

Paper prepared for the Harvard-Hitotsubashi-Warwick Conference “Economic Change Around The Indian Ocean In The Very Long Run,” Venice, 22-24 July 2008
Version of June 24, 2008
Comment invited

China’s Economic Development and Global Interactions in the Long Run

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Overview

At the beginning of the current century, China, with its double-digit GDP growth, prodigious exports, staggering appetite for resources, and massive hoard of foreign exchange, has become the world’s newest and largest *Wirtschaftswunder*. Today’s vision of dynamic China represents a major shift from the recent past. It is also the latest in a long series of historical changes in the external view of China’s position among the economies of Asia and the world.

Sixteenth-century visitors from Spain, Portugal, and Britain depicted China as prosperous and technologically sophisticated. Strong overseas demand for Chinese manufactures, notably silk, tea, and porcelain, enabled the Middle Kingdom to profit handsomely from its technological leadership. Beginning in the 1570s, Chinese merchants parlayed these manufactures into large-scale imports of silver, which transformed the domestic monetary and financial system.¹

These advantages did not endure. Two centuries later, European writers, among them Adam Smith, viewed China as stationary rather than dynamic. China’s relative position deteriorated rapidly after 1800, partly because of accelerated technological developments associated with the Industrial Revolution in Britain and Europe, and more specifically because foreign entrepreneurship and innovation erased the advantages formerly enjoyed by Chinese producers of silk (superior Japanese quality control), tea (successful branding and quality control by British planters in South Asia) and porcelain (British and European firms mastered technologies formerly unique to East Asia).²

Although interaction with the outside world cannot fully explain the evolution of China’s economy from advanced to backward, and then from backward to the “workshop of the

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¹ On European impressions in the sixteenth century, see Mackerras 1989; on Chinese participation in the Southeast Asian trade networks, see Ng 2004. According to Frank 1998: 104, Chinese quicksilver, essential for refining silver, also entered the Spanish Americas via the Manila galleons and was a significant Chinese export. In addition, p. 112, China exported zinc and cupronickel which were used as alloys for coinage in other countries.

² For silk, see Ma, 2004; for tea, see Gardella 1994; for porcelain, which was successfully produced in Europe only in 1709, see Emerson, Chen, and Gates 2000.

world,” internal processes alone are equally incapable of accounting for the past five centuries of China’s economic history.

The Sixteenth-Century Trade Expansion

China’s rich tradition of international exchange dates back at least to the Roman empire, which imported Chinese silks. Prior to 1500, however, transport technology constrained long-distance commerce primarily to overland carriage. As a result, high transport costs stringently limited the volume of trade.³

Beginning around 1500, advances in maritime navigation spurred a substantial expansion of European participation in Asian commerce.⁴ The Portuguese and the Dutch were the major European traders in Asia before 1650. The Portuguese first reached the Pearl River delta in south China in 1517. Their request for formal relations was rejected by the government, who thought they were pirates; expelled from the delta (1522), the Portuguese conducted an illicit trade on islands along the China coast, then (1550) were permitted to trade at Macao. The Dutch, who arrived in 1600-1601, established a trading post on Taiwan in 1624. The number of European ships sailing into Asian waters was small at first and waiting for the monsoon winds made for lengthy voyages. For example, it might take three years for a Portuguese vessel to sail from Goa to Macao to Nagasaki and back. Before 1634, less than four ships a year, on average, made the voyage.

Before the 1540s, inter-Asian trade was regulated by the rules of the Chinese tributary system. China’s central government monopolized legal trade, restricting access to its markets to foreign entities who were willing to subordinate themselves as vassals to the Chinese emperor. The Korean court had accepted vassal status in the fourteenth century, as had the Ryukyus. The Japanese shogun Ashikaga Yoshimitsu (the first and last shogun to accommodate himself to the Chinese system) resumed tributary status after a break of seven centuries and sent four embassies to China between 1401 and 1405. During the fifteenth century, a weakened central government in China was unable to restrict foreign trade to its normal official channels (the so-called ‘tributary’ trade), and the disappearance of effective central authority in Japan permitted Japanese regional lords in western Honshu and Kyushu to participate in the lucrative China trade on their own accounts. The trade taking place outside official channels was sometimes conducted through fraudulent embassies bearing false credentials – enterprising Japanese and Ryukyuan magnates claimed to represent the “King of Japan” or the “King of the Ryukyus,” and surprisingly often these were accepted by Ming officials. Despite Ming prohibitions, which were issued sporadically from the 1370s to 1567, privately conducted maritime trade cum piracy flourished.

³ Chinese data from the 1930s show minimum transport costs per ton-km of 0.02 yuan for railway, steamship, or sailboat vs. 0.05 for carts, 0.10 yuan for wheelbarrow or pack animal, and 0.20 yuan for human porter (T. Rawski 1989, p. 184).

⁴ According to Curtin 1984: 136, the stimulus was not advances in ship design but “the discovery of the world wind system.” See his chapter 7 .

The intra-Asian market activity in the sixteenth-century was primarily driven by the demand for Chinese silk and cotton textiles. The “Japanese pirates” were in actuality an international group which included Chinese merchants from the southeast coast (for example, Wang Zhi, Li Dan, Zheng Zhilong) who set up residence in Japanese ports and presided over extensive trade networks stretching from south China outward to East and Southeast Asia. Both Li (d. 1625) and Zheng Zhilong (1604-1661) were natives of Quanzhou, in south coastal Fujian. Li began his trading career in Manila, but moved to Japan (1607-08) after the Spanish massacred Chinese settlers in that city (1603). He became the “head” of the Chinese merchants in Hirado, an important international trade port in western Kyushu. Most of what we know about his activities comes from English, Dutch, and Japanese accounts.

In the next generation, Zheng Zhilong began his career working for Europeans in Macao, Manila and perhaps Taiwan. By the age of twenty, he was in Hirado. He preyed on Dutch and Chinese shipping before being pardoned by the Chinese government in 1628, and put in charge of suppressing pirates. With an official imprimatur, Zheng eliminated his competitors and consolidated his maritime empire which had branches in Nagasaki, the Philippines, and Taiwan. After 1628, he also controlled a large portion of coastal Fujian. He managed overseas trade in Xiamen and Taiwan, collecting taxes and commissions on goods traded from these ports and on ships at sea. The Zheng trading enterprise “in many respects resembled the contemporary East India Companies of Europe, with an international viewpoint, very large financial resources, major military power, and well-coordinated commercial strategies.”⁵ This was the economic and institutional base from which his son, Zheng Chenggong, and other descendants were able to oppose the Qing conquest for several decades. At its peak, the Ming loyalist forces of the Zhengs were able to muster over one hundred thousand men and attack towns in the Yangzi delta.⁶ When Zheng was forced to retreat to Taiwan in 1661, he drove the Dutch East India Company out of the trading post they had erected on the southwest coast. Chenggong’s son and successor, Zheng Jing brought Southeast Asia back into the Zheng maritime trade network and permitted the English East Indies Company to open an office in Taiwan (1670). Only in 1683, two years after Zheng Jing’s death and nearly four decades after they entered Beijing, were the Manchus able to capture the last of the Zheng leaders and close down their trading empire.

Early European traders functioned as niche players in well-established networks of migration and entrepot trade that linked China not just with neighboring Japan and Korea, but also with ports in Southeast Asia, where Chinese, Japanese, and Ryukyuan traders were present everywhere from Manila in the east to Malacca in the west. The Portuguese, for example, carried Chinese goods to Japan when the Ming prohibition on official trade prevailed.⁷

⁵ Ho 1994: 47.

⁶ Carioti 1996, 2006.

⁷ On the replacement of the Silk Road by maritime trade, see Meilink-Roelofs 1962; on the Asian trade network in which European traders functioned, see Klein 1989. Gang Deng 1997 presents estimates of China’s foreign staple trade from earliest times to ca. 1715.

Silk, Porcelain and Tea: China's Export Products

China's primary exports were based on technologies in which it either held a monopoly or a comparative advantage for a considerable period. The technology of producing silk textiles from silkworms seems to have been known by Chinese at least 5,000 years ago, and remained a Chinese monopoly until the third or fourth century A.D. The existence of silk pieces in Christian church treasuries, medieval Fustat in present-day Egypt, and other parts of the Middle East indicate that Chinese silk remained a much-desired Chinese product in Asia and Europe until at least the nineteenth century.⁸ Embroidered and fringed silk shawls traveled via Manila to Spanish colonies in the Americas and eventually directly to Seville; lavishly embroidered bedcovers were "one of the most ubiquitous items made in China for export to the West," and painted silks were used in Europe for clothes and furnishings.⁹ Silk was the major commodity shipped from China by the British East India Company until the middle of the eighteenth century; exports increased again after a disease ruined European sericulture in the middle of the nineteenth century, more than doubling between 1868 and 1900.

