MIRACLE OR MIRAGE? FOREIGN SILVER, CHINA'S ECONOMY AND GLOBALIZATION FROM THE SIXTEENTH TO THE NINETEENTH CENTURIES

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Abstract. Ming–Qing China has been seen as positioned at the very centre of the process of early globalization partly due to China's huge appetite for foreign silver for its own commercialization. The findings of this study challenge this view head on by showing that not only did China not import and use nearly as much foreign silver as commonly imagined, silver moved into and also out of China. It served at best as a secondary currency and often worked on a barter basis. The sector which retained the lion's share was the pawnshop for short-term credit mainly for consumption.

1. THE ISSUE: SILVER AND THE 'REORIENT THESIS'

In recent years, an orthodoxy has emerged which maintains that China was a leading world power prior to the rise of the West. Its position was based upon several comparative advantages in pre-modern science and technology;[1] unique socioeconomic institutions including income redistribution and social welfare for a pre-modern agrarian empire;[2] high living standards;[3] an unrivalled market size for a national economy; and as a hegemon within a Sinocentric 'world system' before the arrival of the Europeans.[4]

A recent trend for the reinterpretation of sixteen to nineteenth century world history has taken the reassessment one step further by placing China at the very centre of early modern globalization.[5] All the other players were at the mercy of the 'China factor'.[6] Two publications – *ReOrient* by A. G. Frank and *Global Connections and Monetary History, 1470–1800* by Flynn Giráldez and von Glahn – form a landmark.[7] Their view is highly compatible with a recent reassessment of China's economic performance,[8] which ranks China as an equal to Western Europe until the 'great divergence' set in.

Against this backdrop, the 'ReOrient thesis' gets its popularity. It claims that: (i) China produced huge surpluses but lacked precious metals to monetize its huge

[1] See, for example, Needham (1954–2003) and Hobson (2004).

[2] Wong (1997).

[3] See Li (1998), Pomeranz (2000), cf. Maddison (1998) and Landes (1998).

[4] Frank (1998).

[5] There many definitions of globalization, see O'Brien (2006, pp. 3–39).

[6] Flynn and Giráldez (pp. 309–38).

[7] Frank (1998), and Flynn *et al.* (2003).

[8] Pomeranz (2000).

market; (ii) China persistently needed foreign silver;[9] (iii) the West and Japan rationally responded to China's demand by trading their silver for Chinese goods such as porcelain, silk and tea;[10] (iv) China's demand for silver prevented the price of silver from declining in the world market, thereby sustaining European (mainly Spanish) global and colonial enterprises, as well as the economic prosperity of the West in general; and (v) the Chinese went ahead with 'silverization' to maximize commercial growth at home.[11] This global symbolic exchange benefited all parties.

More specifically, the 'ReOrient thesis' views 'silver for China' as the very motor of world trade.[12] '[W]e view silver as a crucial driving force underlying the emergence of global trade . . . a new monetary and fiscal regime within Ming China was the driving force behind global trade in the early modern period'. This was because the 'specific metal, silver, headed to China from all corners of the earth'.[13]

This has to mean that China had an unlimited demand for silver (and hence China became a 'silver black hole'). Anecdotally, Antonio de Morga famously wrote in 1609 that 'the purchase price [of Chinese goods] is paid in silver and reals, for the Shangleys [shangren 商人] do not want gold, or any other articles, and will not take other things to China'.[14]

In contrast, Adam Smith, who lived at the time of global silver trade, was far more cautious. In his *An Inquiry into the Nature and Causes of the Wealth of Nations*, Smith sees no motor of globalization in China: 'The silver of the new continent seems in this manner to be one of the principal commodities by which the commerce between the two extremities of the old one is carried on, and it is by means of it, in a great measure, that those distant parts of the world are connected with one another'.[15]

The 'ReOrient Thesis' is a neat story. The demand and supply of two markets met simultaneously where foreign silver equalled Chinese consumer goods. But this is also a supply side of the story. China's demand for silver was, with constant elasticity, derived only from China's population growth. There is no serious attempt (or need) to examine China's GDP or trade performance.

The problem with this approach is that no one can be sure of the volume and value of the trade with China, as the available information of the Ming–Qing

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[9] There are numerous claims associated with this 'silver only' phenomenon. According Morse (1926–29, pp. 307–13), from 1699 to 1751 more than 90% of British exports to China took the form of silver. Here, we take it as a fact.

[10] The West also purchased large quantities of gold from China. But the actual quantities have remained unknown, see Perlin (1991, pp. 315–48); see also Flynn and Giráldez (1996, pp. 83–142, 224–37).

[11] Such judgements are often made by looking at trade links. For example, Atwell (1982, pp. 72–3) argues that because of the number of silver shipping routes, China became a prime beneficiary of the silver boom in the New World. In Flynn and Giráldez's (1995, p. 218) phrase, 'China did convert, both monetarily and fiscally, to silver, ... [silverization] providing a powerful force in shaping the modern world'.

[12] Frank (1998, p. 117).

[13] Flynn and Giráldez (1997, p. xviii).

[14] Chuan Hang-Sheng (1981, p. 851); similarly, Schurz (1985, p. 68) states 'the Chinese were not buyers, but sellers, and they demanded silver in exchange for their goods'.

[15] See his *Book One*, 'Of the Causes of Improvement in the Productive Powers of Labour, And of the Order according to which its Produce is Naturally Distributed among the Different Ranks of the People'.

population itself is messy and unreliable.[16] Moreover, although we seem to know a great deal of the silver shipping routes,[17] the issues of which route carried what quantity and what quantities of silver were received by which countries are far from clear. According to W. S. Atwell, 70% silver for Asia travelled the Pacific route; and 30%, the Atlantic–Indian Oceans route. Jan de Vries argues that in 1725–1750 the Cape route was dominant. Yen-p'ing Hao sees a roughly 50–50 divide between the two routes: of all silver to China, 48% came from India (presumably via the Cape), and the rest from the Pacific (Japan, the Americas and Manila).[18]

Regarding how much silver China received, figures vary greatly: (i) 10–20% the New World's silver output;[19] (ii) one-third of the New World's output;[20] and (iii) a half or even three quarters of the New World's total.[21] In contrast, Arthur Attman estimates that entire Asia only received 54% of the New World's precious metals including silver.[22] These figures easily contradict each other.

Instead of following this supply side approach, the current study investigates the demand side with the following questions: (i) How much silver did China import? (ii) How much silver did China retain? (iii) How did silver function in the economy? and (iv) Who possessed silver, and how much?

In this study, a maximum approach is adopted to give estimates the benefit of the doubt. When possible, quantities of silver (in pesos, *liang* or *yuan*) are converted to metric tons of pure silver for the sake of consistency.[23] The year 1800 is viewed as a watershed due to the fact that trade deficits began during the period.

Smuggling silver, opium and gold by sea was an open secret during Ming–Qing times.[24] Silver may have also changed hands in China's border trade with Russia, Korea and Vietnam. But the value and volume of the trade have remained unknown. It is inappropriate for the current study to even guesstimate, as any 'result' will be dangerously shaky. But it is reasonable to assume that inflows of smuggled silver in early periods and outflows of the silver in later periods cancelled each other out.

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[16] Deng (2004).

[17] There were two main routes, one across the Pacific Ocean via Manila and the other across the Atlantic and Indian Oceans via the Cape. The Spanish controlled Acapulco–Manila sea link across the Pacific was the most direct to Asia. The second route, associated with the *flotas de plata* (treasure fleet), was more complicated, as silver went from Panama across the Atlantic Ocean to Europe (Seville, Lisbon, Amsterdam and London) and then continued towards Asia via the Cape to Goa and Macao.

[18] See Atwell (1982, pp. 74–5); de Vries (2003, pp. 80–1); Hao (1986, p. 66).

[19] An annual estimate for the first half of the seventeenth century, see de Vries (2003, p. 81).

[20] A lump-sum estimate, see Chaunu (1960, p. 269).

[21] A lump-sum estimate, see Marks (2005); Todd (2004, p. 532).

[22] Attman (1986, p. 33).

[23] The Spanish-Mexican peso weighed between 24.25 and 25.56 g with 89.6–93.1% purity (1555–1820). Thus, pure silver in a peso varied from 21.72 g to 23.85 g. Here, I use the maximum 23.85 g for all the peso conversion. One *liang* weighed 37.5 g with 98–99% purity. It thus can be taken as pure silver. Silver yuan was a carbon copy of the peso in weight and fineness; see Cribb (1987, pp. 125–30).

[24] See Deng (1997, pp. 88–92, 111), van Dyke (2005, pp. 133–4).

2. TEST ONE: HOW MUCH SILVER DID CHINA IMPORT?

Estimates of the cumulative silver output in the Spanish–Portuguese New World (i.e. Brazil, Mexico, Peru, Potosí and Chile) vary between 70,000 and 150,000 tons for the approximate period 1550–1850.[25] It is believed that before 1800, the New World's silver contributed about 80–85% of the world total,[26] which makes the world total 87,500–187,500 tons for the same period. The current study takes these figures as given.

The question remains as to how realistic these figures are. The present study turns the assumption of unlimited demand from China on its head by assuming that China's demand for silver was always elastic. Given that silver came as a commodity not as a gift, China had to sell its own goods and services in exchange for it. Thus, the amount of the metal that China was able to purchase in the world market depended entirely on how much China was able to export. This is far more realistic than the use of China's population as the basis for estimation.

2.1. *How much silver was China able to afford?*

How much silver China was able to afford depended on how much China was able to sell. Before the Treaty of Nanking in 1842 which ended the Qing *Cohong* monopoly in Guangzhou (Canton), not only do we not have the data for China's aggregate imports and exports via Guangzhou, but we are also in the dark regarding other ports available for foreign trade (often illegally). In addition, China always maintained its overland trading links with its neighbours including Korea, Russia, the Ottoman Empire, India and Indochina. Silver could have flown into China through these channels.[27]

The best way around this problem is to use the reasonably reliable data of 1864 to 1894 under China's new customs management of the international standard to interpolate export performances of earlier years (see Table 1). At least China's new customs system was now able to monitor foreign trade across the entire Qing Empire with its 30 or so branches to cover the coasts, Taiwan and all border provinces: Manchuria, Sichuan, Yunnan and Guangxi.[28] Both sea and overland trade was monitored.

[25] There is no synchronized time period for silver output. Garner took 200 years with a figure of 71,550 tons (derived from 3 billion pesos), see Garner (1988, p. 900). Cross (1983, p. 404) also suggests that from 1540 to 1700 the New World might produce 70,000 tons of the metal. But in real terms Garner's total output is likely to be 107,325 tons for the entire 300 years. Barrett (1990, p. 236) landed on 150,000 tons (for both silver and gold, though). Based on archival records, the most reliable sum is probably Soetbeer's (1879, pp. 60, 70, 79, 82–3, 92 and Table 1) 145,410 tons (from Brazil, Mexico, Peru, Potosí and Chile). However, Soetbeer's data are for a later period of 1521–1875. Nevertheless, Soetbeer's data largely confirm Barrett's estimates (150,000 tons). In another account, Mexico alone exported at least 3.5 billion coins, or 83,475 tons (Schell 2001, p. 89).

[26] See Cross (1983, p. 397), Barrett (1990, p. 225). This is probably correct. Sir Isaac Newton filed his report on 17 July 1702 on behalf of the Royal Mint that 'the great quantity of silver coming from the West Indies has brought down the prices of silver in all Europe ... The low price mends the market and thereby carries silver from Spain into all Europe and from all Europe to the East Indies and China' (Newton 1935, p. 136).

[27] A recent work rebuts such a view by arguing that overland trade across China's northern borders was conducted in barter with little silver involved; see Molougheney and Xia Weizhong (1989, p. 65).

[28] See Tang (1992).

