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Shanghai's Trade, China's Growth: Continuity, Recovery, and Change since the Opium War  
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**ABSTRACT**

In this paper, we provide aggregate trends in China's trade performance from the 1840s to the present. Based on historical benchmarks, we argue that China's recent gains are not exclusively due to the reforms since 1978. Rather, foreign economic activity can be understood by developments that were set in motion in the 19th century. We turn our focus to Shanghai, currently the world's largest port. Shanghai began direct trade relations with western nations starting in 1843. By 1853, Shanghai already accounted for more than half of China's foreign trade. In tracking the levels and growth rates of the city's net and gross imports and exports, foreign direct investment, and foreign residents over more than a century, we find that Shanghai's level of bilateral trade today with the United States, the United Kingdom, or Japan, for example, are by no means high given Shanghai's 19th century experience. This paper argues that a regional approach that embeds national trading destinations within an international trading system provides a meaningful approach to understanding the history of China's trade.

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## 1. Introduction

Currently, China is the largest exporter in the world, and one of the top three importers.<sup>1</sup> Its trade has increased by almost 18% per year on average in the last couple of decades, a performance that is routinely described as “astonishing” and “breathtaking.”<sup>2</sup> China’s economy has implications not only for production, incomes and current accounts in individual countries, but China’s influence is felt globally.<sup>3</sup> Forecasts of China’s economic prospects typically focus on the reforms since the year 1978 (Perkins 2007, Lin 2011). We push the quantitative knowledge frontier back in time by 150 years. This paper shows that while some features of China’s recent performance are truly extraordinary, others are not. By distilling similarities and differences between the 19<sup>th</sup> century trade opening and China’s current rise in global trade, our analysis sheds new light on China’s strong recent performance and future prospects. More generally, the case of China provides new policy lessons on the relation between openness and economic performance over the long-run, and on the extent to which pro-openness policies can actually affect a country’s role in the world economy.

Shanghai is a good starting point for understanding China’s recent trade dynamics, not least because the city has had the world’s largest port since the year 2005.<sup>4</sup> Focal port cities such as Shanghai may be more appropriate spatial units with which to examine trade liberalization, because foreign trade does not diffuse to all regions of a country at one point in time when the country opens to world trade. Although Shanghai had been engaged in significant foreign trade for several centuries within Asia, for most of its history the town was overshadowed by several nearby administrative cities that were each more populous

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<sup>1</sup> Based on data from United Nations COMTRADE and the National Bureau of Statistics of China.

<sup>2</sup> “China’s average trade growth measured in constant US dollar between 1990 and 2010 was an astonishing 17.6%”, (Lin 2011), and “[T]he pace of China’s integration into world trade has been nothing short of breathtaking” (di Giovanni, Levchenko, and Zhang 2011).

<sup>3</sup> China’s impact on more developed countries is analyzed by Bloom, Draca, and van Reenen (2011), who examine the implications of import competition from China on employment and information technology investments of European firms; and Autor, Dorn, and Hanson (2011) who study the effects of competition from China in the labor market of the United States. China’s impact on less developed countries is analyzed by Devlin, Estevadeordal, and Rodriguez-Clare (2005) in the case of Latin America. di Giovanni, Levchenko, and Zhang (2011) study China’s impact on global welfare, while Ju, Shi, and Wei (2011) analyze global current account ‘imbalances’ as they relate to China’s current account surplus and the U.S. trade deficit. Finally, Feenstra and Wei (2010) edit a collection of contributions on China’s growing role in world trade..

<sup>4</sup> By total tonnage of cargo volume, based on statistics from [www.aapa-ports.org](http://www.aapa-ports.org).

and influential than Shanghai. In the mid-19<sup>th</sup> century, under the demands of British gunboats, Shanghai, along with a handful of other Chinese ports, was forced to open to foreign merchants seeking wider markets in China. During the late 19<sup>th</sup> century, Shanghai gained importance for China as its center of foreign trade, the recipient of the lion's share of foreign direct investment (FDI), and generally as a hub that linked the world with China.<sup>5</sup> Goods from the hinterlands were exported to Shanghai and re-exported to foreign countries; conversely foreign goods that arrived in Shanghai were channeled domestically to regional Chinese markets. During the treaty port era, Shanghai handled about 50% of China's *gross* (including re-exports) foreign trade.