Silk remained China's leading export from 1900-1930, but during that period, Japan was supplanting China in world markets, providing a higher standard of quality demanded by American silk manufacturers for their power looms. China's failure to rapidly adapt to the new requirements of textile manufacture, and Japan's success in organizing reforms of its silk industry was responsible for its market loss.¹⁰ Before the late nineteenth century, China had "few rivals in silk" in the world economy. By the early decades of the twentieth century, however, Japan had supplanted China as the leading silk exporter, thanks to superior organization: whereas the Japanese producers were able to enforce changes improving the uniform quality of their silk, the extreme atomization of Chinese production hindered similar reforms in China, making Japanese silk a much more desirable commodity in Europe.

Before the height of European imports of Chinese porcelain, which dominated the sixteenth to eighteenth centuries, Chinese porcelain exports circulated for the most part in the vast sector of Eurasia that extended from the eastern Mediterranean to the Pacific Ocean. From the ninth to the sixteenth century, international trade in Chinese porcelain and stoneware—first white vessels, then *qingbai* (bluish white), and finally blue and white ware-- was in the hands of Chinese, Southeast Asians, and Arabs, who distributed the ceramics to Korea, Japan, Southeast Asia and into the cities of the Middle East, where shards of Chinese pieces have been found at excavations of ninth-century Samarra in Iraq and Nishapur in Iran.¹¹ The raising of shipwrecks in the China Seas during the late twentieth century suggest the large scale of porcelain exports: for example, 60,000 pieces were recovered in 1983 from a Chinese ship, which sank in the mid-1640s on its way from China to Batavia. In the Philippines alone, thirty-one shipwrecks bearing large

⁸ Wilson 2005: chapter 2; on the early Silk Road, see Curtin 1984: 93-4.

⁹ Wilson 2005: 29-32.

¹⁰ Li 1981, Introduction.

¹¹ Emerson, Chen and Gates 2000: 74-80.

cargoes of porcelain have been found. Japanese records for three years in the 1635-1645 period show an average of 371,000 pieces of ceramic exports a year; in 1645 the Dutch shipped 300,000 pieces of porcelain to the Arab market. Total annual exports of Chinese ceramics approximated one million pieces during the seventeenth and eighteenth century.¹²

Porcelain first appeared in China in the seventh century A.D. as a technical advance over stoneware (*ci*), found in China from before the 11th century B.C. Unlike earthenware (*tao*), which is permeable and fired at low temperatures, porcelain was fired at temperatures above 1250 degrees Celsius: using special clays that would not melt at this high temperature the finished product was “a high-fired ceramic ware of hard and dense texture, impermeable to liquid, white in color, translucent when thin, and resonant when struck.” The invention of porcelain was facilitated by two things. China possessed the special white-firing clay called kaolin, which when refined contains less than 1 percent of iron, which would otherwise color the fired vessel; and, from its smelting technology, it also had long experience in generating temperatures above 1250 degrees Celsius, the minimum temperature required for transforming kaolin into porcelain.¹³

First introduced to Europe in the fourteenth century, porcelain was “As valuable as gold” and “a great rarity, serving as gifts for potentates and kings.”¹⁴ Francesco de’ Medici was able to produce a soft-paste porcelain in the sixteenth century but since Italian kilns were only able to fire clays at 1100 degrees Celsius the finished product was very different from Chinese porcelain and, because of the difficulties of firing, few vessels were produced. Experiments continued, but it was not until the late seventeenth century that Count Ehrenfried Walther von Tschirnhaus (1651-1708) was able to devise a kiln that could produce the requisite high temperatures. A “renegade alchemist,” Johann Friedrich Böttger (1682-1719), was assigned by his patron, Augustus the Strong (1670-1733), Elector of Saxony and King of Poland, to assist Tschirnhaus with his work. The successful production of Chinese-type (hard-paste) porcelain in Europe came in 1709, after Tschirnhaus’ death; the first porcelain factory was established a year later, at Meissen. Of course, the onset of European manufacture did not immediately affect demand for the Chinese product.

The tea plant, *Camellia sinensis*, is a perennial which originated in the mountains of southwest China and northeast India.¹⁵ The plant thrives in uplands with plentiful rainfall and well-drained, acidic soil. Of the two major subspecies that are commercially important, the China variety is a multi-stemmed bush which reaches a height of nine feet in its natural state and may survive for a century. As cultivated in the hills of south China, the tea plant reaches a height of only a few feet, easing the task of picking its leaves and leaf buds for processing.

¹² Deng 1997: 275-76.

¹³ Emerson, Chen and Gates 2000: 15-17.; see 19-22 for later innovations in south China at the famous porcelain center, Jingdezhen. The same metallurgical skills used to make porcelain enabled China to produce steel centuries before Europe: see Needham 1964.

¹⁴ Emerson, Chen and Gates 2000: 24, 25.; 26-30 on the development of European porcelain.

¹⁵ Gardella 1994: 9.

Tea seems to have become a Chinese beverage of choice during the eighth century, and trade in tea along Inner Asian routes began at about that time. By 1840, tea is estimated to have ranked fourth in value of all commodities marketed on an empire-wide scale; at that point approximately 23 percent of the total tea output was exported.¹⁶ Tea was “one of the few staples of Sino-European commerce,” and China was the world’s principal source of supply until the 1880s.¹⁷

Even before the Boston Tea Party, which was a reaction against the British tax on tea, the beverage was a prestige item in European diets. Attempts to establish tea plantations outside China foundered for ignorance of the complex processing of the tea leaves. The leaves are first withered, then rolled to express their juices. Rolling breaks up leaf clumps, which are then cooled and aerated. The tea is then chemically transformed by fermentation, which alters their chemical composition. The fermentation process was modified to produce three distinct types of tea: the fully fermented black tea, partially fermented oolong, and green tea, which was not fermented. Finally, firing or drying the leaves inactivates the enzyme in the tea leaf, halting the process. The leaves are graded and packaged in airtight parcels for shipping.¹⁸ Tea exported to Inner Asia was molded into cakes; powdered tea, consumed in China in earlier periods, continued to be shipped to Japan; and loose leaf tea was sold to domestic and European markets.

Despite attempts by Chinese officials to ban the export of tea seeds or plants, not to mention knowledge about the crucial process by which the tea leaves were converted into tea, the Englishman Robert Fortune, posing as a native, entered the tea growing region in south China in the 1840s and smuggled out tea plants. Even though tea was native to Assam, the first British tea plantations in India based themselves on Chinese tea plants. Assam became the center of tea production in India. Grown on plantations, the Assam tea processing was mechanized in the second half of the nineteenth century, and black tea became a “semi-standardized commodity” enjoying economies of scale. The industrial model of tea production was replicated on Ceylon, in the Dutch East Indies and in British colonies in east and south Africa. Meanwhile, the creation of tea blends in the new grocery chain stores of Thomas Lipton persuaded consumers to switch to Ceylon and Indian teas, to the detriment of Chinese tea exports. China’s tea trade fell sharply, beginning in the 1890s.¹⁹

Impact on the Domestic Economy

Well in advance of the industrial revolution, this maritime trade left a powerful imprint on China’s domestic political economy. Most notably, silver imports transformed China’s domestic currency and financial system, initially in the coastal centers of trade.

¹⁶ Gardella 1997: 6-7; Wu Chengming’s estimate, reported above, is lower than Perkins 1969, who estimated that 30-40 percent of tea output was exported during the late Qing.

¹⁷ Gardella 1997: 6-7.

¹⁸ *Ibid.*, 10-11.

¹⁹ *Ibid.*, 124-36, Table 1, p. 7 and Table 2, p. 8.

Silver inflows enabled monetary expansion that promoted economy-wide commercialization, including extension and deepening of marketing networks²⁰ and monetization of tax payments. Eventually, payment in silver (or in bookkeeping currencies denominated in silver) became standard practice for wholesale trade in most parts of the Qing Empire. Chinese participation in maritime trade benefited from substantial institutional support. The branch networks of some of the so-called “native banks” (*qianzhuang*) extended to major trading hubs around the Pacific Basin. Printed books described foreign coins (Von Glahn 2007 cites an 1826 publication that refers to earlier but as yet undiscovered manuals) and instructed readers in European languages.

What were the quantitative and qualitative effects of gradually expanding international commerce on China’s domestic economy prior to the Industrial Revolution?

Quantitative issues

Limited data restricts the menu of analytic possibilities. Scattered information on the numbers and sizes of ships suffices to demonstrate the capacity of water-borne trade to outstrip land carriage. In his review of Stewart Gordon’s *When Asia Was the World* (2007), Lucian W. Pye speaks of “the caravans that kept the different parts of Asia connected” as “huge enterprises of over 1,000 people and 3,000 animals.”²¹ Applying a load factor of 150 kg. implies that a caravan of 3,000 camels can haul merchandise weighing 450 tons.²² But data compiled by Gang Deng show that ships of “medium” size could carry 300 tonnes of grain, and that annual production of seagoing ships during the 1720s amounted to over 1,000 vessels (1997, pp. 262ff., 274). With a handful of vessels able to float cargoes equivalent to merchandise carried by “huge” caravans, the vastly superior potential of water-borne trade is beyond doubt.

