

Trading Silver for Gold: Nineteenth-century Asian Exports and the Political Economy of Currency Unions⁺

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Abstract. We examine the evolution of Asian trading volumes between 1870 and 1913, both within Asia and the rest of the world. Far Eastern countries and colonies had used silver currency for centuries. By the beginning of the twentieth century, many of them had adopted gold-exchange standards instead. Colonial powers often decided on this change in policy. We argue that adoption decisions taken by metropolises are less likely to reflect expected gains from joining a currency union, and can hence sidestep many of the endogeneity issues that have plagued the literature on trade and currency unions. We find that while silver was good for trade, joining gold was much better. Leaving silver paid handsomely in terms of total trading volume, even where former silver bloc partners ended up on different currency standards. We then ask what prevented the early adoption of gold in countries, rather than colonies, which could decide currency arrangements independently. Using a case study of Japan, we emphasize the lock-in effects that arise from the political influence of exporters.

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I. Introduction

Should Asian countries follow Europe's lead and adopt a common currency standard? Following the devastating financial crisis in 1997-98, prospects for an Asian monetary union have become a matter of intense debate. In 1999, the ASEAN+3 summit in Manila launched a number of initiatives that broadened financial co-operation. In 2004, the Asian Development Bank lent its support to Japanese plans for a five-stage plan to adopt a common currency (Eichengreen 2004). Alesina, Barro and Tenreyro (2003) investigated the economic feasibility of a "Yen bloc". We examine Asia's historical experience with a shared monetary standard – silver – in the 19th century, and ask what lessons can be drawn from it. We focus on the trade effects of the silver standard and the political economy of switching from one currency regime to another.

As a result of custom, history, and law, Asian countries shared a silver standard in the 19th century, but as European countries increasingly moved to gold (and demonetized silver) after 1870, Asian economies found themselves using a monetary standard that was quickly becoming marginalized. In addition, they saw their currencies depreciate. Eventually, the majority of Asian countries stabilized their currencies vis-à-vis gold, mainly through gold-exchange standards (van der Eng 1999).

Overall, trade grew markedly in the late 19th century, both to overseas destinations and within Asia. As Asian countries increasingly found themselves on a silver standard that they did not share with the rest of the world (i.e. after 1880), intra-Asian trade growth outpaced Asia's trade with the rest of the world. Once stabilization vis-à-vis gold standard currency had been imposed – more often than not by the imperial center – intra-Asian trade declined in relative importance.

In this paper, we use evidence from the Asian silver standard during the nineteenth century to examine whether common currencies boosted trade and whether leaving the Asian Silver bloc (often by fiat of a colonial power) reduced trade. We do so by using a new, comprehensive dataset on bilateral trade volumes in the 19th century. We focus on trade within Asian as well as Asia's trade with the rest of the world. While many authors have investigated the effects of common currencies (Rose 2001; Glick and Rose 2002; Rose and Engel 2002; Yeyati 2003; Rose 2007), and of the gold standard (Estevadeordal, Frantz and Taylor 2003; López-Córdova and Meissner 2003), the effects of silver on trade are relatively underexplored.¹

We argue that countries that started on silver traded intensively with each other, largely as a result of historical legacy and the tyranny of distance. However, it appears, *ex post*, that staying on silver standard was less attractive than moving to gold. Hence, as countries switched from silver to gold, their total trading volumes rose quickly. Remarkably, even bilateral trading volumes between countries that had previously shared

¹ Nugent (1973) provides some evidence of the effects of silver depreciation on exports. A recent working paper by Mitchener and Weidenmier (2008b) provides quantitative estimates on the overall effects of silver standards on global trade, but does not focus on Asia's experience, in particular, which formed the core of the nineteenth century silver bloc and is the focus of this paper.

the silver standard increased significantly: being on silver was good for trade, but leaving silver for gold was even better. We interpret this as a consequence of the nature of trading relationships in the 19th century, when easier access to the capital-goods and intermediate products of Europe was crucial in fostering development.

In many Far Eastern countries, the decision to change currency arrangements in the late nineteenth century was largely taken by (and in the interest of) colonial powers (Kemmerer 1916; Van der Eng 1999). Where countries retained some degree of control over their currency arrangements, the decision to abandon silver for gold was not taken lightly. Countries on silver, where a switch to gold was under discussion, often saw vocal opposition from exporters and other interest groups that had benefitted from silver's depreciation relative to gold (through 1895). Nonetheless, our evidence suggests that overall exports rose in countries that switched to gold. This implies that imperial intervention may have been beneficial in overcoming entrenched interests of existing trading companies.² In cases where countries had the ability to make decisions independently, the voice of exporters mattered more. The case of Japan is instructive. We examine the determined internal opposition to the adoption of the gold standard in the late 19th century as well as the political means by which it was overcome.

In addition to numerous papers that investigate the effects of common currencies on trading volumes (Persson 2001; Ritschl and Wolf 2003; Tenreyro and Barro 2003; Yeyati 2003; Melitz, Alexander and von Furstenberg 2004), our paper also contributes to the literature on optimum currency areas. Mundell's (1961) classic contribution to this literature emphasized the importance of labor market integration, price and wage flexibility, synchronous business cycles, and diversified production structures. Alesina and Barro (2002) extended his analysis by adding the trade-enhancing effects of currency unions, and the benefits of monetary unions as a commitment device to price stability. Nominal rigidities were not an important feature of 19th century economies, and importing inflation-fighting credentials did not feature prominently in discussions of optimum currency arrangements. Consequently, synchronization of business cycles mattered less as a criterion for currency union membership, while the reductions in trade costs should have received relatively larger weight. We examine to what extent these specific differences between 19th and 20th century economic conditions undermined the benefits of the Asian silver standard, while increasing the relative benefits from gold.

We proceed as follows. We first discuss the history and context of the rise and fall of the silver standard in Asia. Next, we introduce a new, comprehensive database on Asian trade compiled from contemporary data sources. The new source allows one to provide a detailed analysis of the evolution of Asian trade during the classical gold standard era – something that has not been possible with earlier data sets because they did not include a sufficient number of country pairs with less prominent roles in the world economy. The larger size of this new database (in comparison to earlier ones) also enables us to pin down the effects of currency unions with much greater precision. Our main results are presented in section IV. In section V, we use a novel way to pin down the causal effect of

² The overall effects of empire on trade are examined in Mitchener and Weidenmier (2008a). The benefits of empire for bond financing are emphasized in Ferguson and Schularick (2008).

gold standard adoption, using military success as the source of identifying variation. Next, we discuss the political economy of currency arrangements, using the case of Japan to illustrate key issues. Section VII concludes.

II. Historical Background and Context

In this section, we summarize Asia's position in 19th century world trade and describe the history of currency arrangements in Asia, with special emphasis on the period after 1870. We summarize the structure and coherence of the "silver bloc" in the Far East, and examine its decline under the influence of colonial powers and the growing attractions of gold.

The 19th century probably marked a nadir in terms of Asia's role in world trade. By 1870, Asia's share of world trade had declined to an unusually low level. Table 1 provides an overview. Despite accounting for over a third of world GDP, Asia's exports were less than 15% of the world total. A century later, in 1998, when its share of world GDP was identical to the 1870 value, Asia accounted for 27% of world exports – almost twice as much. Remarkably, despite having one of the lowest export-GDP ratios in 1870, growth in Asian exports between 1870 and 1913 was also the slowest of any region.

Table 1: World Trade by Region, 1870

| Region | % of World GDP | % of World Merchandise Exports | Merchandise Exports as % of GDP | Growth in Volume of Merchandise Exports, 1870-1913 |
|--------------------|----------------|--------------------------------|---------------------------------|--|
| Europe | 33.6 | 64.4 | 8.8 | 3.2 |
| Western Offshoots | 10.2 | 7.5 | 4.7 | 4.7 |
| Asia (incl. Japan) | 38.3 | 13.9 | 1.7 | 2.8 |
| Latin America | 2.5 | 5.4 | 9.7 | 3.3 |
| Eastern Europe | 11.7 | 4.2 | 1.6 | 3.4 |
| Africa | 3.7 | 4.6 | 5.8 | 4.4 |

Overall, Asia's trading volume was low. Intra-Asian trade did not rise as the global economy further integrated. As Figure 1 shows, if we look at a constant set of trading partners (the rising percentage for intra-Asian trade in the expanding sample is a result of more and more trade within Asia being captured in our database), trade within Asia declined from a little over 10% of total trade to 6% between 1870 and 1913. The main engine of the growth for Asian trade came from exchanging goods with the rest of the world, principally Europe.

