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International Dimensions of China's Long Boom: Trends, Prospects and Implications*

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I. Motivation

China's long boom, which now extends beyond a quarter-century, has established the People's Republic as a major trading nation, a prime destination for overseas investment, and a key link in global networks of manufacturing, capital flows, and technology transfer. What does the growth of China's economic power imply for Beijing's future foreign interactions with the United States and other nations?

Some observers view China as an economic threat and a future military rival. In the economic sphere, analysis focuses on China's rapid export growth, its large and growing bilateral trade surplus with the United States, and the "hollowing out" of manufacturing in many economies as firms shift production to Chinese factories. Highlighting China's undervalued currency, cheap labor, and disregard of intellectual property rights, this perspective portrays the People's Republic as an uncooperative partner whose interests seem destined to provoke future clashes with the United States and other major market economies.

Beijing's determination to translate some of its growing riches into military strength reinforces this interpretation. Rising defense spending increases the capabilities of China's armed forces. This may increase the likelihood that China will aggressively press its economic and political claims in Taiwan and elsewhere, again often at odds with economic and security interests of the United States, Japan and the European community.

This paper systematically reviews the international dimension of China's economic boom.¹ We build a quantitative and comparative picture of China's deepening economic ties to global markets for resources, components, final manufactures, capital, equipment, technology, management expertise, and corporate control. These links are essential components of China's past and future growth. Economic growth is essential to maintaining the legitimacy of China's present government. As China's growing engagement with international markets expands far beyond the boundaries of conceivable Chinese military control, pressure for Beijing to emphasize compromise and cooperation rather than threat and conflict provides an opportunity for cooperative accommodation to China's growing power.

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II. China's Economic Reforms

China's modern history encompasses widely varied policies toward the world economy. The Treaty of Nanking (1842) replaced policies that had largely limited trade to the southern port of Canton with a system of enforced free trade that lasted for nearly a century. After 1949, the People's Republic followed the Soviet example by establishing a plan system that restricted both the scale and the impact of foreign economic contacts. The planning system channeled all commerce through state trading companies, curtailed direct interaction between Chinese and overseas producers and consumers, and severed links between domestic and international prices (Lardy 1992).

Beginning in the late 1970s, China embarked upon a series of reforms that gradually expanded economic openness. The eventual result was a system that today stands among the most open trade and investment regimes among large nations in Asia, and indeed, globally.² China's path toward an open economy began with modest expansion of trade and the creation of four Special Economic Zones in the southern provinces of Guangdong and Fujian. The success of the initial zones in building trade and attracting foreign investment prompted a race to extend these experiments to new locations first along China's coast, and eventually nationwide.

Deregulation and liberalization expanded as the benefits of trade and investment multiplied. Import barriers declined sharply during the 1990s. Branstetter and Lardy (2005) find that tariff revenues declined during the 1990s from 16 percent to only 2.5 percent of total imports; this reflects both falling tariff rates and growing duty-free imports. They also show that the number of firms authorized to conduct direct foreign trade increased from 12 in 1978 to 800 in 1985 and to over 35,000 by 2001, with recent totals including growing numbers of private traders. China's 2003 entry into the WTO brought immediate reforms and promises of future changes, especially regarding the opening of banking, insurance, and other service activities.

These changes have transformed China's external economic relations. Commodity trade is now wide open, with low tariffs and few restrictions. Market forces predominate in domestic price determination, which makes domestic prices increasingly responsive to changes in world market trends. Chinese authorities now welcome foreign participation in sectors formerly closed to private business activity. Liaoning province, "one of the last bastions of the planned economy" announced in September 2005 that "international investors may take full control of almost all State-owned enterprises" except coal mine companies and firms under direct central government control (Wu Yong and Fu Jing 2005). Even in coal, railways, and other formerly closed sectors, foreign entry is now a realistic possibility (Rui 2005, p. 111; Cao Desheng 2005).

III. China's Growing Interaction with the Global Economy

This section lays out the international dimensions of China's growth, focusing on the volume and composition of trade and overseas investment. The key observation is that "open door" policies have sparked a vast multiplication of China's overseas ties. Linkage between the domestic

economy and global markets has become broader and more intensive in China than in other large Asian economies. However, China's economy displays major regional variations, with international trade, overseas investment, and growth all concentrated along the coast.

Engagement with Global Commodity Markets

Trade volume. Prior to the industrial revolution, China was a major force in regional and global trade (Brandt 2005, Frank 1998). After 1800, accelerated growth of output and trade in Europe and North America pushed China to the global periphery. Beginning in 1949, three decades of socialist planning moved China in the direction of autarchy, partly through choice, and partly because of a U.S.-led trade embargo dating from the Korean War.

Following the onset of reform in the late 1970s, China's international trade has grown from a trickle to a torrent. Table 1 and Figure 1 summarize China's import-export surge and compare it with trends in global trade among China's East Asian neighbors.

Insert Table 1 about here
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Table 1 documents the extraordinary pace of trade expansion. Between 1980 and 2004, China's trade in \$US grew at an annual rate of 14.2 percent. By comparison, world trade grew at annual rate of 6.3 percent. Starting from less than one percent of global trade in 1980, China's trade surpassed 6 percent of the 2004 global total in 2004, and in 2005 was near to 7 percent. The pace of China's rise is likely unprecedented. In the post-WW II period, for example, it took Japan thirty years to achieve the same growth in world trade shares that China achieved in fifteen. In 2003, China's two-way trade overtook Japan's, making China the world's third largest trading nation, behind only the United States and Germany.

Information about global commodity markets reflects China's growing impact. WTO data show, for example, that China's share of global exports of manufactures rose from 0.8 to 7.3 percent between 1985 and 2003. During the same period, Chinese exports of office and telecom equipment rose from 0.1 to 10.1 percent, while Chinese imports of fuel and mining products jumped from 0.6 to 5.2 percent of global totals.³

The impact on Chinese markets, where prices of textiles, steel, agricultural products, and many other goods formerly subject to price controls now rise and fall with global market trends, is much larger.⁴ Integration even affects markets subject to official price controls. Beijing's effort to shelter domestic buyers from rising international prices for gasoline produced shortages and long lines in August 2005, evidently because China's state-owned petroleum firms, behaving like market players, diverted supplies to storage or to overseas markets to focus official attention on the cost squeeze arising from price caps on refined products amid rising costs for crude oil (Wonacott 2005, Zhan and Wang 2005).

Figure 1 examines trade trends for East Asia's high-growth economies, showing global trade shares during the initial quarter-century of accelerated growth for Japan (from 1955), Taiwan

(1960), South Korea (1965), and China (from 1978). During the first boom decade, growth of Chinese trade roughly tracks the patterns established by earlier growth spurts in Japan and Taiwan. Thereafter, China's share of global trade accelerates, moving well ahead of the Japanese norm after Year 15 and beyond Taiwan's achievement in Year 25.

Historical experience shows that large nations, which have access to extensive domestic resources and big internal markets, tend to avoid the deep involvement in international exchange typical of smaller nations (Perkins and Syrquin, 1989). Figure 1 points to China as a possible exception, as China's share in global trade tracks a path more like Taiwan or Korea than Japan. Information about trade ratios, which measure the combined value of imports and exports as a percentage of gross domestic product (GDP), confirms this assessment. Figure 2 shows long-term trends in trade ratios for the same dynamic quartet. Prior to reform, China's trade ratio is consistently low, reflecting the combined impact of self-imposed isolation and the U.S.-led embargo. During the 1980s, China's figures, while rising, roughly track Japan's, and remain far below the results for the smaller Taiwanese and Korean economies. Beginning in the early 1990s, however, growth of China's foreign trade rapidly outpaces GDP expansion, pushing China's 2004 trade ratio to 70.1 percent, higher than South Korea's trade ratio.

Insert Figure 2 about here

Geography of trade. Trade activity, and also foreign investment (discussed below), clusters along China's eastern seaboard. Coastal provinces accounted for 92 percent of overall trade value in 2004 (classified by the origin of exports and the destination of imports), led by Guangdong (31.5 percent), Shanghai and Jiangsu (combined total 29.1 percent). Guangdong, whose 83 million people contributed 31.5 percent of overall trade and 9.8 percent of GDP in 2004, achieved a trade ratio of 225.3, which exceeds the comparable ratios for Singapore, Taiwan, and the Netherlands. Table 2 highlights the stark contrast between the extreme openness of China's coastal regions and the relative isolation of western provinces, which contributed 2.7 percent of trade and 12 percent of GDP in 2004, implying a trade ratio of 15.8 percent, indicating openness comparable to all China during the early 1980s. Efforts by interior provinces to expand local participation in international trade and investment, by establishing "one-stop" service centers in Wuhan and Chongqing to facilitate granting of official permissions and approvals, underline widespread understanding of the stimulus associated with China's globalization.⁵

Insert Table 2 about here

Composition of trade. Table 3 summarizes trends in the composition of China's foreign trade, which has shifted markedly during the reform era. Exports, formerly dominated by raw and processed agricultural materials (including cotton textiles) and minerals (including crude oil), now consist mainly of manufactures (including chemicals and machinery), whose share of total exports jumped from 31 percent to 93 percent between 1985 and 2004 (Table 3). Machinery and transport equipment, previously a small component (3.2 percent of exports in 1980 – see Davie 1986, p. 331) has emerged as the leading source of overseas sales, accounting for 45.2 percent of China's exports in 2004.

Insert Table 3 about here

Machinery stands out as the largest import category, contributing 20 percent of imports in 1980 (ibid.), 40 percent in both 1990 and 1995, and 45 percent in 2004. In the past, these imports consisted mainly of equipment destined for domestic factories or mines. More recently, the totals for machinery imports include massive inflows of components, which have grown from a trickle during the early 1980s to approximately US\$120 billion, or 29 percent of China's entire import bill, in 2003.⁶ This trade in industrial components, which also involves substantial exports, reflects the growing significance of transnational production networks to the operation of China's biggest export sector. Studies of "Greater China" and "the China Circle" illuminate complex supply arrangements surrounding the manufacture of computers and electronic goods (Naughton 1997, Sung 2005). Rapid growth of two-way trade in auto parts, discussed below, provides another instance of China's growing integration into global supply chains.

Table 3 also highlights China's growing imports of energy and mineral products. Early in the reform period mineral fuels, principally crude oil, ranked as China's top export category, accounting for 31.3 percent of China's exports in 1985, a figure that has dropped sharply to only 2.4 percent in 2004. China's trade balance in mineral fuels and crude materials shifted from a 1985 surplus equal to 22 percent of total 1985 trade to a deficit amounting to 15 percent of overall trade in 2004.

Table 4 provides further detail on China's imports of energy, minerals, and other materials. Inflows of these commodities fluctuate between 9-18 percent of China's fast-growing import total during 1985-2004. Within the materials segment, we see a gradual shift from imports destined for domestic food, feed, and textile producers toward imports of energy and scrap metals. China's growing influence on global markets for raw materials is evident: the average of China's share of global imports for its top ten material imports rose from 6.1 percent in 1985 to 7.7 percent in 1995 and then 14.7 percent in 2004.

Insert Table 4 about here

Three decades of reform have moved China from economic isolation to extensive participation in, and growing integration with global commodity markets. Links with international markets have become a major feature of China's economy, particularly in the coastal provinces that dominate overseas trade flows. China's trade ratio now exceeds comparable figures for all large nations. The composition of China's imports and exports, formerly dictated by economic planners, has come to reflect comparative advantage, with thousands of producing firms and trading companies now able to buy and sell on overseas markets in response to the dictates of cost, price, and profit. In response to market signals, manufactures have replaced energy and materials as China's chief exports. Early prominence of manufactured exports built upon China's vast pool of unskilled labor has yielded to a broader mix that now includes products requiring substantial inputs of skill, technology, and capital as well as raw labor. On the import side, we see a growing dependence on large inflows of energy and materials. Large-scale trade in industrial components demonstrates the extent of Chinese participation in transnational supply chains. Foreign-invested firms stand out as key contributors to this process of openness and integration with foreign markets. We must therefore consider the impact on China's economy of international capital flows, chiefly foreign direct investment.

Direct Investment and Capital Flows: Impact on Structure, Technology, and Trade

During China's quarter-century of socialist planning, China's involvement with international capital flows consisted of tiny Soviet shareholdings carried over from the pre-World War II era and official Soviet lending (Mah 1968, pp. 704-11). Beginning in the late 1970s, Beijing gradually relaxed earlier prohibitions on foreign investment and participation in global capital markets. By 2005, China had become the world's leading destination for direct foreign investment, a source of modest outflows of overseas direct investments, and a significant participant in global markets for sovereign lending and portfolio investment. Our discussion focuses on direct foreign investment.

Table 5 summarizes annual inflows of foreign direct investment (FDI) during the period of steep increases from 1990. China surpassed the United States as the top FDI recipient in 2003; the annual inflow of FDI jumped to US\$60.6 billion in 2004.

Insert Table 5 about here

Table 5 also charts the sources of incoming FDI. During the early 1990s, Hong Kong sources predominated. More recently, the list has broadened to include large inflows from Japan, South Korea, Taiwan, Singapore, North America, and the European Community, among others. The regional totals in Table 5 fall considerably short of overall inflows because of considerable sums channeled through tax havens, which reflects the recycling of funds originating in China as well as the desire of Taiwan investors to conceal financial flows from the Taipei authorities.⁷

Even though standard data overstate actual inflows of overseas investments, the officially measured inflows amount to only a small fraction of overall Chinese investment spending. Converting the 2004 FDI inflow of US\$60.6 billion to *renminbi* at the official rate of ¥8.28 gives a total of just over ¥500 billion, equivalent to 7.2 percent of 2004 investment spending (Abstract 2005, p. 55). The concentration of FDI in manufacturing results in a much larger share of foreign funds, amounting to 18.2 percent, in that sector's 2004 investment total (Yearbook 2005, Like overseas trade, FDI clusters along the coast. Table 2 shows that 86.6 percent of 2004 inward direct investment targeted coastal regions (including the three eastern metropolises). China's heavily publicized western development plan has not changed this geographic pattern: the share of western provinces in incoming FDI was 2.3 percent in 2003 and 1.8 percent in 2004 (Abstract 2005, p.170).

Asian comparisons highlight the scale of incoming FDI. China's FDI inflow during 2000-2003 amounted to 2.6 times the combined total for Japan, Korea, Taiwan, and India. China's 2003 stock of foreign investment amounted to 35.6 percent of GDP, far larger than corresponding figures for South Korea (7.8), India (5.4) or Japan (2.1), nations that restricted foreign investment (Chang 2003). Even with ample allowance for "round-tripping," the Chinese total runs far ahead of the figure for Taiwan (11.9 percent), which actively sought foreign participation.⁸

Not surprisingly, the impact of FDI inflows on China's economy is far larger than in these comparator economies. Starting from less than 5 percent of China's 1985 exports, overseas sales of foreign-invested firms (FIEs, including wholly owned entities as well as Sino-foreign joint ventures) have shot upward to occupy a majority share of China's exports for every year beginning with 1996. Imports display a similar trend, with the share of FIEs rising from 1 percent in 1985 to 40 percent in the late 1990s and over half of total imports beginning with 2001.