Table 1. China's foreign trade performance (current price, in million silver liang)

	Import-export duties	Export value	Import value
A. Factual			
1894	12.9 (480)	128.1 (4804)	162.1 (6079)
1884	10.0 (375)	67.1 (2516)	72.8 (2730)
1874	8.5 (319)	66.7 (2501)	64.4 (2415)
1864	5.2 (195)	48.7 (1826)	46.2 (1733)
B. Interpolated			
1834	–	18.7 (701)	11.6 (435)
1824	–	13.6 (510)	7.3 (274)
1814	–	9.9 (371)	4.6 (173)
1804	–	7.2 (270)	2.9 (109)

Source: Import–export duties (関税), based on Tang (1992, pp. 63–6); imports and exports data, based on Liu *et al.* (1999, pp. 91–2).
Notes: Interpolations are based on: (i) 25.5% average growth per decade in import-export duties; (ii) 27.4% average growth per decade in the total value of exports; and (iii) 36.9% average growth per decade in imports. Figures in brackets are in metric tons of pure silver.

Despite the difference in value between imports and exports, it can be reasonably assumed (i) that China maintained a balanced current account all of the time and (ii) that China's export was meant exclusively for buying silver.[29] Around the 1800s and 1810s, China was capable of exporting goods worth a maximum 10 million *liang* silver per year (375 tons of pure silver). This estimate may not be too far from the reality: China's export value in the 1820s and 1830s was recorded as 9.8–9.9 million *liang* (367.5–371.3 tons) a year.[30] This value should be seen as the ceiling for China's annual silver intake during this period.

It is important to recognize that China's export was not constant. Empirically, there was a linear growth in silver imports via Guangzhou.[31] Logically, it took time for China to reach 10 million *liang* silver worth exports. We now assume that China's exports began with the generous sum of 100,000 *liang* in 1550, increasing 100-fold to 10 million *liang* in 1800 with an annual increase of 2.3%. Aggregates along a linear trajectory can be plotted as follows.

	Period amount in liang	Aggregate so far	In tons
1600	247,500	8,149,190	305.6
1700	1,584,920	80,493,730	3,018.5
1800	10,000,000	540,339,700	20,262.8

By 1800, a total of 20,270 tons of silver could have been accumulated. This figure serves as a hypothetical benchmark for China's procurement of foreign silver.

[29] Note, Wu (2001, pp. 284, 286) only counted China's trade surplus as the legitimate source for silver intake to balance China's foreign trade. This is too conservative, as empirically, silver payment certainly went beyond settling China's trade surplus.

[30] Yan, (1955, pp. 3–5). During this period China's export value to Britain was mere one million *liang* of silver (37.5 tons) per year. And, Britain was China's single largest trading partner at the time (Shen 1985, p. 110). Yao's (1962, pp. 254–5) estimates are higher at 23.1 million pesos in value (550.9 tons) per year in 1821 throughout 1831. But this is less relevant to us.

[31] See Dermigny (1964).

2.2. *Silver from the West by 1800*

Lump sum estimates of China's silver intake from the West vary for the sixteenth to early nineteenth centuries, ranging from more than 5000 tons to more than 30,000 tons:

	Estimated silver intake, in tons	Annual
1571–1821	5,595 (234.6, in million pesos)[32]	22.4
1571–1821	4,770–7,155 (200–300)[33]	19.1–28.6
1571–1830	27,189–31,721 (1140–1330)[34]	105.0–122.5

There is simply no consensus. For these reasons, they are less trustworthy. Estimates of China's period intake are more convergent. They also show a certain degree of dynamism.[35]

	Estimated silver intake, in tons	Annual
Chinese figures		
1571–1644[36]	1987.5–3750.0 (53–100, in million *liang*)[37]	27.2–51.4
1644–50	–	–
1650–1799	6686.3 (178.3)[38]	44.9
Total	8673.8–10,436.3[39]	
Western figures		
1560–1640	1320 (by Spaniards)[40]	16.5
1600–50	388 (via the Cape)[41]	7.8
1651–1718	–	–
1725–50	2640 (worldwide)[42]	105.6
1719–1833	6108 (256.1 million pesos)[43]	53.6

We are cautiously confident that 9000 to 10,500 tons of silver (based on the 8673.8–10,436.3 range) is a reasonable range. This is at most 10% of the silver output (taking the mean value of the 70,000–150,000 tons) of the New World.

2.3. *Silver from Japan by 1700*

There is no dispute that the New World's silver was exported through multiple channels to China. But this was not the only source. Japan was another silver

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[32] See Wu (2001, pp. 33, 287).

[33] Qian (1986, pp. 69–78); Zhang (1998, p. 327).

[34] Wang's (1992) estimates seem to have been influenced by Hao's (1986, p. 66) figure of 1320 million pesos (31,482.0 tons) for 1910.

[35] Hao (1986, p. 65) famously said, 'We do not exactly know how many foreign silver dollars existed in China'.

[36] Roughly, this was China's 'silver century', see von Glahn (1996).

[37] Liang (1989, pp. 178–9). The upper range agrees with von Glahn's (1996, p. 140) estimate of 2309 tons.

[38] See Wu (2001, pp. 278–85). But von Glahn's (1996, pp. 232, 240) estimate is only 28.7 tons a year for the second half of the seventeenth century. This coincided with 1.5% peso debasement in 1728 under Philip V. Here, the higher figure is used in favour of China's import capacity.

[39] This roughly agrees with two other estimates: (i) Gilbert's (1929, p. 52) figure of 11,200 tons (100 million pounds sterling); and (ii) Wang's (1979, p. 449) estimate of 11,925 tons (500 million pesos).

[40] Yamamura and Kamiki (1983, p. 353).

[41] Based on de Vries (2003, pp. 80–1). We assume that a half of the silver went to China.

[42] Based on de Vries (2003, pp. 80–1). We assume that a half of the silver went to China.

[43] See Dermigny (1964, p. 735).

exporter for China. At one stage Tokugawa Japan's output capacity might even have paralleled that of the New World.[44]

A boom in Japan's silver industry owed much to the adoption of the 'cupellation method' from Korea (吹灰法 *haikuki*) during the 1530s to 1540s. Although Japanese silver was of lower quality,[45] and its price was sometimes 40% higher than in the European market,[46] it was still competitive in the Asian market because all the silver mines were located along Japan's northwestern coast (in Iwami, Sado and Innai), very close to the East Asian Mainland. Large quantities of silver were exported for the next 170 years until the Tokugawa restrictive policy took effect in 1700.[47]

Chinese ships frequented Japan,[48] presumably to buy silver, as did Dutch and Portuguese ships. Flynn and Giráldez thus asserted that 'virtually all Japanese silver was exported to the Chinese marketplace'.[49] But as Japanese silver was freely traded in Asia, European traders (mainly the Portuguese and the Dutch) almost certainly mixed Japanese silver with silver from other parts of the world for payment.[50] There is a real danger of double counting. Despite this problem, the amount of Japanese silver exported to China can still be estimated. Figures from Japanese and non-Japanese sources are amazingly close.

	Estimated silver for China, in tons	Annual
Japanese figures		
1560–1600 (1)	1012.5–1462.5 (by Portuguese)[51]	25.3–36.6
1560–1640 (2)	5512.5–7087.5 (by all traders)[52]	68.9–88.6[53]
1640–1672	843.8 (by Chinese and Dutch)[54]	26.1
Total	6356.3–7931.3	
Non-Japanese figures		
1550–1645 (1)	1833.8 (48.9 million *liang*)[55]	19.3
1550–1645 (2)	2716.5–2851.5 (3622–3802 tons gross)[56]	28.6–30.0
1650–1700	4575.0 (6100 tons gross)[57]	91.5
Total	6408.8–7426.5	

[44] See Glamann (1977, p. 258).

[45] Japanese silver had a low purity at 70–80% of silver content, averaging 75%, see von Glahn, (1966, p. 137) and Kuroda (2005, p. 83). But Tashiro (1989, p. 103) believes that the purity was as low as 64%. Our current discount rate of 75% is not too harsh.

[46] Atwell (1982, p. 82).

[47] See Tashiro (1989, p. 108).

[48] See Deng (1997, Appendix B).

[49] Flynn and Giráldez (1995, p. 7).

[50] Hao (1986, p. 66) thus lumped silver from Japan and Mexico together as one combined source.

[51] Based on a gross weight of 1350–1950 tons, see Yamamura and Kamiki (1983, p. 351).

[52] Based on a gross weight of 7350–9450 tons, see Yamamura and Kamiki (1983, p. 352).

[53] Some Japanese scholars came up with 118.1 tons as Japan's total annual silver export during 1560–1640 (Flynn *et al.* 2003, p. 174), and 150–200 tons during the early seventeenth century (Innes 1980, p. 376). How much for China is unclear.

[54] Based on a gross weight of 1125 gross tons, see Yamamura and Kamiki (1983, p. 350).

[55] Zheng (1994, p. 83).

[56] Von Glahn, (1996, p. 140). This is similar to Kamiki and Yamamura's estimates of 33.8–48.8 tons a year (see Atwell 1982, p. 71). Moloughney and Xia (1989, pp. 65, 68) went so far as believing that in the first half of the seventeenth century the volume of Japan's silver to China was three to four times that from Manila and hence saved China from a monetary crisis after the Spanish silver supply declined in the seventeenth century. But the notion of such a decline in the Spanish supply is subject to debate; see Chaudhuri (1986, pp. 67–8).

[57] Quan (1993, p. 8); see also Reid (1993, p. 27).

It is thus reasonable to take 7000 to 8000 tons as total silver from Japan. Now, the combined silver intake by China was likely to be 16,000–18,500 tons from 1550 throughout 1800. The annual average was 64–74 tons.

2.4. Silver produced in China by 1510

In East Asia, large-scale silver production began earlier in China than Japan, a factor that has often been overlooked. In 1511, when China's silver deposits were finally exhausted,[58] a total of 3750 tons of the metal (100 million *liang*) was yielded.[59]

2.5. China's total silver stock by 1800

In all, by 1800, China was likely to have accumulated a total of 19,750–22,250 tons of the metal, very close to our linear estimate of China's export capacity (20,270 tons of silver in value) for the same period. This is an equivalent of 18% of the New World's silver output (again, taking the mean value of the 70,000–150,000 tons). Only half of the metal came from Western sources.

3.   TEST TWO: HOW MUCH SILVER DID CHINA RETAIN AFTER 1800?

For the time being, we may view this silver stock as part of China's *M0*.[60] To retain the imported silver did not appear to be a problem by ca 1800. If so, the total weight of China's silver stock could remain constant. But if the silver was used as currency, it was subject to loss in wear and tear (friction).

3.1. Wear and tear

The irony is that the higher the degree of commercialization and silverization, the higher the velocity of currency circulation,[61] and the higher the velocity of silver circulation, the greater the loss. With the loss rate at 1% a year, a given stock will lose half its weight in 70 years. At 2% a year, a stock loses half its weight in 34 years. The total loss in the end would be about 220–450 tons (based on 22,250 tons) for the entire 1550–1800 period. This is negligible.

There were some one-off deductions. According to Qing law, only silver of high purity was accepted by the taxman. The use of low quality silver to pay taxes was subject to a fine of ten-fold in value.[62] This created the need for silver smelting and refining foreign coins into ingots with 98% silver content (紋銀銀錠 or 紋銀元寶,

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[58] See Quan (1966, pp. 246–54).

[59] Li and Xu (2004, p. 118) and von Glahn (1996, pp. 113–5). Noted, Liang's (1989, p. 92) figure was only 30 million *liang*.

[60] Conceptually, *M0* is in a modern economy the total of all physical currency plus accounts at the central bank. The Qing state only had reserves in its Treasury called 戶部存銀, meaning 'silver reserves of the Ministry of Revenue, a proxy of accounts at the central bank.

[61] Velocity means the number of times per year that money changes hands.

[62] See Zhao (1977, p. 470).