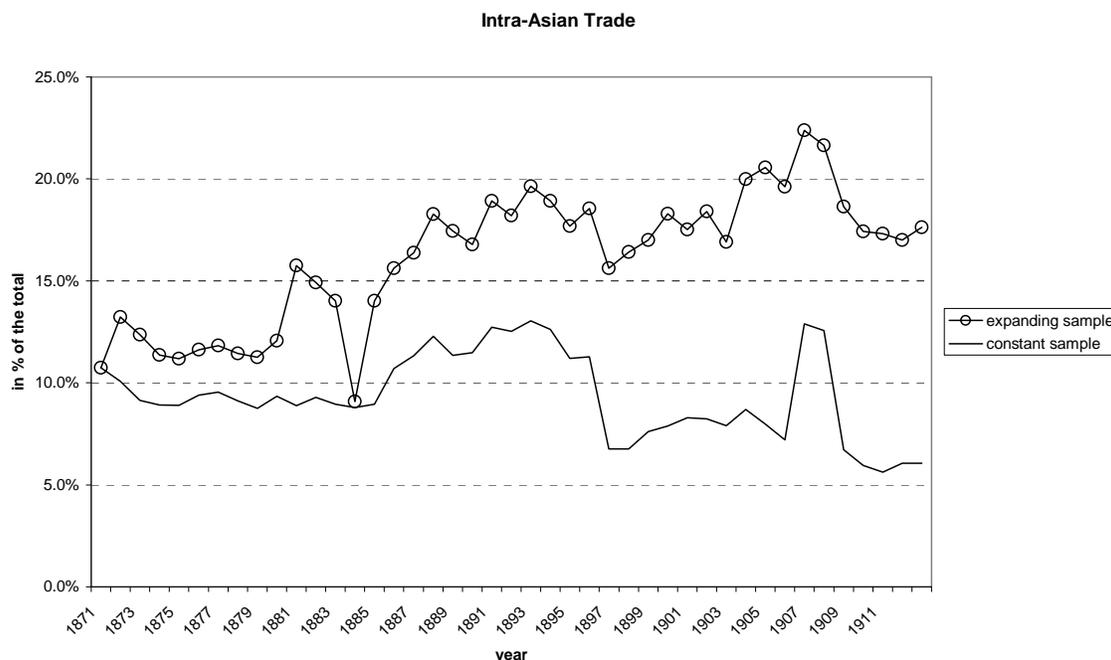


Figure 1

Source: Authors' calculations based on data described in text.

Trade with the rest of the world, as well as within Asia, was low by 1870. It increased in absolute terms after that date, but not enough to halt a further decline relative to rapidly growing trade outside the Far East. Long before the start of our sample period, Asian countries had been using silver as the standard currency of choice. As European countries and Western offshoots increasingly switched to gold in the 19th century, Asia found itself on a currency standard different from the one used by the rest of the world. How did this divergence in currency arrangements occur?

Starting with the Age of Discoveries, Europeans often exchanged silver for Far Eastern goods. After the discovery of America – and especially after the rich silver mines of Potosi came on stream – Europe received substantial inflows of silver. Between 1500 and 1800, Europe imported 72,000 tons of silver from the Americas (Maddison 2001). The value of silver in terms of goods fell only gradually after 1500 (despite the use of the term “price revolution” in the academic literature). Silver was relatively more valuable in Asia.³ It was also useful as means of exchange, given that most goods were markedly cheaper in silver terms there than in Europe.⁴ As the European trading companies reached the Far East, they found a currency system almost entirely based on silver. Between the Arabian Peninsula and the furthest islands of the Pacific, silver was used as the standard means almost without exception. The Mughal currency system in India used the silver rupee as a means of exchange and a unit of account. Gold coins were also minted, but

³ Isaac Newton already noted the fact that the exchange ratio between gold and silver was 1:9 or 1:10 in the Far East, but closer to 1:15 in Europe (Chaudhuri 2006).

⁴ Broadberry and Gupta 2005.

remained largely out of circulation. Only in Southern India, in the areas of the former Hindu kingdoms, was gold the main currency in use. In Persia and in Yemen, the dominant currency was silver. Further East, only silver was in use. In the Indonesian islands, agents of the European trading companies could use Spanish silver dollars as a means of payment (Chaudhuri 2006).

Because Europeans in the 16th century had few goods to offer that Far Eastern customers wanted (except firearms, gold, and silver), they exchanged specie for a steady stream of tea, pepper, nutmeg, and clove (Andaya 1999). Between 1600 and 1780 alone, it has been estimated that Europe exported 29,000 tons of silver, 10,000 tons of which went to the Far East. Most silver was bought in London and Amsterdam as bullion, often in the form of Mexican dollars. British and Dutch importers then exchanged these for Asian goods. Western trading companies were not the only ones whose economic interests were directly tied to currency arrangements and the exchange of Asian goods for European silver. Hao (1986) emphasizes the importance of local traders, for both intra-Asian and long-distance trade.

Until the late nineteenth century, China coined no silver money.⁵ Instead, foreign coins such as the Mexican dollar, and bullion circulated side-by-side. To complicate matters yet further, units of exchange such as the Shanghai silver taels (518.5 grains of fine silver) were traded in the form of ingots. These varied from area to area, so that the Shanghai tael, the Kuping tael and the Haikwan tael all had different weight and fineness (Leavens 1939). The system was not without complications, and many contemporaries noted the high transactions costs that it caused.

Mexican dollars were prized for their purity and exact weight, but other silver currencies were also imported throughout Asia. Some of these were recoined, but in many cases, they circulated alongside the national currencies. In Hong Kong, the Mexican silver dollar circulated as legal tender after 1863. In 1867, the British authorities introduced a Hong Kong dollar with equal size and weight to the Mexican silver dollar. The experiment was quickly abandoned. In 1895, the British colonial administration tried again, using spare capacity at the Indian mint. This time, the experiment was met with greater success (Andrew 1904). From 1903, the Straits settlement also issued its own silver currency.⁶ In the 19th century, Malaya operated on a silver basis. In spite of the earlier political link with India, under whose government the Straits Settlement and Panang fell until 1867, those settlements and the whole peninsula mainly used the (Mexican) silver dollar rather than the silver rupee.⁷ This undoubtedly reflected close trade links with China.

⁵ The only exception was provincial coinage in Foochow and Amoy (Leavens 1939).

⁶ Andrew 1904.

⁷ The Straits Settlement had used rupees, but in 1867, the legal Tender Act repealed legal tender status of the rupee and other Indian subsidiary coins. Silver coins including Mexican, HK, Spanish, Peruvian, and Bolivian would be legal tender instead (Lee 1990).

In India, ‘standard’ rupees of the East India company were the main means of payment after 1835, but other silver rupees circulated alongside them (Van der Eng 1999). In 1852, following the depreciation of gold vis-à-vis silver, gold was effectively taken out of circulation by the East India company. De facto, silver was the sole legal tender (Leavens 1939). In Ceylon, the monetary system originally introduced by the Dutch was replaced entirely by the rupee system of British India (Muhleman 1895).

Throughout the 19th century, contemporaries spoke of a “silver shortage” in much of East Asia. Silver coins, imported from Mexico or elsewhere, often found their way to Asia. In a bid to resolve the issue, colonial powers employed different strategies. The British introduced the Indian rupee in the Straits Settlements, and the Dutch in Indonesia issued currency certificates (Van der Eng 2004). In Hong Kong, bank notes issued by authorized by the Chartered Bank of India in 1853 and HSBC in 1866 were circulating widely, and often traded at a premium to silver coins (Muhleman 1895). Other countries imported silver currency outright, often from Mexico. The French introduced a silver piaster in Indochina, based on the Mexican dollar (Muhleman 1895), while the Dutch rix dollar was used in parts of Asia under Dutch control.

While legal tender was often limited to the currency issued by the government, silver coins from many countries circulated side-by-side with the official currency. Thus, the Asian ‘silver standard’ used mainly two currencies – the Indian silver rupee (in use in India, Ceylon, the Maldives, and some British colonies in East Africa), and the Mexican silver dollar (circulating widely in the Far East, especially in areas trading extensively with China). Transactions costs were thus minimized, in a way that is similar to – but not identical with – that in full-fledged currency-unions. Imports could be paid for with the same coin obtained in domestic sales, and both the risk and the transactions costs of dealing in foreign currencies were largely reduced.

Following the Franco-Prussian war, Germany used the French war indemnity to adopt the gold standard. Following its switch, an increasing number of countries adopted the gold standard. While only 35% of countries were on gold in 1870, the figure had reached 90% in 1913 (Estevadeordal, Frantz and Taylor 2003). After 1870, the price of silver relative to gold came under increasing pressure. This was driven by silver discoveries, and the demonetization of silver in countries switching to gold. Between 1870 and 1890, world stocks of mined silver rose by 170%; gold stocks only rose by 13%. Large silver deposits were discovered in Broken Hill in Australia, Pulacayo in Bolivia, and Colorado in Mexico (Schmitz 1979). These discoveries increasingly depressed the value of silver, giving a cost advantage to exporters in countries that remained on silver (Nugent 1973). At the same time, the volatility of exchange rates increased.

As more and more countries switched to gold, silver was demonetized. Silver coins were melted down, and existing stocks of precious metal no longer used for coinage were sold on the world market. This added to pressure on the gold-silver price ratio. Holland was among the European countries that felt the greatest pressure to switch to gold, as much of its trade was with Germany. By 1875, silver coinage was restricted, and the country switched in all but name to the gold standard. This had the potential to lead to

complications in its trade with Indonesia, which was on a silver standard (Van der Eng 1999). Some two years after the switch to gold in Europe, the Java Bank in Dutch Indonesia started to guarantee the value of silver guilders in terms of gold. Intrinsic and face value of the silver guilder started to diverge. Until the 1870s, many Asian countries traded goods for Dutch guilders from Indonesia, which was more advantageous than obtaining silver from London, but this pattern of trade ceased once silver guilders became overvalued. Increasingly, other Asian nations began to send their goods elsewhere.

There are a number of factors which led to the switch from silver to gold in Asia. For some colonies, as in Indonesia, the use of the same currency in the colony and the metropole made rapid adaptation inevitable. In other colonies, such as India, the peg with sterling was only introduced in 1898. After a series of attempts at halting the slide of silver through international conferences had come to naught, the colonial administration decided to act unilaterally. In part, this was done so as to stabilize the cost of administering and defending India, which were incurred in terms of gold. Once India had switched, other countries followed suit. Ceylon, using the Indian rupee, followed automatically. Figure 2 illustrates the declining role of intra-Asian trade in the case of India. Until the rupee's stabilization, trade with the rest of Asia already grew more slowly. It is after 1898 that intra-Asian trade fell behind decisively, while total trading volumes with Europe surged.

