important role in determining long-term growth. Integration into the global economy provided latecomers greater access to the technological frontier, making it easier to "catch up." The World Bank's widely-read report on the East Asian miracle—a strong defender of the export-led growth thesis—lists no less than seven ways in which such access develops.¹⁸ One example that relates directly to export-orientation concerns the presence of foreign buyers, who disseminate proprietary knowledge to suppliers in developing countries in order to reduce costs. The rigors of international competition also focus R&D efforts on sectors in which there is dynamic efficiency; protection, by contrast, breeds inefficient R&D efforts. Trade also greatly expands the market for domestic producers, allows small open economies to escape the constraint of a limited domestic market, and should therefore increase the profitability of R&D investments.

¹⁷ See, for example, Paul Romer, "Endogenous Technological Change," *Journal of Political Economy*, vol. 98, no. 5 (October 1990), pp. S71-102; Gene M. Grossman and Elhanan Helpman, *Innovation and Growth in the Global Economy*, Cambridge: MIT Press, 1991; Philippe Aghion and Peter Howitt, "A Model of Growth through Creative Destruction," *Econometrica*, vol. 60, no. 2 (1992), pp. 323-351.

¹⁸ The World Bank, *The East Asian Miracle*, *op cit.*, pp. 316-326.

Given these and related arguments, the new growth theory seemed a blessing for advocates of export-led growth. However, the blessing proved a mixed one. Arguments favoring the export-led growth hypothesis hinged critically on several key assumptions, such as the scope and extent of technology spillovers. By changing the assumptions slightly, the new growth theory could also be used to *challenge* the benefits of trade liberalization. For example, a country with a relative abundance of natural resources and unskilled labor could actually experience *lower* long-run growth if international specialization encouraged traditional activities and pulled resources away from more dynamic technology-intensive sectors. Additionally, if technological spillovers are national in scope, a developing country with a small knowledge base may want to protect technology-intensive activities from domination by rival countries with large R&D bases. Long-run growth could be accelerated if such a country “caught up” *before* subjecting itself to the vagaries of international trade. In short, the new growth theory was equally capable of providing ammunition for revisionists who had long made the case that government intervention, including protection, was a component of East Asia’s success.

To explore these questions in more detail, we have divided the terrain into three key areas of controversy and empirical research. The first concerns the relative significance of accumulation and productivity gains as sources of long-term economic growth. The second significant debate divides those emphasizing policy “fundamentals”—such as property rights, macroeconomic stability, and neutral incentives to private investors—from those stressing a more activist and discriminating state role. The final issue is the link between openness to trade and growth, the centerpiece of the export-led growth hypothesis.

III. The Role of Productivity Growth

The conventional view prevailing in both academic and development policy communities is that the key to the East Asian miracle has been rapid productivity growth achieved through implementation of an export-oriented strategy. One of the facts to emerge from both individual country studies and cross-national comparisons was that as much as one-third to one-half of the growth of output in

East Asia could be attributed to productivity improvements. The World Bank's 1993 *Miracle* report is typical in this regard; it claimed that productivity growth in Hong Kong, Indonesia, Japan, Korea, Malaysia, Singapore, Taiwan, and Thailand (the so-called High Performing Asian Economies or HPAEs) could account for as much as a third of the economic growth between 1960 and 1985.¹⁹

The studies by Kim and Lau and Young called this conventional wisdom into question by arguing that East Asia's growth could be explained overwhelmingly by factor accumulation; productivity growth in the region was anything but extraordinary. The techniques that these scholars employ are somewhat different,²⁰ but the basic nature of the enterprise can be captured by looking at Alwyn Young's use of a growth accounting approach to productivity measurement.

Growth Accounting and Total Factor Productivity (TFP)

Growth accounting is a statistical technique for dividing the growth of output into two sources: the growth of a variety of inputs, such as investment in physical capital, increases in the size of the labor force, or education, on the one hand, and the growth of total factor productivity (TFP) on the other. TFP is the economic and technical efficiency with which resources such as capital and labor are converted into output. Methodologically, TFP poses tremendous challenges because it is not directly observable. The solution to this problem has been to estimate TFP as a residual. The growth in output that is *not* explained by growth in factor inputs is fully attributed to TFP growth. The growth accounting framework thus always "explains" *all* growth, but only in the sense that it allocates any unexplained portion to productivity improvements.

¹⁹ The World Bank, *The East Asian Miracle*, *op. cit.*, pp. 60-69; M. Nishimizu and S. Robinson, "Trade Policies and Productivity Change in Semi-Industrialized Countries," *Journal of Development Economics* (1984).

²⁰ Jong-il Kim and Lawrence Lau, ("The Sources of Economic Growth of the East Asian Newly Industrializing Countries," *op. cit.*), rely on econometric estimation of a so-called "meta-production function" to show that productivity growth in Asian countries outside Japan is not significantly different from zero in a statistical sense.

The growth accounting approach is not without detractors who believe that it systematically overestimates the contribution of factor inputs and underestimates total factor productivity growth. One often cited objection is that it fails to fully capture the advances in technology that are “embodied” in successive vintages of imported capital goods. Much of East Asia’s technology has been imported from abroad; TFP measurements may therefore be low because important productivity advances embodied in these imported technologies are ignored.

This argument seems highly plausible. The argument that East Asia has seen little technical progress in the last thirty years seems ludicrous on its face. The countries of the region are clearly more technologically sophisticated than they were, and they became so in part by borrowing and learning from more advanced countries. However, it is important to distinguish the meaning of technological change as used in common parlance from the total factor productivity residual in a growth accounting model. TFP is designed to capture only the “free” growth in output that is not “paid for” by the costs of inputs. Certainly, developing countries of East Asia are employing imported equipment that is much more productive than that employed in the past; computers provide an obvious example. But these imports generate efficiency gains for the importing country (as measured by TFP) *only if they produce a social surplus*. There is no gain if one pays twice as much for a computer that is twice as productive. East Asia gained by importing inputs that embodied technology only if it did so at bargain prices. If relevant, the measurement of TFP should fully reflect this “free” growth in income.