The impact of international trade on monetization is an area in which existing information does allow us to gauge the magnitude of trade-linked changes, which turn out to be very substantial.

The broad outlines of China’s domestic monetary arrangements are well-known. During the Song period (979-1279), China’s economy used a combination of government-issued paper notes and metal coinage (copper, some iron). The circulation of China’s copper²³ coinage extended to overseas regions, including Japan, Korea, and Southeast Asia. Despite regional variations and problems associated with counterfeiting, researchers generally project a favorable view of the Song currency system, which seems to have provided a stable backdrop to the expansion of markets and domestic commerce.

²⁰ E. Rawski (1972).

²¹ *Foreign Affairs* March/April 2008, p. 173.

²² According to www.answerbag.com/q_view/87509, “A camel can carry as much as 450kg/990lbs, but a usual and more comfortable cargo weight is 150kg/330lbs.” Accessed 3 June 2008.

²³ Historians commonly refer to Chinese cash coins, which were actually made of a bronze alloy, as “coppers” or “copper cash.” We follow this tradition.

The Jurchen invasion of north China shattered both political and monetary stability. The Jurchen, attacking from their base in Manchuria, captured the Song emperor in 1126, forcing the remnants of the Song court to abandon their capital, Kaifeng, and flee to Nanjing. The ensuing rivalry between the Jin dynasty (i.e. the Jurchens) and the Nanjing-based Southern Song lasted until the thirteenth century, when both parties succumbed to Mongol armies, who established the short-lived Yuan or Mongol dynasty (1279-1368). Political instability took its toll on both economic activity and monetary arrangements. Thus von Glahn notes that: “The erosion of popular confidence in paper money. . . [was] fully apparent by the turn of the thirteenth century. . . . as the Southern Song state [began] . . . printing enormous quantities of paper money in order to defray its mounting debt...” (von Glahn 1996, p. 45). More generally, the unified currency collapsed after Song – “refracted into manifold regional currencies. . . [the] preferred medium of exchange also shifted periodically. . .” (von Glahn 1996, p. 11).

The Ming dynasty, established in 1368, faced the task of reconstructing trade networks and currency arrangements that had suffered considerable damage from the conflict and uncertainty surrounding this succession of rulers. Early Ming monetary policy, chronicled by Richard von Glahn, features mercantile evasion of official mandates favoring a succession of dubious monetary instruments. The private sector’s capacity to sidestep official regulations via recourse to a variety of unofficial monies, including silver, privately-minted copper coins and counterfeit copper cash in commercially advanced coastal regions and grain, furs and cloth in less developed interior districts (see 1996, p. 97ff), illustrates the resourcefulness of the mercantile community, but also suggests high transaction costs, which surely hampered the growth of production and trade.

Against this background, the emergence of strong Chinese demand for New World silver is perhaps not surprising. Large-scale importation of new world silver increased the volume, stability, and uniformity of China’s domestic currency base. Together with the revival of the government mints, which supplied the copper cash used in retail (and some wholesale) trade, import-driven expansion of domestic stocks of monetary silver provided the foundation for extending the scale of production, the extent of commercialization, and the volume and complexity of domestic and international exchange. Documentary evidence tracks the growing prevalence of silver-based transactions. In Huizhou (South Zhili, modern-day Hebei province in north China), land-sale documents dating from the period 1456-1644 show that “in every one of the 836...contracts...the sale prices was denominated and paid in silver,” with no mention of coin (von Glahn 1996, p. 79). Yang Guozhen has compiled 373 18th and 19th-century contracts from Quanzhou (Fujian province) During the 18th century: with the exception of 5 contracts from the decade 1790-99, 83 of 88 documents dating from the 18th century specify payment in silver sycee (ingots cast by money shops) or silver coin.²⁴

Shortly after the discovery of rich silver mines in Mexico and Peru, new world silver began reaching China in large quantities. Protracted divergence between the high price

²⁴ Data tabulated in von Glahn (2007, p. 55).

of silver (relative to gold and other trade goods) offered in China and the much lower value assigned to silver in Europe and Japan provided the economic logic that propelled the lengthy and expensive process of mining silver, laboriously transporting it down to sea level, and then shipping it across oceans and continents to the Middle Kingdom. From 1592 to the early 17th century, the price ratio of gold to silver fluctuated between 1:5.5 and 1:7 at Canton, as opposed to 1:12 or 1:14 in Spain. This divergence attracted silver to China from Europe, the Americas, and Asia, where 1590s bimetallic ratios were approximately 1:10 in Japan and 1:9 in India. Large-scale transfer of silver led to the convergence of bimetallic ratios worldwide by the 1640s.²⁵

While the data on silver flows are complex and widely debated, there is sufficient agreement to compare the magnitude of the monetary changes initiated by China's importation of new world silver with monetary conditions in the early 20th century.

We begin with 1910, starting with the figure of 1392 million yuan, the midpoint of two estimates of China's monetary silver stock for that year (T. Rawski 1989, Table C-1, p. 364). Applying conversion factors of 1.3 troy ounces per yuan (*ibid.*, 365, n. 3) and 32,151 troy ounces per metric ton (see www.metric-conversions.org), the 1910 stock of monetary silver becomes 56.28 thousand metric tons or 56.28 million kg. Taking China's 1910 population at 425 million yields a per capita stock of monetary silver amounting to 0.13 kilogram.

In the absence of reliable estimates of silver stocks for the imperial period, we ask the following question: if we divide a conservative estimate of 16th and 17th century silver imports by China's 1700 population, how does the resulting *increment* to China's per capita stock monetary silver arising from new world imports compare with the *overall* 1910 figure?

Andre Gunder Frank conveniently summarizes a considerable body of research on silver flows. Silver reached China along three routes: i) shipments of new world silver via Europe; ii) trans-Pacific shipments of new world silver via Manila; and iii) imports of silver mined in Japan. We consider each in turn, aiming to construct a conservative estimate of China's imports of monetary silver between 1500 and 1700.

Shipments of new world silver via Europe. According to Barrett, production of silver in the Americas amounted to 17,000 tons²⁶ in the 17th century and 42,000 tons during the 18th century. In the 18th century, 31,000 tons of total output of 42,000 tons, or 73.8 percent, was shipped to Europe. Of this amount, 40 percent was transshipped to Asia (Gunder Frank, p. 143). We assume the same distribution (73.8 percent shipped to Europe; 0.4*73.8 percent transshipped to Asia) for the 17th as for the 18th century, and assume further that all silver transshipped to Asia ended up in China. We ignore Atman's claim that transshipments from Europe amounted to 60 percent (rather than 40 percent) of arrivals, and also ignore silver shipments to and via the Baltics and the Levant, some of

²⁵ Flynn and Giraldez, "China and the Manila Galleon," pp. 75-76, citing work by Chuan Han-sheng and by Kozo Yamamura and Tetsuo Kamiki.

²⁶ This and subsequent tonnage figures are in metric tons.

which undoubtedly entered China (Gunder Frank, pp. 143-144). This crude estimate yields a figure of approximately 17,000 metric tons for silver arriving via Europe between 1500 and 1700:

Silver via Europe = $(17,000 + 42,000) * 0.738 * 0.4 = 17,147$ tons, which we round down to an approximate total of 17,000 tons.

Trans-Pacific Shipments of new world silver via Manila. Competing estimates of the scale of trans-Pacific silver flows range from 15 up to 143 tons per year. An approximate average of 50 tons, endorsed by Han-sheng Chuan and also by Flynn and Giraldez seems plausible, especially because of the possibility that “unregistered contraband” shipments leads documentary studies to understate actual flows by limiting their tabulations to officially-registered cargoes. A crude estimate annual trans-Pacific shipments averaging 50 tons between 1580 and 1700 produces a total of 6,000 tons:

Silver via Trans-Pacific Shipment = $120 * 50 = 6,000$ tons

Silver imported from Japanese mines. In the interest of avoiding overstatement of silver inflows, we set aside the findings of Yamamura and Kamiki, which surely represent the most thoroughly documented alternative, in favor of lower alternative figures for average silver shipments from Japan to China, as follows:

1500-1560	0	(assumed)
1561-1600	50 tons	(Gunder Frank, 145, citing Atwell and Reid)
1601-1640	150	(ibid., using the low end of a 150-190 ton range)
1641-1650	70	(ibid., citing Reid)
1651-1660	50	(ibid., citing Reid)
1661-1670	40	(ibid., citing Reid)
1671-1700	0	(assumed, although “recent Japanese research. . . by Ikeda . . . and data cited by von Glahn. . . suggest that. . . exports continued until at least the mid-eighteenth century” – Gunder Frank, 145.)