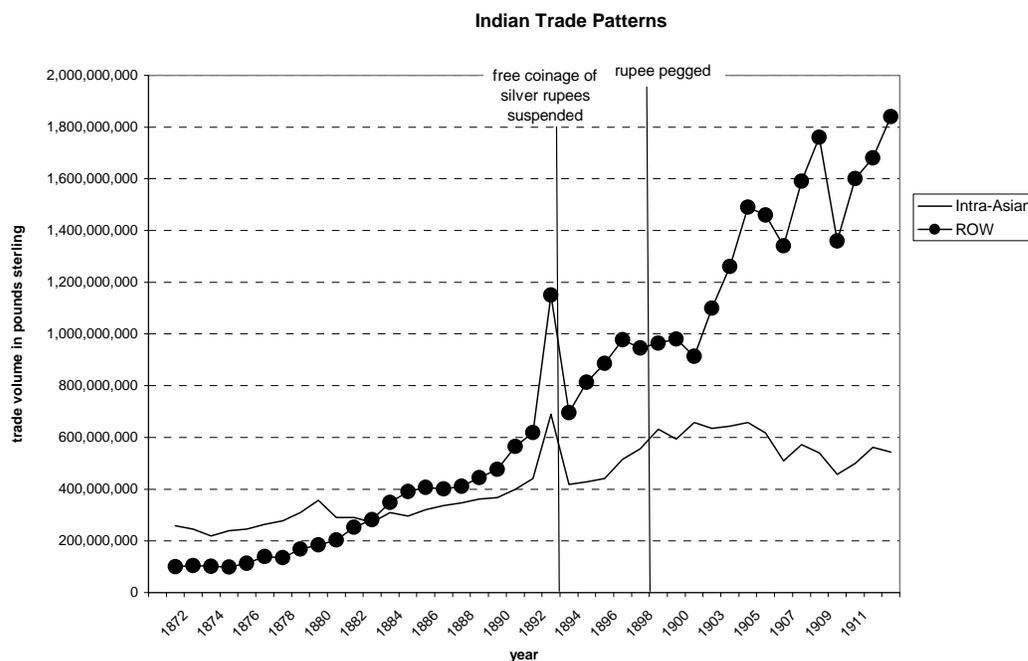


Figure 2: Indian Trade, 1871-1913

In 1906, the Straits Settlement – which would eventually become Singapore – followed the Indian lead and pegged the Straits dollar relative to sterling. In 1908, Siam decided to

do the same relative to gold, having abandoned the silver standard in 1902 (Brown 1978). In Indochina, on the other hand, the French colonial authorities did not peg the piaster to the French franc until 1930.

As an independent country, Japan's adoption of gold sheds additional light on the Asian transitions from silver to gold. After grappling with high inflation in the late 1870s and early 1880s, Japan formally adopted the silver standard in May 1885. By the early 1890s, however, as more countries moved onto gold, Japanese policymakers began to consider alternatives to silver (i.e., bimetallism and gold). A formal committee convened in 1893 to study which metallic standard would be most advantageous for Japan. Its final summary report in 1895 recorded seven members voting to remain on silver, six suggesting that Japan go onto gold at some point in the future, and two favoring a bimetallic standard. Under the direction of Finance Minister (and later Prime Minister) Count Masayoshi Matsukata, the ruling party nevertheless began to engineer Japan's shift to gold. Using the sterling-denominated war indemnity paid by China in 1895, Matsukata acquired the necessary gold for backing the currency. As described in more detail below, Matsukata then shrewdly engineered passage of the gold standard act by forming a political alliance with a key opposition party to ensure a majority at both the committee and chamber levels of the Diet (Japanese parliament). Japan formally adopted gold in September 1897.

In terms of Asian countries, rather than colonies, China was the stalwart, staying on silver throughout our sample period.

III. Data

We use a new, large database of Asian-based annual bilateral export trade based on Mitchener and Weidenmier (2008a) that draws extensively on a consistent set of British statistical sources published by the Board of Trade. The information is hand-collected from the *Statistical Abstract for the United Kingdom*, the *Statistical Abstract for the Several British, Colonies, Possessions, and Protectorates*, and the *Statistical Abstract for the Principal and other Foreign Countries* for the period 1870 to 1913. Some additional data for French colonies is from the *Tableau General du Commerce Exterieur*. Overall, the data consist of more than 17,526 bilateral observations on exports for 347 distinct country pairs or dyads.⁸

⁸ The colonies included in the sample are Aden, Algeria, Australia (New South Wales, Western Australia, Queensland, South Australia, Tasmania, Victoria), Bahamas, Barbados, Belgium Congo, Bermuda, British Guiana, British Honduras, Brunei, Canada, Ceylon, Cuba, Cyprus, Djibouti, Dutch Guiana, Egypt, Falkland Islands, Fiji, French Guiana, French Indochina, Gambia, German East Africa, German SW Africa, German West Africa, Gibraltar, Gold Coast, Guadeloupe, Hawaii, Hong Kong, India, Jamaica, Labuan, Lagos, Madagascar, Maldives, Malta, Martinique, Mauritius, Morocco, Netherlands East Indies, New Caledonia, New Hebrides, New Zealand, Newfoundland, Nyasa, Philippines, Portonovo, Portuguese West Africa, Puerto Rico, Reunion, Sarawak, Senegal, Seychelles, Sierra Leone, Somalia, South Africa (Natal Province, Cape Province, and Transvaal), Southern Nigeria, St. Helena, St. Pierre/Miquelon, Straits Settlement, Togo, Trinidad and Tobago, Tunis, Uganda, UK East Africa, and Zanzibar.

Export data were collected from British Board of Trade publications and converted into current pounds using annual exchange rates from the *Global Financial Database* and Ferguson and Schularick (2004). We deflated the data using the UK PPI and expressed the figures in £2000. Although using GDP to measure “mass” would have been useful in estimating gravity models, reliable annual estimates for a wide range of non-OECD countries prior to 1914 (including smaller colonies) are scarce. In our data analysis, we therefore use population to capture mass. Total railroad miles capture a country’s transportation network. It proxies for internal transport costs that might affect bilateral trade flows. These data series (as well as population) are from Banks (1976) and the aforementioned Board of Trade publications. Data on (log) distance in miles are from Rose (2002) and an online distance calculator that employs U.S. Geographical Survey information.⁹ Data on when countries were on gold and silver standards are from Flandreau and Muriel (2001), Bae and Bailey (2003), Ferguson and Schularick (2004), Meissner (2005), and Officer (2004). Empires include only formal empires and only those with more than one dependency, which rules out Sweden-Norway. Otherwise Mitchener and Weidenmier’s data contains codings for all empires that existed during this period and for which trade data existed.¹⁰ Information on empire affiliation is from the *Correlates of War Database* (COW) described in Sarkees (2000), Olson (1991), O’Brien (1991), and the online historical encyclopedia available at <http://regiments.org/nations/index.htm>.

The Mitchener-Weidenmier (2008a) database significantly improves upon the trade data used in earlier studies of the first era of globalization and allows us to better test the impact of different monetary standards during the first era of globalization. The first reason is its sheer size. To date, the most comprehensive bilateral trade database for 1870-1913, at least in terms of country coverage, is López-Cordova and Meissner (2003), which augmented Barbieri (2002) trade data with information from general statistical compendiums.

The M-W database is roughly 20 times larger than previous data sets. Even the Asia-based trade sample used in this paper is considerably larger than earlier global trade databases for the classical gold standard period. It contains a very large portion of non-European, non-US, and colonial bilateral trade flows in Asia.

IV. Method and Results

Does a shared monetary standard promote trade? Since Rose’s (2000) claim that currency unions increase trade by 200% or more, scholars have debated the robustness and implications of this result.

⁹ We use information from www.wcrl.ars.usda.gov/cec/java to calculate great circle distance.

¹⁰ Belgium, Italy, Japan, Portugal, and Russia also had colonial empires during this period. We have very limited bilateral trade data for the Belgian, Italian, Japanese, and Portuguese colonial empires. We do not have any bilateral trade data for members of the Russian Empire. As a result, we could not consider these empires in the empirical analysis.

The experience of Asia in the nineteenth and early-twentieth centuries is relevant to the broader debate over measuring the effects of currency unions on trade for a number of reasons. First, much of the evidence in favor of the initial Rose result came from cross-sectional variation. As Persson (2001) and Ritschl and Wolf (2003) *inter alia* argue, omitted variable issues potentially loom large. Other factors such as colonial origin, common language, shared legal standards etc., may facilitate the adoption of a common currency while simultaneously increasing trade. The use of panel data (Frankel and Rose 2002; Glick and Rose 2002) has the potential to resolve some of these issues; however, since the dissolution of currency unions is often associated with the end of colonial status, selection bias may remain. The experience of Asian in the 19th century offers a way to solve some of these estimation issues. As colonial powers moved to gold, their Asian colonies initially remained on silver (Indochina, India, Indonesia, Straits Settlement). Colony and imperial center were on different monetary standards – while still sharing the benefits of a related legal system, of imperial control, and of a common language. Estimating the effect of currency unions based on these episodes is useful since the identifying variation comes from the time-series, and because it does not coincide with the dissolution of colonial ties.