A second reservation about growth accounting concerns its assumptions of perfect competition and constant returns to scale. A pioneering study by Hall showed that the presence of imperfect competition and increasing returns in the United States causes TFP to be overestimated in times of economic boom and underestimated during recession.²¹ It would seem that the standard assumptions

²¹ Robert Hall, “The Relation between Price and Marginal Cost in U.S. Industry,” *Journal of Political Economy*, vol. 96, no. 5 (1988), p. 921.

are even less likely to hold for developing countries, where imperfect competition and scale economies are pervasive. This would suggest that for booming economies such as those in East Asia, TFP growth may in fact be *overestimated*.²²

A more basic challenge to the growth accounting approach is that it may in fact not be able to distinguish clearly between growth attributable to factor accumulation and growth arising from technological advance.²³ The details of this “identification problem” are technical, and need not detain us here. But Richard Nelson and Howard Pack are worth quoting at some length because they raise a quite fundamental issue about how we should understand the relationship between factor accumulation and the elusive TFP residual, and particularly whether something called “learning” is itself responsible for observed accumulation. “Under rapid learning—technical advance...is driving growth. However, a growth accounting of a standard sort might show a very small residual. The factor shares of... physical and human capital would be and would remain high, as a consequence of the rapid learning that made their expansion productive.... Thus a growth accounting might ‘attribute’ the lion’s share of output growth to input growth. There would be little left to explain in terms of learning or technical advance, despite the fact that these are the basic factors driving

²² Euysung Kim’s (1996) study of Korean industry over the 1966-88 period (“Trade Liberalization and Productivity Growth in Korean Manufacturing Industries: Price Protection, Market Power, and Scale Efficiency,” unpublished manuscript, Graduate School of International Relations and Pacific Studies, University of California, San Diego, 1996) shows that, by abandoning standard assumptions, the average sectoral TFP growth estimate one gets is much lower (0.5 percent per annum) than that from following standard assumptions (2 percent per annum).

²³ This “identification problem” has been noted by Richard R. Nelson and Howard Pack, “The Asian Growth Miracle and Modern Growth Theory,” unpublished manuscript, Sept. 1995; and Dani Rodrik, “TFPG Controversies, Institutions, and Economic Performance in East Asia,” NBER Working Paper #5914, Cambridge: National Bureau of Economic Research, 1997, but was first noted by Peter Diamond, Daniel McFadden, and Michel Rodriguez, “Identification of the Elasticity of Substitution and the Bias of Technical Change,” in Daniel McFadden, ed., *An Econometric Approach to Production Theory*, Amsterdam: North Holland, 1972.

growth.”²⁴ In sum, rather than seeing accumulation “squeezing out” the role of learning, as the growth accounting results seem to suggest, Nelson and Pack argue that it is learning that is driving observed accumulation.

However, while growth accounting may underestimate the contribution of productivity, measurement does matter, as Young has shown. If one is careful in measuring the contribution of various inputs, Young argues, there appears to be little of the growth rate left to be explained by TFP.²⁵ And Young is exceedingly careful. He divides capital inputs in each of the four NIEs into five categories—residential buildings, nonresidential buildings, other durable structures, transport equipment, and machinery—and constructs both an estimate of each country’s initial capital stock and a time series showing changes in it, minus depreciation. In estimating labor inputs, he painstakingly cross-classifies labor into seven attributes: sex, age, education, industry, income, hours of work, and class of worker, to capture the changing quality of workers over time.

Young demonstrates for each of four economies—Korea, Taiwan, Hong Kong, and Singapore—how the estimate of TFP falls “from the heights of Olympus to the plains of Thessaly” as one moves away from the most naive form of growth accounting to more nuanced measurements. For the 1966-90 period, Young finds average annual productivity growth rates in Taiwan of 3.5 percent, in Hong Kong of 2.3 percent, and in Korea of 1.7 percent. In Singapore—the result that has gotten the most attention—the exercise yields an estimation of TFP growth of only 0.2% yearly, with TFP in manufacturing actually being negative! Other studies have found broadly confirming evidence. In a recent paper covering a larger number of countries, Susan M. Collins and Barry P. Bosworth find that annual average productivity growth from 1960-

²⁴ Richard R. Nelson and Howard Pack, “The Asian Growth Miracle and Modern Growth Theory,” *op. cit.*, p. 7.

²⁵ The following discussion draws on Alwyn Young, “The Tyranny of Numbers,” *op. cit.*

1992 for seven East Asian economies—Indonesia, Korea, Malaysia, the Philippines, Singapore, Taiwan, and Thailand—came to just under one percent.²⁶

It is important to underline that growth accounting is not a *theory* of growth; it is an accounting device. As Robert J. Barro and Xavier Sala-i-Martin put it succinctly, growth accounting “does not attempt to explain how the changes in inputs and the improvements in total factor productivity relate to elements (such as aspects of preferences, technology, and government policies) that can reasonably be viewed as fundamentals.”²⁷ It is therefore only the growth theories outlined above, both neoclassical and “new,” that allow interpretation of the evidence obtained by growth accounting.

Krugman’s Analysis

By far the most widely read interpretation of the Kim and Lau and Young findings has been Paul Krugman’s. In a bold rhetorical move, Krugman draws a parallel between East Asia’s growth and that of the Soviet Union under Stalin; in both cases, he argues, high growth was fully explained by a rapid growth in inputs. However, Krugman’s most important analytic step is to place the growth accounting results in a neoclassical growth framework by emphasizing the law of diminishing returns. As with Soviet growth, Krugman argues, growth rates in Asia will ultimately fall back to earth.

Counterintuitive comparisons often lead to new insights, but Krugman’s falls short in several important respects. One difference between East Asia and the former Soviet Union is that they experienced divergent trends with respect to *productivity growth*. The Soviet Union’s productivity growth rate fell over time and had become negative by the 1980s, suggesting a profound structural crisis of the entire socialist model. Even if Asia’s productivity

²⁶ Susan M. Collins and Barry P. Bosworth, “Economic Growth in East Asia: Accumulation versus Assimilation,” *Brookings Papers on Economic Activity*, 2 (1996), pp. 135-203.

²⁷ Robert J. Barro and Xavier Sala-i-Martin, *Economic Growth*, *op cit*.

growth is not what it was once believed to be, most studies (including Young's) find it to be positive. Some studies even find that the contribution of productivity growth has become more rather than less important over time. For example, Collins and Bosworth find that Singapore, Korea, Taiwan, Thailand, and Malaysia all show increases over time in the share of their growth that can be attributed to productivity improvements. Young's study, based on more detailed measurements, is somewhat more ambiguous on this score, but nonetheless shows that productivity growth in both Korea and Taiwan is higher in the 1980s than it was in the 1970s. Thus Krugman's prediction that growth will slow may not come to pass precisely due to increases in efficiency.

A second problem with Krugman's analysis stems from his misunderstanding of the Western growth experience. Krugman seeks to defang the East Asian challenge by comparing it unfavorably to the growth of the other advanced industrial states, which, he argues, resulted primarily from increases in productivity. However in dispelling the myth about Asia's growth, Krugman overlooks the possibility that the "productivity-led growth" of the West may also be a myth. Early growth accounting studies attributed Western growth largely to productivity improvements, but these results fell victim to the same methodological advances that generated Young's findings. A substantial body of research now confirms that the predominant sources of economic growth in advanced nations, including both the United States and Japan, have been the growth of inputs rather than advances in productivity.²⁸ Even Young's study, the very source on which Krugman relies, notes that TFP growth rates were no higher in absolute terms in the Western economies than in East Asia. In other words, the Western economies are just as apt a comparison to East Asia as the Soviet Union.