Foreign investment has spread beyond early post-reform efforts to combine unskilled Chinese labor with imported materials to manufacture toys, garments and other labor-intensive products for overseas markets. Table 6, compiled from a comprehensive 2002 database for industrial firms, shows that instruments and meters boast the largest accumulation of foreign investment, that electronics and telecommunications account for a larger proportion of Chinese exports than textiles and garments, and that an array of new sectors – pharmaceuticals, transport equipment, non-metallic minerals, and general machinery – have eclipsed textiles and garments as recipients of overseas investment.

Insert Table 6 about here

These data highlight the lead role of FIEs in China's exports. The 15 sectors listed in Table 6 account for three-quarters of industrial FDI and for three-quarters of China's industrial exports. The average share of foreign-linked firms in export sales of these 15 sectors is 69.6 percent.

Three decades of reform have propelled foreign direct investment to a central position in China's dynamic economy. As with trade, the impact of FDI remains concentrated in China's eastern coastal provinces. Even though official measures include returning Chinese funds in the FDI totals, it is evident that China has become a leading destination for global investment, and that the scale and impact of overseas investment dwarf comparable measures for Japan, Korea, Taiwan, and India. Foreign investment has generated large inflows of production technology, managerial know-how and marketing expertise, transformed both the scale and the structure of China's foreign trade, and linked growing numbers of China-based firms to transnational supply chains, a development that promises to accelerate the penetration of valuable technological and commercial knowledge and skill.

Along with large inflows of FDI, China itself is a modest source of overseas investment. Available data, summarized in Table 5, show that outbound FDI remains far smaller than the stock or flow of incoming foreign investment. Even so, UNCTAD now ranks China as the world's sixth largest source of outward FDI. As we shall see, China's overseas FDI seems poised for rapid expansion.

IV. Linking Growth and Internationalization with Global and Regional Trade Balances

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How are these increases in international trade and investment connected to China's overall growth and to trends in trade flows, notably China's large trade deficits with Asian partners and massive surplus with the United States?

Internationalization and China's Development Process

We see the combined impact of China's open door policy and the accumulation of nearly three decades of market-oriented domestic reform as the primary source of both sustained economic growth and of China's expanded participation in global markets. Market-leaning domestic reforms and opening-up initiatives expanded entry of foreign and domestic producers and sellers, and also stimulated competition throughout the economy. The benefits of entry and competition are particularly evident in manufacturing, where they have fostered the expansion of capabilities and the growth of productivity.

Despite its modest size relative to aggregate investment, FDI has played a central role in the process of upgrading (Jiang 2004). Financial returns among foreign-linked firms consistently exceed returns attained by domestic firms: data for 2000 and for 2003 show that FIEs achieved rates of return nearly five times the figures for domestic enterprises.⁹ FIEs inject new products and novel manufacturing methods into China's economy, creating productivity gaps that spur reforms and upgrading among domestic firms.

Foreign participation has enabled China's auto industry to advance from isolated production of 1950-vintage autos to growing participation in the global car industry. Starting with joint ventures linking big state-owned car manufacturers such as Shanghai Automotive and First and Second Auto Works with Volkswagen and Peugeot in the 1980s, the car industry's global links have expanded to include China-based manufacturing operations involving every major international OEM [original equipment manufacturer] as well as Chinese auto ventures in Korea, United Kingdom, and the Middle East. This transformation has also spread to China's auto part manufacturing, with joint ventures involving leading international parts suppliers now dominating the first-tier of China's domestic auto supply chain. China's 2005 output of vehicles (cars plus trucks) reached 5.71 million, making China one of the five largest vehicle manufacturers in the world. In the wake of these developments, we observe rapid growth in China's exports of auto parts (in excess of \$US 10 billion in 2005, and a sixth of auto parts production in China), as well as the emergence of several small, but ambitious private vehicle manufacturers aimed at penetrating both the domestic and international market.

Elsewhere, imports, technology transfer, and FDI have been important catalysts in the remaking of entire industries. China's machine tool industry is a case in point. High precision machine tools are critical to emerging industries such as autos, trucks, shipbuilding, aircraft, electric power, and construction machinery, which demand quality components machined to exacting standards. In the 1980s, China's machine tool companies largely produced conventional lathes, and were ill-equipped to accommodate the growing demand for computerized and numerically-controlled (CNC) products that would soon follow. This demand was largely met by imports and at the low-end of the market by the manufacture of CNC products by Chinese firms under technology licensing agreements.

In the mid-to-late 1990s, several Chinese producers formed joint ventures with leading Japanese, Korean, Taiwanese and German firms to develop CNC products. Their emergence, combined with falling import tariffs, has put considerable pressure on existing manufactures of CNC machine tools in China. Reflecting newly elevated quality standards in the industry, a Shenyang manufacturer has recently offered to rebuild or replace "advanced" equipment sold prior to 2000

(Wu Yong 2005). In the last five years, domestic production of CNC lathes, including that by JVs, has nearly tripled and these products now compete successfully in many product ranges formerly served only by imports. Domestic sourcing of numerical controls, ball-screws, spindles and other key components is expanding rapidly. Although imports remain important--representing half of all CNC sales in the domestic market—they are largely concentrated in the increasingly advanced higher-end of the market for machine tools.

New competition from domestic sales by foreign-invested firms represents only part of the FDI story. FIE activity injects international standards for design, quality control, production management, and other dimensions of business practice deep into China's industrial economy. When First Auto Works and Volkswagen initiated a joint automotive venture, the German partner provided detailed standards for automotive coatings. First Auto, which had never developed such guidelines, assigned one of its research institutes to diffuse Volkswagen's paint standards to more than 20 domestic suppliers (interview, May 1996).

Although the Chinese authorities press FIEs to expand local sourcing, market logic makes "the FIEs. . . eager to increase local content. . . because it makes good business sense" (Rosen 1999, pp. 70, 135). A Taiwan-owned machine tool maker, for example, purchases 60 percent of the 1,000 components needed to assemble lathes from Chinese suppliers, in part to ensure that "the [final product's] price is good" (interview, July 2005). Sutton (2003) shows that automotive manufacturers generate massive demand for local products. Although VW, Toyota, GM and other global auto majors bring convoys of overseas suppliers in their wake, procurement from domestic firms remains essential. Hyundai's vehicle assembly operations, for example, benefit from the presence in China of "about 100" Korean auto-parts producers. These firms, in turn, depend on second- and third-tier suppliers which are "mainly Chinese firms," even though local procurement amounts to "less than 20 percent" of component requirements (private communication to authors, September 2005). A Beijing-area joint venture producer of auto seats reports 60 suppliers, including 50 domestic private enterprises (interview, July 2005).

China's open-door policy has also ramped up the participation of domestic firms in international production networks and supply chains. In the early years of reform, this took the form of processing trade (*lailiao jiagong*), in which overseas firms hired Chinese companies to process imported materials, and then reclaimed the finished products for sale abroad. More recently, the role of Chinese firms in transnational production networks has expanded dramatically, as is evident from the massive two-way trade in components mentioned earlier. Naughton and others have traced these links in the manufacture of computers and electronic products. The involvement of Chinese firms in international supply chains now extends to aircraft, automobiles, and numerous other sectors, and includes growing Chinese participation in R&D and design as well as manufacturing.

Engagement with transnational production networks deepens the exposure of formerly isolated Chinese firms to the designs, technologies, operating procedures, quality standards and business methods practiced in world markets. These new connections, which typically accompany the arrival of overseas firms, stimulate immense flows of knowledge that multiply the domestic benefits associated with foreign investment.

FIE involvement in China's commodity trade has contributed to a modest but definite rise in the technical sophistication embodied in Chinese trade flows. We classify commodities according to their dependence on research and development using a unique survey of United States industries that specialists view as the best available measure of R&D intensity. We then apply this classification to Chinese trade flows. Although the resulting measures are not without problems, the results, which take the form of annual measures of R&D intensity for China's trade in manufactures from 1987-2003, provide a broadly accurate gauge of trends in the R&D intensity of China's trade flows.¹⁰ During the late 1980s, measures of R&D intensity for China's manufactured exports cluster at the lowest levels of R&D intensity. By 2003, the largest segment of exports has moved somewhat higher on the scale of R&D intensity. We also observe considerable growth in the export share for products ranked much higher on this scale. This outcome is entirely consistent with the observation that labor-intensive exports, while still occupying a substantial share of export production, have gradually lost their dominance within China's manufactured exports.

Rankings for China's manufactured imports display similar trends but show wider transformation of the product mix, with the largest cluster of imports for 2003 located in the middle range of R&D intensity. This reflects large imports of sophisticated production equipment as well as extensive network trade in parts and components, including some (like computer chips and hard disk drives) with high levels of R&D intensity.

The new availability of Chinese partners has encouraged firms in many industries to restructure manufacturing operations by relocating final assembly work to plants in Chinese coastal cities. Office machines, telecoms equipment, laptop computers, televisions, and many varieties of industrial machinery formerly exported from Japan, Taiwan, South Korea, or Singapore, now arrive at their final destinations from Chinese ports. The expanding presence of foreign firms in China's coastal regions, their dominant position in China's international trade, and their efforts to rearrange the geography of Asian manufacturing are critical determinants of evolving trends in China's trade balance with various world regions, including China's growing bilateral trade surplus with the United States.

Internationalization and China's Trade Patterns

Figure 3 displays the path of China's exports, imports, and trade balance since 1978. Exports and imports have grown steeply, with strong acceleration visible from the late 1990s. China's trade balance, however, has remained small.¹¹ Following several deficit years in the late 1980s, and again in 1993, China has recorded annual export surpluses beginning in 1994. During the decade ending in 2004, these modest surpluses averaged US\$27.6 billion or 6.4 percent of total trade, and showed no tendency to increase. The largest surpluses are associated with periods when weakening domestic momentum slowed the expansion of imports: 1997 and 1998 fall into this category. It is too early to tell whether the big increase in China's trade surplus to US\$101.9 in 2005 signifies the emergence of a new trend.

Insert Figure 3 about here

This pattern of global trade balance conceals wide regional variations. Table 7, which explores this dimension of China's trade, reveals three distinct trends since 1990: large and growing export surpluses with Hong Kong and North America and even larger trade deficits with Asia (excluding Hong Kong). China's surplus with Hong Kong arises from shipment of Chinese goods through the former colony to overseas destinations (Fung and Lau 2003). The other trends: large Chinese deficits with Asia (excluding Hong Kong) and big surpluses with North America, are closely related. Both arise from China's growing role in transnational manufacturing networks and from the restructuring, noted above, which has brought many types of final assembly work to China. The result is big deficits in China's trade with Asian sources of materials and components, and big Chinese surpluses with importers of Asian manufactures – led by the United States.

Insert Table 7 about here

China's large bilateral surplus with the United States, although sometimes attributed to overvaluation of China's renminbi currency and a variety of specific Chinese practices, arises from the logic of comparative costs. This conclusion emerges from Table 8, which summarizes United States trade results for 1990, 1995, and 2000-2004. The data show China's bilateral trade surplus with the United States rocketing upward from \$11.5 billion in 1990 to \$162 billion in 2004. As a result, China's share of the United States' (rapidly growing) global trade deficit jumped from less than 10 percent to over one-quarter between 1990 and 2004. Public discussion of this phenomenon often blames this bilateral deficit for massive displacement of American manufactured goods and factory employment (e.g. Scott 2005). This is erroneous. As Naughton (2000, p. 253) emphasizes, "U.S. imports from China fit overwhelmingly into one of two categories: labor-intensive, low-tech products. . . that are no longer produced in the United States. . . and labor-intensive assembly of high-tech products."

In reality, what has declined is not output of American manufactures, but the importance of U.S.-bound manufactured exports from Japan, Taiwan, Korea, Hong Kong, Singapore and other Asian producers. This reflects China's emergence as a major manufacturing platform, often in cooperation with manufacturers located elsewhere in Asia. The expansion of network manufacturing often includes the relocation of more labor-intensive assembly operations to China. As a result, final products (for example notebook computers) manufactured cooperatively by plants in multiple jurisdictions move from China to their final destinations, and are thus recorded as Chinese exports, even though much of the value-added originates elsewhere.

Insert Table 8 about here

Table 8 shows that the shifting geography of Asian factory activity has sparked a steep decline in the share of America's trade deficit attributable to "other Asia" (i.e. excluding China). The contribution of these economies to the U.S. deficit dropped by nearly ten percentage points between 1990 and 1995, and then plunged by a further 50 percent between 1995 and 2003. The drop-off in export growth from "other Asia" was so steep that the share of all Asian nations, including China, in the U.S. trade deficit dropped by 15 percentage points, from 63.8 percent to 48.2 percent, between 1990 and 2004. The rising share of non-Asian trade partners in America's trade deficit provides the clearest possible demonstration that wage levels, currency valuation

and other features of China's political economy cannot pass muster as the chief cause of structural imbalance in United States external trade.

V: Looking Forward

During the past three decades, rapid expansion of China's international links has moved the People's Republic from near-autarchy to active participation in a large and growing array of global markets. By some measures, China's immersion in the world economy has attained unprecedented levels for large nations. We anticipate further growth of Chinese involvement in international exchanges of materials, components, final products, technology, information, management, and ownership rights.

The market forces driving China toward globalization will extend current patterns of integration. China continues to expand the scope for foreign business activity, evidently in the expectation that foreign business penetration can beneficially prod domestic participants toward improved performance, as when a Vice-President at China Life Insurance Co. says that "bringing in foreign investors will help improve corporate governance, product development, and internal risk management" (Hu Yuanyuan 2005). Shake-ups inspired by entry of foreign products and overseas companies may be market-based, as in sectors like cars or machine tools, where the productivity and quality achievements of foreign firms create demonstration effects. Policy-directed injection of foreign ownership, as in banking and insurance, provides another option in which government encourages leading foreign firms to enter faltering domestic industries for the express purpose of injecting new standards, business methods, and management systems.

The growing domestic availability of modern logistics capabilities (Dai et al 2005) points to continued expansion of Chinese participation in international supply chains supporting the manufacture of goods for domestic and overseas markets. Network expansion will continue to enhance domestic capabilities, as Chinese firms and also individual engineers, scientists, designers, managers etc. sharpen their skills by working in global business networks. These networks will continue to channel globally prevalent technologies and quality standards into domestic industries – steel and cement provide obvious and important examples.