These figures produce a total of 9,600 tons, as follows:

Silver imported from Japan = $40*50 + 40*150 + 10*70 + 10*50 + 10*40 = 9,600$ tons

Total silver imports, 1500-1700. The combined total of China’s silver imports during 1500-1700, which seems likely to err in the direction of understatement, thus becomes:

Imports via Europe:	17,000
Trans-Pacific shipments	6,000
Direct imports from Japan	9,600
Total imports, 1500-1700	32,600 tons

Our population total for 1700 comes from Dwight Perkins' sensible review of demographic data, which remains useful 40 years after its original publication. Perkins places China's population at 100-150 million in 1650 and 200-250 million in 1750, commenting that "these figures are meant to indicate a range on which there is perhaps an 80 percent chance of the true figure being included" (1969, Table A.7, p. 216). We assume that China's 1700 population fell between 150 and 200 million, and take the midpoint of this range, 175 million, as a crude point estimate.

To answer the question posed above, we conclude that between 1500 and 1700, imports of new world silver, conservatively estimated to avoid possible overstatement of their economic consequences, added something in the neighborhood of 32.6 million kilograms or, dividing by 175 million, a per capita amount equal to approximately 0.186 kg. of silver to China's monetary stock.

Even though we cannot determine the extent to which the China's aggregate or per capita stock of monetary silver (or overall money supply) increased between 1500 and 1700, examining this outcome from several perspectives justifies the conclusion that this expansion of silver money represents a massive economic shift. Consider the following:

- i) The *increase* in monetary silver during 1500-1700, which we conservatively place at 32,600 tonnes or 0.186 kg per member of China's 1700 population is considerably larger than the *entire per capita stock* of monetary silver in 1910, which we place at 0.13 kg, or 70 percent of the increment for 1500-1700.
- ii) We may crudely summarize the structure of China's 1910 money supply as follows:²⁷

Silver:	51.9%
Copper	15.4
Banknotes	4.2
Deposits	28.2

We see that as early as 1910, the development of banking has progressed to the point at which bank notes and deposits occupy nearly one-third of the money stock. Although we have no comparable data for the period 1500-1700, it is difficult to imagine that banknotes and deposits reached anything like the degree of importance visible in 1910. Furthermore, Kuroda's recent research (2005) on early 20th-century monetary affairs emphasizes the importance of paper notes issued by local governments and local merchants – categories omitted from the 1910 monetary estimates used here. This suggests that the actual share of banknotes and deposits in M2 money supply was higher than the figures shown above – perhaps surpassing 35 or conceivably even 40 percent of the M2 monetary aggregate. This serves to highlight the transformative impact of silver inflows during 1500-1700 in providing Chinese households and merchants with a

²⁷ Based on T. Rawski (1989, Table C.16, p. 394) taking the midpoint of alternate estimates of monetary silver for 1910. Note that M2 money supply totals shown in the source are miscalculated.

uniform and relatively convenient medium of exchange, and therefore on reducing transactions costs and facilitating the expansion of agriculture, handicrafts, and commerce.

Qualitative impact on the economy

By the nineteenth century, the Chinese economy had been significantly influenced by its participation in the global economy. One major economic consequence of the silver imports derived from foreign trade was the monetization of silver, reflected in the sixteenth-century Single Whip fiscal reforms, which simplified tax levies and commuted them to money payments. Monetization was based on an expansion of the marketing system that drew regions situated along the coast and the Yangzi River into long-distance and global trade. The sixteenth-century boom brought increased commercialization of agriculture, further growth in rural and urban handicraft production, and more rural markets in the coastal regions from the Yangzi delta southwards.

In Fujian, a primary participant in intra-Asian trade, cash cropping in sugar cane and expansion of cotton and porcelain production responded to the new opportunities. The Lower Yangzi saw further development of rural handicrafts, especially cotton weaving, with north China localities close to the Grand Canal growing cotton to sell to the south. Tea, grown in the hills of southeast China, flowed along expanded transport networks reaching from the coast into the hinterland, connecting northeast Fujian province with Canton.

Market development and economic growth were accompanied by the relaxation of direct government controls over the economy. The fourteenth century system of designating households for special service as salt producers, artisans, or soldiers collapsed in the sixteenth century, to be replaced by commuted payments in money. Goods obtained for Imperial Household use with *corvée* labor in the fourteenth century were now acquired through subcontracts to private firms using wage labor. Government direction of water-control projects was similarly replaced by local financing and management. The long-term trend of a central government retreat from direct participation and control of the economy continued into the Qing dynasty (1644-1911).

Another long-term trend, the increasing frequency of contracts, signaled the gradual penetration of the market economy. Wage labor increasingly replaced the labor of serflike households. Absentee landlordism emerged in the most commercialized localities, and tenancy contracts in these places began to demand a fixed rent in cash rather than rent in kind or sharecropping. In the most advanced regions, peasants were subjected more intensely than before to the vagaries of the market. Market participation stimulated handicraft production and seems to have encouraged improved conditions for tenants in the long run. Peasants in these commercialized economies were farmers: that is, they had to make economic decisions allocating household labor, selecting crops, and determining the mix of handicraft, wage labor, and farm activities that might optimize the household income.

The emergence of lower level rural markets which accompanied expansion of trading activity had more than economic repercussions for both rural and urban places. On the one hand, market uncertainties made society seem “restless, fragmented and fiercely competitive.”²⁸ On the other, the breakdown of the status system stimulated expansion of literacy and sharpened the attempts of the *nouveau riche* to enter elite circles through examination success.²⁹ Literacy now had value beyond the civil service examinations: fundamental numeracy, ability to function in local markets, and to engage in contracts paid economic dividends. The sixteenth century saw a major boom in commercial publishing, which expanded the range of written materials downward from elite circles into the ranks of those with moderate literacy.³⁰

China and the Global Economy, 1800-1937

As the nineteenth century progressed, China’s global standing continued its decline from “advanced” to “backward.” As the Industrial Revolution spread beyond Great Britain, productivity and living standards in a succession of nations advanced far beyond even the most prosperous regions of China. Expansionist policies rooted in Europe’s new growing commercial ambition and military strength resulted in the “unequal treaty” system that, beginning with the 1842 settlement ending the first Opium War, forced China to allow free trade (and, following an 1895 agreement, unlimited foreign investment) in a growing roster of open ports. As noted earlier, technical and organizational innovations in Japan, Europe, and India stripped China’s leading sectors - silk, porcelain, and tea - of their formerly advantageous position. By the end of the 19th century, Japan had joined the ranks of would-be colonizers, reversing East Asia’s long-standing political and cultural order by defeating Chinese military forces and publishing cartoons showing “modern” Japanese endowing Chinese primitives with fire and other elements of civilization.

Aside from material directly related for international trade, systematic research on trends in China’s domestic economy is surprisingly limited for the 19th century, but considerably richer for the early decades of the 20th century. We can provide the following brief summary:

Economic growth. At the national level, aggregate output expanded during the 19th century, despite the negative impact of massive warfare incited by Taiping rebellion (ca. 1854-1867). Perhaps the clearest evidence of widespread growth comes from Wu Chengming’s somewhat impressionistic but extensively documented estimates (see Table 1) showing that the volume of domestic trade rose steadily between 1869 and 1908, with the deflated value of goods entering trade expanding at an average annual rate of 1.5 percent over this 40-year period. These data confirm the farm sector’s involvement in growing domestic trade (and, by implication, specialization): Wu shows annual grain shipments rising from 233 million *dan* (a measure of weight equal to 133.33 pounds)

²⁸ Elvin 1973, p. 235.

²⁹ Ho 1962, pp. 267-318 on social mobility and examination degrees.

³⁰ E. Rawski 1979.

before 1840 to 372.5 and 526.8 million *dan* in 1894 and 1919/20 respectively, along with impressive increases in shipments of soybeans and cotton (Wu 2002, p. 278).

Table 1 about here

Growth accelerated in the early decades of the 20th century. T. Rawski finds that China experienced “modern economic growth” prior to the 1937 outbreak of the Pacific War, with real output per person rising by 22-24 percent between 1914/18 and 1931/36, “a rate that approached comparable Japanese figures for the period 1897-1931 (1989, p. 332). Expansion was not uniform, but clustered in regions involved in both foreign trade and manufacturing, notably the lower Yangzi region centered on Shanghai (see Ma 2008) and the Northeast region, which benefited economically from Japanese investment (and eventual colonization; see for example Chao 1982).

International Trade and Investment. As the 19th century progressed, China’s economy, particularly the regions economically linked to the coastal treaty ports (via physical proximity or water-borne transport), gradually reconnected with the expanding regional and global flows of trade and investment, now dominated by the newly industrialized European powers. With its formerly dominant manufactured exports suffering diminishing market strength, China’s exports came to resemble those of other low-income regions. Ongoing reduction of manufacturing and shipping costs originating in Europe produced rapid expansion of trade volumes as well as the range of goods available to long-distance maritime commerce.