Several implications follow. First, the sustainability of East Asia's performance cannot be called into question on the grounds that advances in total factor productivity contributed very little to

²⁸ See, for example, Laurits R. Christensen, Dianne Cummings, and Dale W. Jorgenson, "Economic Growth, 1947-73: An International Comparison," in John W. Kendrick and Beatrice N. Vaccara, eds., *New Developments in Productivity Measurement and Analysis*, Chicago: University of Chicago Press, 1980.

the region's growth. Similar levels of TFP growth are visible in the advanced industrial states, which have now accumulated over a century of sustained economic development. Second, if East Asia's productivity growth is equal to that of the West, it raises the question of the standard we should use when judging whether productivity growth is "high" or "low." Young's work has been used by Krugman and others to suggest that productivity growth in East Asia is "low." But this is only true in the sense that its contribution to overall growth is relatively modest *when compared to the contribution of factor inputs*. Moreover, even this comparison may be misleading. If factor accumulation is high, then the relative contribution of productivity is necessarily smaller even if productivity growth is in fact quite robust when compared to other countries.

Indeed, it could be argued that the miracle of East Asia's growth was the ability to combine high levels of accumulation with rates of productivity growth that equaled or surpassed those of the West. Takashi Hikino and Alice Amsden suggest that it is precisely this combination that differentiates East Asia from other developing countries, and use the comparison to emphasize the role of learning in the region.²⁹

If we accept, however, that TFP growth is "small" in the West as well as in the East, then how can we explain sustained economic growth? As we have seen, neoclassical growth theory faced the problem that if the marginal product of capital is diminishing it will ultimately fall to zero and growth will grind to a halt. It was for this reason that sustained growth in per capita income was impossible in the absence of technological progress. Since the growth accounting studies show little evidence of technological progress in East Asia, Krugman concludes that the region's growth must inevitably slow as well.

However, there are neither good empirical nor theoretical reasons why the returns to capital must diminish all the way to zero. It

²⁹ Takashi Hikino and Alice H. Amsden, "Staying Behind, Stumbling Back, Sneaking Up, Soaring Ahead: Late Industrialization in Historical Perspective," in William J. Baumol, Richard R. Nelson, and Edward N. Wolff, eds., *Convergence of Productivity: Cross-National Studies and Historical Evidence*, New York: Oxford University Press, 1994.

has long been known that the rate of return to capital (measured, for example, by the real interest rate) has been relatively constant in the advanced industrial states over very long periods of time; this evidence is consistent with the presumption that the marginal product of capital is bounded and may not fall to zero. Sergio Rebelo presents a simple endogenous growth model where the private return to capital does not diminish, inducing sustained investment.³⁰ Even within the standard neoclassical assumption of diminishing returns, all that is required to sustain growth is that the economy continues to generate *some* profitable investment opportunities, that is, that the marginal product of capital remains above some lower bound that is sufficiently greater than zero.³¹ With these assumptions, capital can be accumulated indefinitely (and with it long-run growth) *even in the absence of technological change*.

These observations suggest a final point about how to read the growth accounting evidence. Krugman seeks to demystify East Asia's growth by showing that it rested on factor accumulation. But Krugman's emphasis on accumulation only pushes the puzzle back a step; the "miracle" is no longer why Asia grew so fast, but why it managed to invest at such a sustained and high level.

IV. The Sources of Rapid Factor Accumulation: State and Market in East Asia's Growth

The most heated controversy in the literature on East Asia's growth concerns the role of the state in the economy. Until very recently, this debate unfolded separately from the new growth theory and growth accounting results. However, the debate on the role of the state can be recast to address the question of why the East Asian countries managed to accumulate capital at such a furious pace.

³⁰ Sergio Rebelo, "Long Run Policy Analysis and Long Run Growth," *Journal of Political Economy*, vol. 99, no. 3 (1991), pp. 500-521.

³¹ See Larry Jones and Rodolfo Manuelli, "A Convex Model of Equilibrium Growth: Theory and Policy Implications," *Journal of Political Economy*, vol. 98 (1990), pp. 1008-1038; T.N. Srinivasan, "Long-Run Growth Theories and Empirics: Anything New?" in Takatoshi Ito and Anne O. Krueger, *Growth Theories in Light of the East Asian Experience*, Chicago: University of Chicago Press, 1995.

Part of this accumulation can be accounted for by improvements in both the quantity and quality of education. By 1960 most East Asian countries had already achieved nearly universal primary enrollment, as well as levels of secondary enrollment and literacy that were far higher than in other countries at similar levels of development. Moreover, the growth accounting studies we have cited generally find that the contribution of education to growth in East Asia, while less than the contribution of TFP growth, is nonetheless higher than the contribution of education in other regions, including the advanced industrial states.³² This background factor may itself have had an important effect both on subsequent productivity growth and on the profitability of investment. However, we focus here primarily on the accumulation of physical capital; the investment in plant and equipment which is the most important causal factor in the growth accounting results just reviewed.

One pole of the debate is occupied by those who see investment primarily as a result of the government getting “fundamentals” right; providing the legal and policy framework for private risk-takers.³³ The list of “fundamentals” is both long and elastic; some would include free labor markets, and the question of openness to trade is considered in more detail below. This section focuses on three fundamental features of the policy environment: property rights, macroeconomic stability, and incentives to save.

In his work on the long-run development of the West, Douglass North emphasized the crucial role of secure property rights in stimulating investment and risk-taking.³⁴ Stephen Knack and Philip Keefer followed this line of attack in a large cross-national study that showed how various measures of property and contract rights, on which East Asian countries generally score high, were posi-

³²In addition to the studies already cited, see Jong-il Kim and Lawrence J. Lau, “The Role of Human Capital in the Economic Growth of the East Asian Industrialized Countries,” *Asia-Pacific Economic Review*, vol. 1, no. 3 (1995), pp. 3-22.

³³This view receives at least prima facie support from the fact that the investment boom in East Asia was overwhelmingly private.