We also observe new elements that seem likely to multiply and intensify the sinews binding China to the global economy. These include:

Growing Chinese dependence on imported energy and materials. China now imports one-third of its crude oil and over half of its iron ore. Worldwide efforts by Chinese companies to secure long-term access to a variety of resources reflect expectations that China's economy will become increasingly reliant on resource imports. Chinese researchers conclude that:

By 2020, China's dependence on imported crude oil will rise to 60%, and 40% for natural gas. . . . According to projections of future supply and demand, by 2020, China's domestic resources will fully supply only 9 of 45 mineral varieties. . . . In particular, crude oil, iron ore, copper, bauxite, nickel, sylvite and other products essential to national economic security, are all in long-term deficit. For example in 2003, imports of iron ore

and pure iron amounted to 50% of total consumption, manganese ore imports supplied 46% of consumption, and imports of sylvite, alumina, and copper ore all rose far above their 1998 levels. Resource exhaustion intensifies day-by-day. Of 415 large and medium mines nationwide, 50% suffer crises of depleted reserves or face closure, and 47 mining cities face resource exhaustion” (You and Qi 2004, p. 13).

Emergence of China as a Growing Source of Overseas Investment. Table 5 summarizes available information about China’s outward FDI. Although the totals remain modest, UNCTAD anticipates that China will supplant Japan as the world’s fifth largest source of overseas direct investment in 2005 (China Money 2004). Backed by strong official encouragement to “go global” (*zouchuqu*), the recent jump in activity, which saw annual outlays more than double during 2003/04, probably represents the start of a steep upward climb in both annual flows and the cumulative stock of China’s outward investment.

Two distinct motivations underpin this new drive to expand FDI. China’s search for secure access to overseas sources of energy and raw materials, which has drawn extensive international comment, has sparked a long string of arrangements involving petroleum, natural gas, mineral ores and timber in Australia, Brazil, Canada, Central Asia, Indonesia, Russia, Sudan, and other nations spanning every continent.

Efforts by Chinese manufacturers to expand their technical proficiency and marketing capabilities inform both overseas expansion and acquisition of overseas companies. These motives explain initiatives to develop overseas production of garments, home appliances (e.g. Haier’s production and research facilities in the United States) and motor vehicles (three domestic firms plan to assemble cars in Egypt, Iran, Malaysia, and Russia). Similar objectives stand behind recent Chinese acquisitions of prominent overseas manufacturers of computers (IBM’s PC operations), home appliances (Thomson), motor vehicles (Ssangyong, MG Rover), auto parts, machine tools (e.g. Ikegai, Japan’s oldest lathe manufacturer), chemicals (Inchon Refinery), and electronics (Hynix Semiconductor’s LCD panel division).

Foreign Investment via Acquisition of Ownership Stakes in Chinese Firms. Along with continued expansion of FDI through traditional channels in which foreign companies either join with Chinese partners to establish joint venture firms or create new, entirely foreign-owned firms, we now see a new form of foreign entry in which international firms purchase ownership stakes in established Chinese companies. International banks, including Bank of America, Citigroup, HSBC, Royal Bank of Scotland, Standard Chartered, UBS, Wing Hang Bank, and many others, have purchased stakes in Chinese banking institutions. AIG, Carlyle Group, HSBC, and Sumitomo Corp. have acquired partial ownership of Chinese insurance firms. Recent initiatives by international beer giants include a tense struggle between SABMiller and Anheuser-Busch to acquire shares in the Harbin Brewery Group. The list of prominent multinationals seeking China acquisitions includes Altria, Coca Cola, Amazon.com, Hong Kong’s PCCW, and many others.

Increased Chinese participation in global R&D networks. The contribution to this volume by William Keller and Louis Pauly emphasizes the success of China’s education system in producing a large and growing stock of well-trained scientists and engineers. China’s abundant supply of modestly priced technical expertise has attracted widespread attention from

multinational enterprises, which display a growing inclination to include China in their global R&D operations. Official Chinese insistence that foreign firms include R&D activity in their investment packages (Rosen 1999, 71-76) has led to instances of what foreign managers dismiss as “PR&D,” in which Chinese R&D entities serve to polish corporate images rather than deliver new knowledge. As with local content requirements, however, many international firms initiate or expand China-based research and design activities in the expectation that such operations will create new knowledge and boost company profits. Volkswagen, for example, plans to “develop, assemble and sell a hybrid minivan in . . . cooperation with a Chinese automaker” because of “the Chinese industry’s rapid advance into a complex technological area of automotive design” and because Chinese “government ministries have been heavily subsidizing research. . . into hybrid-propulsion and fuel-cell vehicles” (Landler and Bradshaw 2005). With the business press brimming with accounts of similarly expansive plans by Ericsson, General Electric, Siemens, and many other global giants, it seems evident that large-scale entry into multinational networks for research and design has begun to add a new dimension to China’s international ties.

Development of newly competitive industries that rely on transnational markets and networks to obtain knowledge, capital, supplies, and markets. China is rapidly emerging as a significant player in the global market for auto parts . China’s two-way trade in automotive products (including both vehicles and parts) doubled between 1995 and 2000, and then quadrupled to US\$29.6 billion in 2004. Trade in auto parts rose even faster, reaching US\$16.6 billion in 2004, more than five times the 2000 figure (Automotive 2005, p. 263). Participation has begun to expand beyond foreign-linked producers. Wanxiang, a private firm with multiple domestic and international operations, sells transmission shafts, universal joints, bearings, and braking systems to Visteon, Dana, Delphi, and other international OEMs and component suppliers (interviews, 13 August 2003 and 13 July 2005). Fuyao, “China’s largest auto glass manufacturer,” will export windshields for the Audi Group’s car production in Europe from late 2005. Fuyao, which has sold automotive glass to Hyundai, General Motors, Mitsubishi and Isuzu since 2003, presently occupies “50 per cent of the. . . domestic OEM market and 10 per cent of automobile glass market in the United States.” (Hu and Li 2005a, 2005b). Chinese firms are reportedly preparing to assemble vehicles in Russia, Egypt, Iran, and Malaysia and hoping to export China-made busses and cars. (Li Fangfang 2005, AP 2005, Gong Zhengzheng 2005, You Qiao 2005). Shipbuilding, construction machinery, telecommunications, and biotechnology, among others, show similar signs of growing internationalization.

Restructuring of agriculture based on international comparative advantage. China’s farm sector is “rapidly evolving in the direction of national comparative advantage.” As a result, “China’s interests lie in robust liberalization of. . . market access, reduced export subsidies, and lower domestic supports” for farm products (Rosen, Rozelle, and Huang 2004, pp. 2-3).

Important segments of Chinese economic policy anticipate large-scale access to offshore resources, funds, expertise, and markets. China has adopted U.S.-style policies that encourage energy-using activities by expanding highways, limiting energy prices, and controlling ancillary costs (for example, parking fees). Such policies implicitly assume unlimited future access to imported energy. Plans to build vessels and terminals for transshipping liquid natural gas reflect similar thinking (Li Jing 2005a). Current blueprints for the reform of China’s banking and financial sectors envision major contributions of funds, expertise, and competitive pressure from

overseas companies. The same observation applies to the reform of state-owned enterprises, the promotion of development in China's western regions, the expansion of modern logistics, and the improvement of China's infrastructure. Efforts to develop "world class" companies in numerous industries all presume unlimited access to world markets. In shipbuilding, for example, China, already the world's third-largest producer, with exports amounting to 70 percent of current output, plans to raise its global market share from 14 to 25 percent by 2010 (Li Jing 2005b).

VI. Summary and Policy Implications

Our analysis has documented the expansion of Chinese participation in international flows of trade, technology, and capital. Over the past three decades, this process has moved China from near-autarchy to a new pattern of intensive interaction with global markets that is unusual, and perhaps unprecedented in the economic history of large nations. We anticipate the continuation of this new trend toward deeper engagement with the world economy.

China's reforms represent a giant expansion of market economics. In 1978, foreign investment and private business were largely absent from China's economy. Twelve state companies controlled China's entire foreign trade. Today, we see a transformed economy with tens of thousands of firms engaged in foreign trade, ebullient growth of private business, and accelerating penetration of multinational business and international commercial practices into most segments of China's economy. Despite the survival of the state sector and the continued importance of official intervention, reform has established market forces as a fundamental component of daily life for the quarter of humanity that makes its home in the People's Republic.

This review of China's engagement with the global economy leads to policy-related observations about the contribution of globalization to China's domestic reform process, about short-term issues surrounding bilateral trade between the United States and China, and about long-term prospects for China's integration into the global political economy.

International engagement as a driver of domestic reform

China's remarkable shift toward market economics remains far from complete. The legacy of central planning persists, especially in the management of investment and banking, the operation of state enterprises, and official strategizing for what the Chinese call "pillar industries." Chinese legal practice often falls short of international norms. Despite these and other difficulties, thousands of international firms find China's business environment sufficiently congenial to justify large and growing investments.

International involvement plays a big role in China's reform dynamic. The presence of foreign business and the prospect of future expansion of trade and investment flows drives beneficial

trends – for improved laws and courts, for more extensive government –business consultation, for more transparent regulation, and for a more open and stable business environment. Foreign participation in China’s economy is valued not simply for the influx of capital, technical knowledge, managerial capability, and marketing skill. Chinese reformers see rising trade volumes, growing foreign presence, and the obligations associated with China’s entry into WTO as levers that can help to overcome domestic inertia and resistance in ways that parallel the contribution of *gaiatsu* or external pressure to breaking policy gridlock in Japan. Foreign institutions and international business practice provide inspiration and models for large and small innovations in Chinese policy, Chinese legislation, and Chinese business practice (e.g. Moore 2002, Alford 2003, Jiang 2004, Gallagher 2005).

The increased size and complexity of domestic as well as international business transactions creates a strong demand for predictable and universally applicable business arrangements. China’s motorcycle industry, for example, initially developed by imitation (using “common designs” and “making economical motorcycles that were fairly similar to other domestic brands”). Now, a former copycat explains that “Patented products make up an increasing portion of our product line – that’s exactly what we want” (Zhu Boru 2005). Steep increases in domestic and international patent activity by Chinese firms have stimulated calls to enhance the protection of intellectual property (Hu and Jefferson 2005, Patent Filings 2005). China’s leaders understand that institutional changes can contribute to their goal of continued growth and modernization. Numerous initiatives -- promises to treat private business on an equal footing with state firms and foreign enterprises; efforts to commercialize China’s banks; expanded transparency for government functions; new arrangements for corporate governance; efforts to systematize government procurement; and many others -- reflect the authorities’ genuine efforts to improve the institutional underpinnings of China’s economy.

Although village elections define the present limit to political democracy, China’s populace has enjoyed substantial, if incomplete, expansion in many dimensions of human rights. Progress is particularly evident in the economic sphere. Individual citizens now enjoy extensive (though not unlimited) opportunities to travel, to seek employment, to choose or alter their own occupations, to buy and sell, to establish private businesses, and to create or modify commercial relationships. Business associations, corporate leaders, and even foreign business executives have gained informal access to many policy processes. Kennedy (2005) finds that “firms influence the policy process indirectly via their trade associations and other intermediaries, but even more common is direct lobbying by firms of their regulators.”

China is not the source of structural imbalance in U.S. international trade and payments

China’s bilateral trade surplus with the United States has risen steeply during the past 15 years. China’s share of the U.S. trade deficit now stands at over one-fourth, with further increases likely. This large and growing trade gap has sparked calls for revaluation of China’s *renminbi*, for imposition of new tariffs and quotas on Chinese goods, and for investigation of allegedly unfair Chinese trade practices. Neither theory nor empirical evidence lends much support to such prescriptions

Elementary macroeconomics reveals intimate links between a nation's external trade balance and the domestic balances between savings and investment and between government revenue and spending. The United States trade deficit is the mirror image of domestic fiscal and savings deficits. Substantial reduction of the U.S. trade imbalance cannot occur without fundamental and painful domestic reforms that raise domestic savings and/or reduce fiscal deficits. Furthermore, discussion of proposed short-term remedies for the U.S. trade gap often overlooks unwelcome consequences of proposed policy innovations, such as rising domestic interest rates.

Aside from theoretical considerations, the notion that China is the main cause or even one among several major factors underlying the U.S. trade deficit cannot survive a close reading of Table 8. Although China's share of the U.S. import surplus has jumped from 8.1 percent in 1990 to 26 percent in 2004, much of this increase reflects growing intra-Asian trade networks that have shifted final assembly work to China. Despite the big boom in Chinese exports, Asia's share of the U.S. trade deficit has dropped sharply from a 1991 peak of 83.9% to less than 50% beginning in 2002. Since foreign-invested firms regularly account more than half of China's exports (Table 6), will not restrictions that somehow limit China's exports invite leading exporters to move their factories, knowledge, and expertise to other venues?

We conclude that neither near-term adjustments in Chinese and/or other Asian currencies nor protectionist measures can significantly alter important features of the United States macro economy. Intense focus on economic conflict arising from possible short-term adjustments has diverted attention from a broad range of common economic interests that have the potential to bring the United States and China closer together during the coming decades.

China's reliance on global market ties enhances the feasibility of "China's peaceful rise"

China's long boom is an unprecedented event in world history. China has rapidly emerged as a force in global markets, a regional military power, a looming influence on national economies throughout the Pacific region, and an emerging advocate for the interests of the developing world. Beijing's contributions to stabilizing regional markets during the Asian financial crisis, to promoting regional trade liberalization, and to mediating disputes surrounding North Korea's nuclear ambitions signal China's emergence as a major player in regional and global efforts to manage contentious political, economic, social, and security issues.

China's growing strength elicits deep concern, most notably in Japan and the United States, from observers who see Chinese expansion as a source of friction and possible military strife over natural resources, economic dislocation and territorial claims. Chinese scholars counter with the notion of China's 'peaceful rise', meaning that China can gradually expand its role in world affairs without tearing the fabric of global stability (Zheng 2005). Given the instability surrounding the rise of other great powers during the nineteenth and twentieth centuries, this idea requires careful examination.

Growing global market ties have contributed substantially to China's recent growth spurt. Chinese economic policies relating to industrial development, reform of banking and state

enterprises, infrastructure expansion, overseas investment, energy consumption and many other fields assume continued access to a vast array of global markets and resource flows.

China, like other nations, can deploy a combination of military and diplomatic tools to maintain and protect its access to international markets. Contributions to this volume by Robert Ross and Adam Segal emphasize that China's military power, while expanding rapidly, does not extend far beyond its land and especially its maritime borders. Recent assessments by the United States Department of Defense (2005), the U.S.-China Economic and Security Review Commission (2004) and the Council on Foreign Relations (Brown et al 2003) offer similar perspectives.

No conceivable expansion program can enable China's armed forces to secure access to Brazil's iron ore, Canada's tar sands, Iran's crude oil, Africa's mineral wealth, or the consumer markets of North America and Western Europe. The size of China's economy and the scope of its global interactions constrain Chinese leaders from contemplating strategies that rely on military power to secure markets. China's acceptance of new U.S. and E.C. restrictions on textile and garment imports following the expiration of the Multi-fiber Agreement illustrates the extent to which cooperation and diplomacy must dominate Beijing's efforts to maintain access to the overseas buyers and sellers on whom China's future prosperity must build.