Second, the breaking of a common standard as a result of the European powers' (and Japan's) move to gold is reasonably exogenous to conditions in the colonies themselves. The adoption of gold was largely driven by trade relations between developed countries (López-Córdova and Meissner 2003) and accelerated by historical accident (i.e., war indemnities paid to Germany and Japan which enabled them to acquire sufficient gold to move to this standard). Third, there is a good deal of variation, even within Asia itself. Dutch Indonesia switched to a gold-exchange standard in 1873, while French Indochina only stabilized its currency relative to gold in the inter-war period. Fourth, analogies between historical specie standards and currency unions are not without challenges. As Rose noted in his critique of Ritschl and Wolf (2003), coding gold standard membership as a currency union implies that New Zealand and Germany shared a common means of exchange. It is at least arguable that the gold standard was closer to fixing exchange rates (though with a greater degree of implied permanence, at least before 1914). Because of the way the silver standard operated, however, with coins from different countries circulating freely side-by-side through East Asia, it is much closer to the preferred definition of Glick and Rose (2002): “By ‘currency union’ we mean essentially that money was interchangeable between the two countries at a 1:1 par for an extended period of time, so that there was no need to convert prices when trading between a pair of countries.”¹¹

We begin by examining how the silver standard affected exports by estimating pooled OLS regressions of the following form:

$$\ln(\text{Exports}_{ijt}) = \beta_0 + \beta_D (\text{Dist}_{ijt}) + \beta_P \log(\text{Pop}_{ijt}) + \beta_L \text{Landl}_{ijt} + \beta_E \text{Empire}_{ijt} \\ + \beta_R \ln(\text{rail})_{ijt} + \beta_G \text{Gold}_{ijt} + \beta_S \text{Silver}_{ijt} + \varepsilon_{ijt}$$

¹¹ This is not to say that the silver standard worked without transactions costs.

where $Exports_{ijt}$ are exports from country i to country j at time t . We use uni-directional flow data on exports. This avoids the “silver medal” mistake of averaging exports and imports for the dependent variable when estimating the gravity model (Baldwin and Taglioni 2006).¹² $Dist$ is the distance between them, Pop is the joint population of both countries, $Landl$ measures if they are landlocked, $Empire$ is equal to unity if they are both members of the same colonial empire, RR measures the length of railway lines in country i and j jointly, $Gold$ is equal to unity if both countries are on the gold standard, and $Silver$ is equal to unity if both countries are on the silver standard. Compared to the most common setup in comparable studies, we are estimating without the income variable (Estevadeordal, Frantz and Taylor 2003). We also use population, instead of GDP, because of data constraints for smaller countries.¹³

¹² In a methodological critique of the currency union literature, Cheng and Wall also use exports as a dependent variable (Cheng and Wall 2005).

¹³ In his comments on our paper, Rose examined the effect of changing the specification of the standard gravity model in this way. In present-day data, he found that the coefficient of interest (currency union) is not affected when one uses population instead of GDP as a control for size (Rose 2009).

Table 2: Pooled OLS results - currency standards and exports in Asia

| | (1) | (2) | (3) | (4) |
|----------------------------|-----------------------------------|-----------------------------------|-----------------------------------|-----------------------------------|
| Distance | -0.700 ^{***} (-34.51) | -0.688 ^{***} (-34.13) | -0.660 ^{***} (-32.78) | -0.643 ^{***} (-30.62) |
| Log (pop) | 0.285 ^{***} (43.55) | 0.314 ^{***} (41.29) | 0.305 ^{***} (39.41) | 0.316 ^{***} (39.51) |
| Landlocked | -0.394 ^{***} (-3.63) | -0.556 ^{***} (-5.04) | -0.547 ^{***} (-5.05) | -0.578 ^{***} (-5.34) |
| Empire | 0.540 ^{***} (11.76) | 0.343 ^{***} (7.58) | 0.330 ^{***} (7.30) | 0.358 ^{***} (7.66) |
| Log (rail) | 0.125 ^{***} (23.35) | 0.0724 ^{***} (11.43) | 0.0851 ^{***} (13.25) | 0.0733 ^{***} (10.55) |
| Gold standard | | 0.437 ^{***} (11.76) | 0.458 ^{***} (12.31) | 0.474 ^{***} (10.87) |
| Silver standard | | | 0.394 ^{***} (5.69) | 0.339 ^{***} (4.81) |
| Paper-bimetallic | | | | -0.142 (-1.15) |
| Bimetallic-silver | | | | -1.045 ^{***} (-4.17) |
| Bimetallic-gold | | | | -2.077 ^{***} (-4.82) |
| Paper-silver | | | | -0.688 ^{***} (-7.29) |
| Paper-gold | | | | 0.265 ^{***} (4.48) |
| Paper standard | | | | -0.0761 (-1.12) |
| C | 14.91 ^{***} (77.12) | 14.99 ^{***} (75.29) | 14.70 ^{***} (74.93) | 14.53 ^{***} (70.52) |
| <i>N</i> | 15599 | 14517 | 14517 | 14517 |
| adj. <i>R</i> ² | 0.290 | 0.311 | 0.313 | 0.319 |

Note: excluded category for currency arrangement is gold-silver. *t*-statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

For most variables, our results are similar to earlier contributions in the literature. They confirm the usefulness of the gravity equation for the 19th century. The effect of economic ‘mass’ is smaller than in present-day models, and the overall explanatory power, while satisfactory, is lower than is typically the case in the 20th century (Bergstrand 1985). We find that distance reduced trade. So did being landlocked. Membership in the same empire had a positive effect on trading volumes, and longer railway lines were helpful in boosting trade. The gold standard’s trade-increasing effect is substantial -- raising trading volume in our set of country pairs by at least 54% [$(e^{0.43} - 1) * 100$] relative to the average for ‘all other’ currency arrangements.

Being on the silver standard also had positive effects on trading volumes. These appear to have been similar in magnitude to the benefits from gold. In estimated equation (4), the excluded category is gold-silver. The regression coefficient suggests that when both countries of a trading pair were on silver, on average, they traded roughly 35-45% more than dyads on a combination of silver and gold. Currency combinations involving bimetallism were generally associated with much lower levels of bilateral trade. Paper-silver and paper-paper were also combinations which saw low trade volumes, while paper-gold was a relatively dynamic combination.

Since we are using pooled OLS, there is no way of knowing if the results reflect omitted variable bias – with unobserved factors jointly determining trade volume and exchange regime status – or a causal effect. For this reason, numerous authors have noted the advantages of estimating the effects of currency unions using fixed-effects regressions. Table 3 therefore presents estimates of dyad, fixed-effects regressions.

Table 3: Fixed effects regressions – currency standards and exports in Asia

| | (1) | (2) | (3) | (4) |
|---------------------------|---------------------------------|---------------------------------|----------------------------------|-----------------------------------|
| Log (pop) | 0.512 ^{***} (24.08) | 0.452 ^{***} (21.15) | 0.456 ^{***} (21.35) | 0.453 ^{***} (21.44) |
| Empire | 0.687 ^{***} (7.19) | 0.576 ^{***} (6.40) | 0.534 ^{***} (5.92) | 0.677 ^{***} (7.56) |
| Log (rail) | 0.131 ^{***} (26.20) | 0.106 ^{***} (21.28) | 0.100 ^{***} (19.72) | 0.0893 ^{***} (17.66) |
| Gold standard | | 0.395 ^{***} (16.77) | 0.377 ^{***} (15.84) | 0.296 ^{***} (10.69) |
| Silver standard | | | -0.210 ^{***} (-5.16) | -0.272 ^{***} (-6.69) |
| Paper-bimetallic | | | | -0.364 ^{***} (-3.02) |
| Bimetallic-silver | | | | -1.419 ^{***} (-15.95) |
| Bimetallic-gold | | | | -2.141 ^{***} (-10.63) |
| Paper-silver | | | | -0.369 ^{***} (-6.26) |
| Paper-gold | | | | -0.0279 (-0.65) |
| Paper standard | | | | -0.222 ^{**} (-2.40) |
| C | 4.985 ^{***} (14.87) | 6.344 ^{***} (18.84) | 6.395 ^{***} (19.00) | 6.626 ^{***} (19.86) |
| <i>Year Dummies</i> | N | N | N | N |
| <i>Fixed Effects</i> | Y | Y | Y | Y |
| <i>N</i> | 15601 | 14519 | 14519 | 14519 |
| <i>adj. R²</i> | 0.154 | 0.169 | 0.170 | 0.192 |

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Many of the results are similar to what was obtained with pooled OLS. Bimetallism was generally not good for trade. Countries that switched to being on gold saw higher trade volumes. This effect is large and significant, except in the final specification where we control for year effects. This suggests that much of the gain in trade volume amongst nations switching to gold coincided with a period of generally growing trade volumes. One important difference compared with the OLS results is that we now find a significant negative effect for countries that are jointly on silver. The result is highly statistically significant, and large. It implies a reduction in trading volume by almost 24%. We interpret the difference in results across specifications as follows. Pair-specific unobserved factors made it more likely for trading partners to be on a joint silver standard. These include a long history of commercial exchange, the presence of groups from similar ethnic backgrounds involved in trade, and broader cultural similarities. All the identifying variation in the fixed effects model comes from countries that decided to switch from silver to gold, and from silver to a stabilized exchange rate vis-à-vis gold. The negative coefficient implies that, as countries left the silver standard during the late 19th and early 20th century, on average, they saw their export volumes rise – even if they now traded on a mix of currency standards, with one country on gold and the other on silver.

Multilateral Resistance

Trade costs were falling rapidly after 1870, and the effective barriers to trade between countries changed over time. This is a classic problem of time-varying multilateral resistance (Anderson and Van Wincoop 2003). Dealing with it in a panel setting is not trivial. Column (1) of Table 4 presents the results when we include time dummies, in addition to the dyad fixed effects. Results are broadly similar. The benefits of the gold standard itself are no longer apparent, indicating that there was no gain from two trading partners being jointly on gold as compared to the excluded category, gold-silver. The negative result for silver, however, remains highly significant, but is now somewhat smaller.