³⁴For a good introduction to North’s thinking, see his *Institutions, Institutional Change and Economic Performance*, New York: Cambridge University Press, 1990.

tively correlated with growth.³⁵ Corroborating evidence can also be found in individual country histories. In Taiwan, for example, both private investment and growth took off in the early 1960s after the ruling Kuomintang party signaled its willingness to allow the local Taiwanese private sector to flourish. Rodrik found that a composite index of institutional quality that included several measures of the security of property and contract rights was significant in explaining the variance *among* East Asian developing countries; those with weaker institutions, such as Indonesia, grew less rapidly than those with more developed ones, such as Singapore.³⁶

A second component of this “fundamentals” story centers on the conduct of macroeconomic policy. Comparisons between East Asia and other developing regions had underscored differences in trade and exchange rate policy since the 1970s. In the aftermath of the debt crisis of the mid-1980s, however, these studies began to compare deeper differences in macroeconomic management that affect not only trade and exchange rate policy but investment as well. As Jeffrey Sachs emphasized in an influential comparison of East Asia and Latin America, it was not the size of the government that differentiated the two regions; governments consumed roughly the same share of GNP.³⁷ In contrast to a number of cross-national studies that purported to find government consumption negatively related with growth, Shin-ichi Fukuda and Hideki Toya even find the opposite to be true in East Asia, suggesting that the provision of government services was somehow growth enhancing in the region and that there was no tradeoff between public and private investment.³⁸ Nor does the evidence support a supply-side story of

³⁵ Stephen Knack and Philip Keefer, “Institutions and Economic Policy: Cross-Country Tests Using Alternative Institutional Measures,” *Economics and Politics*, vol. 7 (1995), pp. 202-27.

³⁶ Dani Rodrik, “TFPG Controversies, Institutions, and Economic Performance in East Asia,” *op. cit.*

³⁷ Jeffrey D. Sachs, “External Debt and Macroeconomic Performance in Latin America and East Asia,” *Brookings Papers on Economic Activity*, 2 (1985), pp. 523-573.

³⁸ The inverse correlation between government consumption and growth was first noted in Robert J. Barro, “Economic Growth in a Cross Section of Countries,” *Quarterly Journal of Economics*, vol. 106, no. 2 (1991), pp. 407-443. Shin-ichi Fukuda and Hideki Toya, “Conditional Convergence in East Asian Countries: the Role of Exports in Economic Growth,” in Ito and Krueger, eds., *Growth Theories*, *op. cit.*

low and uniform taxes in East Asia when compared to other regions. Effective tax rates in Latin America are notoriously low and the World Bank *Miracle* report itself catalogues how taxes in East Asia are neither uniformly low nor neutral—they often combine high marginal rates with complex tax subsidies.³⁹

Rather, it was the size of fiscal deficits in Latin America and resulting inflation and macroeconomic instability that distorted relative prices, deterred investment, and contributed to high levels of both external indebtedness and capital flight. By contrast, fiscal policy in East Asia was extremely conservative. These cross-regional comparisons were buttressed by cross-national studies which found growth in large samples of countries adversely affected by inflation, large budget deficits, and distorted foreign exchange markets. In one influential study, Stanley Fisher found that inflation and budget deficits reduced both investment and productivity growth, primarily by increasing uncertainty.⁴⁰ Uncertainty about the macroeconomy reduces investment because potential investors delay or postpone their commitments. Macroeconomic instability reduces investment directly through capital flight. The uncertainty associated with high inflation and budget and current account deficits also reduces productivity and productivity growth by undermining the efficiency of the price mechanism.

A third component of the “fundamentals” story centers on the role of savings. It has long been observed that savings as well as investment in East Asia has been high, and it is commonly thought that there is a direct causal relationship running from high savings, to high investment, to high growth. If true, incentives to save would be a central part of the growth story.

Over two decades ago, pioneering studies on the role of finance in development by Ronald I. McKinnon and Edward Shaw advanced the argument that low levels of savings in most developing countries were due in part to government efforts to maintain interest rates at artificially low levels, a policy of “financial repres-

³⁹ The World Bank, *The East Asian Miracle*, *op. cit.*, pp. 228-231.

⁴⁰ Stanley Fischer, “The Role of Macroeconomic Factors in Growth,” *Journal of Monetary Economics*, vol. 32 (1993), pp. 485-512.

sion."⁴¹ McKinnon in particular drew on Korea's experience in the 1960s to show how financial market liberalization—allowing interest rates to approach market-clearing levels—not only had the effect of increasing savings but of increasing the efficiency of investment as well. Again, allowing markets to work seemed to be an important ingredient in growth.

In fact, the relationship between interest rates, savings, investment, and growth is by no means straightforward. First, the effect of interest rates on savings remains highly contested, both in cross-national studies and in the literature on particular East Asian countries. Any gains in savings must also be balanced by consideration of the effect of higher interest rates on investment; even the World Bank concedes that there may be some benefit to reducing the cost of capital for certain types of investments, particularly in equipment.⁴² Moreover, the direction of causality between savings and growth has proved surprisingly ambiguous. In a careful analysis of the Korean case, Susan Collins rejects the significance of real interest in explaining savings growth; rather, she pinpoints growth itself as the source of the country's high savings.⁴³ Her result is confirmed by Carrol and Weil's causality test on data from Japan, South Korea, Singapore, and Hong Kong; in all cases, they find that high growth is followed by, rather than preceded by, high savings.

The significance of these results is that they cast doubt on an interpretation that emphasizes property rights, a stable macroeconomic framework, and incentives to save and invest. These may be necessary conditions for high investment and growth, but what if they are not sufficient? What if countries put these "fundamentals" in place, but nonetheless get stuck on a low growth track?

⁴¹ Ronald I. McKinnon, *Money and Capital in Economic Development*, Washington D.C.: The Brookings Institution, 1973; Edward S. Shaw, *Financial Deepening in Economic Development*, New York: Oxford University Press, 1973.

⁴² For a brief review, see Stephan Haggard and Chung Lee, "The Political Dimension of Finance in Economic Development," in Stephan Haggard, Chung Lee, and Sylvia Maxfield, eds., *The Politics of Finance in Developing Countries*, Ithaca: Cornell University Press, 1993.

⁴³ Susan Collins, "Saving, Investment, and External Balance in South Korea," in Stephan Haggard, et al., *Macroeconomic Policy and Adjustment in Korea: 1970-1990*, Cambridge: Harvard University Press, 1994.

It is precisely such a possibility that motivates revisionist accounts of the state's role in East Asia's rapid investment growth. Ha-Joon Chang and Dani Rodrik independently developed models that emphasized the coordination problems that arise in moving from a low growth to high growth path. Rodrik's model, which goes back to early postwar ideas about the importance of planning, begins with an economy divided into two sectors: a traditional sector (agriculture) where returns to factor inputs are low; and an incipient modern sector where returns are potentially high, but only once the sector is viable. Rodrik makes three assumptions about the modern sector: (1) some of its inputs, including technology, are non-tradable; (2) there are economies of scale; and (3) firms in the modern sector demand relatively skilled labor at low cost. For an individual investor, there are high returns to be made from shifting resources into the modern sector, *but only if other entrepreneurs are moving into it at the same time*. With non-tradability of inputs and economies of scale, these complementary investments may not arise in the absence of coordination by the government. Rodrik interprets efforts to protect property rights and improve the overall investment climate as one response to this dilemma.