Beijing's astute comprehension of these realities stands behind a remarkable transformation of China's foreign policy. Revolutionary ideology and anti-market rhetoric, formerly staples of Chinese diplomacy, have faded from Beijing's agenda, now replaced by promises of contracts, investment, market access, and free-spending tourists. China's keen interest in market access may account for otherwise puzzling features of Beijing's international economic stance. Why did China quietly agree to WTO accession under conditions of unprecedented stringency? Why did the world hear no Chinese complaint that the WTO conditions "interfered in China's domestic affairs"? Why did China's leaders not insist that the United States and the European Community withdraw demands that far surpassed requirements previously applied to new signatories upon their entry into global trade agreements? Why did the Chinese not protest international demands for rapid compliance with WTO agreements? Why did Beijing not insist on the same leeway enjoyed by Japan and Korea, which flouted important provisions of multilateral trade agreements long after signing such documents? The answer to all these questions appears to rest on Beijing's early realization that such costs paled in comparison to the long-term benefits attached to WTO membership.

Ellen Frost's contribution to this volume highlights Beijing's robust commercial diplomacy. China's recent volley of trade liberalization initiatives has energized trade diplomacy throughout the Pacific Basin, with even protectionist stalwarts like Japan and India scrambling to join in (Dent 2005, p.395 gives a graphic summary). As Shambaugh (2005) points out, some have dismissed Beijing's activism as a "charm offensive." Although Beijing's trade proposals seek to exclude Taiwan and to overshadow Japanese and American influence, we see China's espousal of open trade with ASEAN and other Pacific partners as serious policy initiatives that build on long-term economic interests.

Looking beyond short-term friction over trade balances and currency valuation, we see substantial overlap between China's economic interests and those of the United States. China is

emerging as an improbable tribune for open flows of commodities and direct foreign investment, objectives long espoused by the United States. As a big importer of natural resources, China, like the United States, will benefit from, and may actively seek to promote stability in the Middle East and other resource-rich regions. Ironically, it is now the West, with its concern over democracy and human rights, rather than China, which puts ideology ahead of commerce. We anticipate that conflicts over violations of intellectual property rights are likely to recede as growing numbers of Chinese entities “suffer. . . losses. . . [when] many other enterprises began copying. . . technology without paying any royalties” and therefore join in “applying IPR in the battle against counterfeiters” (Liu Weiling 2005a, 2005b).

Our review demonstrates that growing involvement with global markets has conveyed enormous benefits to China’s booming economy. Expansion of new international links involving resource imports, emergence of new industries, growing outward flows of Chinese overseas investment, participation in global R&D networks, and restructuring of Chinese agriculture will intensify the connections between international market access and China’s future prosperity.

Because economic growth represents a key objective of China’s present regime, Beijing’s leaders will be powerfully motivated to craft cooperative strategies that can preserve Chinese access to global markets and thereby enhance China’s development prospects. The centrality of growth and prosperity among China’s national goals, and Beijing’s resulting willingness to endorse compromise and adjustment in pursuit of economic gain, transforms the idea of ‘China’s peaceful rise’ into an unusual opportunity for mutually beneficial adaptation to the emergence of a newly powerful nation.

China’s goals, however, encompass security, prestige, and national honor as well as economic growth. Both theory and Chinese history demonstrate that the exigencies of current rivalries and tensions can induce political leaders to abandon long-term economic benefits and embrace immediate strategies that emphasize conflict rather than cooperation. Issues surrounding the future of Taiwan, North Korea’s nuclear ambitions, and growing tensions between China and Japan represent three obvious arenas in which Chinese leaders could choose to reject cooperative approaches to controlling international tension. There may be others.

We conclude that China’s current and future economic circumstances provide powerful leverage for advocates of international cooperation. Economics cannot guarantee that Beijing’s strategists will endorse cooperation and eschew conflict. However, we do insist that the economic benefits of cooperation are immense, that even a limited curtailment of Chinese access to global markets would threaten massive injury to the most dynamic segments of China’s economy. We therefore expect China’s current and future leaders to welcome efforts to resolve potential conflicts through cooperation. This economically inspired tilt toward cooperation increases the prospects of transforming ‘China’s peaceful rise’ from slogan to reality.

REFERENCES

- Abstract. 2005. *Zhongguo tongji zhaiyao 2005*. [China Statistical Abstract 2005] Beijing: Zhongguo tongji chubanshe.
- Achvarina, Vera V. 2003. "Integration of the Chinese Aluminum Market into the Global Economy and the Efficiency of the Shanghai Futures Exchange: Empirical Study." M.A., East Asian Languages and Literatures, University of Pittsburgh, Pittsburgh.
- Alford, William P. 2003. "The More Law, The more. . . ? Measuring Legal Reform in the People's Republic of China. In *How Far Across the River*. Ed. Nicholas C. Hope, Dennis Tao Yang, and Mu Yang Li. Stanford: Stanford University Press.
- AP. 2005. "China's Automakers on Mission." *St.Petersburg Times*, 9-24-2005, http://www.sptimes.com/2005/07/19/news_pf/Business/China_s_automakers_on.shtml.
- Automotive. 2005. *Zhongguo qiche gongye nianjian 2005*. [China Automotive Industry Yearbook 2005] Beijing: Zhongguo qiche gongye nianjian bianjibu.
- Brandt, Loren. 2005. "China's Foreign Trade Since 1450" In *History of World Trade Since 1450*. Macmillan.
- Brandt, Loren, Thomas G. Rawski and John Sutton. 2005. "Industrial Organization." Forthcoming in *China's Great Transformation*, ed. Loren Brandt and Thomas G. Rawski.
- Branstetter, Lee, and Nicholas R. Lardy. 2005. "China's Embrace of Globalization." Forthcoming in *China's Great Transformation*, ed. Loren Brandt and Thomas G. Rawski.
- Brown, Harold, Joseph W. Prueher, and Adam Segal. 2003. *Chinese Military Power: Report of an Independent Task Force Sponsored by the Council on Foreign Relations*. NY: Council on Foreign Relations.
- Browne, Andrew. 2006. "China Drew Over \$60 Billion in Foreign Investment in 2005." *Wall Street Journal*, 14-15 January, A2.
- Cao, Desheng. 2005. "Private, Foreign Funds an Option to Plug Rail Funding Shortfall." *China Daily*, 6 June, p. 1.
- Carpenter, Ted Galen, and James A. Dorn. 2000. *China's future: constructive partner or emerging threat?* Washington, D.C.: Cato Institute.
- Chang, Ha-Joon . 2003. "Foreign Investment Restriction in Historical Perspective." See <http://www.globalpolicy.org/socecon/ffd/2003/03historical.htm> (accessed 11 November 2005).
- China Money. 2004. *China Pours More Money Overseas* (accessed 11 September 2005). Available from <http://www.china-embassy.org/eng/xw/t166686.htm>.
- Dai, Jim, Yuepeng Li, Xiutian Liu, Yang Wang, Nancy Wong, and Chen Zhou. 2004 *China Road Transportation Enterprise Survey Report* National University of Singapore, 2005 [Accessed 25 September 2005. Available from http://www.tliap.nus.edu.sg/tliap/Research_WhitePapers/China_Road_Transportation_Enterprise_Survey.pdf.
- Davie, John L. 1986. "China's International Trade and Finance." In *China's Economy Looks Toward the Year 2000* edited by Joint Economic Committee, United States Congress. Washington: U.S. Government Printing Office.
- Dent, Christopher M. 2005. "Taiwan and the New Regional Political Economy of East Asia." *China Quarterly* (182):385-406.

- EAAU 1997. Australia. Department of Foreign Affairs and Trade. East Asia Analytical Unit. *China embraces the market : achievements, constraints and opportunities*. Barton, ACT: The Department of Foreign Affairs.
- External. 2004. *Zhongguo duiwai jingji tongji nianjian 2004*. [China External Economic Statistical Yearbook 2004] Beijing: Zhongguo tongji chubanshe.
- Frank, Andre Gunder. 1998. *Reorient: global economy in the Asian Age*. Berkeley, Calif.: University of California Press.
- Fung, K.C., and Lawrence J. Lau. 2003. "Adjusted Estimates of United States-China Bilateral Trade Balances, 1995-2002." *Journal of Asian Economics* 14:489-496.
- Gallagher, Mary E. 2005. *Contagious Capitalism: globalization and the politics of labor in China*. Princeton: Princeton University Press.
- Gong, Zhengzheng. 2005. "Egypt to Make Brilliance Cars." *China Daily*, 9-24-2005, http://www.chinadaily.com.cn/english/doc/2005-04/15/content_434431.htm#.
- Hu, Albert Z. and Gary H. Jefferson. 2005. "A Great Wall of Patents: What is behind China's recent patent explosion?" Unpublished ms.
- Hu, Meidong and Dapeng Li. 2005. "Fuyao Sees Through Glass Sales to Audi." *China Daily*, 2 June, p. 10.
- Hu, Yuanyuan. 2005. "Insurer: Search for Investor Going Well." *China Daily*, 8 September, p. 9.
- Jiang, Wei. 2006. "Outward Investment Steady." *China Daily*, 24 January 2006, p. 9.
- Jiang, Xiaojuan. 2004. *FDI in China: Contributions to Growth, Restructuring and Competitiveness*. NY: Nova Science Publishers.
- Kennedy, Scott. 2005. *The business of lobbying in China*. Cambridge, Mass.: Harvard University Press.
- Landler, Mark, and Keith Bradsher. 2005. "VW to Build Hybrid Minivan With Chinese." *New York Times*, 9 September.
- Lardy, Nicholas R. 1992. *Foreign trade and economic reform in China, 1978-1990*. Cambridge ; New York: Cambridge University Press.
- Lardy, Nicholas R. 2002. *Integrating China into the global economy*. Washington, D.C.: Brookings Institution Press.
- Lardy, Nicolas R. 2003. "Evaluating Economic Indicators in Post-WTO China." *Issues & Studies* 39 (1):249-268.
- Li, Fangfang. 2005. "Youthful Mobility." *China Business Weekly*, 19-25 September p. 3.
- Li, Jing. 2005a. "Top LNG Ship Takes Shape in Shanghai." *China Daily*, 18 July, p. 1.
- Li, Jing. 2005b. "We're Not Building an Aircraft Carrier." *China Daily*, 17 June, p. 1.
- Liu, Weiling. 2005a. "Prince of Patents." *China Business Weekly*, 31 Oct.-6 Nov., p. 9.
- Liu, Weiling. 2005b. "Bad Medicine." *China Business Weekly*, 7-13 Nov., p. 9.
- Mah, Feng-Hwa. 1968. "Foreign Trade." In *Economic trends in Communist China*, edited by A. Eckstein, W. Galenson and T.-c. Liu. Chicago,: Aldine Pub. Co.
- Moore, Thomas G. 2002. *China in the World Market: Chinese Industry and International Sources of Reform in the Post-Mao Era*. Cambridge: Cambridge University Press.
- Naughton, Barry. 2000. "China's Trade Regime at the End of the 1990s." In *China's future : constructive partner or emerging threat?*, edited by T. G. Carpenter and J. A. Dorn. Washington: Cato Institute.
- Naughton, Barry, ed., 1997. *The China circle : economics and electronics in the PRC, Taiwan, and Hong Kong*. Washington, D.C.: Brookings Institution Press.

- Patent Filings. 2005. "Record Number Of International Patent Filings In 2004." See http://www.wipo.int/edocs/prdocs/en/2005/wipo_pr_2005_403.html#. Accessed 13 November 2005.
- Perkins, Dwight H. and Moshe Syrquin. 1989. "Large Countries: The Influence of Size," in Hollis Chenery and T.N. Srinivasan, eds., *Handbook of Development Economics II*: 1169-1753.
- Rawski, Thomas G. 2001. "What Is Happening to China's GDP Statistics." *China Economic Review* 12 (4):347-354.
- Rosen, Daniel H. 1999. *Behind the open door: foreign enterprises in the Chinese marketplace*. Washington, DC
- Rosen, Daniel H., Scott Rozelle, and Jikun Huang. 2004. *Roots of competitiveness : China's evolving agriculture interests, Policy analyses in international economics 72*. Washington, DC: Institute for International Economics.
- Rui, Huaichuan. 2005. *Globalization, transition and development in China : the case of the coal industry*. London ; New York: RoutledgeCurzon.
- Scott, Robert E. *U.S.-China Trade 1989-2003: Impact on Jobs and Industries* Economic Policy Institute, 2005 [Accessed 25 September 2005. Available from http://www.uscc.gov/researchpapers/2005/05_02_07_epi_wp_rscott.pdf.
- Shambaugh, David. 2004. "China Engages Asia: Reshaping the Regional Order." *International Security* 29 (3):64-99.
- Sung, Yung-wing. 2005. *The Emergence Of Greater China : The Economic Integration Of Mainland China, Taiwan And Hong Kong*. Houndmills: Palgrave Macmillan.
- Sutton, John. 2003. "The Auto Component Supply Chain in China and India: A Benchmarking Study." See http://personal.lse.ac.uk/sutton/auto_component_sutton.pdf
- U.S.-China Economic and Security Review Commission. 2004. *2004 Report to Congress*. Washington: U.S. Government Printing Office.
- U.S. Department of Defense. 2005. *Annual Report To Congress: The Military Power of the People's Republic of China 2005*. Washington: Department of Defense.
- Wonacott, Peter. 2005. "Gas Lines and Growing Pains China's Fuel Shortages Add to Pressure to End Central Planning." *Wall Street Journal*, 16 August, p. A11.
- Wu, Yong. 2005. "Machine Tool Firm Recalls Products." *China Daily*, 11 August, p. 10.
- Wu, Yong and Jing Fu, 2005. "Foreign Investors Able to Buy Large SOEs." *China Daily*, 16 September, p. 1.
- Xiao, Geng. *People's Republic of China's Round-Tripping FDI: Scale, Causes and Implications 2004* [Accessed 20 September 2005. Available from <http://www.adbi.org/files/2004.06.dp7.foreign.direct.investment.people.rep.china.implications.pdf>.
- Yamazawa, Ippei, and Kenichi Imai. 2001. *China enters WTO: pursuing symbiosis with the global economy*. Tokyo: Institute of Developing Economies Japan External Trade Organization.
- Yearbook. *Zhongguo tongji nianjian* [China Statistical Yearbook] Translated by: Zhongguo tongji chubanshe.
- You, Qiao. 2005. "Car Makers Move Production into Russia." *China Daily*, 5 July, p. 10.
- You, Wan, and Jianguo Qi. 2004. "China's Long Term Development Trend and Environmental Economy." *Caimao jingji* [Finance and Trade Economics] (10):11-17.

- Zhan, Lisheng, and Wang Ying. 2005. "Guangzhou oil supply 'returning to normal'." *China Daily*, 9-24-2005, http://www.chinadaily.com.cn/english/doc/2005-08/19/content_470459_2.htm.
- Zheng, Bijian. 2005. "China's 'Peaceful Rise' to Great Power Status. *Foreign Affairs* 84.5.
- Zhu, Boru. 2005. "Growth Engine." *China Business Weekly*, 9-11 September, p. 9.