5 or 10 *liang* each in a shape of boat), also known as *sycee* (成色銀 literally meaning 'purity').[63]

The source of *sycee* was usually 'foreign silver' (番銀), explicitly associated with coins of Japanese and Western origins (European, Mexican and American) whose purity was regarded as inferior. The smelting process normally caused a 1–2% loss in the original weight (called 火耗 *huohao*) plus a loss in the refinery process (hence 10–12% for the peso and 25% for the Japanese bullion). We are looking at a combined loss of 14–27% in the weight of imported silver which is indeed very considerable. However, as far as we can tell, only 7.7% of China's total silver intake was ever smelted and refined that way.[64] So, in real terms, the actual loss was about 240–460 tons. In addition, the current study converts all foreign silver to pure silver of the *sycee* quality. So, separation loss calculation is irrelevant.

3.2. *Inflow and outflow of silver post-1800*

Inflow of silver continued after 1800. Even the British East India Company (EIC), the main supplier of opium to China, kept sending silver to Canton.[65]

Years	ozs	tons
1800–4	3,487,775	108.5
1805–9	735,968	22.9
1810–4	374,604	11.6
1815–9	5,047,569	157.0
Total		300.0

However, information of silver inflow in the post-1800 era is as fragmented as pre-1800. As far as we can tell, from 1800 to 1830, about 3000 tons were landed in Guangzhou when the *Cohong* system was still very much in full swing.

	Silver received by China, in tons[66]	Annual
1799–1833	2394.5 (100.4 in million pesos, by Americans)	
	381.6 (16.0, by British)	
	62.0 (2.6, by Danes)	
	28.6 (1.2, by Swedes)	
	4.5 (0.19, by Dutch)	
	3.8 (0.16, by French)	
	11.9 (0.5, by others)	
Sub-total	2886.9	84.9
1834–40	?	?
1841–86	11,476.6–17,510.7 (481.2–734.2)[67]	389.1
Total	14,363.5–20,397.6	

[63] The Chinese notion of *liang* for silver was based on *sycee* until a reform the 1930s to switch *liang* to *yuan* (廢兩改圓).

[64] See Hao (1986, p. 66).

[65] Data extracted from East India Company's cargo records of the British Library, 'Oriental and India Office Collection, Commerce Journal', L/AG/1/6, vols 14–28. I thank Professor Huw V. Bowen of the University of Leicester for sharing the information so generally with me. Similarly, Dermigny (1964, p. 735) has a figure of 15,969,160 pesos (380.9 tons) for 1799 to 1833.

[66] Dermigny (1964, p. 735).

[67] This is derived from the estimated total of 17,816–23,850 tons of silver (747 to 1000 million Mexican pesos) for the period of 1721–1886 by the deduction of the estimated total of 6340 tons of silver for 1700–1840 (Lin 1991, p. 11), Ye (1963, p. 71) and Zhuang (1995, pp. 64–76).
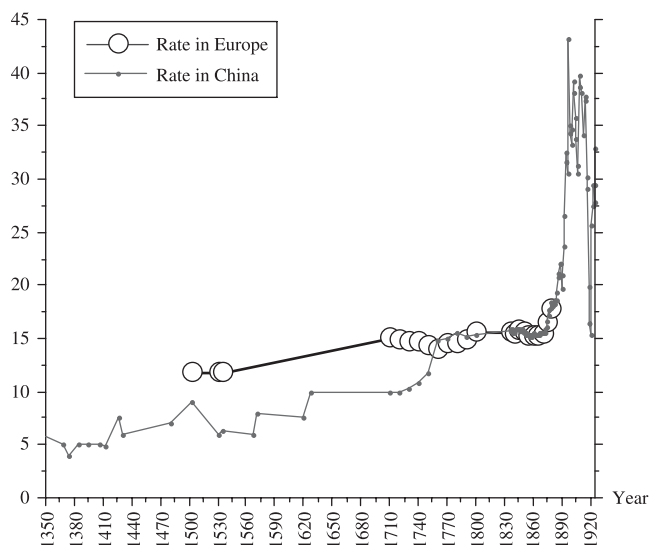
Figure 1. The Silver–Gold exchange rate, China and Europe compared
Source: China – based on Yu (2000, pp. 754–5, 865) Liu and Wang (1996, pp. 178–9), cf. von Glahn (1996, p. 61). Europe – Soetbeer (1879, pp. 129–31) and von Glahn (1996, p. 128). Also, Austria Finanzministerium (1903–5) and Jastram (1981, pp. 200–2).

But the one-way inflow of silver did not last forever. The inflow of large quantities of silver changed China's internal price level and aggregate demand to the point that it eventually became preferable for China to use its silver to pay for foreign goods (opium for example). In the process, China turned itself from a 'production and export economy' to an 'import and consumer economy'. China reached such a point after 1750, coinciding with the synchronization of China's silver–gold exchange ratio with Europe (see Figure 1).[68] Therefore, China's 'silver flight' was determined by the market itself. The mechanisms and timing of the change is a textbook case of David Hume's 'price-specie flow theory'.[69] In this context, the importance of China's current account balance loomed large, because it ultimately dictated how much silver China was able to retain in the post-1800 era.

It is unsurprising that the movement of silver reversed that of ca 1800, hand in hand with the rise of opium consumption by the Qing population.[70]

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[68] Numerous accounts; see for example, Flynn and Giráldez (1995, pp. 12–13) and Cross (1983, pp. 400–1).

[69] David Hume's dynamics begin with a windfall of hard currency (silver or gold) in country X, which enlarges the aggregate demand and pushes up the domestic prices to make foreign imports attractive. Country X then begins to import goods from country Y. Country X's currency drain causes its aggregate demand to fall. Its purchase of Y's goods declines. Country Y, now rich in hard currency, has an enlarged aggregate demand and high domestic prices. It buys cheap goods from X. The cycle begins all over again.

[70] Based on Hao's figures (1986, p. 69).

Table 2. Opium prices, selected years, 1820–35

	Chests†	Weight (斤 jin)	Value (pesos)	Pesos [liang]/jin
1820–5	6,774	729,320	33,502,440 (799.0)	45.9 [29.4][212]
1825–30	12,108	1,312,440	56,930,593 (1357.8)	43.4 [27.8]
1830–5	20,546[213]	2,217,260	63,866,684 (1523.3)	28.8 [18.5]

Source: Morse (1926–9, vols 3–5); Brook and Wakabayashi (2000, p. 204) for the 1838 figure, cf. Hao (1986, p. 117), Gong (1999, pp. 284–90, 292).
Note: Figures in parentheses are metric tons. All the figures may double if smuggling is included.[214] Figures in brackets are in *liang* (37.5 g). Chest–weight conversion is based on Gong (1999, pp. 281, 284–90, 292). †A chest contained 40 opium balls (the same size as a cannon ball, 15 cm in diameter, 3 *jin* each) of 100–120 *jin* (133.3–140 lb) in total.[215] Maximum price based on 2000 chests for 1,200,000 pesos.[216]

	Opium imports, value in tons of silver	Index
1810s	1,097.1	100
1830s	3,148.2	287
1850s	7,155.0	652
1860s	8,347.5	761
1870s	8,586.0	783
1880s	8,109.0	739
Total	36,442.8	

What made opium so special was its value adding capacity. It was sometimes more expensive than silver in weight (see Table 2).[71] It functioned as a currency, too.[72]

As opium consumption spread quickly across the Empire,[73] an immediate consequence was China's mounting trade deficit with India where a large proportion of opium came from. In 1847, Captain George Balfour of the Madras Artillery wrote, 'the balance between China and foreign states is less than it was, but there is still a deficiency of about 9,000,000 dollars'.[74]

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[212] One Qing *jin* was made of 16 *liang*. So, the average opium price per *jin* was higher than silver in weight. High-quality opium cost up to four times its weight in silver, see Qi (2000, p. 537).

[213] Chinese sources often put a figure of 25,000 to 35,500 chests a year for the late 1830s due to the factor of smuggling, For example, Zhongguo Shixuehui 中國史學會 (編), 《鴉片戰爭》(*The Opium War*), vol. 2, 上海: 神州國光社, 1954, p. 543; Kuang (1989, p. 38). Morse's data here are taken as the minimum.

[214] This is based on a comparison between Morse and Wu: (i) 22.2 million *liang* (832.5 tons) a year in the 1830s on the official record (Morse 1926–29, vols 4–5); and (ii) 43.4 million *liang* (1627.5 tons) including smuggling (Wu 2001, p. 286).

[215] Booth (1996, ch. 1).

[216] Pritchard (1929, p. 160).

[71] During 1872–1911, opium was 27-fold the price of copper of the same weight, 46 times of that of raw cotton, 163 times of that of wheat flour, and 326 times of that of rice (Lin 1991, p. 6).

[72] See Hao (1986, p. 56).

[73] The estimated opium addicts in China's total population varies widely from mere one percent to 50–70%, see Gong (1999, pp. 293–4), Brook and Wakabayashi (2000, pp. 9, 194, 214). Opium was most widely used by the upper class, as 80–90% of all officials took the substance (p. 294).

[74] *British Parliamentary Papers*, vol. 38, Entry 4405.

Table 3. Trade between China and India, 1813–50 (million pounds sterling)

		China's import			
	China's export	*Total*	*Of which opium*	*Balance*	*In tons†*
1813–22	6.3	13.7	6.3	−7.4	828.8
1823–32	6.8	24.0	14.0	−17.2	1,926.4
1833–42	4.9	33.3	21.8	−28.4	3,180.8
1843–50	6.1	44.6	35.4	−38.5	4,312.0
Total				−91.5	10,248.0

Source: Based on Messenger (1859, p. 11).
Note: †One pound = 112 grams.

By 1850, China's cumulative trade deficit with India reached nearly 10,250 tons of silver (see Table 3). This is close to a half of China's entire silver intake from 1550 to 1800.

The situation worsened from the mid-nineteenth century onward. Also, the trade deficits were no longer limited to India and they weighed more than China's silver intake during the nineteenth century (14,363.5–20,397.6 tons).[75]

	Total deficits, in liang	*In tons*	*Index*
1864–73	35,335,000	1,325.3	100
1874–83	40,939,000	1,535.3	116
1884–93	242,054,000	9,076.9	685
1894–1903	657,032,000	24,638.6	1859
Total		36,576.1	

One could argue that China did not have to settle its deficits with silver. The only way to do it had to be by business credit. But so far there has been no evidence that the UK, the mastermind of the Sino–Anglo–Indian triangle trade, provided China with credit to finance its deficit or that China defaulted on its payment. So, the fact that the trade still continued implies silver flowed out of China to India.[76] It was documented that 'the export from Canton to India for the season 1827–8 amounts in bullion to 5,667,979 Spanish dollars'.[77] The aforementioned Captain George Balfour also mentioned Chinese *sycee* silver paid to India.[78]

It has been estimated that during the nineteenth century a minimum of 15,500 tons of silver were exported to pay for China's trade deficits. China's export of gold is not accounted for.[79]

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[75] See Liu and Wang (1996, pp. 59–62), cf. Feuerwerker (1980, pp. 46–7).

[76] See Lin (1991, pp. 6–9).

[77] *British Parliamentary Papers*, vol. 37, Entry 5156.

[78] *British Parliamentary Papers*, vol. 38, Entry 4405.

[79] During 1880 to 1910, China's ratio between gold export and silver export was 1.6:1 in value. So, China's total export of precious metals could be worth 25,900 tons of silver. See Hsiao (1974, p. 128).

	China's silver flow, in tons	Annual	Index
Stage One			
1800–30	–1091.3 (–29.1, in million *liang*)[80]	–36.4	100
1831–50	–3581.3 (–95.5)[81]	–188.5	518
Subtotal	–4672.6	–93.5	
Stage Two			
1851–64	–2380.0[82]	–72.1	198
1865–89	–6585.0 (–175.6)[83]	–274.4	754
1890–1911	–1908.8 (–50.9)[84]	–90.9	250
Subtotal	–10,873.8	–181.2	
Total	–15,546.4	–140.1	

Specie payment from China's own silver stock to settle its trade deficits caused a severe silver deflation.[85] Soon, how to retain silver became a national anxiety. For example, Wei Yuan urged the authorities to take action.[86] But ordinary Chinese consumers seemed far less worried. The outflow of silver sped up during the rest of the nineteenth century.