However, improving the investment climate per se does not necessarily solve the coordination problem, which rests precisely on the fact that socially optimal investments are not undertaken. Rather, "jump-starting" growth may require direct subsidies (which lower risk); coordination of private investment decisions to guarantee linkages exist; and even public investment and the use of state-owned enterprises, for example to ensure the provision of needed inputs. The profitability of such investments may also hinge critically on the prior accumulation of a threshold level of human capital, the adequate provision of which is subject to its own coordination problems. In the absence of a government committed to education, such a strategy might fail.

It is important to underline that the existence of such coordination failures does not necessarily mean that a government will respond in an efficacious fashion. A government's response will hinge to some substantial degree on political economy questions, which we address below. However, it is clear that more serious attention

is being paid to the role of the state in triggering growth, in this case precisely through the investment channel which has been so central to the new growth accounting.

V. The Role of Trade and Openness

An outward-oriented trade policy has long been seen as a centerpiece of East Asia's economic success, even though there is substantial debate over the role of the state in effecting that strategy. However, the mechanisms through which openness, trade, and exports have contributed to growth have not been entirely clear either.⁴⁴ Did trade influence growth by inducing increases in productivity or by stimulating investment, and if so, how? Neoclassical growth theory did not stipulate any role for policy; changes in the trade regime could therefore not affect long-term growth, which was driven by exogenous technical progress. Some new growth models provide reasons why openness to trade may increase productivity, and this channel has been the implicit mainstay of the export-led growth approach. But some of these were surprisingly fragile,⁴⁵ while others, such as explanations based on physical and human capital accumulation did not seem adequate to explain the very high observed growth rates.

The link between openness and investment is no less ambiguous. According to traditional trade theory, openness to trade tends to equalize the cost of factor inputs across countries; liberalizing trade will lower the returns to scarce factors and increase the returns to abundant ones. For labor-abundant developing countries such as those in East Asia, the implication is that trade liberalization should *lower* returns to capital (a scarce factor), and thus the incentive to invest. This prediction sits well neither with the export-led growth story nor with the unambiguous evidence of strong investment growth in East Asia. Recent work by Don Davis has shown why traditional trade theory may fail to hold and the returns

⁴⁴ Anne O. Krueger, "Trade Policy and Economic Development: How We Learn," *The American Economic Review*, vol. 38, no. 1 (1997), pp. 1-22.

⁴⁵ For example, in the Grossman and Helpman R&D-based model, trade could either benefit or harm productivity performance depending on whether international specialization pulled resources into or out of the research intensive sector.

to capital could actually rise following liberalization in capital-poor countries.⁴⁶ However, even if this alternative is plausible, the benefits of openness are only transitory within the neoclassical framework—only in some strands of endogenous growth theory can trade liberalization have long-run effects.

If the theory remains ambiguous, the empirical evidence would seem much less so. The number of country studies detailing the transition to export-led growth in the East Asian NIEs is truly voluminous. The majority of country studies and cross-national analyses have found a positive correlation between various measures of outward-orientation and output growth. These studies rely on data from many countries, often a hundred or more, and estimate the impact of openness by including some measure of outward orientation along with a host of other explanatory variables in growth-rate regressions.⁴⁷ One widely-cited review by Levine and Renelt notes that the relationship between the trade share (but not just exports!) and investment is one of the few robust findings to emerge from the cross-national growth literature.⁴⁸

Unfortunately, there are a number of reasons to be skeptical of these findings. Not only is the data for some countries highly suspect, but the measurement and even the meaning of key variables such as “openness” remains unclear.⁴⁹ For example, one common measure of openness is trade volumes or shares (i.e., exports or trade as a share of GNP), on the presumption that open economies trade more than closed ones. But the volume of trade may reflect

⁴⁶ Don Davis, “Miracles of Accumulation: Models of Trade and Growth in East Asia,” Department of Economics, Harvard University, January 1996.

⁴⁷ See, for example, Robert Barro, “Economic Growth in a Cross Section of Countries,” *Quarterly Journal of Economics*, vol. 106, no. 2 (May 1991), p. 106.

⁴⁸ Ross Levine and David Renelt, “A Sensitivity Analysis of Cross-Country Growth Regressions,” *American Economic Review*, vol. 82, no. 4 (1992), pp. 942-63.

⁴⁹ The data available for many developing countries are at best projections and certainly not actual observations. See T. N. Srinivasan, “Long-Run Growth Theories and Empirics: Anything New?” *op. cit.*, for a broad criticism. Among the measures used are trade shares (exports, imports, or the sum of both as a share of total output), the growth rate of exports, direct or derived policy measures (average tariffs, quota coverage ratios, effective rates of protection, or various indices), as well as categorical dummy variables (“open” vs. “closed” economies).

the size or factor endowment of the country rather than its policy orientation. The World Bank's *Miracle* study uses an openness indicator based on distortions in the real exchange rate, but this measure is also only tentatively related to openness as traditionally conceived.⁵⁰ More generally, as studies by Ann Harrison and Lant Pritchett have recently pointed out, the correlation among various measures of "openness" is surprisingly low; openness along one dimension does not necessarily imply openness along another.⁵¹ In sum, since there is still lack of clarity about precisely what "openness" is, it is particularly hard to know what conclusions we can draw from it.

The most substantial problem is that these studies are rarely based on a well-specified theoretical model, making it difficult to draw firm causal inferences. Cross-country studies typically establish a contemporaneous correlation between openness to trade and growth, leaving open the possibility that growth may in fact cause exports. Dani Rodrik has developed just such a model, in which investment drives exports.⁵²

Recent studies have employed more sophisticated statistical techniques to explore the direction of causality, essentially by testing whether export growth in fact precedes investment growth.⁵³

⁵⁰ See Dani Rodrik, "King Kong Meets Godzilla: the World Bank and The East Asian Miracle," in Albert Fishlow, et al., *Miracle or Design? Lessons from the East Asian Experience*, Washington D.C.: Overseas Development Council, 1994.

⁵¹ Ann Harrison, "Openness and Growth: A Time-Series, Cross-Country Analysis for Developing Countries," *Journal of Development Economics*, vol. 48, no. 2 (1994); Lant Pritchett, "Measuring Outward Orientation in LDCs: Can it be Done?" *Journal of Development Economics*, vol. 49, no. 2 (1996).

⁵² Dani Rodrik, "Getting Interventions Right: How South Korea and Taiwan Grew Rich," *Economic Policy*, (April 1995).