In column (2), we include dyad fixed effects and time dummies, as well as time-varying country dummies. This effectively controls for country-specific time-effects, so that the remaining identifying variation is only at the ijt level. This is intended to deal with changes in multilateral resistance to trade over time – the effects of Baldwin and Taglioni's (2006) "non-constant". Estimation is computationally intensive, requiring 16,676 dummy variables. As the results show, our substantive conclusions are not affected by this more advanced estimation technique. In particular, the key results for silver continue to hold. In comparison to the results with only time dummies and dyad fixed effects, the fully interacted model shown in column (2) produces a gold standard effect that is positive, but not statistically significant. As for silver, the estimated effect of becomes more negative, and remains highly significant.

Table 4: Fixed effects regressions – time dummies and time-varying country dummies

| | (1) | (2) |
|-------------------|-----------------------|-----------------------|
| Log (pop) | 0.187*** (7.61) | 0.294*** (8.59) |
| Empire | 0.631*** (7.17) | 0.596*** (6.01) |
| Log (rail) | 0.0113* (1.74) | 0.00207 (0.23) |
| Gold standard | -0.0108 (-0.35) | 0.0419 (1.08) |
| Silver standard | -0.112*** (-2.73) | -0.237*** (-4.87) |
| Paper-bimetallic | -0.159 (-1.33) | -0.210 (-0.96) |
| Bimetallic-silver | -1.068*** (-11.81) | -1.212*** (-10.49) |
| Bimetallic-gold | -2.217*** (-11.10) | -2.409*** (-11.63) |
| Paper-silver | -0.189*** (-3.21) | -0.183*** (-2.73) |
| Paper-gold | -0.136*** (-3.18) | 0.00575 (0.11) |
| Paper standard | -0.104 (-1.13) | 0.117 (1.06) |
| C | 11.69*** (27.99) | 9.198*** (13.95) |
| <i>N</i> | 14519 | 14519 |
| adj. R^2 | 0.221 | 0.314 |

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Results for sub-periods

What is behind the strikingly negative results for the silver standard? We next examine the stability of our results for sub-periods. Until the 1890s, with the exception of Dutch Indonesia, the majority of Asian colonies continued to use silver -- the legacy monetary standard. It is only with the move towards stabilized exchange rates vis-à-vis sterling in India that more and more countries and colonies switched to gold-exchange standards. The movement to stabilize relative to gold gathered pace after 1898, when India pegged the rupee to the pound; the Straits settlement and Siam followed suit in 1906 and 1908, respectively. To capture the changing nature of currency arrangements and their effects on trade in the Far East, we split our sample in 1895, and examine the stability of our results.

Table 5 broadly confirms the positive coefficient of gold in the two sub-samples. The pooled OLS estimator shows that countries on gold before 1895 traded markedly more with each other. The size of the coefficient drops after 1895, and becomes statistically indistinguishable from zero. Silver countries also trade more with each other before 1895, but in contrast to the result for gold, the coefficient is larger thereafter; however, the silver standard is not statistically different from zero in either sub-period. In the final two columns of Table 5, we use fixed effects estimation for each of the two separate sub-periods. Many estimation results are stable across periods. In the fixed effects regressions, the gold standard significantly boosted trade in both periods. By contrast, the negative and statistically significant sign on the silver standard coefficient in column 3 suggests the silver standard reduced trade before 1895. The negative effect of the silver standard is disappears after 1895, suggesting that most of the gains from switching from silver to other currencies were realized by the early adopters.

Table 5: Results before and after 1895

| | (1) | (2) | (3) | (4) |
|---------------------------|----------------------------------|----------------------------------|-----------------------------------|---------------------------------|
| | <1895 | ≥1895 | <1895 | ≥1895 |
| Distance | -0.486 ^{***} (-3.22) | -0.859 ^{***} (-5.28) | | |
| Log (pop) | 0.410 ^{***} (6.96) | 0.259 ^{***} (4.64) | 0.430 ^{***} (11.58) | 0.435 ^{***} (15.25) |
| Landlocked | -0.386 (-1.08) | -0.529 (-0.81) | | |
| Empire | 0.746 ^{**} (2.04) | 0.135 (0.44) | 0.843 ^{***} (5.92) | 0.794 ^{***} (5.73) |
| Log (rail) | -0.00640 (-0.17) | 0.184 ^{***} (3.13) | 0.0903 ^{***} (11.62) | 0.156 ^{***} (14.40) |
| Gold standard | 1.324 ^{***} (3.96) | -0.122 (-0.48) | 0.684 ^{***} (8.35) | 0.199 ^{***} (6.97) |
| Silver standard | 0.120 (0.28) | 0.746 (1.37) | -0.685 ^{***} (-7.47) | 0.0493 (1.01) |
| Paper-bimetallic | 0.142 (0.35) | 0 . | -0.381 ^{***} (-2.96) | 0 . |
| Bimetallic-silver | -1.041 (-1.23) | 0 . | -1.199 ^{***} (-12.37) | 0 . |
| Bimetallic-gold | -1.681 ^{**} (-2.42) | 0 . | -1.700 ^{***} (-8.22) | 0 . |
| Paper-silver | -0.563 (-0.99) | -1.012 (-1.36) | -0.385 ^{***} (-4.20) | -0.110 (-1.22) |
| Paper-gold | 1.022 ^{***} (2.77) | -0.592 [*] (-1.75) | -0.0949 (-1.23) | 0.0856 (1.51) |
| Paper standard | 0.173 (0.56) | -0.252 (-0.65) | -0.0980 (-0.85) | 0.221 (1.34) |
| C | 12.34 ^{***} (7.49) | 15.97 ^{***} (10.56) | 7.103 ^{***} (12.69) | 5.634 ^{***} (11.30) |
| <i>Year dummies</i> | N | N | N | N |
| <i>Dyad fixed effects</i> | N | N | Y | Y |
| <i>N</i> | 7177 | 7340 | 7179 | 7340 |
| <i>adj. R²</i> | 0.346 | 0.333 | 0.168 | 0.084 |

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

| | (1) | (2) | (3) | (4) |
|-------|----------------------------------|----------------------------------|---------------------------------|---------------------------------|
| | Intrade | Intrade | Intrade | Intrade |
| dist | -0.486 ^{***} (-3.22) | -0.859 ^{***} (-5.28) | | |
| lnpop | 0.410 ^{***} (6.96) | 0.259 ^{***} (4.64) | 0.430 ^{***} (11.58) | 0.435 ^{***} (15.25) |

| | | | | |
|----------------------------|---------------------|---------------------|-----------------------|---------------------|
| lndlck | -0.386 (-1.08) | -0.529 (-0.81) | | |
| empire | 0.746** (2.04) | 0.135 (0.44) | 0.843*** (5.92) | 0.794*** (5.73) |
| lnrr | -0.00640 (-0.17) | 0.184*** (3.13) | 0.0903*** (11.62) | 0.156*** (14.40) |
| wcgoldgold | 1.324*** (3.96) | -0.122 (-0.48) | 0.684*** (8.35) | 0.199*** (6.97) |
| wcsilversilver | 0.120 (0.28) | 0.746 (1.37) | -0.685*** (-7.47) | 0.0493 (1.01) |
| paperbimetal | 0.142 (0.35) | 0 . | -0.381*** (-2.96) | 0 . |
| wcbimsilver | -1.041 (-1.23) | 0 . | -1.199*** (-12.37) | 0 . |
| wcbimgold | -1.681** (-2.42) | 0 . | -1.700*** (-8.22) | 0 . |
| papersilver | -0.563 (-0.99) | -1.012 (-1.36) | -0.385*** (-4.20) | -0.110 (-1.22) |
| papergold | 1.022*** (2.77) | -0.592* (-1.75) | -0.0949 (-1.23) | 0.0856 (1.51) |
| paperst | 0.173 (0.56) | -0.252 (-0.65) | -0.0980 (-0.85) | 0.221 (1.34) |
| _cons | 12.34*** (7.49) | 15.97*** (10.56) | 7.103*** (12.69) | 5.634*** (11.30) |
| <i>N</i> | 7177 | 7340 | 7179 | 7340 |
| adj. <i>R</i> ² | 0.346 | 0.333 | 0.168 | 0.084 |

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

Discussion

How are we to interpret the seemingly negative effect of the silver standard in the fixed-effects regressions? One possible interpretation is that the lower transactions costs and reduced volatility of a joint currency standard produced a certain amount of 'lock-in' in trading patterns. As countries left one currency arrangement and adopted another, these pre-existing trade patterns began to dissolve. According to our findings in Table 5, countries that remained on silver after 1895 appear to have had particularly strong ties to other silver standard countries. Countries in question include China and Hong Kong (for the entire sample period), Siam (until 1908), the Straits Settlement (until 1906), Japan (until 1897), and India plus the countries on a rupee standard (until 1898). They hence stayed on silver for much longer, in a world that was rapidly switching to gold. As the pooled OLS results suggest, bilateral trade was not markedly higher for silver standard countries before 1895; it is only afterwards that we find a positive coefficient. The fixed effects models suggest that as countries exited silver, their trade volume overall grew rapidly. Exports surged particularly strongly for those countries that left silver before 1895. Late switchers, on the other hand, did not see their exports increase.