NOTES

¹ Although specialists debate the accuracy of annual economic data (Rawski 2001, Lardy 2003), there is little disagreement about the magnitude of China's long-term growth. We regard standard official statistics as the best available guide to medium- and long-term economic trends, and therefore rely on data from official Chinese sources throughout this essay.

² Detailed accounts of this process include Lardy (1992, 2002), EAAU 1997, Naughton 1997, and Yamazawa and Imai 2001.

³ See authors' file China share of world trade by sector 85 to 2003.090105.xls.

⁴ Achvarina (2003) provides a detailed analysis for aluminum.

⁵ See http://www.cnnz.gov.cn/en/top03_05.asp (for Chongqing) and http://h20331.www2.hp.com/enterprise/downloads/Wuhan_eGovernment_6.pdf (for Wuhan), both accessed 12 February 2006.

⁶ Results based on authors' analysis of information from UNCOM trade data. The classification of imports is unavoidably arbitrary, so that findings reflect orders of magnitude only. See authors' file data/imports/machinery_imports.complete.update082405.xls.

⁷ Official data overstate the flow of external funds from Hong Kong. Sung (2005, p. 16) indicates that funds sent out of China and repatriated to qualify for favorable tariff, tax and regulatory treatment may account for 25-40 percent of reported FDI arriving from Hong Kong. Xiao (2004, p.23) concludes that such funds may contribute 30-50 percent of China's recorded FDI. We expect the share of "round-tripping" in measured FDI to decline because of the growing importance of retained earnings from China-based foreign-linked firms in measured FDI and because the convergence of tax systems affecting foreign and domestic firms limits the incentive to conceal the origin of Chinese funds.

⁸ See authors' file UNCTAD FDI Inflows.090705.xls, compiled from data available at the UNCTAD web site <http://www.unctad.org>.

⁹ This calculation uses the Industrial Microdata for 2000 and 2003 to calculate the weighted average ratio of pre-tax profits to total capital for firms with and without external investment, using total capital as weights. Other information (Yearbook 2005, pp. 493-494, 505-506) shows a much smaller gap between profits of FIEs and of industrial firms with no foreign investment.

¹⁰ See Brandt, Rawski, and Sutton (2005). Inconsistent classification methods prevent us from evaluating the entire spectrum of Chinese trade flows. Unpublished work by Peter K. Schott uses a different approach to study quality changes in China's commodity trade, and obtains similar results.

¹¹ Nicholas Lardy informs us that China's Customs Administration tabulates imports on a "CIF" basis, meaning that the import totals include cost of insurance and freight. China's export data,

by contrast, are tabulated “FOB” (“free on board” i.e. excluding insurance and freight charges). Treating exports and imports consistently would raise China’s trade surplus.

Figure 1: Asian Trade Spurts: Evolution of World Trade Share Over 25 Years

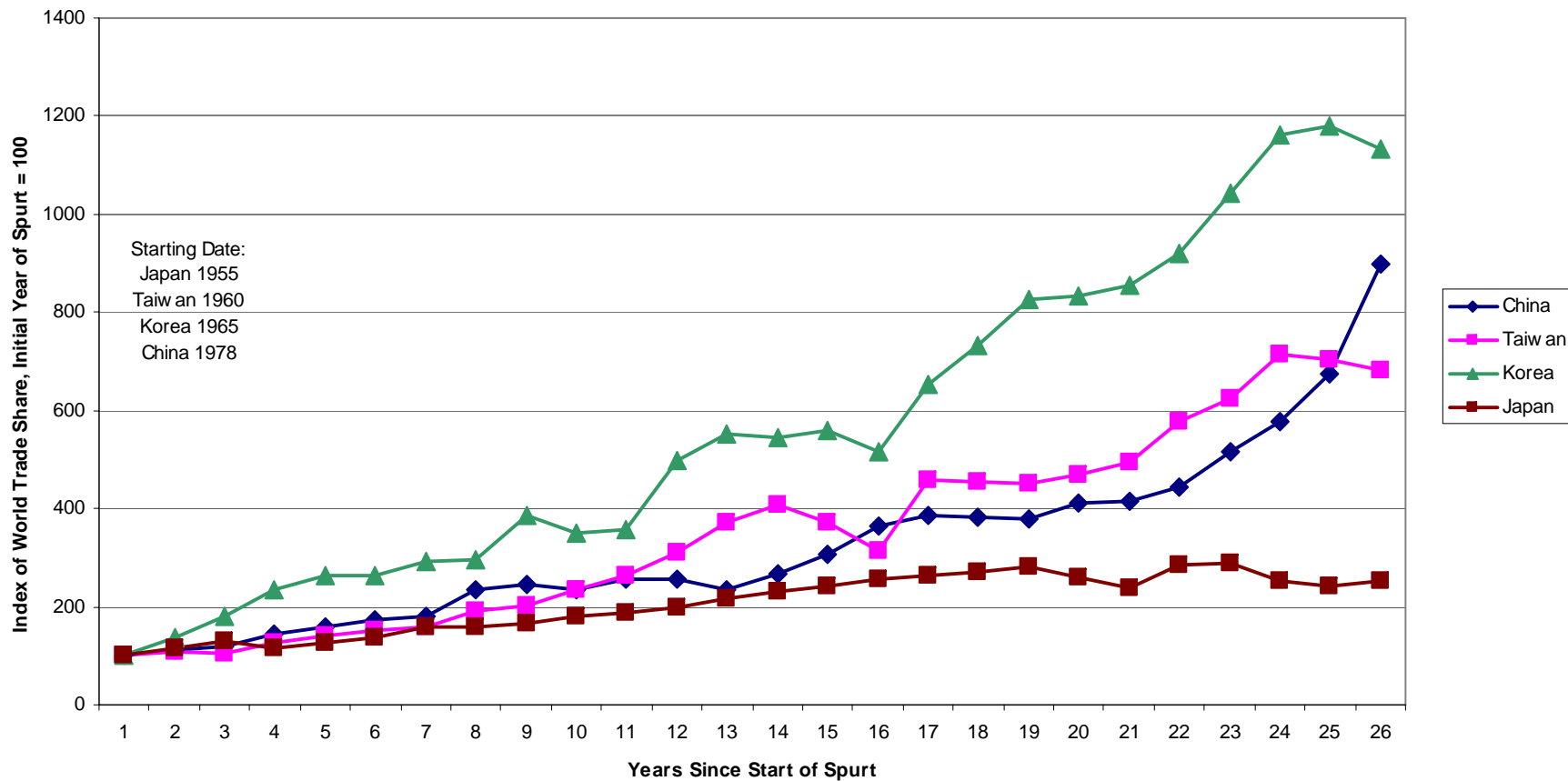


Figure 2
East Asian Trade Ratios, 1955-2004 (Export plus Import as Percent of GDP)

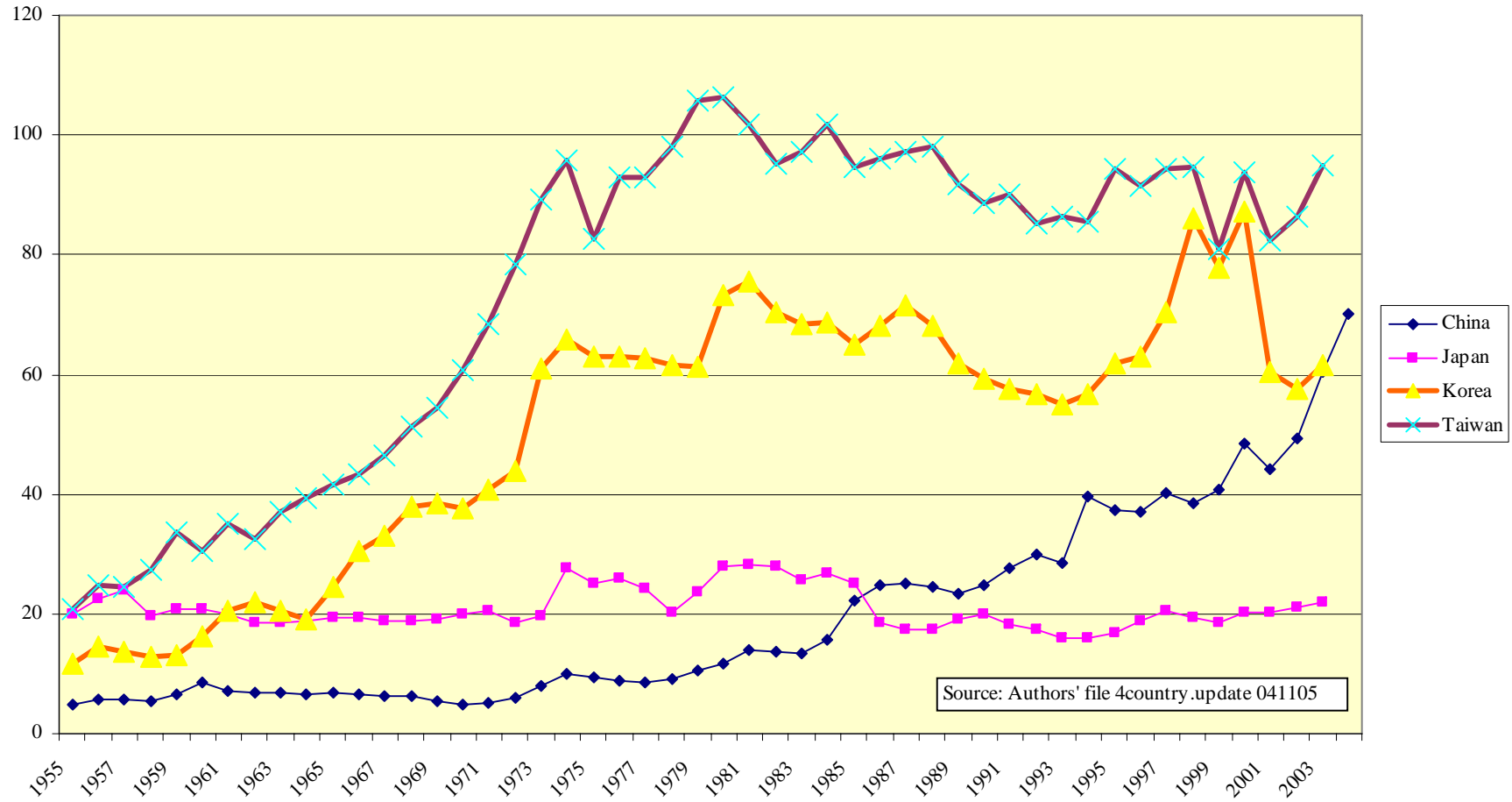


Figure 3: China's Trade Balance, 1980-2005

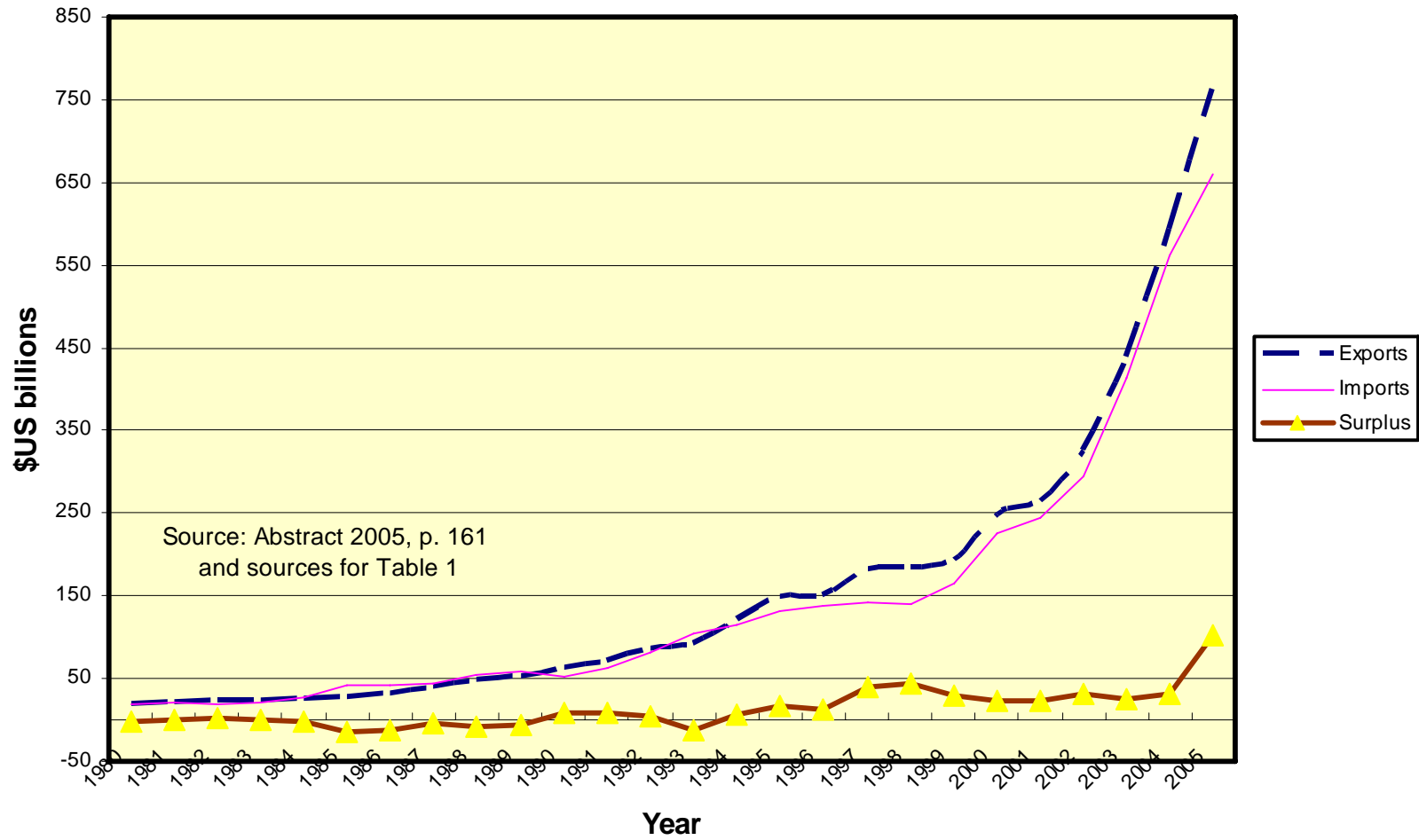


Table 1

Chinese International Trade in Regional and Global Perspective, 1913-2005

Billion U.S. dollars (current prices) and percent

Year	Annual Trade Flow Billion US Dollars		Share of World Trade (percent)			
	World	China	China	Japan	Korea	Taiwan
1913	39.8	0.8	1.9	1.8	0.1	0.0
1955	193.6	3.1	1.6	2.3	0.2	0.2
1960	267.6	3.8	1.4	3.2	0.1	0.2
1965	388.9	4.3	1.1	4.3	0.2	0.3
1970	646.3	4.6	0.7	5.9	0.4	0.5
1975	1788.9	14.8	0.8	6.4	0.7	0.6
1980	4109.2	38.1	0.9	6.6	1.0	1.0
1985	3968.6	69.6	1.8	7.8	1.5	1.3
1990	6998.4	115.4	1.6	7.5	1.9	1.7
1991	7147.5	135.7	1.9	7.7	2.1	1.9
1992	7647.5	165.5	2.2	7.5	2.1	2.0
1993	7651.3	195.7	2.6	7.9	2.2	2.1
1994	8751.7	236.6	2.7	7.7	2.3	2.0
1995	10440.5	280.9	2.7	7.5	2.5	2.1
1996	10926.7	289.9	2.7	7.0	2.6	2.0
1997	11302.1	325.2	2.9	6.7	2.5	2.1
1998	11160.1	324.0	2.9	6.0	2.0	1.9
1999	11610.6	360.6	3.1	6.3	2.3	2.0
2000	13151.2	474.3	3.6	6.5	2.5	2.2
2001	12663.3	509.7	4.0	5.9	2.3	1.8
2002	13195.6	620.8	4.7	5.7	2.4	1.8
2003	15281.1	851.0	5.6	4.4	2.4	1.8
2004	18581.8	1154.8	6.2	5.5	2.6	1.9
2005		1422.1				

Source: authors' file China & World Trade Data.020406.xls.