⁵³ Recent examples are Subrata Ghatak, Chris Milner, et al., "Exports, Export Composition and Growth: Cointegration and Causality Evidence for Malaysia," *Applied Economics*, vol. 29, no. 2 (1997), pp. 213-223; and Zhenhui Xu, "On the Causality between Export Growth and GDP Growth: An Empirical Reinvestigation," *Review of International Economics*, vol. 4, no. 2 (1996), pp. 172-184. One problem with these studies is that even if export growth does precede investment growth, it does still not necessarily imply a causal relationship. Your alarm clock may always go off before the sun rises, but it does not mean that the alarm caused the sun to rise.

These statistical causality studies find surprisingly mixed support for the export-led growth story.⁵⁴ Country case-studies do not offer much solace on the question of causation either; indeed, they may be positively misleading. It is true that both Korea and Taiwan, the most frequently-cited cases, did appear to take off following reforms of the trade and exchange rate regimes in the late 1950s and early 1960s. However, both governments undertook a variety of other reforms at the same time, the extent of liberalization was relatively modest, and the export sector appears much too small to have generated the sharp inflection in growth rates in both countries. Moreover, Hong Kong and Singapore had been free ports fully open to trade and investment for decades. Yet neither took off until the 1960s.

Despite the ambiguities that always attend such empirical analysis, there are at least two insights that emerge from the new causality studies. Some studies point out that the causal relationship between exports and growth may depend not simply on *how much* is exported but on *what* is exported. Ghatak, Milner, and Utkulu, for example find that manufacturing exports are causally related to output growth in the sense described, while traditional exports are not. This finding might help explain East Asia's dynamism, while also calling into question whether that experience could be transferred to other countries with different factor endowments.⁵⁵

The most important finding of these studies, however, is that causality appears to run in two directions and that there may be important feedback effects running from growth to exports as well as the other way around. This problem of mutual causation or simultaneity is not limited to trade flows, but extends to various policy

⁵⁴ Bahmani-Oskooee and Alse find fairly robust evidence of a link between trade and growth while a well-known study by Jung and Marshall found that only four in a total of 37 economies show a strong causal relationship running from export growth to real output growth. Mohsen Bahmani-Oskooee and Janardhanan Alse, "Export Growth and Economic Growth: An Application of Cointegration and Error-Correction Modeling," *Journal of Developing Areas*, vol. 27, no. 4 (1993), pp. 535-542; W. S. Jung and P. J. Marshall "Exports, Growth and Causality in Developing Countries," *Journal of Development Economics*, vol. 18, no. 1 (1985), pp. 1-12.

⁵⁵ Subrata Ghatak, Chris Milner, et al., "Exports, Export Composition and Growth: Cointegration and Causality Evidence for Malaysia," *op. cit.*

measures of openness as well. For example, the Korean government often relaxed trade restrictions during economic booms and tightened trade barriers during recessions;⁵⁶ hence, there is strong likelihood that many empirical studies are plagued with problems of simultaneity.

Even setting methodological problems aside, these cross-country growth regressions remain unsatisfying because they provide little insight into the channels through which openness affects growth; does the dynamic impact of openness work by promoting technical efficiency, as is commonly thought, or is it possible that it may serve to stimulate investment as well?⁵⁷ The growth accounting results are once again important in this regard. If the East Asian economies can be characterized as open—a crucial assumption—then the Young and Kim-Lau evidence would seem to cast doubt on the dynamic benefits of an export orientation as commonly posited; TFP growth is simply too modest to attribute much of East Asia's development to its export-orientation.

It is premature to cast aside the export-led growth hypothesis, however. First, as revisionists have long argued, the idea that East Asia was free from protection or characterized by policy neutrality is doubtful. But contrary to the revisionist argument, low TFP growth rates may in fact be an outcome of excessive protection. Other policies also exert significant influence on productivity performance; low TFP growth may simply reflect other distortions that mask the positive effects of trade reform in East Asia. Another possibility is that the true benefit of an outward-orientation operates through the investment channel (i.e., factor accumulation and the sectoral reallocation of resources); this possibility has received surprisingly little attention to date.⁵⁸

⁵⁶ See Charles R. Frank, Jr., Kwang S. Kim, and Larry E. Westphal, *Foreign Trade Regimes and Economic Development: South Korea*, *op. cit.*, pp. 47-49.

⁵⁷ One recent exception is B. Bosworth, S. M. Collins, and Y. Chen, "Accounting for Difference in Economic Growth," paper delivered at conference "Structural Adjustment Policies in the 1990s: Experience and Prospects," the Institute of Developing Economies, October 5-6, 1995. They find outer orientation to work through both channels.

⁵⁸ Most "evidence" on the effects of trade liberalization on resource allocation comes from simulations based on computable general equilibrium models, and these generally tend to find modest results.

A growing trend in empirical research is to explore these questions through more detailed micro-level analysis. Industry- and sector-level studies allow us to take account of the significant variation in the level of protection which exists across industries in East Asia; cross-country studies, by contrast, must measure openness through national averages that mask these differences.⁵⁹

Because the export-led growth interpretation and some strands of the new growth theory emphasize the link between trade and productivity, most of these studies have attempted to plumb this relationship more deeply. Kim's study of 36 Korean manufacturing industries from 1966 to 1988, for example, reveals that trade liberalization had a positive and significant impact on productivity performance and even helped counter the effect of other shocks. Kim argues that about two percentage points of the permanent increase in TFP growth during the period could be attributed to trade liberalization.⁶⁰ Thus even if we deem productivity growth in East Asia "low"—a supposition we have called into question—openness to trade nonetheless may have contributed positively to what productivity growth there was.

Going one step further, several studies have even focused on technological change and learning at the plant or firm level, which, as Nelson and Pack suggest, is where learning and technological

⁵⁹Sector- or industry-level studies also allow less restrictive assumptions about the production relationship between output and inputs than studies done at a highly aggregate level. A technical treatment of these issues is found in C. R. Hulten, "Growth Accounting with Intermediate Inputs," *Review of Economic Studies*, vol. 45, no. 3 (1978), p. 511.