Available data, crudely summarized in Table 2, show that China’s share of world trade remained stable at 1.3 percent throughout the last quarter of the nineteenth century. Terms of trade also remained stable – using price indexes for exports and imports compiled by researchers at Nankai University – L.L. Hsiao finds that the ratio P_i / P_e is 101.3 in 1870, 93.2 in 1880, 79.0 in 1890, and 103.7 in 1900. Chi-ming Hou’s revision of the Nankai indexes also shows no major trends: Hou’s figures for P_i / P_e average 75.2 for 1867-70 and 84.0 for 1900-03 (data from Hsiao 1974, pp. 273-275).

Table 2 about here

Moderate acceleration of domestic growth during the early 20th century contributed to China’s growing share of global trade, which reached 2.4 percent during the 1920s (Table 2). Terms of trade became more volatile after 1900, with steep increases in the ratio of import to export prices occurring during World War I and again during the global depression.

The proliferation of steamships, railways, and telegraphs expanded the scope of domestic commerce, thus multiplying the impact of maritime links with Europe. For example, Loren Brandt shows that by the late 1880s, rice prices throughout the Yangzi River drainage area become firmly linked to international price trends, creating strong reciprocal ties between transnational rice markets and all inhabitants of the Yangzi area who grew, traded, or ate rice or conducted business with partners who did so (1985, 1989,

which also shows similar results for wheat and cotton in North China). Since China's major rivers flow from west to east, completion in 1905 of the first north-south railway linking Peking to the major Yangzi port of Wuhan stimulated trade by cutting transit time from 40 to 2 days.

China's slow transition to modern economic growth. China's historically dominant position in the regional and global economy has led many to puzzle over the conspicuous absence of a quick response, parallel to Japan's Meiji restoration, following the shock of the Opium War defeat and subsequent European and Japanese incursions. Research of the early post-World War II decades emphasized the deleterious consequences of corruption (e.g. Feuerwerker 1970) and of traditional Chinese social structures (e.g. Levy 1949) – explanations that now seem quaint and irrelevant. Subsequent work (e.g. by Lin 1992) focuses on the “Needham puzzle”: in view of China's long-standing scientific excellence (chronicled by the late Joseph Needham), why the slow transition to modern growth? Kenneth Pomeranz attributes China's slow response to resource constraints, particularly the lack of conveniently-situated coal deposits (2000).

We suggest that structural and institutional factors may have constrained China's economy prior to 1949. China's large size may have slowed the transition to modern growth. Japan's fabled Toyota Corporation originated when the corporate founder, a village mechanic, encountered European textile machinery at a treaty-port exhibition and was inspired to develop what became the Toyoda automatic loom (Kajinishi 1962). But the proportion of Chinese who lived within a day's walk of a treaty port in 1870, 1890, or 1910 was surely far smaller than in Japan; how many potential Chinese Toyodas never materialized simply because the friction of distance kept them removed from sources of inspiration? The particularistic nature of commercial property rights is one candidate for detailed study. The intensity of commercial competition may have inhibited innovation. Finally, until the advent of the People's Republic, no Chinese government (except possibly the 16th-11th century BC Shang dynasty) possessed sufficient revenue to mount a substantial development effort. Under Japan's Tokugawa shogunate, the “feudal dues” amounted to roughly one-quarter of national product. Access to this immense share of total output allowed the Meiji government to buy off potential opponents, administer the country, strengthen the military, and devote approximately 5 percent of GDP to development efforts. This level of developmental expenditure exceeded the entire revenue share of the Qing central state (1644-1912) and approximated the revenue share of all levels of government during the subsequent republican era (1912-1949).³¹

China and the Global Economy, 1949-2008

³¹ Yeh-chien Wang concludes that “in the last quarter-century of the Ch'ing, the land tax [which was the chief source of fiscal revenue] fell within the range between 2 and 4 percent of the land produce in most districts and provinces” (1973, p. 128). T. Rawski's compilation of data for 1931 shows combined central and local government revenues amounting to 4.7-7.2 percent of GDP (1989, p. 23).

China's economic history since the creation of the People's Republic in 1949 falls into two chapters: the era of economic planning, which lasted until the late 1970s, and the era of reform and transition toward a market system, which began in the late 1970s and continues as this is written.

China's Economy Under Socialist Planning. We may summarize key features of China's socialist interlude as follows:

1. Resource mobilization. Land reform and expropriation of the business classes, followed by collectivization of agriculture effectively concentrated tangible wealth (except for household belongings) in the hands of the state. Control over most productive assets and monopoly/monopsony power in most markets permitted public accumulation on an unprecedented scale: by the late 1950s, government revenue amounted to 30 percent of GDP, a large multiple of the revenue achievements of all prior Chinese regimes (Lardy 1978, p. 41). Massive growth of public revenues supported a huge expansion of investment, initially with technical support and policy advice from the Soviet Union.
2. Investment spending extended to the creation of human capital as well as physical assets. China's socialist era brought a steep rise in literacy and important advances in public health – the latter reflected in declining infant mortality, which fell from approximately 140 to about 35 between 1950 and 1982, and a substantial increase in life expectancy, which rose from about 44 to about 67 during the same period (data from Wang and Mason 2008, p. 138).
3. Despite the waste and inefficiency common to planned economies, exacerbated in China's case by massive damage inflicted by political campaigns – particularly the Great Leap Forward and consequent famine of 1958-60 and to a lesser extent the “Cultural Revolution” of the late 1960s, China's planned economy recorded substantial growth. Focusing on 1950-75, years roughly coterminous with China's plan era, David Morawetz finds that China's 4.2 percent average growth of per capita income exceeded results in all but 10 of 77 developing nations. China's overall growth in this period surpassed outcomes in other populous developing states, including Brazil, Egypt, India, and Mexico, often by large margins (1978, pp. 19-21).
4. China's plan-era experience was unusual in that important advances in “basic needs” for average citizens – including education, control of infectious disease, access to basic health care, and protection via rudimentary social safety nets, coincided with stagnant per capita consumption and, for most rural Chinese, insufficient food supplies (between 1958 and the start of reform in the late 1970s).
5. Like other planned systems, China limited its participation in world markets to essential imports and the exports needed to pay for such purchases. The withdrawal of Soviet assistance following the Sino-Soviet split of the late 1950s

pushed the economy in the direction of autarchy, as China's share of world trade fell far below levels attained in the 19th-century treaty-port era (Table 2).

Three decades of socialism left China's economy with an odd combination of accomplishments and setbacks. Despite this mixed outcome, several aspects of China's plan system contributed substantially to the long boom that began soon after the death of Mao Zedong in 1976, and often in completely unexpected ways. These include:

- The uniquely Chinese approach to expanding socialist industry by emphasizing construction of “complete sets” of manufacturing facilities in most provinces. As a result, deregulation, which tended to create monopolies in the former Soviet Union, resulted in competition among Chinese manufacturers.
- The expectation that local governments should pursue economic growth on their own initiative, a feature introduced under the Great Leap Forward of the late 1950s, which unleashed enormously successful entrepreneurial efforts beginning two decades later.
- Although China's rural collectives managed cultivation of approximately 95 percent of arable land, villagers continued to experience the impact of market forces via private plots (which occupied roughly 5% of land and a considerably larger share of household income), and the purchase and sale of subsidiary farm products (piglets, fodder for pigs and poultry etc.), building materials (housing remained largely private; households sought to provide newlywed sons with houses or at least extensions onto family homes); and brides (marriage typically involved substantial payments from the groom's family to the bride's parents).
- In rural China, the collective system forced all adults to respond to external forces (more often political than economic). When reform began in the late 1970s, this heightened awareness of external circumstances accelerated the entrepreneurial response of Chinese villagers and magnified the resulting rural boom (T. Rawski 2006).
- Current field studies of Chinese industry find that the legacy of institutions surrounding socialist industry – technical universities, government-sponsored scientific research facilities, etc. - continue to generate benefits in the form of smoothing everyday operations (e.g. firms hire engineers and train workers through networks linked to plan-era professional associations and educational institutions) and stimulating innovation and upgrading (e.g. a machine tool plant uses contacts established during the plan era to initiate cooperation with a German design institute).

China's Economy During the Reform Era, 1978-present

There is no need to rehearse the well-known accomplishments of China's completely unanticipated economic boom of the past three decades.³² We focus on the impact of global ties in the origin and extension of China's remarkable economic upsurge.

Chinese reform arose from two concerns: the inability of the collective farm system to provide an adequate food supply and dissatisfaction with overall economic performance that, despite favorable comparison with other large developing nations, lagged far behind the achievements of China's East Asian neighbors.

The ancestry of China's long boom is linked to post-World War II developments in Japan and especially in Taiwan, both of which experienced extraordinary growth involving substantial contributions from both agriculture and trade. Taiwan's experience is of particular relevance: a Chinese administration, relying on unconventional advice from Chinese economists, flouted then-standard anti-trade policies by replacing confiscatory foreign exchange policies with a new regime that rewarded successful exporters of agricultural and industrial products, resulting in a notable episode of export-led growth.