Table 2						
China: Regional Differences in Development and Global Engagement, 2004						
	Coast	Central	West			
Regional Percentage of						
Population	41.8	35.1	23.1			
GDP	61.2	26.7	12.0			
Industrial Value-added	64.6	24.9	10.5			
Fixed Asset Spending	60.0	24.5	15.5			
International Trade	92.0	5.3	2.7			
Trade by Foreign Firms	97.4	2.0	0.6			
Direct Foreign Investment	86.6	11.6	1.8			
Regional Averages						
(National Total = 100)						
GDP per person	146.4	76.1	51.9			
DFI inflow per person	207.2	33.0	7.8			
Foreign trade per person	220.1	15.1	11.7			
Regional Trade Ratio	150.3	19.9	22.5			
Source: Abstract 2005, pp. 22, 27, 29, 42, 55, 167, 170.						

Table 3											
Composition of China's Exports and Imports, 1985-2004											
US\$ billion and percent											
	Annual Trade Flows (US\$ billion)					Composition of Trade Flows (percent)					
	1985	1990	1995	2000	2004	1985	1990	1995	2000	2004	
China's Exports											
Food and live animals	2.6	6.7	9.9	12.3	18.8	12.5	10.9	6.7	4.9	3.2	
Beverages & tobacco	0.0	0.3	1.4	0.7	1.2	0.2	0.6	0.9	0.3	0.2	
Crude materials	2.0	3.5	4.4	4.4	5.8	9.5	5.7	2.9	1.8	1.0	
Mineral fuels	6.6	5.2	5.3	7.9	14.5	31.3	8.4	3.6	3.2	2.4	
Animal & veg. oils	0.1	0.2	0.5	0.1	0.1	0.6	0.3	0.3	0.1	0.0	
Chemicals	0.8	3.8	9.1	12.0	26.0	3.9	6.0	6.1	4.8	4.4	
Manufactures	2.9	12.8	32.9	43.3	101.7	13.9	20.6	22.1	17.4	17.1	
Machinery & transp eq.	0.5	10.8	31.4	82.5	268.2	2.2	17.4	21.1	33.1	45.2	
Misc. manufactures	2.3	17.5	53.7	85.5	155.8	11.0	28.2	36.1	34.3	26.3	
Other	3.2	1.2	0.4	0.5	1.1	15.0	1.9	0.3	0.2	0.2	
Total	21.1	62.1	148.8	249.2	593.2	100.0	100.0	100.0	100.0	100.0	
China's Imports											
Food and live animals	1.3	3.5	6.1	4.7	9.1	4.6	6.5	4.6	2.1	1.6	
Beverages & tobacco	0.2	0.2	0.4	0.4	0.5	0.7	0.3	0.3	0.2	0.1	
Crude materials	2.6	4.1	9.9	19.7	55.2	9.2	7.7	7.5	8.8	9.8	
Mineral fuels	0.2	1.3	5.2	20.8	48.4	0.6	2.4	3.9	9.2	8.6	
Animal & veg. oils	0.1	1.0	2.6	1.0	4.2	0.4	1.8	2.0	0.4	0.7	
Chemicals	2.0	6.7	17.2	29.9	64.4	7.1	12.5	13.0	13.3	11.5	
Manufactures	8.1	11.6	29.1	42.2	74.0	28.1	21.7	22.0	18.7	13.2	
Machinery & transp eq.	11.1	21.5	52.9	92.1	253.0	38.5	40.3	40.0	40.9	45.1	
Misc. manufactures	0.9	3.3	8.0	12.7	50.7	3.0	6.2	6.0	5.6	9.0	
Other	2.3	0.3	0.9	1.8	1.5	7.9	0.5	0.7	0.8	0.3	
Total	28.7	53.4	132.1	225.1	561.0	100.0	100.0	100.0	100.0	100.0	
Source: UNCOM Trade data											

Table 4: China's Top Ten Raw Material Imports: 1985, 1995, 2004

SITC Code	Commodity Group	Data for 1985		Data for 1995		Data for 2004	
		Rank	% of Imports	Rank	% of Imports	Rank	% of Imports
222	Seeds for 'soft' fixed oil					4	1.28
232	Natural rubber latex	6	0.73				
233	Synthetic rubber, latex, etc	7	0.45				
247	Other wood in the rough or roughly squared	1	4.53			9	0.50
251	Pulp and waste paper	5	1.17	7	0.64	6	0.94
263	Cotton			3	1.13	8	0.58
266	Synthetic fibres suitable for spinning	2	3.86	4	1.00		
267	Other man-made fibres suitable for spinning	9	0.29				
268	Wool and other animal hair	3	1.93	8	0.56		
281	Iron ore and concentrates	4	1.44	5	0.93	2	2.26
282	Waste and scrap metal of iron or steel						
287	Ores and concentrates of base metals	10	0.24	6	0.76	5	1.18
288	Non-ferrous base metal waste and scrap			9	0.50	7	0.64
322	Coal, lignite and peat	8	0.35				
333	Crude petroleum			1	1.79	1	6.04
334	Refined petroleum products			2	1.60	3	1.71
341	Gas, natural and manufactured			10	0.34		
	Top Ten Materials' Share of China's Total Imports (%)		14.99		9.24		15.57
	Codes 200-399 Share of China's Total Imports (%)		15.43		11.40		17.20
	Unweighted Average of Top 10 Share of WORLD Imports (%)		6.11		7.66		14.73
Notes: 1. Based on all commodities 200-399 in the SITC revision 2 classification							
2. Share of China's raw material imports in world imports of those products may be biased upwards because of non-reporting by some countries.							
Source: UNCOM Trade data.							

Table 5									
China's Foreign Direct Investment Inflows & Outflows,									
1990-2004, (Billion U.S. dollars)									
Year	1990	1994	1998	2000	2001	2002	2003	2004	2005
FDI Inflow:	3.48	33.94	45.46	40.71	46.88	52.74	53.50	60.60	60.33
FDI Sources									
Asia:			31.33	25.48	29.61	32.44	34.10		
Hong Kong	1.91	19.82	18.50	15.50	16.72	17.86	17.70	19.00	17.95
Japan	0.50	2.09	3.40	2.92	4.34	4.19	5.05	5.45	6.53
Korea		0.23	1.80	1.49	2.15	2.72	4.49	6.24	5.17
Singapore	0.05	0.73	3.40	2.17	2.14	2.34	2.06	2.01	2.20
Taiwan		0.34	2.91	2.30	2.98	3.97	3.38	3.12	2.15
Europe:			4.31	4.76	4.48	4.08	4.27	4.61	
Germany	0.02	0.26	0.74	1.04	1.21	0.92	0.86		1.53
UK	0.01	0.69	1.17	1.16	1.05	0.57	0.72		
Netherlands	0.02	0.11	0.72	0.79	0.78	0.90	0.73		
North America			4.33	4.78	5.10	6.49	5.16		
US	0.46	2.49	3.89	4.38	4.43	5.42	4.20	3.94	3.06
Canada	0.41	0.22	0.32	0.28	0.44	0.59	0.56		
FDI Outflow:	0.83	2.00	2.36	0.92	6.88	2.7	2.9	5.5	6.9
Sources: FDI Inflow: Yearbook, various years; External Yearbook 2004, pp. 133-137; Abstract 2005, p.171. Detail for 2004: http://fdi.gov.cn accessed 6 October 2005									
Data for United States is inconsistent with reported 6.13% annual increase.									
Figure for Europe based on 7.86% increase for 15 EC members for 2003/04.									
FDI Outflow: http://stats.unctad.org/fdi/eng/TableViewer/wdsview/dispviewp.asp									
accessed 19 September 2005; data for 2002-2004 from									
http://english.sina.com/business/1/2005/0905/44731.html									
accessed 10 September 2005									
Data for 2005 are from Browne 2006, Jiang Wei 2006, and <i>China Business Weekly</i> , 6-12 February 2006, p. 2.									

Table 6: Chinese Industry: 15 Sectors Receiving Largest FDI Inflows (percent)

Manufacturing Sector				
	Sector Share of Industry FDI	Export Share of Sector Output	FIE Share of Sector Exports	Sector Share of China's Industrial Exports
Plastics	2.18	17.30	79.19	1.44
Metal products	2.73	19.60	84.80	2.18
Smelting-Rolling of Ferrous Metals	3.15	7.87	49.13	2.41
Food products	3.24	23.26	60.42	2.42
Electric equipment and machinery	3.35	16.25	81.84	2.79
Paper products	3.37	8.84	77.85	0.86
Textiles	3.52	27.16	50.41	5.54
Beverages	4.30	4.76	58.93	0.48
Garments	5.07	45.93	61.40	10.63
Ordinary machinery	5.56	18.82	58.13	4.66
Non-metal mineral products	6.14	14.75	76.48	2.74
Transportation equipment	6.50	6.55	64.03	2.78
Medical and pharmaceutical	7.03	9.11	56.34	3.42
Electronics and telecommunications	7.88	32.16	91.12	19.01
Instruments and meters	10.64	30.45	93.83	13.11
Average	4.98	18.85	69.59	4.96
Total for top 15	74.66			74.47
Source: Industrial Microdata for 2002				
Coverage includes the entire state sector and other firms with annual sales in excess of ¥5 million (about US\$600,000).				

Table 7: China's Global Trade by Region, 1990-2004

(US\$ billion)

	1990			1994			1998			2004		
	Exports	Imports	X - M	Exports	Imports	X - M	Exports	Imports	X - M	Exports	Imports	X - M
Total Trade	62.09	53.35	8.75	121.01	115.61	5.39	183.81	140.24	43.57	593.33	561.23	32.10
Asia (excluding HK)	17.36	14.61	2.75	41.29	57.91	-16.62	59.97	77.99	-18.03	180.13	290.58	-110.45
Hong Kong	26.63	14.15	12.48	32.36	9.44	22.92	38.74	6.66	32.08	100.87	11.80	89.07
Europe	7.10	10.61	-3.52	18.60	24.66	-6.06	32.99	25.84	7.15	106.10	85.12	20.98
North America	5.61	8.03	-2.42	22.87	15.74	7.13	40.11	19.12	20.99	130.13	50.80	79.33
Note: X-M refers to the trade surplus.												
Source: UNCOM trade data												

Table 8								
United States Trade Deficit with China and Asia, 1990-2004								
United States Imports (US\$ billion)								
From	1990	1995	2000	2001	2002	2003	2004	2005
World	517.0	770.8	1217.9	1132.5	1202.3	1305.1	1469.7	1671.1
China	16.3	48.5	100.0	102.1	133.5	163.3	196.7	243.5
Other Asia	174.6	257.0	324.2	276.9	282.2	280.4	325.7	334.3
All Asia	190.9	305.5	424.2	379.0	415.6	443.7	522.4	577.8
Asia Share (%)	36.9	39.6	34.8	33.5	34.6	34.0	35.5	34.6
United States Exports (US\$ billion)								
To	1990	1995	2000	2001	2002	2003	2004	2005
World	374.5	546.4	781.8	731.0	693.2	723.6	818.8	904.3
China	4.8	11.6	16.2	19.2	22.1	28.4	34.7	41.8
Other Asia	95.4	152.6	178.3	155.3	146.3	151.0	173.8	177.7
All Asia	100.2	164.2	194.5	174.5	168.4	179.5	208.6	219.5
Asia Share (%)	26.7	30.1	24.9	23.9	24.3	24.8	25.5	24.3
United States Trade Balance (US\$ billion)								
With	1990	1995	2000	2001	2002	2003	2004	2005
World	-142.4	-224.4	-436.1	-401.5	-509.1	-581.5	-650.9	-766.8
China	-11.5	-36.9	-83.8	-82.8	-111.4	-134.8	-162.0	-201.6
Other Asia	-79.3	-104.5	-145.9	-121.6	-135.8	-129.4	-151.9	-156.7
All Asia	-90.8	-141.4	-229.7	-204.5	-247.3	-264.2	-313.8	-358.3
Share of U.S. Trade Deficit (percent)								
With								
China	8.1	16.4	19.2	20.6	21.9	23.2	24.9	26.3
Other Asia	55.7	46.6	33.4	30.3	26.7	22.3	23.3	20.4
All Asia	63.8	63.0	52.7	50.9	48.6	45.4	48.2	46.7
Non-Asia	36.3	37.0	47.3	49.1	51.4	54.6	51.8	53.3
Share of U.S. deficit with Asia (percent)								
China	12.7	26.1	36.5	40.5	45.1	51.0	51.6	56.3
Other Asia	87.3	73.9	63.5	59.5	54.9	49.0	48.4	43.7
Source: OECD Trade Statistics, various years.								
For 2004: http://www.bea.doc.gov/bea/di/home/trade.htm , accessed 21 September 2005								
For 2005: http://www.bea.gov/newsrel/tradnewsrelease.htm , accessed 12 February 2006								
Disaggregated data for 2005 appear preliminary; they may exclude smaller Asian nations								

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Employment: Professor of Economics and History, University of Pittsburgh

Education

B.A. in Economics, with honors in Economics and distinction in all subjects, Cornell University, 1965

M.A. in Economics, Harvard University, 1967

Ph.D. in Economics, Harvard University, 1972

Academic awards: N.Y. State Regents' Scholarship (1961-65); Cornell University, Dean's Scholarship (1961-65); Cornell U. Dean's list, eight semesters; Phi Beta Kappa; Phi Kappa Phi; Omicron Delta Epsilon; Woodrow Wilson Fellowship (honorary, 1965-66); Harvard U. Graduate Prize Fellowship 1965-70); National Science Foundation Graduate Fellowship (1965-68, 1970-71); Foreign Area Fellowship (1968-70)

Languages: English, Chinese, Japanese, German

Thomas G. Rawski, p. 2

Research Grants and Fellowships

Canada Council Summer Research Grant, 1972

Social Science Research Council, Joint Committee on Contemporary China, Subcommittee on the Economy of China, 1973

University of Michigan, Center for Chinese Studies, Postdoctoral Research Appointment, 1974

University of Toronto Small Research Grants, 1974-75, 1975-76, 1976-77, 1978-79, 1980-81, 1981-82, 1983-84, 1984-85

University of Toronto - York University Joint Centre on Modern East Asia Research Grants, 1975-76, 1977-78, 1984

Social Science Research Council Released Time Grant, 1975

Canada Council Leave Fellowship, 1977-78

Social Sciences and Humanities Research Council of Canada Research Grants, 1977-78, 1978-79, 1979-80, 1983-84, 1985

Hoover Institution National Fellowship Award, 1979-80

Connaught Senior Fellowship in Social Sciences, 1981-82

Social Sciences and Humanities Research Council of Canada released time award, 1982-83

American Council of Learned Societies - Social Science Research Council Joint Committee on Chinese Studies award for Workshop and Conference project on "Economic Methods for Chinese Historical Research," 1985

Henry Luce Foundation award for Workshop and Conference project on "Economic Methods for Chinese Historical Research," 1986-1989

National Science Foundation award for Workshop and Conference project on "Economic Methods for Chinese Historical Research," 1986-1987

University of Pittsburgh Research Development Fund award, 1986

University of Pittsburgh Asian Studies Small Grants, 1986, 1987, 1988, 1990, 1991, 1992

Thomas G. Rawski, p. 3

University of Pittsburgh Center for International Studies Senior Fellowship, 1986-87, 1993-94

Henry Luce Foundation award for collaborative project on "Productivity and Reform in China's Industrial Economy, 1987-1990.