V. Identifying the Effects of Currency Choice

It could be argued that the effects estimated in Tables 3-5 are reasonably exogenous. Since the identifying variation in the fixed-effects models comes from changes over time, and most currency arrangements in Asia were decided by colonial powers, the normal issues relating to endogeneity should not arise. However, it can be argued that colonial powers ignore the interests of their overseas possessions at their own peril. Britain, for example, waited for almost half a century after it took direct control of India to push for the adoption of the gold standard. The preceding debate revolved largely around the interests of the Indian economy. To the extent that currency arrangements are changed in response to expected benefits, we cannot treat the effects estimated in Table 3 as causal.¹⁴

In this section, we present estimates using a new instrument derived from a close reading of the historical record of currency adoption. Switching to gold happened under a variety of circumstances. One of most frequent determinants of adopting gold after 1850 was success on the battlefield – states that won wars often used indemnities imposed on the vanquished to fund the acquisition of specie required. Two of the most prominent cases are Germany’s adoption of the gold standard in 1875, and Japan’s in 1897 (Flandreau 1996; Mitchener, Shizume and Weidenmier 2008). In both cases, these changes in currency arrangement followed hot on the heels of victory – against the French in the case of Germany, and against China in the case of Japan. Conversely, the failure to adopt gold appears correlated with defeat, such as in the case of Spain (beaten by the US in 1898, and one of the very few European powers not to do adopt gold permanently).¹⁵

In our sample, countries that *lost* a war [within a ten year interval] had a 23% chance of being on gold in any one year. If they neither won nor lost, the probability rose to 47% and for victors to 54%. Of course, it is very likely that countries on gold were structurally different from those that were not – they were, on average, richer, more industrialized, and more likely to possess an efficient war machine. Hence, we will simply exploit the time-series dimension of war success. In the relevant thought experiment, a range of countries may possess the characteristics that make being on gold and winning a war possible. Then, due to a set of historically contingent events, a war breaks out, and the winner adopts gold. The exclusion restriction is therefore the following: the variation in gold standard adoption driven by the time-series dimension of victory at war will not directly affect trade volume.

¹⁴ We thank Andy Rose for pushing our thinking on this point.

¹⁵ The potential endogeneity of currency choice has been recognized before. López-Córdova and Meissner (2003) used the stock of gold reserves relative to notes in circulation as an instrument. Since changes to gold stocks are normally part of the process that leads to the adoption of gold, it is difficult to see how this identifies a source of exogenous variation.

Table 6 presents our IV estimates. The first two columns are estimated without currency dummies other than gold-gold; the third and fourth columns contain estimates where we include all possible currency pairs except gold-silver, the excluded category. In all cases, the results show a strong and significant effect of gold standard adoption on trade volumes. These are stronger than in the main specification. Measurement issues are unlikely to be responsible. We surmise that the much larger coefficient could reflect the timing of trade increases. Those countries that adopt gold because of sudden war-time success would not have adopted the gold standard for many years under normal circumstances. The sudden reduction in trading costs probably led to a sharper increase in trading volume than would otherwise have occurred.

Table 6: IV-Estimates

| | (1) | (2) | (3) | (4) |
|---------------------------|---------------------------------|--------------------------------|----------------------------------|---------------------------------|
| Gold standard | 1.689 ^{***} (7.86) | 3.857 [*] (1.69) | 1.602 ^{***} (5.48) | 1.984 [*] (1.67) |
| Log (pop) | 0.246 ^{***} (5.97) | 0.363 ^{***} (2.72) | 0.317 ^{***} (8.43) | 0.315 ^{***} (3.90) |
| Empire | 0.215 [*] (1.87) | -0.122 (-0.29) | 0.450 ^{***} (4.18) | 0.390 ^{**} (2.24) |
| Log (rail) | 0.0650 ^{***} (7.55) | 0.139 [*] (1.73) | 0.0665 ^{***} (9.00) | 0.0646 ^{**} (1.99) |
| Silver standard | | | 0.124 (1.26) | 0.0619 (0.55) |
| Paper-gold | | | 0.988 ^{***} (4.28) | 1.208 (1.51) |
| Bimetallic-gold | | | -0.930 ^{***} (-2.70) | -0.424 (-0.39) |
| Paperstandard | | | 0.639 ^{***} (2.96) | 0.716 (1.44) |
| Paper-silver | | | 0.479 ^{**} (2.40) | 0.588 (1.26) |
| Paper-bimetallic | | | 0.416 [*] (1.93) | 0.605 (1.28) |
| Bimetallic-silver | | | -0.803 ^{***} (-4.82) | -0.628 ^{**} (-2.24) |
| C | 12.30 ^{***} (12.36) | 10.42 ^{***} (5.40) | 10.76 ^{***} (12.44) | 10.68 ^{***} (7.63) |
| <i>Year dummies</i> | N | Y | N | Y |
| <i>Dyad fixed effects</i> | Y | Y | Y | Y |
| <i>N</i> | 14519 | 14519 | 14519 | 14519 |
| <i>adj. R²</i> | 0.834 | 0.690 | 0.846 | 0.835 |

t statistics in parentheses

* $p < 0.10$, ** $p < 0.05$, *** $p < 0.01$

VI. The Political Economy of Currency Arrangements

If one were to ignore the evidence on trade flows, it is not clear why Asian economies abandoned silver for gold. The long historical dominance of silver in the region, the declining price of silver relative to gold, and the cost advantages of trading with nearby neighbors might seem like sufficient conditions to significantly delay adoption at least up until World War I. As we noted earlier, however, all but China, Hong Kong, and French Indochina had switched to gold by this time.

What is particularly interesting is that the decision to abandon silver, according to our evidence, turned out to be advantageous in terms of increasing trade flows. So, were policymakers prescient? Did they realize that the large decline in the price of silver, relative to gold, had run its course by 1895 and exporters would no longer benefit from this, that non-Asian trade would grow faster than Asian trade, and that trade based on Ricardian principles with Europe and the Americas would be large enough in magnitude to offset the cost advantages of intra-Asian trade? The historical record suggests that the abandonment of silver in Asia was largely driven by politics rather than economic considerations. There is little evidence that policymakers expressed concern over potentially higher transactions costs if the switch from silver to gold in the region was partial or slow. Rather the historical record suggests two political factors dominated the decision to adopt gold. First, colonies had little to no say in the matter. For example, the Herschell Committee was appointed to decide on the future of the Indian currency. It met in London from 1892 to 1893, and heard 28 witnesses. Only one was Indian. Manufacturers, bankers, and tea planters in India favored staying on silver while British textile exporters favored gold. In the end, the fact that the gold value of remittances for home charges (effectively a British tax on India) had been declining decided the matter (Leavens 1939). The committee's decision was facilitated by over 1,700 submissions of officials in the Indian civil service, army, etc., who complained about the declining value of their earnings in silver when sent back to Britain. On the whole, it appears that currency arrangements decreed by imperial metropolises with little or no regard for the interests of the colonized. Much of Asia's decision to switch was taken out of the hands of domestic considerations, including interest-group politics. Nonetheless, and despite the heavy-handed nature of the decision to change colonies' monetary standards, it appears to have been economically efficient in that it increased trade flows.¹⁶

In contrast to the Straits Settlements, India, Indochina, Dutch East Indies, Indochina, and other Asian colonies, Japan's decision to switch was entirely based on domestic politics.¹⁷ In introducing the legislation to the Diet, Prime Minister and Finance Minister Matsukata argued that trade would be one of the chief benefits as a result of gold standard adoption. "First, fluctuations of prices will be smaller under the gold standard than under

¹⁶ A possible exception is the case of the Straits Settlement, where local interests favored the introduction of gold after Japan had adopted it in 1898 (Leavens 1939).

¹⁷ The case of Siam is more complex. While generally portrayed as a de facto dependency of Britain by many, there is some evidence that British financial advisors wielded less influence than commonly thought (Brown 1978).

the silver standard. Second, the introduction of the gold standard will promote trade, especially with other gold standard countries. Third, the introduction of the gold standard will reduce exchange rate risk with gold standard currencies.”¹⁸

Before becoming law, the legislation had to first clear a vote at the committee level and then before the entire Diet, and while the proponents of going onto the gold standard had the powerful backing of the ruling party, many other legislators believed that adopting the gold standard would hurt the Japanese economy and that the timing was not propitious. They noted that the majority opinion of the 1895 report had concluded that recent fluctuations in the gold-silver price (while Japan was on the silver standard) had increased the volume of exports, reduced the burdens of debtors and fixed taxpayers, created a boom in agriculture, and led to prosperity in commerce and industry. As Eiichi Shibusawa, one member of the 1895 committee and a prominent business leader wrote: “The exports to gold standard countries increased by more than 260 percent from 1878 to 1893 while the imports from these countries only increased by 70 percent over the same period. This is because the price of exports has fallen while the price of imports has risen. This has promoted the development of industries, technical progress, and growth in the demand for labor. These benefits exceed the costs of being a silver standard country.”¹⁹

The business community was largely in favor of remaining on the silver standard as export-producing sectors of the economy had benefited from the depreciation of silver. In 1898, economist Garrett Droppers wrote in the *Quarterly Journal of Economics* the following about the business community’s view on Japan’s monetary standard: “From 1886 to 1897, a period of over a decade, it is doubtful whether there was the slightest demand for return to the gold standard. On the contrary, every so-called decline of silver was hailed with general satisfaction by those engaged in industrial and commercial pursuits.”²⁰

Opposition from the business community to the gold standard was, in part, a function of the more unified voice of exporters. Based on data from the 1890s, Japan’s exports were concentrated in a few key commodities and industries. Forty-one percent of Japanese exports were silk products, and 27 percent were tea, rice, and matches.²¹ The value added of these commodities was almost entirely domestic, and Japanese producers of these goods had gained the most from the depreciation of the silver yen against gold-standard currencies. In contrast to exports, there was no single import that accounted for a large portion of total imports. Raw cotton accounted for 19 percent, sugar for 10 percent, machinery for 9 percent, and petroleum for 4 percent. Given that imports were used as inputs into a variety of products or were final goods sold to consumers, it proved more

¹⁸ Speech of Finance Minister Court Masayoshi Matsukata. Ministry of Finance (1905, pp.182-183). Matsukata suggested that the way the gold standard would increase exports was by reducing price fluctuations and making commercial transactions more convenient (Matsukata’s speech cited in “The Gold Standard,” *The Oregonian*, August 7, 1897). Matsukata may have also believed that adopting gold would increase the prestige and standing of Japan internationally, and that it was broadly consistent with the national goals of modernizing Japan’s economy and military.