In addition, China's military defeats by foreign powers incurred large war reparations payable in silver. The 1840 Opium War established the precedent.[87] By 1899, China's war reparations mounted to a staggering 26,737.5 tons of silver (713 million *liang*).[88]

By the end of the Qing dynasty, China owed the outside world 73,563 tons of silver, compared with a total of 43,000 tons of silver (up to 25,450 tons in the pre-1800 period plus 17,510.7 tons post-1800) in China's possession.

	tons
Trade deficit with India	10,250
Trade deficits worldwide	36,576
War reparations	26,737
Total	73,563

[80] Wu (2001, pp. 33, 287).

[81] Figure in liang is converted from 150.0 million pesos, see Lin (1991, p. 3). During this period, 134 million pesos (3195.9 tons) was re-exported in 1827–49, averaging 145.3 tons a year (Wang 1979, p. 442).

[82] No datua, estimation made by the fact that during 1800–50 silver outflow was at least one-third of the total value of China's opium imports.

[83] This was the aggregate trade deficit, see Liu *et al.* (1999, pp. 91–3). Chen (1979, pp. 389–418) has much low figures, which are almost certainly a result of underestimation, cf. Fairbank and Kwang-Chin Liu (1980, pp. 46–7).

[84] See Hsiao (1974, p. 128). This does not include China's export of gold of 82.7 million *liang* (worth 3101.3 tons of silver).

[85] See Hao (1989, pp. 122–3).

[86] Wei Yuan saw a ban on opium trade as a solution, '外夷歲入中國之貨, 僅值銀 20,148,000 元. 而歲運出口之貨, 共值銀 35,095,000 元. 以貨易貨, 歲應補中國銀價 14,945,000 元. 使無鴉片之毒, 則外洋之銀有入無出. 中國銀几几, 利可勝述哉.' See his 《海國圖誌》 (*Illustrated World Atlas*), vol. 2, Entry '籌海篇 * 議款' (Sea Policies, Finance).

[87] Under the Treaty of Nanking, formally ratified at Hong Kong on 26 June 1843, China was liable to pay a total of 18 million 'silver dollars' (meaning 'pesos') as reparation (Articles IV and VI), an equivalent of 429.3 tons.

[88] Zhao (1990, pp. 874–80) and Tang (1992, p. 33).

Table 4. Foreign debts of the Qing central government, 1861–87

Purpose		Silver liang	Debtor's origin	Interest (interest rate)
(1) Internal security				
1861–6	Counter-Taipings	1,609,925	–	–
1867	Counter-Muslims	2,200,000	–	396,000 (18.0%)
1875–7	Counter-Muslims	9,750,000	British	1,462,500 (15.0%)
(2) National defence				
1874	Taiwan defence	2,000,000	British	160,000 (8.0%)
1883–5	Coastal defence	13,602,300	British	1,224,207 (9.0%)
1886	Naval upgrading	980,000	German	53,900 (5.5%)
(3) Public works				
1887	Flood control	1,968,800	British	137,816 (7.0%)
Total		32,111,025†		3,434,423
Total in tons		1,204.2		128.8
Annual average in tons		46.3		5.0

Source: Based on Tang (1986, pp. 34–41).
Note: †Equivalent to one year's Qing state revenue before the Opium War. This sum does not include debts raised by Qing local government and state-owned enterprises; see Xu *et al.* (1996, pp. 653–71).

In theory, China should have had no silver left at all by the end of the nineteenth century. But evidence indicates the opposite. Where did China get silver from? The answer lies in foreign borrowing by both the state and the private sector.

3.3. *Foreign borrowing and investment after 1850*

Heavy borrowing from foreign banks began in the 1860s.[89] On the Qing government front, such borrowing was imperative during the Taiping Rebellion to make up for the heavy losses in regular revenue (see Table 4). Not only did the central government depend on foreign funds, provincial governments also raised foreign debts to survive.[90] For the private sector, the most common type of borrowing was the 'chop loan' (拆款).[91] It was documented in 1883 that the amount of chop loans issued in Hong Kong or Shanghai totalled two million *liang* (75 tons) at any given time. When foreign banks stopped the loans, a widespread recession was triggered.[92] In Table 5, the data for 1911 are used as a proxy to show the magnitude of the loans. Now, China's *M3* started to work to compensate its diminished *M0*.[93]

The data in Tables 4 and 5 are far from complete. Even so, on average the Qing state borrowed 40 tons of silver a year while the private sector in Shanghai alone borrowed another 60 tons (as in 1911). This well exceeded China's annual

[89] One such bank, Oriental Banking Corporation, established its branch in Canton in 1845, soon after the Opium War. By 1860, foreign banks became entrenched in China.
[90] See Li (2000).
[91] See Wagel (1914, p. 238); see also, Nishimura (2005, pp. 109–32).
[92] See Zhu (1998, p. 69).
[93] *M3 = M1* + money market accounts. If *M3* is held constant, any increase in foreign borrowing will necessarily reduce *M1*.

Table 5. 'Chop Loans' in Shanghai, 1911

Name	Origin of bank	Silver liang
Deutsch-Asiatische	German	397,800
National City Bank	USA	235,400
Banque de I'Indochine	France	233,000
Handel-Maatschappii	Holland	184,300
Russo-Chinese Bank	Russian	154,000
Banque Belge pour I'Etranger	Belgium	128,000
Yokohama Specie Bank	Japan	305,400
Bank of Taiwan	Japan	182,000
Total		1,820,000
Total in metric tons		68.3
Net after interest		61.5†

Source: Based on ZRY, 1964, p. 90. See also Yang (1952, p. 89).
Note: †Based on a 10% interest rate.

silver intake in 1550–1800 (89 tons a year on average).[94] These figures do not include foreign loans to provincial governments, government enterprises and private agents in all the other treaty ports.[95]

In essence, after 1850, China's silver in the form of trade income was quietly replaced by silver in the form of foreign loans, a subtle switch that has so far been overlooked.

The implications here are very serious. Since the loaned silver had little to do with China's commercial growth, the economic power of the Empire must have vanished in the world arena. Also, if the role of foreign creditors was so vital in keeping China's economy afloat, to blame Westerners for the decline of the Qing economy might not be logical.

In addition, the 1895 Treaty of Shimonoseki (馬關條約) between Qing China and Meiji Japan opened the door for foreign direct investment in China's transport, communication, mining and manufacturing sectors. A surge of the new type of silver into China dwarfed all previous records in quantity and intensity. Around 1911, the total foreign investment in China reached 44,122.5 tons of silver (18.5 billion silver *yuan*), and hence became the main source of silver for the economy.[96] Consequently, more than 80% of shipping tonnage was carried by foreign companies.[97] Foreign companies controlled about 90% of China's railways.[98] Foreign investment also dominated the Qing mining sector.[99]

It would be a mistake to count foreign capital as China's *M0*.[100] Nevertheless, this 44,122.5 tons of silver was more than enough to bridge the gap between China's silver debt and silver stock.

[94] 1911 was a year of high risk, as the Nationalist Movement was on its way to toppling the Qing state. Thus, the loans may have well been below the average.

[95] Li (2000).

[96] Xu and Wu (2003, pp. 727, 731, 734).

[97] Based on Tang, (1992, p. 21).

[98] Yang (1997), cf. Maddison (1998, p. 51).

[99] Wu (1958).

[100] Such a mistake is unfortunately common, e.g. Hao (1986, pp. 70–1).

4. TEST THREE: HOW DID SILVER FUNCTION IN THE ECONOMY?

So far, we have viewed silver as part of China's *M0*. If we assume that silver was a fully fledged common currency for the Chinese economy as A. G. Frank suggested, our analysis should stop right here. However, we should bear in mind that the Qing state had no legal authority or control over the supply or the movement of the silver. This is a serious problem for the 'ReOrient Thesis'. Moreover, four specific problems force us to question whether silver was *M0*: (i) silver heterogeneity, (ii) silver as a secondary currency, (iii) silver premium, and (iv) transactions without silver. They all indicate the absence of the alleged silverisation of the Qing economy.

4.1. *Silver heterogeneity and its raison d'être*

Our prime facie evidence is that China was the only main silver importing economy in Asia which was trapped in monetary heterogeneity. India developed high quality silver rupees. The Ottomans had their silver currencies, *dirham* and *kurus* and *piastre*. In comparison, China's silver stock was made of a collage of pieces in just about all shapes, sizes and qualities under the sun. Nothing was official, although the most popular Spanish-Mexican coins (銀圓, meaning 'round silver coins') gained certain quasi-currency status in parts of South China and were tacitly accepted as a means to pay taxes. But that happened only after the Opium War, two centuries after these coins were first introduced to China.[101]

The silver market in Qing China was in complete anarchy. Among the Western sourced coins, the common ones were: (i) the Dutch 'Knight with Sword' (馬劍); (ii) the Spanish 'Original Silver Dollars' (木洋) with various names such as 'Hair Coils' (大髻, 小髻) and 'Alien God' (番佛); (iii) Portuguese 'Cross' (十字); (iv) Mexican Dollar or 'Eagle Dollar' (鷹洋); and (v) American 'Liberty Head' (蓬頭).[102] There were also Asian ones: British Hong Kong, British Indian, Franco-Saigon and so forth. Japanese silver came often in sheets (枚) or bars.

Even the Chinese *sycee* ingots (元寶) were not uniform, varying from piece to piece in weight and sometime in fineness as well.[103] They were made by the private sector (銀爐業) with minimum government involvement.

In addition, there were crude silver nuggets. Pieces between one and four *liang* were called loose pieces (碎銀); those under one *liang*, beads (滴珠). Overall, foreign silver coins dominated the market due to the sheer quantity of the imports.[104]

To make it more complicated, foreign silver coins arrived at different times to have a go: Spanish, before 1821; Mexican, after 1850; British Hong Kong, after 1866; Japanese, after 1871; US, after 1873; Franco-Saigon, after 1885. Instability of the silver market was guaranteed.

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[101] Wang (1979, pp. 438–9).
[102] Zhao (1990, pp. 613–4) and Hao (1986, pp. 35–46).
[103] Peng, (1995, p. 27) *Selected Materials*. The only exception was probably the well standardised Taiwanese ingots (臺灣紋銀, 壽星銀) minted in 1837, 1853 and 1862; see Zhao (1990, pp. 612, 614).
[104] Zheng (1982, p. 691); ZRY (1964, p. 749).

Between different coins, there was a pecking order with multiple exchange ratios. The Mexican dollar, for example, was normally discounted up to 25% against its Spanish cousin, the peso, despite their identical purity.[105] The discount rate peaked at 80% in 1856 in the wake of the Taiping victory in the Nanjing region.[106] It is easy to image how silver became an attractive market for speculation. With it, huge transaction costs must have been incurred and economic rent scooped from silver marketeering.

To make this heterogeneous situation worse, there existed no universal weight measure for the silver *liang*.[107] There were in all 56 regional Silver Weight Standards (市平兩) in operation, varying from 35.14 to 37.50 g.[108] Only four local standards ever overlapped across the Empire.[109] One *liang* meant different weights even in the same region or organization. In Zhili (直隸), there were six local silver weight standards of 35.16 g, 36.00 g, 36.05 g, 36.18 g, 36.80 g and 37.43 g. The most authoritative measures used by the central government, the Treasury Silver Weight Standard (庫平兩) and the Customs Silver Weight Standard (關平兩) were different: one was 37.30–37.31 g;[110] and the other, 37.68 g.