⁶⁰His study shows, however, that the significance of this result critically depends on relaxing the assumptions of perfect competition and constant returns to scale found common in other studies. Other notable industry-level studies on East Asia include M. Nishimizu and S. Robinson, "Trade Policies and Productivity Change in Semi-Industrialized Countries," *op. cit.*, David Dollar and Kenneth Sokoloff, "Patterns of Productivity Growth in South Korean Manufacturing Industries, 1963-1979," *Journal of Development Economics*, vol. 33 (1990) and J.-W. Lee "Government Interventions and Productivity Growth in Korean Manufacturing," NBER Working Paper No. 5060, Cambridge: National Bureau of Economic Research, 1995.

progress actually take place.⁶¹ Empirical analyses of countries, but also of industries and sectors, presume that what firms do is determined by the economic environment they are in (i.e., firms pursue the optimal course given incentives). But productivity analysis based on the behavior of a representative firm are at best misleading if technological innovation takes place through a gradual process of efficient plants displacing inefficient ones or through the diffusion of new knowledge.⁶²

Such learning is at the heart of Alice Amsden's revisionist account, which includes detailed studies of Korean *chaebol* in shipbuilding and autos. Amsden's case studies do not focus on trade per se, and pay particular attention to the question of how organizations learn. But she shows clearly how extensive and multifaceted links developed with foreign partners, buyers, and suppliers of technology and inputs and how these contributed to absorbing foreign know-how. These observations have become the staple of a sociological literature on international production networks that adopts a much broader conception of "openness"—encompassing multifaceted trade and investment relations—than that used by economists.⁶³

In sum, recent research has raised new questions about the relationship between openness and growth, but there nonetheless seems to be support for the orthodox contention that an export-oriented strategy produces faster economic growth; we just do not know precisely *how*. It is clear, however, that the limits of both cross-national and country studies that simply identify the correlates of growth have been reached. Future research needs to reach for theory, unravel the relationship between trade and long-run growth at the micro-level, and adopt a wider conception of "openness" that goes beyond trade policy narrowly conceived.

⁶¹ For an overview and survey, see Howard Pack, "Learning and Productivity Change in Developing Countries," in Gerald K. Helleiner, ed., *Trade Policy, Industrialization and Development: New Perspectives*, Oxford University Press, 1992.

⁶² James Tybout, "Linking Trade and Productivity: New Research Directions," *The World Bank Economic Review*, vol. 6, no. 2 (1992), p. 189.

⁶³ See for example Gary Gereffi and Miguel Korzeniewicz, eds., *Commodity Chains and Global Capitalism*, Westport CT: Greenwood Press, 1994.

VI. The Return to Institutions and Politics

Virtually all accounts of East Asia's growth place emphasis on the role of government, even if only to establish the framework within which markets and private actors function. Policy reform and "getting fundamentals right" are central to the export-led growth story as well as several strands of new growth theory. Revisionist accounts place even greater weight on state action. All such accounts thus necessarily beg the question of why political elites choose the policies they do and why they are capable of implementing them more or less credibly and efficiently.

The seminal work on the role of political processes in East Asia's growth was Chalmers Johnson's study, *MITI and the Japanese Miracle*.⁶⁴ Johnson's primary aim was a revisionist one: to debunk economists' accounts of Japanese development by showing the pervasive role of state intervention in the economy. However, the book's more important contribution was in detailing the economic policy-making process, and particularly the independent political role played by a powerful, meritocratic, and insulated bureaucracy. At first, this idea appeared antithetical to advocates of market-oriented reform. However, the idea that meritocratic bureaucracies could contribute to coherent and credible policy, stable expectations about future rates of return, and thus higher levels of investment seemed plausible. Reform of bureaucratic organization and the civil service quickly became one of the standard institutional lessons drawn from the East Asian experience.⁶⁵

However, it is clear that the bureaucracy is itself embedded in a wider set of political relationships. In the 1980s and 1990s, a flood of work appeared that sought to understand these political sources of growth in Japan and the East Asian NIEs. One strand of this literature concentrated on the strength or autonomy of what Johnson called the "developmental state." For example, Haggard empha-

⁶⁴ Stanford: Stanford University Press, 1982.

⁶⁵ Miles Kahler, "Orthodoxy and its Alternatives," in Joan M. Nelson, ed., *Economic Crisis and Policy Choice: The Politics of Adjustment in the Third World*, Princeton: Princeton University Press, 1990; The World Bank, *The East Asian Miracle*, *op. cit.*, pp. 174-180.

sized the transition to export-led growth in the East Asian NIEs, but sought to understand the politics of the reform process.⁶⁶ He argued that difficult adjustments such as fiscal consolidation, trade liberalization, and devaluation were best resolved through a concentration of political authority and executive initiative. A number of important policy reforms in East Asia, including the shift toward export promotion in Korea, Taiwan, and Singapore, followed general political and economic crises that permitted the consolidation of power by strong governments: Park Chung Hee's military rule in Korea and Chiang Kai-shek's and Lee Kuan Yew's dominant parties in Taiwan and Singapore, respectively.

The revisionist accounts by Alice Amsden and Robert Wade although resting on different conceptions of the growth process, drew surprisingly similar conclusions about the significance of a politically powerful state. For example, Alice Amsden argued that subsidies were only dynamically efficient because of the capacity of the state to "discipline" business use of them. Wade made similar arguments about the importance of "corporatism" in controlling business demands in Taiwan, and revisionists such as Ha-Joon Chang, Dani Rodrik and Chung Lee assumed that these governments have been capable of solving the coordination problems that might have blocked the transition from a low-growth to a high-growth trajectory.⁶⁷

The development state hypothesis faced a number of criticisms, the most fundamental of which was the puzzle of why strong states do not behave in a predatory fashion, distribute rents to cronies, or engage in massive corruption. In fact, there was evidence of all of these practices in East Asia. Among institutionalists, attention increasingly shifted to an analysis of the political relationship between the government and the private sector, and how the relation-

⁶⁶ Stephan Haggard, *Pathways from the Periphery: The Politics of Growth in the Newly Industrializing Countries*, Ithaca: Cornell University Press, 1990.

⁶⁷ Alice Amsden, *Asia's Next Giant*, *op. cit.*, p. 14; Robert Wade, *Governing the Market*, *op. cit.*, chs. 8 and 9; Ha-Joon Chang, *The Political Economy of Industrial Policy*, New York: St. Martins, 1993; Dani Rodrik, "Getting Interventions Right," *op. cit.*; Chung Lee, "The Government, Financial System, and Large Private Enterprises in the Economic Development of South Korea," *World Development*, vol. 20, no. 2 (1992), pp. 187-97.

ship contributed to coherent and credible policy. Campos and Root provided a particularly useful inventory of this new institutional analysis, focusing on the effort to woo political support from big business (through protection of property rights), while delegating authority to relatively insulated and meritocratic bureaucracies and establishing government-business deliberation councils. These institutions increased the flow of information—and no doubt provided channels for political influence—but nonetheless also served to check both government discretion and private sector rent-seeking.⁶⁸

The alternative to such institutional analysis has been to look for more fundamental sociological factors that might influence long-run economic performance, government strategies, or the coherence and credibility of policy. Perhaps the most intriguing result to emerge out of the political economy literature in recent years centers on the role of equality in long-run growth. It was long held that inequality might constitute a necessary evil in the early growth process since a concentration of income was required to generate the investment needed to move an economy onto a higher growth track. The East Asian countries presented a puzzle, however, because they appeared relatively egalitarian. Export-led growth accounts went to great lengths to suggest that this result was the product of an outward orientation that rapidly absorbed labor and contributed to real wage growth. Recent accounts have inverted this logic and argued that equality may itself be an important precondition for growth.⁶⁹ Some of the arguments undergirding this logic are economic, such as the claim that an equal distribution of income contributes to an expansion of domestic demand for consumer goods in the early stages of growth. However the more intriguing rationale for the finding is political; that the absence of severe social inequality has limited debilitating class and social conflicts that have contributed to wide swings in policy, investment, and economic performance in other developing countries.