In this paper, we introduce a formal historical benchmark by quantifying international economic activity at Shanghai, including over the treaty port era, which we take to be the start of the opening of Shanghai in 1843 to the occupation of Shanghai by Japan in 1941. This provides a benchmark for China's recent trade performance. Today, Shanghai is again a connection between the rest of China and the rest of the world, as well as a catalyst for Chinese regional and national economic development. In some ways, Shanghai has taken on its historical role anew. By focusing on Shanghai, we put the domestic hub—key to China's foreign trade—at the center of the analysis.

A better understanding of the history of China's trade is important for understanding her overall economic performance, which remains somewhat of a puzzle (Rawski 1999, Sachs and Woo 2000). While high growth today is in part due to improved factor allocation *post* reforms (Hsieh and Klenow 2009, Song, Storesletten, and Zilibotti 2011), China's institutions (a non-democratic political regime, weakly enforced property rights, slow privatization, heavy public spending, as well as highly managed interest and exchange rates) and China's late industrialization make it difficult to judge how temporary growth bursts will carry over into sustained welfare increases. In fact, even China's current trade performance can be remarkably difficult to gauge. While the observed "surge" stems in part from the release of the state control in the early 1980s, without a benchmark level

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<sup>5</sup> Shanghai, like other Chinese ports opened by treaty to foreign trade, was also exposed to new institutions, for example the abolition of old monopoly trading systems and certain aspects of the Western legal system. While taken as given in the present paper, this issue will be central in some of our future work.

of trade it is impossible to tell whether China's recent trade performance is a real breakthrough or a recovery from distortionary policies.

We provide a historical benchmark in this paper by linking the post-1978 period to China's liberalization of foreign trade in the 1840s. To do so, we employ new data originally collected by the Chinese Maritime Customs (CMC) service, the Western-led organization that ran China's customs system from the years 1854 to 1948, and connect those data to present-day statistics and international activity in Shanghai. We also undertake a comprehensive comparison between what historical data predict and what actually happened, not only in terms of Shanghai's trade but also FDI as well as international migration. This makes plain how a forecast of future trade growth that takes as the starting point the year 1978 would vastly overestimate China's future trade performance. The current rates of growth may reflect a recovery to an underlying "natural" level of globalization, but it is not itself a good indicator of that level.<sup>6</sup>

We also show that in some respects there is a great deal of continuity over time. For example, the value of trade per capita in Shanghai during the treaty port era was comparable to its level as recently as in the year 2000. As a fraction of China's net foreign trade, Shanghai today accounts for only slightly less than it did during the treaty port era (13%, versus 20%). In addition, the fraction of Shanghai's exports that are produced elsewhere in China—that is, re-exports through Shanghai—was about 60% both for the years 1870 to 1930 and 1990 to 2009, showing that Shanghai retains much of its historical role as a hub for China's overall trade.

Our analysis clarifies the long-run impact of temporary trade policies. While Shanghai was among the regions hardest hit by the highly restrictive foreign economic policies of the early planned economy regime, we show that Shanghai in many respects has reclaimed its historical position since the 1978 reforms. This attests to the resilience of the Shanghai economy and suggests that temporary policies are unlikely to overcome regional

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<sup>6</sup> This paper is not the first to take a longer view on China's recent economic reforms. Keller and Shiue (2007), e.g., have noted that the degree of regional market integration in the 18<sup>th</sup> century is highly correlated with today's income per capita across provinces.

fundamentals that are reinforced by foreign trade.<sup>7</sup> A complementary interpretation is that the institutional basis of Shanghai's strong position that it attained during the treaty port era was not fully wiped out during the years under the command and control economy.