China's reform began with what amounted to a reverse land reform in which households received operational control (but not ownership) of arable land. Reversion to household cultivation exposed the disincentives associated with collective farming, as agricultural output surged even as large numbers of workers began to leave the farm sector. This initial rise in farm production rapidly erased chronic food shortages, relaxed long-standing foreign exchange constraints, and encouraged renewed expansion of rural industry (which had boomed in the late 1950s, contracted in the 1960s, and revived during the 1970s) via increases in both supply (of workers and of agricultural materials) and demand (from rising rural incomes).

At the same time, China enacted small and hesitant measures aimed at expanding foreign trade and experimenting with foreign direct investment, notably the establishment of four special export zones (imitating earlier measures in Taiwan and other Asian economies) in south China.

These new trade zones, and the considerable flexibility enjoyed by China's rural industries (which remained largely under local government ownership until the late 1990s) soon developed into an unexpected export bonanza, thanks in large part to a fortunate historical accident. Starting in the late 1950s, Taiwan and Hong Kong emerged as centers for small-scale manufacturing of labor-intensive exports. Successful expansion raised land and labor costs, leading owners to search for new venues. The opening of south China provided an ideal opportunity for these entrepreneurs. The combination of Overseas Chinese entrepreneurial skill and marketing expertise with Chinese labor opened the door to massive expansion of foreign trade, and also provided an ample menu of opportunity for China's nascent private business sector.

³² Naughton (2007) provides a good overview. For fuller analysis, see Brandt and Rawski (2008).

In contrast to the historical circumstances surrounding China's pre-modern economic prominence, the current economic upsurge of the People's Republic depends on extensive transfer of overseas technologies rather than, as in the past, on distinctively Chinese production methods. In general, the recent commercial success of Chinese producers does not arise from distinctive products or trade secrets. Rather, as is widely observed, China's export dynamism arises from changes in transport costs and information technology that, together with a domestic transition from economic planning to a new form of semi-capitalism, have allowed enterprises staffed by China's immense work force to gain global market share in a rapidly expanding array of product lines.³³

The clustering of Overseas Chinese manufacturing ventures along China's southern coast provided the first of multiple channels through which production technology, market intelligence, management methods, institutional options, and many other forms of knowledge poured into China's long-isolated economy. As reform expanded, foreign direct investment from multinational corporations and overseas travel and study soon emerged as important vehicles for knowledge acquisition. In recent years, multinational firms' expansion of China-based R&D centers as well as China's own outbound FDI, especially funds destined for the purchase of manufacturing properties (rather than widely publicized efforts at resource acquisition), have further enlarged the inward flow of knowledge and information.³⁴

Growing participation of foreign business has contributed to China's development in many ways. Rapid dismantling of barriers to commodity imports and to foreign direct investment, which preceded China's 2001 entry into the World Trade Organization (see Branstetter and Lardy, 2008), injected international standards of quality and design into a broad array of domestic sectors.

The efforts of foreign manufacturers to build local supply chains, encouraged by a combination of government policy and cost pressures, has encompassed a growing proportion of domestic firms, especially in China's coastal provinces. A single example can illustrate this point. Johnson Controls, a U.S.-based firm, established a greenfield plant to supply auto seats to the Hyundai car assembly firm located in Beijing. The plant was completed in March 2004. When visited in July 2005, this plant employed 60 suppliers, 10 of which are wholly owned Korean firms specified by Hyundai. The remaining 50 are private domestic firms located within an hour or so of the Johnson Controls facility in the Beijing suburbs.

As China's policy elites gradually came to appreciate the benefits associated with international trade and investment, numerous legislative and regulatory changes have sought to smooth the path to attaining these gains. In the 1980s, for example, foreign

³³ Work by Peter Schott of Yale shows, for example, that Chinese manufactures have penetrated the "import space" of the U.S. economy more rapidly than goods from other exporters such as South Korea and Mexico.

³⁴ UNCTAD data tabulates China's incoming FDI at US\$50-70 billion annually during 2002-2006. UNCTAD data show outbound FDI rising from US\$0.9 billion in 2000 to US\$16.1 billion in 2006 (all at current prices). See <http://stats.unctad.org/FDI/TableViewer/tableView.aspx>, accessed 23 June 2008.

firms persuaded Chinese administrators to allow the use of newspaper advertisements to recruit staff, and to permit workers to change jobs without their employers' permission. During the 1990s, China permitted the establishment of wholly owned foreign firms; this in turn led to enhanced pressure to relax restrictions on private domestic business. The predilection of foreign firms for leased equipment led to provisions facilitating the spread of leasing to the domestic economy. The special legal/regulatory regime established to govern activity in the special economic zones, reminiscent of the mixed Sino-foreign regimes that governed China's 19th and early-20th century treaty ports, gradually spilled into the domestic economy – as did the zones themselves – as initial success encouraged local and provincial governments across China to campaign for permission to establish new zones aimed at encouraging foreign trade, foreign investment, technology start-ups and other forms of enterprise that could benefit from the beneficial regulatory environment provided to the initial zones.

The cumulative impact of these developments is very large. Over a period of three decades, China has vaulted from near-autarchy to join the ranks of global leaders in trade and investment. China's share of world trade outstripped Japan's in 2004. WTO data for 2006 rank China as the world's third largest exporter and importer of merchandise, trailing only the United States and Germany in both categories. China's trade ratio (combined value of exports and imports as a percentage of GDP) rose from 5 percent in 1970 to 12, 30, and 40 percent in 1980, 1990, and 2000. In 2005, the trade ratio reached 63.9 percent, a total far in excess of comparable figures for other large nations (with populations above 100 million – see Brandt, Rawski and Zhu 2007). Foreign-linked firms regularly transact more than half of China's overall imports and exports. China ranks among world leaders as a destination for FDI and is rapidly emerging as a mid-sized capital exporter.

The economic benefits associated with expanded participation in global flows of commodities, technology, capital, and knowledge while large, remain unevenly distributed across China's vast landscape. Table 3, which illustrates the differential impact of international trade and investment on three geographic sub-regions, demonstrates that a disproportionate share of activity, and hence of benefits, accrues to coastal provinces that, based on data for 2004, account for roughly 40 percent of the nation's populace, 60 percent of GDP, and more than 85 percent of international trade and incoming FDI. As a result, regional trade ratios for central and western provinces resemble China's national figures for the mid-1980s, while the per capita volume of trade and FDI along the coast is 6-14 times the figure for central China and 20 times comparable figures for the west.

In reform-era China, regional growth is closely linked to easy access to global markets, and also to a relatively small share of state ownership in the local economy. This reality places interior regions at a double disadvantage as they are both distant from coastal port cities and typically burdened by large state sectors, which preoccupy policymakers' attention, divert capital into often ill-chosen projects, and retard the growth of non-farm productivity and employment as well as the transfer of labor from farming to non-agricultural occupations (Brandt, Hsieh, and Zhu 2008).

China's massive efforts to construct a national system of expressways, together with nationwide development of airports and telecommunications, have sharply reduced the economic distance separating key interior cities from the coast. Additional policy interventions aimed at reducing regional inequality, such as the "Develop the West" campaign initiated in 2000, reflect official determination to pursue regional economic balance.

To date, however, the impact of these efforts remains modest at best. Although high costs in coastal centers have encouraged foreign (and Chinese) firms to explore inland investment options, business activity in interior provinces faces obstacles arising from limited supply chain opportunities, government behavior, and regional culture. Managers at a leading Chinese maker of auto report producing only "products that were less 'quality demanding' in their inland facilities, in part because highly qualified employees refuse assignments in interior locations. They also report that efforts to raise standards encounter broader cultural obstacles at interior plants, even though they regularly use workers from these same provinces to staff their superior coastal plants" (Brandt, Rawski and Sutton 2008, p. 625). Factory managers interviewed in Shaanxi province during 2004 repeatedly noted their own firms' "poor sales performance" and "indicated their unwillingness to explore initiatives undertaken elsewhere by 'southerners' (*nanfangren* – referring to inhabitants of central and southern coastal regions)" (ibid).

These differences in regional attitudes and commercial capabilities, which seem rooted in historical experience that extends centuries prior to 1949, are widely recognized. In April 2008, Vice-Premier Wang Qishan, addressing a Central China Investment & Trade Exposition in Wuhan, "urged leaders in central China to further liberate their thinking and speed up reform." Wang emphasized the importance of "transforming minds" and instructed the assembled leaders to "reduce intervention into micro-economic operations." Commerce Minister Chen Deming's promise to "help set up centers to train business brains in East China for the central region highlighted the significance of regional differences in economic culture (Gong Zhengzheng 2008).

Implications

Several conclusions emerge from this survey.

Our review shows that interaction with global markets has consistently contributed to the growth and commercialization of China's economy and to the material well-being of its populace.

China's experience leads us to reject the notion that participation in global markets is necessarily detrimental to the economies of poor nations and to the welfare of poor households. Globalization may negatively impact some poor nations and their citizens. For China, the outcome is precisely the opposite.