⁶⁸ Jose Edgardo Campos and Hilton Root, *The Key to the Asian Miracle: Making Shared Growth Credible*, Washington D.C.: The Brookings Institution, 1996.

⁶⁹ For a summary of this work, see Dani Rodrik, "King Kong Meets Godzilla: the World Bank and The East Asian Miracle," *op. cit.*

VII. Conclusions

No social phenomenon as complex as economic growth lends itself to simple formulae, and as we have tried to show, many basic questions about the East Asian experience remain highly contested. Perhaps the only unambiguous finding to emerge from the recent controversy is a reaffirmation that factor accumulation remains central to long-run growth, and even in this relationship the causality may run in both directions. To achieve high growth requires the sacrifice of current consumption for future output; this difficult choice cannot be finessed.

The Kim-Lau and Young findings have been used, particularly by Krugman, to suggest that productivity improvements, technological change, and learning were unimportant for Asia's growth. Krugman's conclusions imply that the gains in efficiency associated with policy reform and an export-oriented strategy need to be reassessed. We have argued that this is a misleading interpretation of the evidence. The role of productivity growth may not carry the weight in East Asia's performance that was once thought, but this is true of our understanding of growth in the West as well. Even in the absence of evidence of strong TFP growth, it seems difficult to escape the conclusion of Amsden, Nelson and Pack, and others that learning played some role in contributing to high accumulation. Clearly, a frontier for future research is to figure out both theoretically and empirically how to capture the effects of such learning in a more compelling way.

If we accept that the contribution of productivity to total growth is lower than once thought, it suggests that the locus of attention needs to shift from explaining growth to explaining the causes of high investment. Protection of property rights, provision of a stable macroeconomic environment, and incentives to save have played some role in this process, but both theory and mounting empirical evidence suggest that other types of interventions, particularly those that encouraged investment in the early stages of growth, also have made a positive contribution. The puzzle is to understand how such government intervention avoided the ill effects visible in socialist and other developing countries. We have suggested that the an-

swers lie in part in the design of institutions that serve to check both government officials and the private sector and that contribute to coherent and credible policymaking.

Finally, we noted that the association between trade and growth is somewhat less clear than was once thought: there is uncertainty over the direction of the causal relationship and the precise channels through which openness contributes to growth. More fundamentally, there is a need to sort out the different meanings of “openness,” which encompasses not only liberalization of trade, but a variety of external channels through which technological learning might take place.

If new research is challenging what we thought we knew, our observations on investment, trade, and productivity nonetheless cast substantial doubt on Krugman’s pessimistic conclusions concerning East Asia’s future. The region has sustained high levels of investment in both physical and human capital, is increasingly open to trade and investment, and shows some signs of increasing productivity growth as well. However, it is possible that the entire growth experience rested on an extensive set of prior institutional and social foundations that are not easily replicated—from strong states and meritocratic bureaucracies to relative social equity. This does not mean that the East Asian experience holds no lessons for other states; only that transferring them may prove more difficult than simply prescribing a list of desirable reforms.

ACCESSASIA PROJECT INFORMATION

AccessAsia Global Consortium Members

Australia, *The Research School of Pacific and Asian Studies,
The Australia National University*

Canada, *Asia Pacific Foundation of Canada*

China, *China Institute of Contemporary International
Relations*

Germany, *Institut für Asienkunde*

Indonesia, *Centre for Strategic and International Studies*

Japan, *The International House of Japan, Inc.*

Korea, *Center for International Studies, Seoul National
University*

Malaysia, *Institute for Strategic and International Studies*

The Netherlands, *International Institute for Asian Studies,
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The Philippines, *Institute for Strategic and Development
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Singapore, *Institute for Policy Studies*

Taiwan, *Institute for International Relations, National
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Thailand, *Institute of Security and International Studies,
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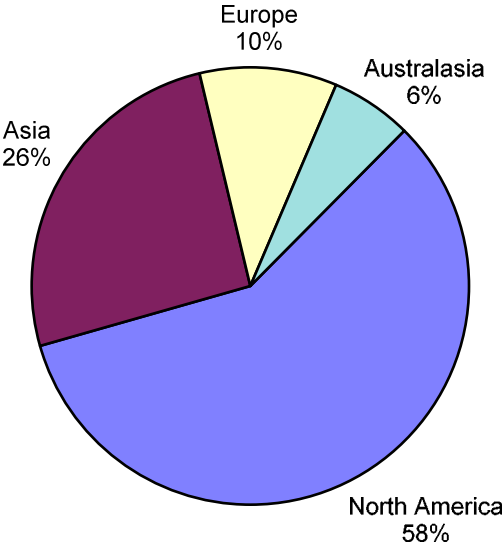
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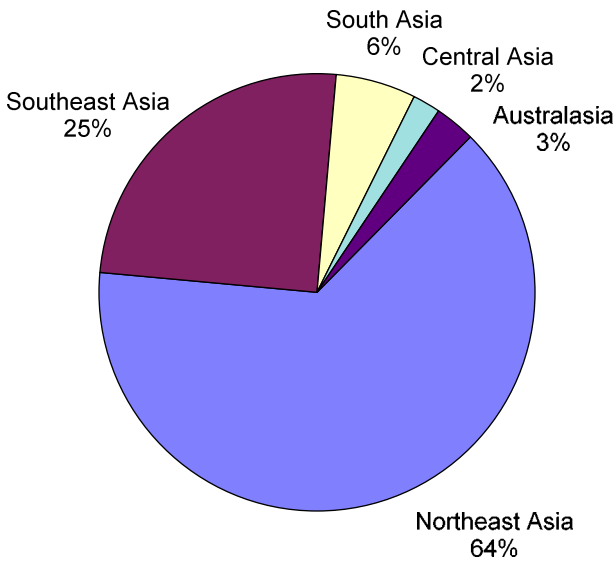
AccessAsia Specialist Database at a Glance

The charts below reflect the AccessAsia Specialist Database as of July 1997. This database contains approximately 2,700 specialists and represents the combined efforts of the AccessAsia Global Consortium.

AccessAsia Specialists: Place of Residence



**AccessAsia Specialists:
Concentration of Expertise (Region)**



AccessAsia Specialists: Concentration of Expertise (Discipline)