National Science Foundation award for "Reform and Productivity in China's Industrial Economy," 1988-1990

Research Fellowship, Woodrow Wilson International Center for Scholars, 1992-1993

Research Fellowship from the John Simon Guggenheim Memorial Foundation, July-December 1993

Chiang Ching-kuo Foundation/Joint Committee on Chinese Studies Postdoctoral Fellowship in Chinese Studies, July 1992-June 1993

William Davidson Institute award for collaborative research on "Corporate Governance and Economic Performance in Chinese Industry," 1995-1996.

Henry Luce Foundation award for collaborative project on "Innovation in Chinese Manufacturing," 1995-1998

Yoshida Shigeru International Foundation Traveling Fellowship, 1997

ACLS/SSRC National Endowment for the Humanities International Postdoctoral Fellowship, 1999-2000

National Science Foundation Award for project "Transition That Worked: Origins, Mechanism, and Consequences of China's Long Boom," 2001-2002.

Chiang Ching-kuo International Foundation Award for project "China's Economic Transition: Origins, Mechanisms, and Consequences," 2002-2003.

National Science Foundation Award for project "China's Economic Transition: Origins, Mechanisms, and Consequences," 2002-2004.

Smith Richardson Foundation Award for project "China's Economic Transition: Origins, Mechanisms, and Consequences," 2002-2004.

Courses Taught

Application of Economic Theory to Economic History (graduate)

Thomas G. Rawski, p. 4

Comparative Economics (undergraduate)
Dynamic Economies of East Asia (undergraduate)
Dynamics of Economic Systems (graduate)
Economic Development (graduate)
Economics of Technological Change (undergraduate)
Economy of China (undergraduate and graduate)
Economy of Japan (undergraduate and graduate)
Heuristic Introduction to Economic Theory (graduate)
Microeconomic Theory (undergraduate)
Principles of Economics (undergraduate)
Proseminar on the International Economy (undergraduate)

Teaching and Research Appointments

University of Pittsburgh: Professor of Economics, 1985-
Professor of History, 1987-
UCIS Research Professor, 1996-

Visiting Scholar, University of Tokyo Center for International Research on the Japanese
Economy, June 2000

Associate in Research, Fairbank Center for East Asian Research, Harvard University, 1999-2000

Visiting Research Scholar, Research School of Pacific Studies, Australian National University,
Summer 1992

Fellow, Woodrow Wilson International Center for Scholars, 1992-93

University of Toronto: Assistant Professor of Economics, 1971-76; Associate Professor, 1976-
80; Professor of Economics, 1980-85

Senior Fellow, Trinity College, University of Toronto, 1981-85

National Fellow, Hoover Institution, Stanford, California, 1979-80

Visiting Research Scholar, Asian Studies Center, University of Pittsburgh, 1977-78

Postdoctoral Research Scholar, Center for Chinese Studies, University of Michigan, January-
June 1974

External Research Scholar, Institute of Developing Economies, Tokyo, July-November 1973

Thomas G. Rawski, p. 5

Professional Activities

Member, Steering Group on Chinese Foreign Policy and International Relations of the Joint Committee on Contemporary China, Social Science Research Council, 1975-76.

Member, Subcommittee on Research on the Chinese Economy of the Joint Committee on Contemporary China, Social Science Research Council, 1976-81.

Member, Advisory Board, Modernization of China Project, Princeton University, 1976-79.

Member of Editorial Board, *Journal of Comparative Economics*, 1982-85.

Elected Member, Board of Directors and China/Inner Asia Council, Association for Asian Studies, 1982-85; Nominating Committee, 1984-85; Program Committee, 1985-86.

Member, Committee on Advanced Study in China, Committee on Scholarly Communication With the People's Republic of China, 1983-86

Member, China Grants Selection Committee, American Council of Learned Societies, 1985-88

Member, Steering Committee, Workshop on Wage and Price Reform in the People's Republic of China, sponsored by ACLS/SSRC Joint Committee on Chinese Studies, 1986

Member, National Committee on United States-China Relations, 1987-

Member, American Council of Learned Societies-Social Science Research Council Joint Committee on Chinese Studies, 1987-90

Member, Selection Committee, ACLS-Luce Fellowships for Beginning Graduate Students in Chinese Studies, 1988

Member, Editorial Board, *China Quarterly*, 1991-

Elected member, Board of Directors, Association for Comparative Economic Studies, 1992-94

External Examiner, Department of Economics, Chinese University of Hong Kong, 1994-

Member, Editorial Board, *China Reviews International*, 1994-

Vice President, Association for Comparative Economic Studies, 1994

President, Association for Comparative Economic Studies, 1995

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Member of Editorial Board, *Journal of Comparative Economics*, 1995-98

Member, Editorial Board, *China Economic Review*, 1995-

External Assessor, Department of Economics, Chinese University of Hong Kong, 1995-
Member, Editorial Board, *The Global Economic Review*, 1996-

Member, Editorial Advisory Board, *Journal of Asian Business*, 1996-

Research Fellow, William Davidson Institute, 1997-

Member, Budget Committee, Association for Asian Studies, 1998-

Member, Harvard University Overseers= Committee to Visit East Asian Studies, 1999-

Member, Advisory Board, *The China Review*, 2001-

Member, Association for Asian Studies Finance Committee, 2002-

Member, Finance Committee, Association for Asian Studies, 2002-

Principal Publications

Books:

Economics and the Historian (chief author, with seven co-authors; Berkeley: University of California Press, 1996).

Productivity, Efficiency, and Reform in China's Economy (contributor and co-editor with Kai-yuen Tsui and Tien-tung Hsueh; Hong Kong: Chinese University Press, 1995).

Tizhi zhuanhuan zhong de Zhongguo gongye shengchanlü [Productivity and Reform in Chinese Industry; contributor and co-editor with Yuxin Zheng; Beijing: Shehui kexue wenxian chubanshe, 1993].

Chinese History in Economic Perspective (contributor and co-editor with Lillian M. Li; Berkeley: University of California Press, 1992).

Economic Growth in Prewar China (Berkeley: University of California Press, 1989).

China's Transition to Industrialism: Producer Goods and Economic Development in the Twentieth Century (Ann Arbor: University of Michigan Press, 1980).

Thomas G. Rawski, p. 7

Economic Growth and Employment in China (N.Y.: Oxford University Press, 1979), translated into French as *Croissance et emploi en Chine* (Paris: Economica, 1980); into Spanish as *Crecimiento Economico y Empleo en China* (Madrid: Editorial Tecnos, 1981); and partially translated into Japanese as "Chûgoku no keizai seichô to koyô," *Sekai shûhō*, April/May 1980.

Rural Small-Scale Industry in the People's Republic of China (with eleven others; Berkeley: University of California Press, 1977).

Teaching Materials:

(with ten co-authors) *Contemporary Chinese Society: Continuity and Change*. Interactive CD-ROM Project for the Undergraduate Curriculum developed by University of Pittsburgh China Studies faculty. Published by Columbia University Press, 2001. This project was awarded the Buchanan prize for curriculum materials by the Association for Asian Studies, 2002.

Monographs, Articles, and Chapters in Books:

(with Gary H. Jefferson) "China's Emerging Market For Property Rights: Theoretical and Empirical Perspectives," *Economics of Transition*, forthcoming.

"Measuring China's Recent GDP Growth: Where Do We Stand?" [Chinese-language version forthcoming in *Jingjixue* (China Economic Quarterly) 2.1 (October 2002).

"Will Investment Behavior Constrain China's Growth?" [forthcoming, *China Economic Review*]

AChina Reform Watch: Turning Point Looming,@ *China Perspectives*, no. 38 (2001), pp. 28-35.

(with Wei Xiao) AIntroduction to Roundtable on Chinese Economic Statistics,@ *China Economic Review* 12.4 (2001): 298-302.

AWhat=s Happening to China=s GDP Statistics,@ *China Economic Review* 12.4 (2001): 347-354.

"China By the Numbers: How Reform Has Affected China's Economic Statistics," *China Perspectives* n. 33 (2001), pp. 25-34.

Thomas G. Rawski, p. 8

(with Gary H. Jefferson, Li Wang, and Yuxin Zheng), "Ownership, Productivity Change, and Financial Performance in Chinese Industry," *Journal of Comparative Economics* 28.4 (2000): 786-813.

"The Political Economy of China's Declining Growth," in *China in the World Economy*, ed. Peter Lloyd and Xiaoguang Zhang. Aldershot: Edward Elgar, 2000, pp. 28-42.

"China's Move to Market: How Far? What Next?," in *China's Future: Constructive Partner or Emerging Threat?* ed. Ted Galen Carpenter and James A. Dorn. Washington D.C.: Cato Institute, 2000, pp. 317-340.

"China's Economy After Fifty Years: Retrospect and Prospect," *International Journal*, Winter 1999-2000, pp. 62-79.

China: Prospects for Full Employment. Employment and Training Papers, no. 47, International Labour Office, Geneva. 1999. Partial Chinese translation in *Guanli shijie* (Management World), no. 3 (1999), pp. 92-103.

"Reforming China's Economy: What Have We Learned?," *China Journal*, no. 41 (1999): 139-156.

(with Gary H. Jefferson) "Ownership Change in Chinese Industry," in *Enterprise Reform in China: Ownership, Transition, and Performance*, ed. Gary H. Jefferson and Inderjit Singh (New York: Oxford University Press, 1999), pp. 23-42.

(with Gary H. Jefferson) "China's Industrial Innovation Ladder: A Model of Endogenous Reform," in *Enterprise Reform in China: Ownership, Transition, and Performance*, ed. Gary H. Jefferson and Inderjit Singh (New York: Oxford University Press, 1999), pp. 65-88.

(with Gary H. Jefferson) "A Model of Economic Reform," in *Enterprise Reform in China: Ownership, Transition, and Performance*, ed. Gary H. Jefferson and Inderjit Singh (New York: Oxford University Press, 1999), pp. 265-278.

(with Margaret Maurer-Fazio and Wei Zhang) "Inequality in The Rewards For Holding up Half The Sky: Gender Wage Gaps in China's Urban Labor Markets, 1988-1994," *China Journal*, no. 41 (1999): 55-88.

(with Robert W. Mead) "On the Trail of China's Phantom Farmers," *World Development* 26.5 (1998): 767-781. Translated as "Guanyu Zhongguo nongye laodongli shuliang zhi yanjiu," *Zhongguo nongcun guan cha* [China Rural Survey, Beijing], no. 4, 1997, pp. 28-39.

Thomas G. Rawski, p. 9

(with Gary H. Jefferson and Yuxin Zheng) "Innovation in Chinese Manufacturing Enterprises: A Preliminary Analysis of Survey Data," *MOCT-MOST 7.4* (1997), pp. 101-120.
Reprinted in *Enterprise Reform in China: Ownership, Transition, and Performance*, ed. Gary H. Jefferson and Inderjit Singh (New York: Oxford University Press, 1999), pp. 89-106.

"China's State Enterprise Reform - An Overseas Perspective," *China Economic Review* 8.1 (1997): 89-98. Translated as "Zhongguo guoying qiye gaige - yizhong haiwai guandian," in *Zhongguo Hubei/Huangshi qiye gaige guoji yantaohui wenjian huibian* [Documents of the International Workshop on Enterprise Reform in Wuhan and Huangshi in China—Hubei Province; Wuhan: Government of Hubei, 1997], pp. 61-73.

"China and the Idea of Economic Reform," *Shirizu Chūgoku ryōiki kenkyū* [China Area Studies Series], No. 5, Special Issue, 1997, *China's Gradualism Reconsidered - From a Comparative Point of View*, pp. 22-33.

"Who Has Soft Budget Constraints?" *Global Economic Review*, 26.1 (Spring 1997): 29-49.
Translated as "Shei de yusuan yueshu ruanhua?" in *Caizheng yanjiu* [Fiscal Research, Beijing], no. 7, 1997, pp. 14-24.

(with Gary H. Jefferson and Yuxin Zheng) "Chinese Industrial Productivity: Trends, Measurement Issues, and Recent Developments," *Journal of Comparative Economics* 23.2 (1996): 146-180.

(with Gary H. Jefferson), "The Paradox of China's Industrial Reform," in *East Asian Capitalism: Diversity and Dynamism*, ed. A. E. Safarian and Wendy Dobson (Toronto: University of Toronto Press, 1996), pp. 45-90.

"Reflections on Three Decades of 'China Watching'," *Issues & Studies* 32.9 (1996): 19-40.
Reprinted in *Tendencies of Regionalism in Contemporary China*, ed. Yu-ming Shaw (Taipei: Institute of International Relations, National Chengchi University, 1997), pp. 329-348.

"The PRC's Industrial System: Reform, Obstacles, and Opportunities: An Update," *The Economy of the PRC: Analysis and Forecasts*, Studies by the Salomon Brothers Panel of PRC Experts, Report No. 2 (June 1996), pp. 16-23.

"Implications of China's Reform Experience," *China Quarterly*, no. 144 (1995), pp. 1150-1173.
Reprinted in *China's Transitional Economy*, ed. Andrew G. Walder (Oxford: Oxford University Press, 1996), pp. 188-211; in *The Reformability of China's State Sector*, ed. G.J. Wen and D. Xu (Singapore: World Scientific, 1997), pp. 189-219; and in *Zhongguo guoyou qiye gaige* [Reform of China's State Enterprises], ed. Xu Dianqing and Wen Guanzhong (Beijing: Zhongguo jingji chubanshe, 1996), pp. 90-122. Partial translation

Thomas G. Rawski, p. 10

in *Shuliang jingji jishu jingji yanjiu* [Studies in Quantitative and Technical Economics], no. 12 (1997), pp. 26-29, 8.