China's historic and contemporary interaction with the international economy strongly confirms Paul Romer's notion that information blockage (rather than resource misallocation arising from price distortions) dominates the total cost arising from officially-imposed isolation, such as occurred during the early Qing period and again during China's era of 20th-century socialist planning. The astonishing ignorance displayed even by highly educated elites prior to China's reform underlines Romer's view of "how costly it is in terms of domestic welfare when a poor nation indulges a taste for self-sufficiency and righteous indignation in its dealings with the rest of the world" (1993, p. 548).

Alexander Gerschenkron emphasized "the significance of. . . native elements in the industrialization of backward countries" (1962, p. 26). Even now, following three decades of reform, China's economy falls far short of a full market system. How, then, did rapid growth, and especially the rapid penetration of international markets, follow so quickly upon the very modest market-leaning initiatives of the late 1970s and 1980s, particularly among a population just emerging from two decades of relentless propaganda aimed at vilifying markets, profit-seeking, and entrepreneurship?

Overseas Chinese – prosperous, enterprising, and linked to China by patriotism as well as family ties, contributed immensely to the flows of technology, market knowledge and managerial know-how that enabled the rapid expansion of China's exports. But what explains the remarkable business acumen of the overseas Chinese? How did so many poor, uneducated migrants from South China villages attain entrepreneurial success in often hostile Asian environments? Similar questions arise in China itself. How did so many poor, uneducated villagers create successful business ventures during the past three decades, despite lingering official hostility to private enterprise? Why does the extensive and often critical literature on China's rural communes say so little about the massive burden of recording production, consumption, sales, purchases, inventories, and cash balances of several million collective units, not to mention the daily work of several hundred million commune members? Why do studies of China's "township and village enterprises," which mushroomed from 1.5 million to 18.5 million units between 1978 and 1990 devote so little space to discussing recruitment of managers?

We suggest that the legacy of traditional village culture represents a "native element" that has spurred China's economy throughout the five centuries reviewed here. There is no need to insist that the "will to economize" is stronger in China than elsewhere, or that Chinese are quicker to spot bargains than others. Instead, we suggest that pre-modern Chinese village society, with its long and deep traditions of involvement with markets, financial instruments, contracts, shareholding, and complex organizations, produced social patterns and cultural legacies that equips its descendents with what, on average, amounts to an unusually rich and flexible portfolio of organizational skills with which to pursue economic advantage (T. Rawski 2007).

Writing of the 1920s and 1930s, Tim Wright describes China's economy as blessed with "an abundance of small-time entrepreneurs" (1984, p. 325); the same observation could

apply to the 1620s or 1820s. Business observers often describe successful companies as having a “deep bench” of managerial talent. As a nation, China benefits from an exceptionally “deep bench” of entrepreneurial verve and management skill. In short, we suggest that historical legacies equip Chinese societies with a comparative advantage in business enterprise.

REFERENCES

Brandt, Loren. 1985. "Chinese Agriculture and the International Economy, 1870-1930's: A Reassessment." *Explorations in Economic History* 22 (April 1985): 168-193.

Brandt, Loren. 1989. *Commercialization and Agricultural Development: Central and Eastern China, 1870-1937*. Cambridge and New York: Cambridge University Press.

Brandt, Loren, Chang-tai Hsieh, and Xiaodong Zhu. 2008. “Growth and Structural Transformation in China.” In *China's Great Economic Transformation*. Ed. L. Brandt and T. G. Rawski. Cambridge and New York, Cambridge University Press: 683-728.

Brandt, Loren, and Thomas G. Rawski, eds. 2008. *China's Great Economic Transformation*. Cambridge and New York: Cambridge University Press.

Brandt, Loren, Thomas G. Rawski, and John Sutton. 2008. “China's Industrial Development.” In Loren Brandt and Thomas G. Rawski eds., *China's Great Economic Transformation*. Cambridge and New York: Cambridge University Press, pp. 569-662.

Brandt, Loren, Thomas G. Rawski, and Xiaodong Zhu. 2007. “International Dimensions of China's Long Boom: Trends, Prospects and Implications.” In *China and the Balance of Influence in Asia*. William W. Keller and Thomas G. Rawski, eds. Pittsburgh: University of Pittsburgh Press, pp. 14–46.

Branstetter, Lee, and Nicholas R. Lardy. 2008. “China's Embrace of Globalization.” In Loren Brandt and Thomas G. Rawski eds., *China's Great Economic Transformation*. Cambridge and New York: Cambridge University Press, pp. 633-682.

Chao, Kang. 1982. *The Economic Development of Manchuria: The Rise of a Frontier Economy*. Ann Arbor: University of Michigan Center for Chinese Studies,

Curtin, Philip D. 1984. *Cross-Cultural Trade in World History*. Cambridge: Cambridge University Press.

Deng, Gang. 1997. “The Foreign Staple Trade of China in the Pre-Modern Era.” *The International History Review* 19.2: 253-85.

Dernberger, Robert F. 1975. “The Role of the Foreigner in China's Economic Development.” In Dwight H. Perkins ed., *China's Modern Economy in Historical Perspective*. Stanford: Stanford University Press, pp. 19-47.

- Elvin, Mark. 1973. *The Pattern of the Chinese Past*. Stanford: Stanford University Press.
- Emerson, Julie, Jennifer Chen, and Mimi Gardner Gates. 2000. *Porcelain Stories: From China to Europe*. Seattle: Seattle Art Museum and University of Washington Press.
- Feuerwerker, Albert. 1970. *China's early industrialization; Sheng Hsuan-huai (1844-1916) and Mandarin enterprise*. NY: Athaneum.
- Fortune, Robert. 1853. *The Tea-Districts of China and India*. 2 vols. London: John Murray.
- Flynn, Dennis O. and Arturo Giraldez. 1994. "China and the Manila Galleons." In *Japanese Industrialization and the Asian Economy*, ed. A. J. H. Latham and Heita Kawakatsu, pp. 71-90. London: Routledge.
- , 1995. "Arbitrage, China, and World Trade in the Early Modern Period." *Journal of the Economic and Social History of the Orient* 38.4: 429-48.
- Frank, Andre Gunder. 1998. *ReOrient: Global Economy in the Asian Age*. Berkeley: University of California Press.
- Gardella, Robert. 1992. "Squaring Accounts: Commercial Bookkeeping Methods and Capitalist Rationalism in Late Qing and Republican China." *Journal of Asian Studies* 51.2: 317-39.
- , 1994. *Harvesting Mountains: Fujian and the China Tea Trade, 1757-1937*. Berkeley: University of California Press.
- Gerschenkron, A. (1962). *Economic backwardness in historical perspective, a book of essays*. Cambridge: Belknap Press of Harvard University Press.
- Gong, Zhengzheng. 2008. "Central China Urged to Up Ante." *China Daily*, 28 April, p. 2.
- Hartwell, Robert. 1962. "A Revolution in the Chinese Iron and Coal Industries during the Northern Sung, 960-1126 A.D." *Journal of Asian Studies* 21.2: 153-62.
- Ho, Chuimei. 1994. "The Ceramic Trade in Asia, 1602-82." In *Japanese Industrialization and the Asian Economy*, ed. A. J. H. Latham and Heita Kawakatsu, pp. 35-70. London: Routledge.
- Ho, Ping-ti. 1964. *The Ladder of Success in Imperial China*. New York: John Wiley & Sons.
- Hsiao, Liang-lin. 1974. *China's Foreign Trade Statistics: 1864-1949*. Cambridge: Harvard University East Asian Research Center.

- Kajinishi, Mitsuheya. 1962. *Toyota Sakichi*. Tokyo: Yoshikawa Kobunkan.
- Klein, Peter W. 1989. "The China Seas and the World Economy Between the Sixteenth and Nineteenth Centuries: The Changing Structures of Trade." In *Interactions in the World Economy: Perspectives from International Economic History*, ed. Carl-Ludwig Holtfrerich, pp. 61-89. New York: New York University Press.
- Kuroda, Akinobu. 2005. "The collapse of the Chinese imperial monetary system," in Kaoru Sugihara (ed.), *Japan, China and the Growth of the Asian International Economy, 1850-1949*. Oxford: Oxford University Press, pp. 103-126.
- Lardy, Nicholas R. 1978. *Economic Growth and Distribution in China*. Cambridge and New York: Cambridge University Press.
- Levy, Marion J. 1949. *The rise of the modern Chinese business class; two introductory essays*. New York: International Secretariat, Institute of Pacific Relations.
- Li, Lillian M. 1981. *China's Silk Trade: Traditional Industry in the Modern World, 1842-1937*. Cambridge: Council on East Asian Studies, Harvard University.
- Lin, Justin Y. 1992. "The Needham Puzzle: Why the Industrial Revolution Did Not Originate in China." *Economic Development and Cultural Change*, 43, 2 (1995): 269-292.
- Ma, Debin. 2004. "Why Japan, not China, Was the First to Develop in East Asia, Lessons from Sericulture 1850-1937." *Economic Development and Cultural Change* 52.2.
- Ma, Debin. 2008. "Economic Growth in the Lower Yangzi Region of China in 1911-1937: A Quantitative and Historical Perspective" *The Journal of Economic History*, 68.2: 355-392.
- Mackerras, Colin. 1989. *Western Images of China*. Hong Kong: Oxford University Press.
- Meilink-Roelofs, M. A. P. 1962. *Asian Trade and European Influence in the Indonesian Archipelago between 1500 and about 1630*. The Hague: Martinus Nijhoff.
- Morawetz, David. 1978. *Twenty-Five Years of Economic Development, 1950 to 1975*. Baltimore: Johns Hopkins University Press.
- Naughton, Barry. 2007. *The Chinese Economy: Transitions and Growth*. Cambridge: MIT Press.
- Needham, Joseph. 1964. *The Development of Iron and Steel Technology in China*. Cambridge: Newcomen Society.