Compared with the private sector, the state sector was tidy. There were several hundreds of private weight measures varying from place to place and from trade to trade.[111] For example, Hankou (漢口) (a trading hub along the Yangtze), had more than 40 different silver weight measures as late as the early twentieth century.[112]

But the Chinese were rational and clever. More often than not they simply treated foreign silver currencies as bullion. Very low quality silver coins faced rejection; Ningbo (寧波) bankers refused to take eight types of coins.[113] In some parts of coastal Jiangsu (江蘇), it became imperative for each household to keep a scale to overcome the weight heterogeneity.[114] The Sshanxi native bank (山西票號) used its own weight standard 'internal silver weight standard' (咱平銀, 本平銀).[115] Also, specialized services emerged to assay silver quality (估色),[116]

[105] Geng (1933, pp. 150–4).

[106] Lin (1993, pp. 55–6).

[107] Hence, one *liang* = 37.5 g only serves as a proxy.

[108] Zhang (1987, p. 130).

[109] These were: (i) 35.84 g shared by Hunan's Xiangtan (湘潭) and Yunnan (雲南); (ii) 36.00 g shared by Tianjin (天津) and Shenyan (瀋陽); (iii) 36.05 g shared between Beijing, Changsha (長沙) and Chongqing (重慶); and (iv) 36.56 g, also known as 'the Grand Canal Standard' (漕平兩), shared between Shanghai (上海), Yangzhou (揚州), Anqing (安慶), Jiujiang (九江) and Mongol's Kulun (庫倫), see Zhang (1987, p. 130).

[110] The Treasury Standard was finally settled for 37.30 g in 1904.

[111] Wang (1979, p. 433).

[112] Kuroda (2005, p. 84).

[113] Peng (1995, p. 27).

[114] Kuroda (2005, p. 81).

[115] S & R (1990, pp. 135–6).

[116] Often involving cutting up coins; see Cribb (1987, pp. 121, 122). Manuals on silver assaying were available since the early eighteenth century. The known items include 楊清:《銀論》 (*On Silver*); 謝懷德:《新增銀論》 (*On Silver, Enlarged*); 梁恩澤:《新鐫銀經發秘》 (*Unveiling the Secret of Silver, New Edition*); 嚴京周:《新刊洋銀辨止》 (*Foreign Silver-Assaying, New Edition*); 曲莊上山人:《銀水總論》 (*General Guide for Silver-Assaying*); 無名氏:《銀洋精論》 (*Essence of Foreign Silver*),《銀洋珠寶譜》 (*Complete Thesaurus of Foreign Silver and Jewellery*), and 《石洋銀要訣》 (*Basics for Silver-Assaying*).

convert different weights (扣平)[117] and arbitrage between bullions and coins (洋厘).[118]

As the private sector tried so hard to cope, it is puzzling why the Ming–Qing state should keep its hands so completely off silver, considering especially that the standardization of silver weights would not cost much to achieve. The problem was certainly not technological,[119] but a deliberate and conscious choice. Because when the Qing state changed its mind, silver standardization did take place. In 1889, at the very end of the Qing dynasty, 'Dragon Dollars' (龍洋, 大洋) were successfully inaugurated.[120] By 1913, a total of 220 million coins (5247 tons) were issued,[121] not counting the small denominations.[122] Another success occurred 20 years later during the 1930s when Nationalist rule was still shaky – further silver standardization was carried out, known as 'abolishing the silver *liang* and adopting the silver dollar' (廢兩改圓).

Superficially, when silver is used in the bullion form there is no seigniorage for the state which in turn undermines the state's incentives to standardize the currency. But the history of silver standards in many parts of the world defeats such an argument.

The reason for China not to have its own silver currency was directly related to a long dispute over a tax on imported silver between the Qing state and foreign importers. The Qing official line was that all imports were commodities and thus subject to customs duties. From the importers' point of view, silver was a currency and thus should not be taxed.[123] It was thus in the interest of the Qing authorities not to recognise foreign silver as a currency but as metal bullion. To make the point, first, most foreign silver pieces were left physically intact after being shipped to China. Second, foreign silver did not gain official approval as a legal tender for China's domestic market: until the mid-nineteenth century, *sycee* ingots were the only legal form of silver in which to pay taxes.[124] The negative externalities of this policy were of course silver heterogeneity. But that was not the official concern.

After 1850, the need to standardize silver may have decreased. This is because silver came in as foreign loans, not only free from Qing taxation but also free from the Qing judiciary. The Qing state had no legal right to temper foreign currencies in the form of loans. In the end, even foreign bank notes were tolerated as long as they were associated with loans.

[117] Chen (1997, pp. 150–1).

[118] Chen (1997, pp. 149–50).

[119] The Tibetan silver dollars (西藏銀幣) were minted as early as in 1793; see Zhao (1990, pp. 612, 614). In addition, China had the longest unbroken history of mint metal currency in Asia.

[120] The manufacturing of the silver coins was highly decentralized: 1894 in Hubei (湖北), 1896 in Zhili, 1897 in Jiangsu and 1898 in Fengtian (奉天), Jilin (吉林), Xinjiang (新疆), Anhui (安徽), Hunan (湖南), Fujian (福建), Sichuan (四川) and Yunnan.

[121] See Anon.《銀行週報》(上海), vol. 9, no. 8, 10 March 1925, p. 25.

[122] The set had a five layer hierarchy: 大洋 = 7 錢2分, 小洋 = 3錢6分, 銀双角 = 1錢4分4厘, 銀单角 = 7分2厘, and 銀半角 = 3分2厘. The largest denomination was a carbon copy of the peso. See Cribb (1987, pp. 125–30).

[123] See van Dyke (2005, p. 119).

[124] In von Glahn's (1996, p. 253) view, *sycee* was 'uncoined silver', a crude, regressive form of money.

Considering these points, we are left with the strong suspicion that Ming–Qing China may never have had a *de facto* silver standard. The notion that large quantities of silver would automatically have China's monetary system silverized is a false causality. Even Spain, the 'silver paymaster of the world', kept its own copper currency at home. In Asia, silverization may have happened in India; but not in Qing China.[125]

4.2.   *Silver as a secondary currency*

In light of the prolonged high degree of heterogeneity in fineness and weight, it was simply impossible for China to have a silver-based homogenous price structure. If China appeared to have a single price measured by silver, it must have happened via another homogenous medium (be it bronze coins or rice).[126] If so, silver itself was only a secondary or auxiliary currency.

The high degree of heterogeneity also means that when and where silver was used, traders had to barter every time in assessing each silver piece for the payment. This piecemeal bartering was a major step backwards in a country where token money and paper currency were invented long before the Qing period. The barter nature of silver raises serious doubt as to whether or not silver really qualified as China's *M0* during most of Qing history.

The situation was alleviated with the rapid influx of Mexican dollars after 1850. By 1911, 300–500 million Mexican coins are believed to have been in circulation.[127] But one has to be careful about the timing of when the Mexican coins were introduced; it coincided with the rise of foreign loans with strings attached, as described earlier. The barter problem with silver did not disappear perhaps until the Mexican dollar became entrenched in China's coastal regions after 1870.[128]

Silver as a secondary or auxiliary currency also explains why until the end of the nineteenth century the Imperial taxman never took silver exclusively but accepted silver alongside cloth, salt and grain. There was nothing magic about silver with regard to Qing taxes. Silver was treated as a commodity with value just like cloth or rice.

China's silver heterogeneity inevitably made silver an inefficient medium for market transactions. This inefficiency in turn distorted the geographic distribution of silver. For example, despite the fact that large quantities of the metal always landed first along China's east coast, silver was about 100% more expensive on China's east coast than in north China; and the dominant currency in the south was the bronze coin, not silver.[129] Normally, arbitrage across the two regions would even out such differences. This, however, did not happen. One

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[125] Chaudhuri (1986, pp. 679, 74) claims that both India and China operated with 'an intrinsic standard of 99–100% gold and silver'.

[126] Chinese bronze coins are conventionally called 'copper coins' or 'copper cash'. This is a mistake, as these coins were unmistakably made of bronze.

[127] See Wei (1955, p. 108); 彭信威, 《中國貨幣史》(*A Monetary History of China*), 上海: 上海人民出版社, 1958, pp. 880, 888–9.

[128] Geng (1933, pp. 150–4).

[129] Kuroda (2005, pp. 74–5, 84–5).

may attribute this to the state's efficiency in siphoning silver from the south to pay bureaucrats and soldiers stationed in the north. But as far as we know, the Qing state only commanded a tiny proportion of China's GDP and equally a small share of China's silver stock. Thus, the importance of the state should not be overplayed.

The only other explanation left is market disintegration across the Empire which effectively stopped arbitrage. A suggestion of this comes from the decentralization of the Qing monetary supply. Each province had its own mint to supply coins locally. Shipping local coins out was never encouraged. It was documented that when Beijing's coins were found in other provinces it alarmed the Imperial Court.[130] The output of these mints was never properly controlled by the centre. Decentralization also occurred in the capital where the Ministry of Revenue (戶部) and the Ministry of Works (工部) ran separate mints (戶部寶泉局, 工部寶源局) whose annual outputs of coins varied from 887 million to 9424 million coins a year (as in 1757–93), depended purely on supply of copper and lead, instead of market demand.[131] Such a localized monetary supply created strong incentives for the local authorities to block outflows of local coins. But if local coins could not move freely, there could be no monetary integration. The Qing market suffered from such a lack of integration.

In such highly localized monetary markets, silver could be monopolized by the authorities. This explains the paradox that the Ming–Qing taxmen actually encouraged bronze payment from the taxpayer. But there was a catch; such payments had to be converted into silver at an artificial exchange rate set by the taxman.[132] A rotten practice to rip off the taxpayer, it was, however, entirely consistent with a population largely free of silver ownership.

Now, back to the issue of *M0*, as argued by Akinobu Kuroda, the problem for Chinese local markets was not a lack of silver but a shortage of bronze coins.[133] Even in the silver-rich north, when bureaucrats and soldiers were paid in silver, they quickly converted it to bronze for day to day transactions.[134] Clearly, not everyone kept silver. Those who did were called 'silver holders' (銀主) to distinguish them in society.[135]

Nevertheless, silver could still represent a concept of value with which the virtual or phantom *liang* was used in accounting. But from what we have learnt about the heterogeneity in silver measurements, the phantom *liang* was one thing and the physically tangible *liang* in transaction was quite another.[136] It is unfortunately a common mistake to entangle them. The untold story is that silver *liang* was not the only accounting unit. The units of *wen* (文) and *diao* (吊 = 1000 *wen*) for bronze coins were equally used.

[130] Sun (1996, pp. 292–3).
[131] Sun (1996, p. 245).
[132] See Pomeranz (1993, ch. 1).
[133] Kuroda (2005).
[134] Kuroda (2005, p. 75) and Wang (1979, p. 427).
[135] Yang (1988, p. 280).
[136] In the late fifteenth century, officials' salaries were quoted in silver but paid in anything but silver (Huang 2001, pp. 52–3).
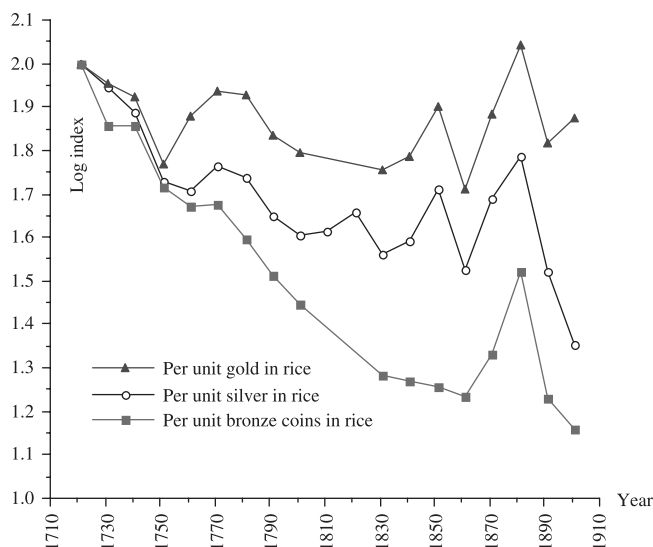
Figure 2. Indices for currency prices in rice, 1710–1910
Source: Yu (2000, pp. 903–4); the gold price is derived from silver–gold exchange rates, based on
Liu and Wang (1996, pp. 178–9).