(with Gary H. Jefferson and Yuxin Zheng), "Gaige yilai Zhongguo gongye shengchanlü biandong qushi de guji ji qi kekaoxing fenxi" [Chinese Industrial Productivity: Trends, Measurement Issues, and Recent Developments] *Jingji yanjiu* [Economic Research, Beijing] no. 12 (1995), pp. 10-22.

"The PRC's Industrial System: Reform, Obstacles, and Opportunities," *The Economy of the PRC: Analysis and Forecasts*, Studies by the Salomon Brothers Panel of PRC Experts, Report No. 1 (November 1995), pp. 25-43.

(with Kai-yuen Tsui and Tien-tung Hsueh) "The Impact of Reform on Chinese Industry: A Regional Perspective." In *Productivity, Efficiency, and Reform in China's Economy*, ed. Kai-yuen Tsui, Tien-tung Hsueh, and Thomas G. Rawski (Hong Kong: Chinese University Press, 1995), pp. 109-150.

"Social Foundations of East Asian Economic Dynamism," *Chinese Culture: Tradition and Modernization* (Chinese language), no. 3 (1995): 18-25

(with Gary H. Jefferson) "How Industrial Reform Worked in China: The Role of Innovation, Competition and Property Rights." In *Proceedings of the World Bank Annual Conference on Development Economics 1994*, pp. 129-156. Reprinted in *The Economies of Asia 1950-1998: Critical Perspectives on the World Economy*, ed. Robert Ash and Anne Booth (London and N.Y.: Routledge, 2000), I: 168-198 and in *Zhongguo gongye gaige yu xiaoliu* [Reform and Efficiency of Chinese Industry], ed. Lin Qingsong and Du Ying (Kunming: Yunnan renmin chubanshe, 1997), pp. 52-98. Partial translation in *Zhongguo gongye jingji yanjiu* [Studies in Chinese Industrial Economics, Beijing], no. 8 (1994), pp. 45-53.

(with Gary H. Jefferson and Yuxin Zheng) "Institutional Change and Industrial Innovation in Transitional Economies," *Journal of Asian Economics* 5.4 (1994): 585-604

(with Gary H. Jefferson and Yuxin Zheng) "Gaige yilai Zhongguo guoying gongye shengchanlü qushi huodele gaishan" [Has productivity in China's state-owned industrial enterprises really increased during the reform period?] *Jingji yanjiu* [Economic Research, Beijing] no. 10 (1994), pp. 77-80.

(with Gary H. Jefferson and Yuxin Zheng) "Productivity Change in Chinese Industry: A Comment." *China Economic Review* 5.2 (1994): 235-241.

"An Overview of Chinese Industry in the 1980s," in Yuxin Zheng and Thomas G. Rawski eds., *Tizhi zhuanhuan zhong de Zhongguo gongye shengchanlü*, pp. 1-56.

Thomas G. Rawski, p. 11

"Economics and the Historian," in Thomas G. Rawski et al, *Economics and the Historian* (Berkeley: University of California Press, 1995), partially translated as "Jingjixue yu lishi xuejia," in Ding Richu ed., *Jindai Zhongguo* [Modern China], vol. 7 (Shanghai: Lixin kuaiji chubanshe, 1997), pp. 232-240.

"Economic Trends," in Thomas G. Rawski et al, *Economics and the Historian* (Berkeley: University of California Press, 1995).

(with Gary H. Jefferson) "Labor Markets as a Constraint on Reform in China's Urban Economy." In *China's Economic Reform and Growth*, edited by Ross Garnaut, Guonan Ma, and Geoff Raby. Cambridge: Cambridge University Press, forthcoming. Reprinted in Yuxin Zheng and Thomas G. Rawski eds., *Tizhi zhuanhuan zhong de Zhongguo gongye shengchanlü*, pp. 411-445.

"Chinese Industrial Reform: Accomplishments, Prospects, and Implications." *American Economic Review* 84.2 (May 1994), pp. 271-275. Chinese translation in *Jingji yanjiu* [Economic Research, Beijing], no. 12 (1994), pp. 54-57, 27.

(with Gary H. Jefferson) "Enterprise Reform in Chinese Industry." *Journal of Economic Perspectives* 8.2 (Spring 1994): 47-70. Reprinted in *The Economies of Asia 1950-1998: Critical Perspectives on the World Economy*, ed. Robert Ash and Anne Booth (London and N.Y.: Routledge, 2000), I: 123-148. Partially reprinted in *Growth Without Miracles*, ed. Ross Garnaut and Yiping Huang (New York: Oxford University Press, 2001), pp. 244-262.

"Progress Without Privatization: The Reform of China's State Industries," in *The Political Economy of Privatization and Public Enterprise in Post-Communist and Reforming Communist States*, edited by Vedat Milor (Boulder: Lynne Rienner, 1994), pp. 27-52. Reprinted in Yuxin Zheng and Thomas G. Rawski eds., *Tizhi zhuanhuan zhong de Zhongguo gongye shengchanlü*, pp. 360-391.

"Milton Friedman, Silver, and China," *Journal of Political Economy*, 101.4 (1993): 755-758.

"Jingji xiaoyi yu jingji xiaolü" [On the relationship between economic benefit and economic efficiency], *Jingji yanjiu* [Economic Research, Beijing] no. 6 (1993), pp. 38-40.

(with Tien-tung Hsueh and Kai-yuen Tsui) "The Impact of Reform on China's State Industry: A Regional Perspective." In Li Jingwen, Zheng Yuxin and Hsueh Tien-tung eds., *Zhongguo shengchanlü biandong qushi zhi yanjiu* [Studies on the trend of productivity change in China]. (Beijing: Shehui kexue wenxian chubanshe, 1993), pp. 130-164

(with Gary H. Jefferson and Yuxin Zheng) "Innovation and Reform in Chinese Industry: A Preliminary Analysis of Survey Data." In Li Jingwen, Zheng Yuxin and Hsueh Tien-tung

Thomas G. Rawski, p. 12

eds., *Zhongguo shengchanlü biandong qushi zhi yanjiu* [Studies on the trend of productivity change in China]. (Beijing: Shehui kexue wenxian chubanshe, 1993), pp. 307-325. English version in Research Paper Series, No. 30, Socialist Economies Reform Unit, Country Economics Department, World Bank (August 1992). Reprinted in Yuxin Zheng and Thomas G. Rawski eds., *Tizhi zhuanhuan zhong de Zhongguo gongye shengchanlü*, pp. 328-347.

(with Gary H. Jefferson) "A Theory of Economic Reform." Socialist Economies Research Unit, Country Economics Department, World Bank, Research Paper Series, no. 25, February 1992.

(with Gary H. Jefferson) "Theoretical Foundations of Economic Transition: Comparisons Between China and Poland," in *Transition to Advanced Market Economies: Strategic Options, Modeling Approaches and Operational Research Perspectives*, edited by Jan W. Owsinski, Jacek Stefanski, and Andrzej Straszak. Warsaw: Association of Polish Operational Research Societies, 1992, pp. 77-94.

"Ideas About Studying China's Rural Economy: A Comment on the Commentaries," *Republican China* xvii.1 (1992): 146-159.

"Japan and China as Case Studies in Introductory Courses in Economics," in *Case Studies in the Social Sciences for Asia: A Guide for Teaching*, edited by Myron L. Cohen (Armonk: M.E. Sharpe, 1992), pp. 187-232.

(with Gary H. Jefferson) "Underemployment, Employment, and Employment Policy in China's Cities," *Modern China* 18.1 (1992): 42-71.

(with Gary H. Jefferson and Yuxin Zheng) "Growth, Efficiency, and Convergence in Chinese Industry: A Comparative Evaluation of the State and Collective Sectors," *Economic Development and Cultural Change* 40.2 (1992): 239-265; Chinese language version "Zhongguo guoying gongye yu jiti gongye shengchanlü biandong qushi bizhao," *Shuliang jingji jishu jingji yanjiu* [Studies in Quantitative and Technical Economics] 8 (1990): 22-31. Reprinted in Yuxin Zheng and Thomas G. Rawski eds., *Tizhi zhuanhuan zhong de Zhongguo gongye shengchanlü*, pp. 80-110.

(with Lillian M. Li) "Introduction," in *Chinese History in Economic Perspective*, ed. Thomas G. Rawski and Lillian M. Li (Berkeley: University of California Press, 1992).

(with Gary H. Jefferson) "A Theory of Economic Reform," Research Paper Series, No. 15, Socialist Economies Reform Unit, Country Economics Department, World Bank (February 1992).

Thomas G. Rawski, p. 13

"How Fast Has Chinese Industry Grown?" Research Paper Series, No. 7, Socialist Economies Reform Unit, Country Economics Department, World Bank (March 1991). Reprinted in Yuxin Zheng and Thomas G. Rawski eds., *Tizhi zhuanhuan zhong de Zhongguo gongye shengchanlü*, pp. 224-274.

"Economic Growth in China Before World War II," in *The Second Conference on Modern Chinese Economic History* (Taipei: Academia Sinica, 1989) 1: 63-94, reprinted in Yung-san Lee and Ts'ui-jung Liu eds., *China's Market Economy in Transition* (Taipei: Academia Sinica, 1990), pp. 483-514.

(with four collaborators) "New Estimates of Fixed Investment and Capital Stock for Chinese State Industry," *China Quarterly* 114 (1988): 243-266; Chinese-language version "Zhongguo guoying gongye guding zichan de pinggu," *Zhongguo shehui kexue* [Chinese Social Science] 6 (1987): 67-74. Reprinted in Yuxin Zheng and Thomas G. Rawski eds., *Tizhi zhuanhuan zhong de Zhongguo gongye shengchanlü*, pp. 275-288.

(with four collaborators) "Productivity Change in Chinese Industry, 1953-1985," *Journal of Comparative Economics* 12 (1988): 570-591; Chinese-language version "Zhongguo guoying gongye shengchanlü biandong qushi yanjiu" in *Zhongguo shehui kexue* [Chinese Social Science] 4 (1988): 37-44. Reprinted in Yuxin Zheng and Thomas G. Rawski eds., *Tizhi zhuanhuan zhong de Zhongguo gongye shengchanlü*, pp. 57-79.

"Overview: Industry and Transport," in United States Congress, Joint Economic Committee, *China's Economy Looks Toward the Year 2000* (Washington, 1986), 1: 497-504.

"The Economy of the Lower Yangtze Region, 1850-1980," partially translated in *Shanghai jingji yanjiu* [Shanghai Economic Studies] 8 (1985): 55-64.

"Beimei Zhongguo jindai jingjishi yanjiu de xin jinti xin jinchan" [New Developments in North American Research on China's Modern Economic History], *Zhongguo jindai jingjishi yanjiu ziliao* 2 (1984): 169-173.

"New Sources for Studying China's Economy," *Journal of Economic History* 43.4 (1983): 997-1002.

"Japan as Number One, but for How Long?" *Nihon no teiryû/Undercurrent* #1 (1983), pp. 1-12, translated into Japanese in the same issue as "Itsu made tsuzuku Nihon 'Number One'."

"Economic Growth and Integration in Prewar China," Discussion Paper #5, University of Toronto-York University Joint Centre on Modern East Asia, 1982.

"Modern Economic Activity in Prewar China: An Investment Approach," in L. Jorberg and N. Rosenberg eds., *Technical Change, Employment and Investment* (Lund: Department of Economic History, Lund University, 1982), pp. 197-208.

Thomas G. Rawski, p. 14

"Agricultural Employment and Technology," in Randolph Barker and Radha Sinha eds., *China's Agricultural Economy* (Boulder: Westview Press, 1982), pp. 121-136.

"The Simple Arithmetic of Income Distribution in China," *Keizai Kenkyû* [Economic Research] 33.1 (1982), pp. 12-26.

"China's Industrial Performance, 1949-1973," in Alexander Eckstein ed., *Quantitative Measures of China's Economic Output* (Ann Arbor: University of Michigan Press, 1980), pp. 108-193.

"Choice of Technology and Technological Innovation in China's Economic Development," in Robert F. Dernberger, ed., *China's Development Experience in Comparative Perspective* (Cambridge: Harvard University Press, 1980), pp. 191-228.

"Comment" on R.A. Matthews and A.R. Moroz, "The Impact of Imports from Japan on Canadian Manufacturing," in Keith A.J. Hay ed., *Canadian Perspectives on Economic Relations with Japan* (Montreal: Institute for Research on Public Policy, 1980), pp. 266-268.

"Economic Growth and Employment in China," *World Development* 7 (1979), pp. 767-782.

"China's Republican Economy: An Introduction," Discussion Paper #1, University of Toronto-York University Joint Centre on Modern East Asia, 1978; Chinese version published in *Zhongguo jindai jingjishi yanjiu ziliao* [Research Materials for China's Modern Economic History] No. 4 (1986): 90-113.

Industrialization, Technology and Employment in the People's Republic of China (World Bank Staff Working Paper No. 291, 1978).

"Notes on China's Republican Economy," *Chinese Republican Studies Newsletter* 1.3 (1976), pp. 20-34.

"On the Reliability of Chinese Economic Data," *Journal of Development Studies* 12.4 (1976), pp. 438-441.

"Chinese Economic Planning," *Current Scene* 14.4 (1976), pp. 1-5.

"The Growth of Producer Industries, 1900-1971," in Dwight H. Perkins, ed., *China's Modern Economy in Historical Perspective* (Stanford: Stanford University Press, 1975), pp. 203-234, partially translated in *Zhongguo jindai jingjishi lunzhu xuanze* [Selected Translations on Modern Chinese Economic History; Shanghai 1987], ed. Chang Chung-li, pp. 326-345.

Thomas G. Rawski, p. 15

"Problems of Technology Absorption in Chinese Industry," *American Economic Review* 65.2 (1975), pp. 324-328.

"China's Industrial System," in United States Congress, Joint Economic Committee, *China: A Reassessment of the Economy* (Washington: U.S. Government Printing Office, 1975), pp. 175-198. Reprinted in Morris Bornstein ed., *Comparative Economic Systems: Models and Cases*, fourth edition (Homewood, Ill.: Irwin, 1978), pp. 315-341. Translated in *Dui Zhongguo jingji de chongxin guji* (Peking, 1976), pp. 330-373.

"China and Japan in the World Energy Economy," in Leonard Waverman and Edward W. Erickson eds., *The Energy Question* (Toronto: University of Toronto Press, 1974), I: 100-119.

"Recent Trends in the Chinese Economy," *China Quarterly* 53 (1973), pp. 1-34.

"Chinese Industrial Production, 1952-1971," *Review of Economics and Statistics* 55.2 (1973), pp. 169-181.

"Foreign Contacts and Industrialization," *International Journal*, Summer 1971, pp. 522-534.

"Chinese Dominance of Treaty Port Commerce and Its Implications, 1860-1875," *Explorations in Economic History* 7.4 (1970), pp. 451-473.