The history of world trade essentially consists of the records left behind by port cities in major economies: Alexandria, Istanbul, London, Rotterdam, New York, Kobe, and Shanghai. Nearly all major cities in the world are still global trade hubs that connect domestic economies to the world, but this function is largely ignored by existing studies. Moreover, since there is a large amount of variation between regions within a large country such as China, country-level statistics may confound important issues, especially over long time spans.<sup>8</sup> Our approach unifies the viewpoints of urban economics, including 'new' economic geography, and international trade.<sup>9</sup> Along these lines, it has been argued that in order to understand the welfare effects of Chinese-style industrial localization today one needs a model in which external economies of scale at the national level are embedded in a wider international trading system (Krugman 2009, 2010). This paper provides crucial evidence on such domestic-international links, based on comprehensive records on Shanghai's trade with other Chinese ports and foreign countries.<sup>10</sup>

Very little is known on how national localization advantages embedded in an international trade system change as the traded goods, industrial structure, and world incomes change over time. Re-exports also feature prominently in the analysis of trade intermediation and entrepôt trade (Feenstra and Hanson 2004, Ahn, Khandelwal, and Wei 2011, Antras and Costinot 2011). While Shanghai may have cost advantages in matching buyers and sellers, Shanghai's function as a hub appears to have had also dynamic implications for production and growth of the city. Consistent with that, Shanghai's population share in China dramatically increased towards the end of the treaty port era,

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<sup>7</sup> See also Davis and Weinstein (2001) on Japan.

<sup>8</sup> Similarly, given the size difference the question why China did not industrialize at the same time England did may be misleading (Pomeranz 2000). Shiue and Keller (2007) provide a more nuanced analysis.

<sup>9</sup> The urban literature tends to look at cities as agglomeration economies within a country that is internationally isolated, while cities have typically no role in international trade, where the country is the spatial unit of analysis, see for example Glaeser and Gottlieb (2009) and Feenstra (2004), respectively. Ottaviano and Puga (1997) present an early survey of work on new economic geography.

<sup>10</sup> For some analysis for the late 19<sup>th</sup> century, see also Keller, Li, and Shiue (2011b).

overall moving from around 0.07% in the year 1870 to around 1% in the year 2009. Moreover, Shanghai's involvement with foreign trade may thus have contributed to the mobilization of resources in other Chinese regions since the 19<sup>th</sup> century trade liberalization. We show below that China's share in world GDP since the year 1870 is closely related to the trade openness of Shanghai, in fact more so than to the trade openness of China.

The remainder of the paper is as follows. The following section 2 gives a brief historical account on Shanghai's role in China's trading system since the mid-19<sup>th</sup> century. Section 3 provides an overview of the data, most importantly of the 19<sup>th</sup> century source. Empirical results are in section 4; in addition to analyzing foreign trade, this section examines the evolution of bilateral trade partners, international migration (foreign residents), and international capital movements in FDI to Shanghai. The final section 5 provides a concluding discussion.

## **2. Shanghai and the Foreign Trade of China**

This section summarizes the role of Shanghai within the broader context of China's foreign trade since the 16<sup>th</sup> century. We will see that its special role today has emerged from Shanghai's unique geographical position together with foreign trade interests of other countries during the 19<sup>th</sup> century. This section describes the main features while we turn to the quantitative analysis in section 4.

At the conclusion of the Opium Wars, Shanghai was opened to Western trade as stipulated in the Treaty of Nanjing on November 17, 1843.<sup>11</sup> Before this time, Shanghai was overshadowed by nearby administrative capital cities such as Suzhou, Hangzhou, and Nanjing, and foreign trade was subject to restrictions and bans. As a result, China's foreign trade on the whole since the mid-15<sup>th</sup> century was fairly restrictive.<sup>12</sup> Shanghai's foreign trade consisted mainly of interactions with non-Western areas—especially Korea, Japan

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<sup>11</sup> For more details on China's trade opening in the 19<sup>th</sup> century, see Keller, Li, and Shiue (2011a) as well as the references cited therein.