¹⁹ Shibusawa, Appendix to the Final Report, Committee on the Monetary System (1895).

²⁰ Droppers (1898, p.164)

²¹ Figures are average shares of exports based on data from 1893-1897.

difficult for policymakers to drum up support from the business community to jettison the silver standard, since no one industry was experiencing a disproportionate rise in input prices (due to the depreciation of silver).

Despite this opposition, Matsukata and his allies prevailed by forging a strategic alliance with a key opposition party, the Progressive Party. In particular, when Matsukata formed the cabinet in September 1896, and as a condition of his acceptance of the post of Prime Minister, he offered the post of Foreign Minister to Shigenobu Okuma, the leader of the Progressive Party (another large political party in Japan).²² Indeed, the ruling government found itself in a crisis of leadership after the resignation of Prime Minister Ito in 1896, and commentators believed that the “Matsukata-Okuma coalition seems the only appropriate outcome of the crisis.”²³ The press quipped that the Progressive party (which had previously spearheaded opposition to the government) now signaled their alliance with the Matsukata cabinet by “issuing a singularly tactless manifesto, in which they arranged for themselves the position of austere mentors.”²⁴ The Progressive Party was a key player in the Diet and one of two parties that, along with the Liberals, often voted to block the legislation of the ruling party.²⁵ More importantly, the Progressive Party was well represented on the House of Representatives Special Committee on Monetary System to which the legislation was referred. Matsukata also bought off some Liberal party members.²⁶

When the voting record and composition of the committee is examined more carefully, it is apparent that without the support of Progressives (who held the committee chair and made up 8 of the 26 voting members), the legislation would have stalled at the committee level. With the support of the Progressives and some of the Liberals, the legislation narrowly passed 14 to 12.²⁷

This coalition again proved sustainable when the debate moved out of committee and to the full Diet. Count Mutsu, Secretary for the Japanese legation in Washington, commented in American newspapers that the debate seemed to have already been won by the coalition in support of adoption: “In many instances the discussion [in the Diet] proceeded upon lines as far removed as well could be from the real point at issue.”²⁸ The bill cleared the House of Representatives and the House of Lords and was proclaimed law on March 29th. The new currency act took effect on October 1, 1897.

²² “Japanese Politics,” *London Times*, December 4, 1896, p.8.

²³ “Japanese Politics,” *London Times*, December 4, 1896, p.8.

²⁴ “Ministerial Changes in Japan,” *London Times*, November 22, 1897, p.6.

²⁵ During his first term as Prime Minister (1891-92), Matsukata failed to get the support of Progressives and Liberals for the budget, which included finances for the building of warships. The failure of the budget resulted in his resignation (Masumi, 1966, pp.202-9 and 233-9).

²⁶ A contemporary reported that some 40 members from the Liberal Party were bought off by Matsukata’s allies (Masumi, 1966, p.281).

²⁷ See Mitchener, Shizume, and Weidenmier (2008) for a detailed, empirical analysis of the vote on gold standard adoption.

²⁸ “Japan’s Gold Standard Law,” *Salt Lake Tribune*, September 14, 1897.

China's experience stands in contrast to that of the rest of Asia. Neither the heavy hand of the European empire or the strong-arm of domestic politicians guided it onto the gold standard. China didn't vote against adopting gold, rather it simply stayed on silver, unable to form any consensus about what type of currency system would be optimal. Both external and civil wars took their costs on Chinese politics, and little support emerged for abandoning the status quo. As a consequence, it experienced lower trade as a result of its staying on silver and being the last to do so.

VII. Conclusion

Large parts of Asia shared a common currency in the 19th century – silver. Country pairs with particularly extensive bilateral trade remained on silver for longer. This reflected a reluctance to break with the traditional currency arrangements, as well as the vocal opposition of exporters who feared losing the competitive advantage that rapid devaluation of silver offered. In our case study of Japan, we saw that overcoming this opposition depended on a confluence of political factors that were not easy to achieve, and that contained a considerable element of chance. In general, switching to the currency of the largest trading network was easier where the imperial center, rather than a national government, had control over policy. Starting with Dutch Indonesia in 1873, European powers prevailed on their Far Eastern dependencies to stabilize their currencies relative to gold as the 19th century wore on. While the aim of imperial authorities was mainly to facilitate exports from the mother country, de facto gold standard membership offered large advantages that more than amply compensated for leaving silver.

Using a new dataset on bilateral annual trading volume between Asian countries and the rest of the world, 1870-1913, we document the silver standard's impact on exports. Its effect was not uniformly positive. We find evidence that countries on silver traded more with each other than one would have expected, given their distance, empire membership, and population sizes. After abandoning their ties to silver, how did Asian countries fare on gold? It is with respect to this monetary standard that we find qualified support for the hypothesis that common currencies boosted trade in Asia. We obtain mainly positive coefficients for gold standard membership, and strongly negative coefficients for silver-standard membership in fixed effects regressions. The latter result at first glance appears to contrast sharply with the documented effects of currency unions in the 20th century, as well as under the gold standard. In fact, what it shows is that countries that left silver and joined gold saw large increases in their exports.

Since identification in our fixed effects models comes from time-series variation and the decision to switch from silver to gold in Asia was largely driven by the exogenous decisions of imperial powers (except possibly in Japan, and possibly Siam), our estimate of a positive gold-standard effect appears to be reasonably free of concerns of reverse causality. Nevertheless, we offer a novel way of identifying exogenous variation in gold standard adoption so that causal inferences in our results are clearer. Using the effects of military success on currency adoption as an instrumental variable, we show that the gold standard indeed had strong, positive effects on bilateral trade volumes.

As the nineteenth century drew to a close, one by one, Asian countries and colonies left a currency arrangement that had served them well for centuries. Instead of sharing the silver standard of their immediate neighbors, they joined the gold standard – and struck out to develop more extensive trading relationships with partners located thousands of miles away. Alesina and Barro (2002) argue that members of a currency union should ideally be formed by adjacent countries – geographically close, with synchronous business cycles, and engaged in extensive trade with each other already. In contrast, we find that exiting a currency union with immediate neighboring countries can be beneficial, even for trade with member states of the abandoned currency union.

We argue that the peculiar gains from leaving silver reflect the nature of trade in the nineteenth century. The gold standard was a much larger and more dynamic currency union after most European countries had switched to gold. By 1914, almost 90% of world trade took place between countries on the gold standard, or on a gold-exchange standard – up from 35% four decades earlier. Total world trade was booming – it increased by 320% between 1870 and 1913 (Maddison 2001). As earlier authors have noted (O'Rourke and Williamson 1994) trade before 1900 can in good measure be explained in terms of technological differences and factor endowments.²⁹ This is very different from trade today, where a large proportion is intra-industry trade of the “North-North” type.³⁰ On the whole, Asian countries exported raw materials and traditional finished goods in exchange for industrial products and capital equipment. While goods flowed from East to West geographically, trade was largely of the “North-South” variety, and not intra-industry trade.³¹ Since Ricardian trade based on differences in technology was important, and the greatest differential for Asian countries was vis-à-vis developed nations at the other end of the globe, the benefits from using the same currency as neighboring countries (with relatively similar factor endowments and technology) were limited. Because gold standard membership for Asian countries offered easier trade with the countries that had the largest potential for North-South trade, its adoption boosted trading volumes to a considerable degree. Even breaking ancient trading arrangements, shared with neighboring countries, could be beneficial in such circumstances. Countries that left silver and adopted gold began to import more capital goods from European countries and the U.S as a result of lower transactions costs. Easier access to capital equipment, and possibly to export financing, may have also facilitated exports to their former silver bloc partners. In this sense, our finding of a negative silver effect may reflect positive spillover effects from adopting gold – spillovers that were so strong that they dominated the increased uncertainty and higher direct trade costs that came from membership of different currency blocs.

Asian trading volumes in the late 19th century were low relative to the region's population size and GDP. Sharing a common currency arrangement in numerous cases had not prevented this decline. In addition, vocal opposition of exporters prevented some

²⁹ Work on the case of Japan's opening up to trade after 1868 documents the size of welfare gains (Bernhofen and Brown 2004, Bernhofen and Brown 2005).

³⁰ Krugman 1981.

³¹ For models of North-South trade, see Flam and Helpman 1987, Grossman and Helpman 1991b, Grossman and Helpman 1991a, Matsuyama 2000, Dinopoulos and Segerstrom 2006.

Far Eastern countries from joining the dominant currency arrangement of the day – gold – for an extended period. When the switch occurred, its benefits were large, but not enough to reverse the unusual decline of Asia’s role in world trade.

For modern-day discussions of currency arrangements in Asia, our findings offer some tentative implications. Nineteenth-century exporters opposed leaving the silver standard since many of them had benefited from the enormous decline in the price of silver relative to gold. The cost-advantages of a depreciating currency were too good to give up – much as exporters in European soft-currency countries did in the 1990s. In retrospect, the misgivings of Asian exporters turned out to be short-sighted – joining gold was good for overall trading volumes, even vis-à-vis silver countries.