Our analysis fundamentally challenges the common notion that China had
a sophisticated and well-integrated market. It also challenges the hypothesis of
silverization of the Chinese monetary market. Yet, China exported its own valuable
resources for so long to buy in silver whose quantity came only randomly and
whose quality was messy. In addition, all this was done through paying a top
price for silver often much higher than the international par. What was the reason
for such behaviour? One possible answer is that China was able to persistently
produce a surplus but lacked means to store value because the surplus was often
perishable (grain, cloth and so on). Traditionally, such a surplus was spent on
purchasing Confucian education, official titles, concubines and, of course, real
estate. But they all had their own limits. Silver was able to transcend those limits.

However, there was a catch. China had to devote a considerable pool of
resources to convert to silver[137] resources that could have been better employed
for industrialization. When industrialization was not an option, releasing
China's silver to buy foreign consumer products during the nineteenth century
was indeed highly justifiable.

4.3. *Silver premium*

The other evidence for silver as a secondary currency was the silver premium.
In Figure 2, rice, a low value and relatively homogeneous commodity, is used
as the 'common currency' to measure units of gold, silver and bronze coins.

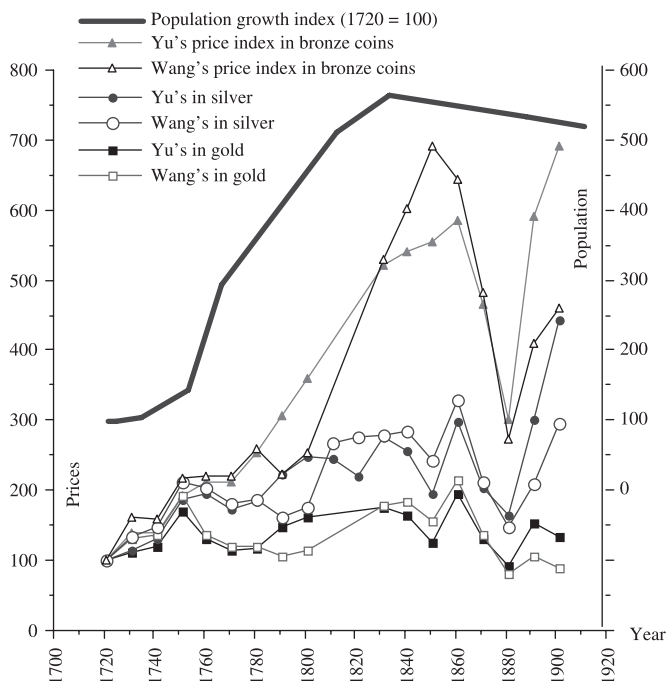[137] Flynn and Giráldez (2000, pp. 199–215).

Figure 3. Population growth and food price, 1720–1900
Source: Population, based on Deng (2004, Appendix 2); China-wide rice price, based on Yu (2000, pp. 903–4); southern rice price, see Wang (1992, pp. 35–68, 40–7); silver-gold exchange rates, Liu and Wang, (1996, pp. 178–9); bronze coins-silver exchange rates, Lin (1993, pp. 359–60).

What strikes us is that the 'rice price' for silver remained reasonably stable. But the rice price for bronze coins declined. The gap between the two can be taken as the silver premium, meaning that one had to pay more rice to buy silver. This is confirmed by an 1840 report to the court that 'the market overvalues silver and the purchasing power of bronze coins is eroded'.[138] The observation was correct but the reasoning was not. From an economics' point of view, the purchasing power of silver remained little changed due to the premium while the purchasing power of bronze coins declined due to an increased demand for food. Increased demand was dictated by population pressure.

Thus, to take one step further, we can introduce population into our equation. In Figure 3, China's population growth is included as a proxy for the aggregate demand for food. The fluctuations in prices registered in bronze coins moved closely with China's population pressure both regionally and empire wide. This is expected from a functional common currency. In contrast, the response of silver to demand was the weak.

[138] Lei Yixian 雷以諴: '是重銀, 而錢又為銀所累'; see Li (2000, p. 36).

Table 6. Growth in silver premium, silk regions compared, 1875–1910†

	A	Price	B	Price	C	Price
1875	1.0	100	1.2	100	2.2	100
1880	1.0	105	1.0	124	1.6	144
1885	1.0	95	1.1	104	1.4	157
1890	1.0	119	1.1	133	1.8	145
1895	1.0	110	0.9	145	1.8	137
1900	1.0	173	1.6	129	2.4	163
1905	1.0	183	1.1	198	1.4	285
1910	1.0	164	0.9	216	1.4	254

Source: Yu (2000, pp. 917–9).
Note: †The period was after the Taiping Rebellion when silk production returned to normality. A, Shanghai-Shanghai price ratio for raw silk; B, Shanghai-Guangzhou price ratio for raw silk; C, Shanghai-Sichuan price ratio for raw silk. Price, silver price index.

Table 7. Growth in silver premium, south and north compared

	Bronze price index (I)	Silver price index (II)	Premium index (I:II)
I. Southern rice price: Suzhou (蘇州府)			
1785	100	100	100
1823	167	114	144
1850	115	50	231
II. Northern retail price: Zhili			
1800	100	100	100
1820	118	85	140
1843	118	63	190

Source: Based on Lin (1993, pp. 370–1, 372).

Moreover, the silver premium was universal but varied from region to region. The acid test is from the relative prices for the homogenous product raw silk which remained very stable across south China. However, the silver premium was on the rise rather independently (see Table 6). The premium increased particularly fast in the south during the nineteenth century to reflect the aforementioned silver shortage there (see Table 7).

The silver premium means that silver and bronze coins did not work in a coherent bimetallic system.[139] Rather, they took their own courses. The bronze coin was undoubtedly the workhorse of the market medium in China. Unlike the bronze coin, silver was unable to signal market demand and its change. The silver premium per se was a form of a transaction cost for the economy which the bronze coin did not have. If so, it is questionable how positive an effect silver had on China's commercial growth.

[139] The illusion of a bimetallic system was once the mainstream view; see Hao (1986, p. 34).

Table 8. Rates of seigniorage in early Qing

	Million bronze coins (I)	*Net seigniorage (II)*	*II:I*
Beijing Mint (北京)			
1628	129.5 (235,454.5)	26,453.2 silver *liang*	11.2%
1629	130.6 (200,923.1)	22,763.6	11.3%
1631	145.1 (223,230.1)	21,908.3	9.8%
Nanjing Mint (南京)			
1631	366.0 (563,076.9)	42,713.6	7.6%
1632	345.1 (530,923.1)	44,341.1	8.4%
Average			9.7%

Source: Data for seigniorage, based on von Glahn (1996, pp. 187, 192); data for the official bronze coins to silver *liang* exchange rate, based on von Glahn (1996, p. 108).
Note: Figures in parentheses are converted to silver *liang*.

4.4. *Transaction without silver*

No matter how humble they may have been, China's bronze coins were authorized legal tender.[140] Although the fineness varied from place to place,[141] these coins were far better standardized than silver in size, weight and reign-mark.[142] Also, foreign coins had no significant role in China's market. China imported copper from Japan for coinage until the middle of the Qing dynasty. But China continued its own copper production at 5000–7000 tons per year until the nineteenth century.[143] Secured seigniorage in bronze coinage played an important part in the government's commitment to bronze mintage (see Table 8).[144] The success of the bronze currency even attracted counterfeits (低錢, 私錢) on an industrial scale in the mid-nineteenth century in the coastal region.[145]

In terms of the supply of the bronze currency, according to the estimate by Liang Qichao (梁啟超), the Director of the Currency Bureau (幣制局總裁) in 1914, there were as many as 14 billion coins in circulation at the end of the Qing period.[146] This makes 38 coins per head of population (368 million in

[140] Among monetary historians of China, there has been a long debate on whether silver became China's principal currency (von Glahn 1996, pp. 253–5). Opinions are divided. China's increased silver stock supports the notion of silverization, while China's own records and anecdotes endorse the view that the role of bronze coins never diminished; see Wang (1979), 'Chinese Monetary System' and Kuroda (2005).

[141] According to Song (1978, pp. 224–5), one *wen* coin produced in Beijing and Guangdong was worth twice as much as coins minted elsewhere in the Empire.

[142] Although bronze coins were not completely uniform at any give time, the differences were limited due to a handful makes available. The mainstream 'legal tender' (通寶) dominated the market during the seventeenth and eighteenth centuries. The alternative was 'Kangxi Minor Mint Coins' (康熙小制錢). The local ones such as 'Taiwan Minor Mint Coins' (臺灣小制錢) and 'Beijing Coins' (京錢, 京墩) were harmlessly circulated within their domains (Zhao 1990, pp. 609, 612, 614).

[143] See Xu and Wu (2000, pp. 273–4).

[144] According to Huang (1974, p. 88), the rate was 40%.

[145] Lin (1993, pp. 388–92); Kuroda (2005, pp. 71–4).

[146] See Liang (1935, ch. 21).

Table 9. China's GDP and its structure in the 1880s[217]

Estimates	Chang's	Feuerwerker's	Nankai's	Average
Total GDP	100%	100%	100%	100%
Value in tons of silver	104,298.8	125,205.0	131,568.8	120,356.3
Non-agricultural GDP†	39.9%	33.2%	30.4%	34.5%
Value in tons of silver				41,523.8
Agricultural GDP	60.1%	66.8%	69.6%	65.5%
Value in tons of silver				78,832.5

Source: Based on information from Chang (1962, p. 296), Feuerwerker (1995, p. 16) and Liu *et al.*, (1999, p. 66).
Note: *Based on 377.6 million in 1887.[218] †Both urban and rural (i.e. off-seasonal, non-farming output).

1910)[147] Yen-p'ing Hao suggested further that by 1910 the total value of bronze coins was worth 14,834.7 tons of silver (622 million pesos).[148]

If the velocity of the bronze currency was three times a year,[149] China's bronze currency was able to facilitate exchanges worth 44,500 tons of silver in value to match China's commercial activities (see Table 9).[150] At this point it is more correct to view bronze coins as China's *M0*; and silver, *M2*.[151] But the problem of silver heterogeneity almost certainly retarded this *M2* to a considerable extent.

As the Qing bronze currency went from strength to strength, China's nominal silver stock became stagnant from 1830 to 1910.

1830	31,720 tons	(1330 million yuan)[152]
1910	31,482 tons	(1320 million pesos)[153]

Intriguingly, during these 80 years silver became 60% cheaper in the Chinese market.[154] So in real terms the stock diminished by the same percentage. This is compatible with the real role of silver in the Qing economy.

During the nineteenth century, there was a switch from silver to bronze in the real estate market which is conventionally viewed as the safe haven of silver payment. In Suzhou in the wealthy south, before 1753 real estate prices on transaction contracts were exclusively in the silver *liang*. Bronze currency began to take over in 1763. By 1783, all real estate prices had been registered in

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[217] The current study does not want to re-work China's GDP but to take the average among the available estimates.

[218] Deng (2004, Appendix 2).

[147] See Deng (2004, Appendix 2).

[148] Hao (1986, p. 68).

[149] M = PT/V, where M is the actual money needed for all transactions a year; PT, the total value traded a year; and V, the velocity of silver in circulation a year. M = PT/V is derived from the so-called 'monetarist equation' MV = PT (Fisher 1922).

[150] We assume that the annual exchange between the agricultural and nonagricultural sectors was worth 41,523.8 tons of silver × 2 when the market cleared itself. The trade needed 41,523.8 ÷ 3 bronze coins to facilitate, when the velocity was three times a year.