Ng, Wai-ming. 2004. "Overseas Chinese in the Japan-Southeast Asia Maritime Trade during the Tokugawa Period (1603-1868)." In *Maritime China in Transition, 1750-1850*, ed. Wang Gungwu and Ng Chin-keong, pp. 213-26. Wiesbaden: Harrassowitz.

Perkins, Dwight H. 1969. *Agricultural Development in China, 1368-1968*. Chicago: Aldine.

Pomeranz, Kenneth. 2000. *The Great Divergence, Europe, China, and the Making of the Modern World Economy*. Princeton: Princeton University Press.

Rawski, Evelyn. 1972. *Agricultural Change and the Peasant Economy of South China*. Cambridge: Harvard University Press.

_____. 1979. *Education and Popular Literacy in Ch'ing China*. Ann Arbor: University of Michigan Press.

Rawski, Thomas G. 1989. *Economic Growth in Prewar China*. Berkeley: University of California Press.

Rawski, Thomas G. 2006. "Social Capabilities and Chinese Economic Growth," in *Social Change in Contemporary China*. Wenfang Tang and Burkart Holzner, eds. Pittsburgh: University of Pittsburgh Press, pp. 89–103.

Romer, Paul. 1993. "Idea Gaps and Object Gaps in Economic Development." *Journal of Monetary Economics*, vol. 32: 543-573.

Schott, Peter K. 2007. "The Relative Sophistication of Chinese Exports." Accessed March 8, 2007, from http://www.som.yale.edu/Faculty/pks4/files/research/papers/chinex_310.pdf.

Sung, Ying-Hsing. 1966. *T'ien-kung K'ai-wu: Chinese technology in the seventeenth century*. Tr. E-tu Zen Sun and Shiou-Chuan Sun. University Park: Pennsylvania State University Press.

Tracy, James D., ed. 1991. *The Political Economy of Merchant Empires: State Power and World Trade, 1350-1750*. Cambridge: Cambridge University Press.

Von Glahn, Richard. 1996. *Fountain of Fortune: Money and Monetary Policy in China, Fourteenth to Seventeenth Centuries*. Berkeley: University of California Press.

Von Glahn, Richard. 2007. "Foreign Silver Coins in the Market Culture of Nineteenth Century China." *International Journal of Asian Studies* 4.1: 51-78.

Wang, Feng and Andrew Mason. 2008. "The Demographic Factor in China's Transition." In L. Brandt and T. Rawski eds., *China's Great Economic Transformation*. Cambridge and New York: Cambridge University Press, pp. 136-166.

Wang, Yeh-chien. 1973. *Land Taxation in Imperial China, 1750-1911*. Cambridge: Harvard University Press.

Wilson, Verity. 2005. *Chinese Textiles*. London: Victoria and Albert Museum.

Wright, Tim. 1984. *Coal Mining in China's Economy and Society, 1895-1937*. Cambridge: Cambridge University Press.

Wu Chengming. 2002. *Wu Chengmingji* [Collected works of Wu Chengming]. Beijing: Zhongguo shehui kexue chubanshe.

Table 1
 Estimated Volume of China's Domestic Trade, 1869-1908
 (Million *guiyuan* taels)

Year	Domestic Products	Import Goods	Import Share %	Nominal Trade		Price Index	Volume Index
				Total Taels	Index		
1869	852.65	74.76	8.1	927.41	100.0	100.0	100.0
1874	865.14	71.70	7.7	936.84	101.0	78.8	128.2
1879	866.35	91.60	9.6	957.95	103.3	75.3	137.2
1884	872.99	81.06	8.5	954.05	102.9	72.9	141.1
1889	1089.61	123.52	10.2	1213.13	130.8	83.5	156.7
1894	1085.91	180.58	14.3	1266.49	136.6	87.1	156.8
1899	1325.71	294.93	18.2	1620.64	174.7	109.4	159.7
1904	1610.96	383.28	19.2	1994.24	215.0	116.5	184.6
1908	1760.43	439.48	20.0	2199.91	237.2	129.4	183.3
Average annual growth 1869-1908 (%)							1.5

Source: Wu Chengming, "Estimate of Volume of Commerce in Modern China's Domestic Market," in *Wu Chengming ji* [Collected Papers of Wu Chengming; Beijing: Zhongguo shehui kexue chubanshe, 2002], pp. 278-279.

Table 2
China's Share of Global Trade, 1870-2005

Year	China's Trade \$ Billion	China's Trade Ratio (%)	China's Share of World Trade (%)
1871-1884	0.2		1.3
1885-1900	0.2		1.3
1901-1914	0.5		1.5
1913	0.8		1.9
1915-1919	1.1		
1920-1929	1.4		2.4
1955	3.1	12.1	1.6
1960	3.8	8.8	1.4
1970	4.6	5.0	0.7
1980	38.1	12.5	0.9
1990	115.4	29.8	1.6
2000	474.3	39.6	3.6
2001	509.7	38.5	4.0
2002	620.8	42.7	4.7
2003	851.0	51.9	5.6
2004	1154.8	59.8	6.1
2005	1421.9	63.9	6.7
2006	1760.4		7.2
2007	2173.8		7.7

Sources: Dernberger (1975, p. 27);
Brandt, Rawski and Zhu (2007, p. 17)
Authors' file
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WTO web site

Table 3
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: Brandt, Rawski, and Zhu 2007, p. 20.

On May 28, 2008, the Global Economy and Development program at the Brookings Institution hosted a presentation by Angus Maddison on his findings in the second edition of *Chinese Economic Performance in the Long Run*. Maddison discussed his analysis of the six major transitions in Chinese history, beginning with the transformation under the Sung Dynasty and ending in his predictions for the future of China's economy. This conversation is particularly pertinent in light of China's rapidly changing role in the world economy. Mr. Maddison has a long history with the Organisation for Economic Co-operation and Development (OECD), having served as Head of the OEEC Economics Division from 1935 to 1962 when the organisation became the OECD.

[@inproceedings{Maddison1998ChineseEP, title={Chinese economic performance in the long run}, author={A. Maddison}, year={1998} }](#)
A. Maddison. Published 1998. Economics. This book is unique in its depth of perspective. It uses a comparative approach to explain why China's role in the world economy has changed so dramatically in the last thousand years. It concludes that China is likely to resume its natural role as the world's largest economy by the year 2015, thus regaining the position it had held until the end of the nineteenth century. The study provides a major reassessment of the scale and scope of China's resurgence over the past half century, employing a comparative approach. [Expand. View via Publisher.](#) Although the Chinese government quickly took measures to bring the epidemic under control, China's economic development still faces huge challenges and risks in the post-epidemic era due to the normalization of epidemic prevention and control and many uncertainties. Therefore, while strengthening the prevention and control of the epidemic, the Chinese government adjusted the macroeconomic regulation in time and made more pragmatic and meticulous arrangements for economic and social development. The long-term positive economic trend of China's economy has not changed. Although the coronavirus has a short-term impact on China's economic growth, it has not changed the trend of China's long-term economic development. The reasons are as follows. China's rapid economic development over the last 30 years is primarily due to the opening of their economic system to the free market. The reason I say free is that China's economy is not yet a free market economy and it likely never will be. But, you have to admire the miracle of introducing a bit of markets to a country that was ravaged by the abject failure of Communist economic planning. Many capital powers run into China bring out productive energy which also bring out some negative powers in the long run. Many other country have negative government or system which doesn't or has no ability to focus on the need of it's people but few's profit amount.if the profit isn't p. Continue Reading. *Environment and Development Economics*. Volume 23 Issue 2. The potential benefits of agricultural adaptation to... *China Agricultural Economic Review* 6(3), 358-378. [CrossRef Google Scholar](#). Wei, X, Declan, C, Erda, L, Yinlong, X, Hui, J, Jinhe, J, Lan, H and Yan, L (2009) Future cereal production in China: the interaction of climate change, water availability and socio-economic scenarios. *Global Environmental Change-Human and Policy Dimensions* 19(1), 34-44. [CrossRef Google Scholar](#). Spatio-temporal effect of climate change on water balance and interactions between groundwater and surface water in plains. *Science of The Total Environment*, Vol. 722, Issue. , p. 137886. [CrossRef](#).