The prospects for an Asian currency union face similar challenges today.³² The current development model in many Asian countries is based on exports to the US and Europe. Such policies have a long history. Governments used active exchange rate policies (China in the 1990s and 2000s, Korea in the 1960s, Japan in the immediate post-war period) to create conditions favorable for their growth of exports. Exchange rates are still often fixed at rates that can be seen as undervalued. In the case of EMU, the possible gains from importing the credibility of the Bundesbank were enough to overcome initial skepticism (Eichengreen 2002). European monetary integration was also widely seen as the crowing achievement of a political process. Neither prospect is likely or appealing in the case of East Asia today, where a pan-Asian vision is, at best, still in its infancy. In the 19th century, colonial powers – or the strong-arm tactics of politicians such as Count Matsukata – solved the issue of political feasibility. Based on the historical record, it is hard to see what external factors or force could help to achieve a similar outcome in East Asia today.³³

³² In addition, there is evidence to suggest that a “yen bloc” would not be an optimum currency area (Alesina, Barro and Tenreyro 2003).

³³ For a related argument about the key differences in terms of political culture and institutions, cf. Eichengreen 2007.

References

- Alesina, A. and R. Barro (2002). "Currency Unions." Quarterly Journal of Economics **107**(2): 409-436.
- Alesina, A., R. J. Barro, et al. (2003). Optimal Currency Areas. NBER macroeconomics annual 2002. Volume 17. Cambridge and London, MIT Press: 301-45.
- Andaya, L. (1999). Interactions with the Outside World and Adaptation in Southeast Asian Society, 1500-1800. The Cambridge History of Southeast Asia. N. Tarling. Cambridge, CUP.
- Anderson, J. and E. Van Wincoop (2003). "Gravity without Gravititas: A Solution to the Border Puzzle." American Economic Review **93**(170-92).
- Andrew, A. P. (1904). "The End of the Mexican Dollar." Quarterly Journal of Economics **18**(3): 321-356.
- Bae, K.-H. and W. Bailey (2003). "The Latin Monetary Union: Some Evidence on Europe's Failed Common Currency." Cornell U working paper.
- Baldwin, R. and D. Taglioni (2006). Gravity for Dummies and Dummies for Gravity Equations. National Bureau of Economic Research, Inc, NBER Working Papers, 12516.
- Barbieri, K. (2002). The liberal illusion : does trade promote peace? Ann Arbor, University of Michigan Press.
- Bergstrand, J. H. (1985). "The Gravity Equation in International Trade: Some Microeconomic Foundations and Empirical Evidence." Review of Economics and Statistics **67** 3: 474-81.
- Bernhofen, D. M. and J. C. Brown (2004). "A Direct Test of the Theory of Comparative Advantage: The Case of Japan." Journal of Political Economy **112** 1: 48-67.
- Bernhofen, D. M. and J. C. Brown (2005). "An Empirical Assessment of the Comparative Advantage Gains from Trade: Evidence from Japan." American Economic Review **95** 1: 208-25.
- Broadberry, S. N. and B. Gupta (2005). The Early Modern Great Divergence: Wages, Prices and Economic Development in Europe and Asia, 1500-1800. C.E.P.R. Discussion Papers, CEPR Discussion Papers, 4947.
- Brown, I. (1978). "British Financial Advisers in Siam in the Reign of King Chulalongkorn " Modern Asian Studies **12**(2): 193-215.
- Chaudhuri, K. N. (2006). The trading world of Asia and the English East India Company, 1660-1760. Cambridge [Eng.] ; New York, Cambridge University Press.
- Cheng, I. H. and H. J. Wall (2005). "Controlling for Heterogeneity in Gravity Models of Trade and Integration." Federal Reserve Bank of St. Louis Review **87** 1: 49-63.
- Dinopoulos, E. and P. Segerstrom (2006). North-South Trade and Economic Growth. C.E.P.R. Discussion Papers, CEPR Discussion Papers, 5887.
- Eichengreen, B. J. (2002). Lessons of the Euro for the Rest of the World. Marshall Lecture.
- Eichengreen, B. J. (2004). Real and Pseudo Preconditions for an Asian Monetary Union. Asian Development Bank High-Level Conference on Asia's Economic Cooperation and Integration. Manila.
- Eichengreen, B. J. (2007). "European Integration: What Lessons for Asia?" UC Berkeley manuscript.

- Estevadeordal, A., B. Frantz, et al. (2003). "The Rise and Fall of World Trade." Quarterly Journal of Economics **CXVIII**(2): 359-407.
- Ferguson, N. and M. Schularick (2008). "The "Thin Film Of Gold": Monetary Rules and Policy Credibility In Developing Countries." NBER working paper **13918**.
- Flam, H. and E. Helpman (1987). "Vertical Product Differentiation and North-South Trade." American Economic Review **77** 5: 810-22.
- Flandreau, M. (1996). "The French Crime of 1873: An Essay on the Emergence of the International Gold Standard, 1870-1880." Journal of Economic History **56** 4: 862-97.
- Flandreau, M. and M. Muriel (2001). "Monetary Union, Trade Integration, and Business Cycles in 19th Century Europe: Just Do It." Centre for Economic Policy Research, Discussion Paper Series No. 3087.
- Glick, R. and A. K. Rose (2002). "Does a Currency Union Affect Trade? The Time-Series Evidence." European Economic Review **46** 6: 1125-51.
- Grossman, G. M. and E. Helpman (1991a). "Endogenous Product Cycles." Economic Journal **101** 408: 1214-29.
- Grossman, G. M. and E. Helpman (1991b). "Quality Ladders and Product Cycles." Quarterly Journal of Economics **106** 2: 557-86.
- Hao, Y.-p. i. (1986). The commercial revolution in nineteenth-century China : the rise of Sino-Western mercantile capitalism. Berkeley, University of California Press.
- Kemmerer, E. W. (1916). Modern currency reforms; a history and discussion of recent currency reforms in India, Porto Rico, Philippine islands, Straits Settlements and Mexico. New York, The Macmillan Company.
- Krugman, P. R. (1981). "Intraindustry Specialization and the Gains from Trade." Journal of Political Economy **89** 5: 959-73.
- Leavens, D. (1939). Silver Money. Bloomington, Indiana, Principia.
- Lee, S. Y. (1990). The monetary and banking development of Singapore and Malaysia. Singapore, Singapore University Press, National University of Singapore.
- López-Córdova, J. E. and C. Meissner (2003). "Exchange-Rate Regimes and International Trade: Evidence from the Classical Gold Standard Era." American Economic Review.
- Maddison, A. (2001). The World Economy : A Millennial Perspective. Paris, OECD.
- Matsuyama, K. (2000). "A Ricardian Model with a Continuum of Goods under Nonhomothetic Preferences: Demand Complementarities, Income Distribution, and North-South Trade." Journal of Political Economy **108** 6: 1093-1120.
- Meissner, C. (2005). "A New World Order: Explaining the Emergence of the Classical Gold Standard." Journal of International Economics **66**: 385-406.
- Melitz, J., V. Alexander, et al. (2004). Geography, Trade, and Currency Union. Monetary unions and hard pegs: Effects on trade, financial development, and stability. New York and Oxford, Oxford University Press: 69-87.
- Mitchener, K. J., M. Shizume, et al. (2008). "Why did Countries Adopt the Gold Standard? Lessons from Japan." Kobe U working paper.
- Mitchener, K. J. and M. D. Weidenmier (2008a). "Trade and Empire." Economic Journal **118**(533): 1805-34.
- Mitchener, K. J. and M. D. Weidenmier (2008b). "The Value of Silver in an Age of Gold." working paper.

- Muhleman, M. L. (1895). Monetary systems of the world: a study of present currency systems and statistical information relative to the volume of the world's money. New York, C. H. Nicoll.
- Mundell, R. A. (1961). "A Theory of Optimum Currency Areas." American Economic Review **51**: 657-664.
- Nugent, J. B. (1973). "Exchange-Rate Movements and Economic Development in the Late Nineteenth Century." Journal of Political Economy **81** **5**: 1110-35.
- O'Rourke, K. and J. G. Williamson (1994). "Late Nineteenth-Century Anglo-American Factor-Price Convergence: Were Heckscher and Ohlin Right?" Journal of Economic History **54** **4**: 892-916.
- Officer, L. (2004). "The Gold Standard." from <http://www.eh.net/encyclopedia/?article=officer.gold.standard>.
- Persson, T. (2001). "Currency Unions and Trade: How Large Is the Treatment Effect?" Economic Policy: A European Forum **33**: 433-48.
- Ritschl, A. and N. Wolf (2003). Endogeneity of Currency Areas and Trade Blocs: Evidence from the Inter-war Period. C.E.P.R. Discussion Papers, CEPR Discussion Papers, 4112.
- Rose, A. K. (2001). "Currency Unions and Trade: The Effect Is Large." Economic Policy: A European Forum **33**: 449-57.
- Rose, A. K. (2007). "Checking Out: Exits from Currency Unions." Journal of Financial Transformation **19**: 121-28.
- Rose, A. K. (2009). Comment on Mitchener and Voth. ADB Conference on Regional Integration. Hongkong.
- Rose, A. K. and C. Engel (2002). "Currency Unions and International Integration." Journal of Money, Credit, and Banking **34** **4**: 1067-89.
- Schmitz, C. (1979). World Non-Ferrous Metal Production and Prices, 1700-1976, Frank Cas.
- Tenreyro, S. and R. J. Barro (2003). Economic Effects of Currency Unions. National Bureau of Economic Research, Inc, NBER Working Papers, 9435.
- Van der Eng, P. (1999). "The Silver Standard and Asia's Integration into the World Economy, 1850-1914." Review of Asian and Pacific Studies **18**.
- Van der Eng, P. (2004). Coinage and Currency. Southeast Asia: A Historical Encyclopedia. K. Gin Oi, ABC-Clio.
- Yeyati, E. L. (2003). "On the Impact of a Common Currency on Bilateral Trade." Economics Letters **79** **1**: 125-29.