[151] *M2* including sayings accounts. Silver was a means to store value in the Chinese economy for savings purposes, often known as 'hoarding'.

[152] Wang (1992, p. 57). China's silver *yuan* was a copy of peso (Cribb 1987, p. 125).

[153] Hao (1986, p. 66).

[154] Based on Liu and Wang (1996, pp. 178–9).

bronze coins. The same change took place in Shandong (山東) in the north. By 1783, all real estate deals had switched to bronze. The same trend occurred later in 1800 in commercially advanced southern Fujian (閩南). Even in silver abundant Beijing, by 1853, half of the real estates deals had been in bronze. The only place where the silver *liang* remained active on real estate contacts was Huizhou (徽州), famous for long-distance traders, bankers and wholesalers.[155] But this was an exception rather than a rule.[156] Undoubtedly, silver retreated from transactions of large sums during the nineteenth century.[157]

During the mid-Qing Dynasty (ca 1740) the retreat of silver also occurred in large businesses.[158] Transactions in the wholesale sector were conducted with the increasing use of 'demand silver deposit certificates' (銀票), 'money orders' (莊票, 會券), 'bills of exchange' (會票, 匯票) and outright paper currency (錢票).[159] By definition, these devices became part of China's *M1*.[160] To minimize money changing hands, multiple account settlements (過帳) were also invented.

This change was so decisive that by the 1850s up to 90% of commercial dealings became silver free in many places in the north.[161] The practice soon spread southwards to Anhui, Hunan, Sichuan, Guangxi (廣西), Jiangsu and Fujian.[162] According to Yen-p'ing Hao's conservative estimation, in 1910 the total value of paper money alone (Chinese only) was worth 4817.7 tons of silver (202 million pesos).[163] Considering their high velocity, these commercial credit devices were a formidable force in the Qing market.

In the process, China must have had de-silverization in the second half of the nineteenth century with the onset of more and more bronze coins and commercial credits in the market. Here, it is important not to be confused by the 'phantom *liang*' as a convenient accounting unit. As far as one can tell, the phantom *liang* did not always mean silver payment. The gain from silver free transactions was the deduction of the silver-cum-transaction costs.

4.5. *Summary*

The four major problems with silver and its use in the Qing economy lead to one conclusion: silver had high transaction costs and was an inefficient

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[155] See Kishimoto (1997, pp. 354–60).

[156] Wang (1979, p. 426).

[157] Von Glahn (1996, pp. 254–5) has a sharp comment that bronze coins 'played a far more important role in the commercial economy than is usually realized', and they 'displaced silver as the prevailing form of money in many regional markets'. Kuroda (2000, pp. 194–6) has discovered that the intake of foreign silver had little impact on China's general price levels.

[158] The causes have been described as a combination of a decline in silver imports, an increased tax burden, and more active silver hoarding; see Atwell (1982, p. 88).

[159] *Huipiao* was not a Qing invention. It was used during the Ming by Matteo Ricci (1552–1610), the Italian Jesuit who devoted his life to China, to purchase a house in Nanjing (Trigault 1953, pp. 343–510).

[160] *M1* = *M0* + 'demand accounts' held by institutions which were what money orders and bills of exchange really were. Any increase in demand accounts will reduce *M0*, if *M1* is held constant.

[161] Wang (1979, pp. 436–7, 440, 446); Huang (1987, pp. 3–1); see also Pan (1985, p. 292).

[162] Lin (1993, pp. 397–9).

[163] Hao (1986, p. 68).

currency. Clearly, liquidity and market integration in China depended more on China's own bronze coins as the principal currency rather silver. The notion of a 'silver driven growth' in the Qing economy has to be discounted. The export of silver from China in exchange for consumer goods (even opium) was thus highly rational.

5.   TEST FOUR: WHO POSSESSED SILVER AND HOW MUCH?

It has become clear that silver came to China for various reasons and it functioned as anything but the principal currency. The remaining question is who had silver in the economy.

5.1.   *The Ming–Qing State*

A popular assumption is that the Ming–Qing state was the main absorber of silver through taxation. Such a view is flawed on several grounds. First, Ming–Qing taxes constituted only a small proportion of China's total GDP: well under 10% most of the time.[164] It is highly doubtful whether this percentage could determine how silver was used in the entire economy.

Second, Ming–Qing taxes were not all paid in money, let alone silver. In 1436, a total of four million *shi* of taxed grain was converted to one million *liang* of silver. But this was considered an exception during the Ming dynasty.[165] After 1581, all direct taxes in kind or labour (corvée) could be made in cash (折變). But it is unclear how many taxpayers actually made that conversion. Even under the much cited 'one whip method' tax regime of 1581 (一條鞭法),[166] tax in kind was never abandoned.[167] Under the new tax law, only 40–50% of the tax payment was ever made in silver in the north; and 60%, in the south. In the end, the new tax regime resulted in a stockpile of grain, not silver, in the government granaries, enough for 10 years' rations.[168]

In the sixteenth century, the Ming revenue in silver was 2–5 million *liang* a year (75–187.5 tons).[169] Not until 1620 did it reach the 10 million *liang* mark (375 tons). The amount of silver available for the Ming state, including the reserves held by the Imperial Depot (太倉庫), never exceeded 25 million *liang* (937.5 tons) at any given time.[170] This was probably only 10% of China's silver stock of the time (as indicated by our linear growth trajectory).

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[164] For example, Wang (1979, p. 431), Feuerwerker (1984, pp. 300, 322), Will (1990), Deng (1999, Appendix 7).

[165] Zhang, 1974, ch. '食貨志二' (Economy Two).

[166] See Liang (1956).

[167] Zhang (1974, vol. 213, entry '張居正').

[168] Huang (1974, pp. 125–30) and Wu (2001, pp. 220, 222).

[169] See Huang (2001, p. 314).

[170] Zhang, 1974, ch. '食貨志二' (Economy Two). A sudden increase in the Ming silver resevers occurred after 1630 and peaked at 23 million *liang* in 1642 (Atwell 1982, p. 80). By then the days of the dynasty were hastily numbered.

Table 10. Direct tax combination and growth indices, 1661–1820 (1661 = 100)

Year	Money (A), million liang	Grain (B), million shi (石)	Value ratio (A:B)
1661	100 (21.6)	100 (6.5)*	100 (3.9:1)
1724	122 (26.4)	73 (4.7)†	164 (6.4:1)
1784	137 (29.6)	74 (4.8)‡	97 (3.8:1)
1820	140 (30.2)	138 (9.0)§	41 (1.6:1)

Sources: Taxes based on Liang (1980, pp. 185, 186–7, 190–1, 196–7, 344, 352, 354, 356, 358, 379, 390–1, 398, 401, 415–6, 418). Rice prices, based on Yu (2000, pp. 788), 904.[219]
Note: *The total value was in the region of 5.5 million *liang* of silver at the price of 0.85 *liang* per *shi*. †The period rice price was 0.88 *liang* per *shi*. The total value is thus 4.1 million *liang*. ‡The rice price was 1.60 *liang* per *shi*. The total value is 7.7 million *liang*. §The period rice price was 2.1 *liang* per *shi*. The total value is thus 18.9 million *liang*.

Under the Qing, revenue in silver did increase, largely due to the reform to combine poll and land taxes into one (攤丁入地, 攤丁入畝) which began in the 1720s. However, until 1820, mixed tax payments were still the norm (see Table 10).

It is true that throughout the eighteenth century, the amount of silver available for the state reached an unprecedented 80 million *liang* in value (3000 tons) with the following breakdown: (i) 30 million *liang* (1237.5 tons) from a 'land–poll combined tax' (地丁銀);[171] (ii) 10 million *liang* (375 tons) from indirect taxes on salt levy (鹽課) and customs duties (關稅);[172] and (iii) 40 million *liang* (1500 tons) of treasury reserves.[173]

The 80 million *liang* was the equivalent of 13.5% of China's pre-1800 silver stock. Interestingly, of the 80 million *liang*, only 12% came from the commercial sector. Also, by definition only half of the 80 million *liang* was ready to enter market circulation, as the other half was kept away in reserve. So, the 'market active' part counted for only 6.8% of the same silver stock.

In total, it is almost certain that the state did not generate enough force for silverization of the economy.

5.2. *Native banking*

The Sshanxi native bankers (票號) have been hailed as the best example of Chinese entrepreneurs in Qing China. However, Sshanxi banks emerged very late (1823) and were short lived (till ca the 1920s). This casts serious doubts over the banks' role in relation to the alleged silver economy. We include the sector here mainly to clarify some myths.

Until the mid-nineteenth century the services provided by Qing native banks were mainly remittances. There was no evidence that silver was invested extensively in the economy by those native banks. In 1853, the total remittances were

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[219] The rice price in Jiangnan was the highest, see Wang (1992, pp. 40–7).
[171] Liang (1980, pp. 415–6, 426).
[172] Zhou (1981, pp. 419–21, 426), cf. Tang (1992, pp. 126–8).
[173] See Lü (1984, pp. 19–21).

merely 174,577 *liang* (6.5 tons), of which 81.7% were between merchant houses, 17.6% between individuals and only 0.7% between bureaucrats.[174]

The main boost for the banks' growth came by accident in 1861 due to the state's need for revenue remittances from the provinces to Beijing.[175] From 1861 to 1911, the silver remittances totalled 236.6 million *liang* (8872.5 tons), averaging 6.1 million *liang* (228.8 tons) a year.[176] But this was only 7.6% of the late Qing annual revenue, and hence insignificant in the economy.

By 1900 the total number of the Sshanxi banks reached 647 in 124 locations, on average 22 for each province, or one for every 569,000 people.[177] The average assets of a bank were worth 10,000 to 20,000 *liang*.[178] But during this period, these banks depended heavily on 'chop loans' from foreign sources. Even so, the aggregate capital of the native banks was around 6.5–13.0 million *liang* (487.5 tons). This amount is barely 2.2% of China's pre-1800 silver stock.

These figure all speak for themselves.

5.3. *Wholesale*

Information of wholesale value and wholesalers' investment is notoriously difficult to obtain. The best we can do is to piece together some cases. It is known that the total volume of China's tea export was 605,000 *dan* (X, traditional Chinese 'bushel' to measure grain in capacity) (擔) in 1838.[179] This was allegedly 20% of China's annual tea output.[180] Tea was sold at 3.7–15 *liang* per *dan* in the open market of tea producing regions, averaging 9.4 *liang* per *dan*,[181] a price we assume wholesalers paid. On top of that, there was a transport cost to Guangzhou where tea was exported. The closest tea producing province was neighbouring Fujian. It cost around 2.1 *liang* per *dan* to transport tea from Fujian to Guangzhou. The total investment needed to export the 605,000 *dan* tea was in the region of 7 million *liang* (262.5 tons).

To take the salt trade (鹽商) as another example, the salt dealership originated in Sshanxi known as the 'dealership scheme' (鹽鈔, 鹽引) in 1371 under the 'new salt policy' (開中鹽法).[182] The salt merchants were responsible for collecting indirect taxes through supplying salt to the population of the Empire. Considering the fact that an adult needed 5–10 g of salt per day or 2–3 kilograms per year, and that one-third of China's population were children, each consuming half of the adult intake, the total consumption of salt in the empire was in the

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[174] S & R (1990, p. 40).

[175] They had a nickname of the 'Second Ministry of Revenue' (Kong 1984, pp. 1–7).

[176] S & R (1990, pp. 130–9, 242–9).

[177] Tian (1994, Appendix). For Qing population of the time (as in 1911) see Deng (2004, Appendix 2).

[178] In the 1860s, a large native bank in Shanghai had on average 80,000–100,000 *liang* assets which was exceptional, see Shanghai Customs (1866, p. 14).

[179] Wu (2001, p. 149), cf. Lin (1991, p. 30).

[180] This is based on 3 million *dan* of tea a year after the war, see Tang (1986, p. 517).

[181] Huang (1990, p. 441) and Lin (1991, pp. 234–5). Similarly, prior to 1840 the average price for tea at China's domestic market was 11.3 *liang* per *dan* (Wu 2001, p. 299).

[182] Zhang (1995).

Table 11. China's international trade, the 1830s

	Value, in tons of silver	% in total
Type	14,936.3 (398.3, in million *liang*)	100.0
Grain[220]	6,123.8 (163.3)	41.0
Cotton cloth	3,547.5 (94.6)*	23.8
Salt	2,197.5 (58.6)	14.7
Tea	1,196.3 (31.9)	8.0
Silk textiles	547.5 (14.6)	3.7
Cotton fibre	480.0 (12.8)	3.2
Raw silk	450.0 (12.0)	3.0
Metals	225.0 (6.0)	1.5
Porcelain	168.8 (4.5)	1.1

Source: Based on Wu (2001, pp. 148–9). The price used is 1830 price.
Note: *Xu and Wu's estimate of the annual export of cotton cloth from Jiangnan, the centre of the cotton textiles, was 450 tons of silver (12 million *liang*) (Xu and Wu 1985, pp. 325–7). Here we assume a much higher proportion for export.

region of 1800 million *jin*, excluding the industrial use of the substance.[183] The total value of this 1800 million *jin* was likely to be in the region of 18 million *liang* at the f.o.b. price (675 tons).[184] Given that salt is price and income inelastic, this aggregate should largely be credible.

The combined investment value of tea and salt was under 1000 tons of silver, or 4.5% of China's pre-1800 silver stock. If the aggregate wholesale value of 20% (using tea exporters as a benchmark) applies to all trades worth a total of 398.3 million *liang* (see Table 11), China's wholesale sector would have had a total investment of 79.7 million *liang* (2980 tons) in the 1830s,[185] about 13.4% of China's pre-1800 silver stock. This is a respectable share but not overwhelmingly high.

We should also bear in mind that a considerable proportion of the transactions was conducted without silver.[186] So, the share was almost certainly less than 13.4% of the pre-1800 silver stock.

5.4. *Pawning*

By taking collaterals, the business faced very low risks under normal circumstances. This certainly helped the growth of the pawning sector in the hectic nineteenth century in particular. The state taxed only 2.5 *liang* (93.8 g) a year per enterprise to encourage investment in pawning.[187] Ming–Qing pawnshops

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[220] This is more optimistic than Wang's estimates of 30–40 million *shi* (石) of un-husked rice for the same period (Wang 1979, p. 434). Given that the period price was 2.0–2.4 *liang* of silver per *shi* for un-husked rice, the total value of the grain would be 80 million *liang*. This is half of Wu's value.

[183] Chang's (1962, p. 306) figure is much higher at 2400 million *jin* a year.

[184] Yu (2000, pp. 935–6); the calculation is based on 10 *wen* (文) per *jin* of salt, FOB.

[185] See Table 1.

[186] Wang (1979, p. 427).

[187] Liu *et al.* (2005, pp. 217–21).

Table 12. Growth in pawnshops, 1685–1812

	North	*South*	*Total*	*Index*
1685	5,210	2,485	7,695	100
1724	7,265	2,639	9,904	129
1753	12,141	5,934	18,075	234
1812	12,085	11,054	23,139	301

Source: Liu *et al.* (2005, p. 199).
Note: Grassroots pawnshops at the village level are not included, see Zhao (1978, p. 148).

were genuinely silverized, keeping large quantities of silver all the time. The peculiarity of silver in pawnshops was that not only did silver return, it brought back an interest, in silver too.[188] Often, the repayment was not only required to be made in silver but also in *sycee*, even if the loans were originally issued in bronze coins and low-quality foreign silver pieces.[189] As a result, pawnshops' silver inventory contained the best silver. Undoubtedly, the pawning sector was where silver was. So much so, it became the prime target of looting during civil unrests or foreign invasions which caused the sector to decline at the end of the Qing dynasty.[190]

Pawnshops operated on a much larger scale and scope than any other silver users did. During the Ming, the capital Nanjing alone had 500 pawnshops (or one shop per 2000 residents). During the Qing, Beijing had 600 pawnshops (or one shop or less than 2000 residents); and Guangzhou, 1243.[191] Pawning also operated on the township level.[192] In addition, the number of pawnshops increased by a factor of three from 1685 to 1812 (see Table 12). With a total of 23,139 shops, the Qing population was served 36-fold better by the pawning sector than by the native banks – one shop for every 156,000 people on average.[193]

In 1912 when the pawning sector was well on the way to decline, it still topped the league table of investments.[194]

Pawning	Native banks	Industrial enterprises	Total
89.8 million dollars	75.1	54.8	219.8
2141.7 tons	1791.1	1307.0	5239.8
40.9%	34.2%	24.9%	100%

[188] During the Qing, the 'normal' interest rate charged by the pawning sector was between 1–3% per month, see Zhou (1955, vol. 3) and Ling (1991, p. 250).

[189] According to the Jiangsu pawnshop guild regulations, silver was used for payment and redemption: 銀當銀贖 (Peng 1995, p. 847). Often, the initial payment in bronze coins also had to be redeemed in *sycee*: 出則銀元銅幣, 入則京平足銀; (Qu 2004, p. 207).

[190] Qu (2004, pp. 191–5).

[191] Qu (2004, pp. 17, 21, 58).

[192] Qu (2004, p. 67). Noted, grassroots pawnshops at the village level are not included, see Zhao (1978, p. 148).

[193] For the Qing population of the time (as in 1812), see Deng (2004, Appendix 2).

[194] Wang (1957, p. 1017).

To invest in a pawnshop was often related to a pension scheme during the Qing.[195] Individual and institutional investors across a wide spectrum flocked in, even including Qing emperors themselves. Accordingly, pawnshops were categorized during the Qing as civilian (民當), official (官當) and crown (皇當).[196] Emperor Yongzheng (r. 1723–35) was a shrewd pawnshop operator before he was crowned. Emperor Qianlong (r. 1736–95) rewarded his officials on occasion with pawnshops.[197]

To enter the pawning business was flexible and relatively easy. Most pawnshops were collectively owned by shareholders to reach critical mass. Their sizes varied. A well-established shop could be worth 30,000–40,000 *liang* (1.1–1.5 tons).[198] The smallest might start with only 1000–2000 *liang*.[199] But the average size seems to have been in the region of 10,000–20,000 *liang*. This range is confirmed by Ming anecdotes.[200] It is also supported by available Qing data. During 1770–1910 in Sshanxi, the average asset of 72 pawnshops was 14,000 *liang* (0.5 tons).[201] In 1745–8, Beijing's 22 state-run pawnshops had a total of 585,074 *liang* investment (22.1 tons), averaging 26,594 *liang* each (1.0 ton).[202]

If the lower figure of 14,000 *liang* is used as a proxy, by 1812 the total silver invested in the 23,139 pawnshops was likely to be 323.9 million *liang* (12,146.3 tons),[203] an equivalent of a massive 54.6% of China's total silver stock prior to 1800.

Evidence indicates that commercial investors seldom used pawnshops to raise money. When they did, it often involved arbitrage and speculation. In a well-known case of 1755, rice merchants used one unit of rice as collateral to raise money to buy in five-fold rice stock during the harvest season when the rice price was at the lowest in order to make a killing during the next spring when the rice price reached its highest. The practice alerted the Throne and was consequently banned.[204]

The majority of loans were taken by ordinary peasants; more than 50% in value in Zhejiang and up to 80% in Jiangsu. They were mainly in the form of 'debts for survival' (生存借貸).[205] Only 14% of the total value of the loans was devoted to capital spending (on land, tools, seed and fertilizers).[206] This determined the nature of pawnshop loans to be seasonal and for consumption.

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[195] See Liu (2000).

[196] Qu (2004, pp. 184–90). Also see Wei (1989).

[197] Liu *et al.* (2005, pp. 217–18); Qu (2004, pp. 71–2, 180–2).

[198] In the early twentieth century, the minimum amount required to establish a pawnshop in Shanghai was 30,000 silver yuan (Yang 2005), p. 103. See also Qu (2004, pp. 70–1, 179, 185).

[199] Liu (2000, p. 78); Liu *et al.* (2005, p. 205); Qu (2004, pp. 70–4).

[200] See Ai Na (1983, ch. 3) and Luan (1996, pp. 146–5).

[201] See Liu *et al.* (2005, pp. 206–13).

[202] Sun (1996, p. 311). This is close to Liu's estimate of 21,760 silver *yuan* per pawnshop (Liu 2000, p. 81).

[203] This is slightly lower than Liu's estimate of 347 million *liang* (Liu 2000, p. 81).

[204] Qu (2004, p. 209).

[205] Yang (2005, p. 107).

[206] Zhao (1978, pp. 151–2); Liu (2000, p. 254).

As a result, a considerable proportion of pawnshop capital lay idle, especially during low seasons.[207] Thus, overall, there was an oversupply of loans from the pawning sector. The main evidence is that the interest rate charged by the sector was very low in order to attract business – between 1 and 3% per month during the Ming dynasty, highly affordable to most of people.[208]

That said, a pawnshop can still be viewed as a rudimentary bank, as the investor's silver was not hoarded and loans were spent in the economy in one way or another. But given that the ledger had all the incentives to pay back the loan as soon as possible, funds from this sector were not suited for long-term investment.

Still, many questions remain. For example, why did pawnshops always prefer silver despite its high transaction costs? What were the incentives for investors to put their silver in pawnshops instead of other commercial sectors? In addition, what was the impact of the pawning sector on China's monetary system and its silverisation? All these questions beg further investigation which goes beyond the scope of this article.

5.5. *Summary*

We now have the following list to highlight how silver was allocated in China ca 1830.

	% share without turnover
Pawnshops	54.6%
Wholesalers	≤ 13.4%
State	6.8%
Native banking	2.2%
Total	≤ 77.0%

This breakdown reveals for the first time the unique structure of the Qing 'silver economy'. If anything, the use of silver was biased towards services and consumption, not production.

6. CONCLUSION

First, the alleged miraculous, unlimited demand for silver from China did not exist. China's tangible demand was far smaller than conventionally claimed; an equivalent of only 18% of the New World's silver output. This 18% includes the share from Japan and China. It is highly doubtful whether such a demand was able to make a difference globally.[209] Considering also that some scholars excluded Spain and silver from globalization,[210] the 'ReOrient Thesis' may well be a red herring.

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[207] The total earning per unit of pawnshop capital was halved from the late Qing to early Republic periods, which suggests the amount of idle capital increased (Pan 1985, p. 307).

[208] Zhou (1955, vol. 3); Ling (1991, p. 250). Also, Qu (2004, pp. 58, 183, 204, 207).

[209] Chaudhuri (1986, p. 65) advocated three types of integrations in the international economy: temporal, geographical and structural. This occurred extremely slowly, if at all, in Ming–Qing China.

[210] For example, Thompson (2000, pp. 6–16).

Second, until 1700, Japan was China's main supplier of silver. So the 'initial push' came within Asia. If so, the issue is not 'globalization'. Rather, it was 'Eurasianization' by forging more links within Eurasia in the hands of European and Asian sea merchants. If the prime mover was already in Asia, do we still need to reframe the growth pattern?

Third, silver's transaction cost was too high in China. This in turn led to marginalization of silver as a currency and to the export of silver in the nineteenth century. Such a trend almost certainly reversed the alleged 'silverization'. It becomes clearer than ever that China's indigenous bronze coins underpinned the Qing commercial growth.

Finally silver in China, was associated with services and consumption, and later drug abuse and foreign debts in China. In this context, silver was not a magic item to benefit all parties: it may have been benign for the economic development of the West but not Pareto-optimal for China. Indeed, the loaned and invested silver had little to do with China's own commercial growth. It enhanced the 'world system' as well as cemented the 'Great Divergence'.[211]

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[211] See Wallerstein (1974–86) and Pomeranz (2000).

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