<sup>12</sup> Emperors for the most part avoided the business of trying to resolve conflicts between merchants. Not infrequently, imperial bans on foreign trade would follow as a measure to subdue a disorderly episode involving the loss of Chinese lives and property.

and the Nanyang (traders from Southeast Asia, the Arab Peninsula, Africa, and India). Western goods, if they arrived in Shanghai, had to come by way of Guangzhou, since by a decree of 1760, Guangzhou was the only Chinese port open to western traders.

Shanghai was one of a handful of Chinese ports selected by western countries to be opened in the 1840s. The location was attractive because of its geographical position at the mouth of the Yangzi River, with potential access to seafaring routes as well as the traffic on the Yangzi River (see Map 1).<sup>13</sup> This location of the city had long been considered promising, for example by the British East India Company, which suggested already in the year 1756 that a new factory—that is, a trading post—ought to be opened in Shanghai.

Within weeks of the official opening of Shanghai in 1843, no less than 11 foreign firms had begun operating in the city (CMC 2001, v.159, 36), in anticipation of the profits to be had from Shanghai. A high-ranking British official, Sir John Davis, reported in 1844 that Shanghai was the most promising of the newly opened Chinese ports and possessed all the elements of commercial success (CMC 2001, v.159, 37).<sup>14</sup> In fact, Shanghai's trade growth was initially disappointing and limited by the fact that foreign ships were not permitted to go further along the Yangzi River to tap effectively into the trunk lines of the inland traffic, which was where the source of China's markets lay. The forced opening of further ports inland on the Yangzi in the early 1860s partially improved western traders' access to internal markets. The city's advantages as a bridge to the Western world was notable to contemporaries. In the words of a Christian missionary: "if China is ever to be opened, if the spirit of exclusiveness is ever to be effectually broken down, that process will begin here. The rays will diverge from Shanghai".<sup>15</sup> In 1869, a newspaper, the *North-China Herald*, would write:

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<sup>13</sup> The Yangzi is about 6,300 kilometers and the third-longest river in the world. It starts in the Tibetan plains and flows towards Chongqing (Sichuan province), from where it flows another 2,400 kilometers before emptying into the East China Sea at Shanghai. On the booming domestic trade of the Yangzi River Valley, see Pomeranz and Topik (2005), p. 63.

<sup>14</sup> Davis was Governor of Hong Kong and British Plenipotentiary and Chief Superintendent of Trade.

<sup>15</sup> Davis (1852). Christian missionaries were spread between Hong Kong, Fuzhou, Xiamen, and Shanghai.



*“The heart of foreign trade is Shanghai, and the outports mere blood vessels.”* (June 2, 1869; CMC 2001, v.159, 79).<sup>16</sup>

To assess the merits of this claim, the size and the structure of Shanghai’s foreign trade will be detailed quantitatively in section 4 below. We now turn briefly to the institutional structure in which this trade took place, which is important in its own right.

The British were officially permitted, in 1848, to establish a foreign settlement in Shanghai. Separating the foreign population from the Chinese city was a solution the Chinese government preferred over having the foreigners reside in the city itself. British consuls and foreign merchants, on their part, also realized that the city lacked the means to secure their goods. A section of wasteland less than a mile from the city and close to anchorage points in the harbor was selected for the building of foreign residences and warehouses. Outwardly, there were some similarities between the foreign settlement policy of the treaty port era and the practice from 1760 to 1842 when European traders were cordoned off in an enclave, and forced to reside within a specified location outside of the city of Guangzhou. During the treaty port era, however, foreigners came to have a much more active role in the wider economy than in earlier times, including not only hundreds of firms but also banks and a shipyard, for example.

In addition to the right to trade, the British and later other Western nations proclaimed other rights, including the right to own land and buildings (Willoughby 1920). There they were able to build roads, factories, and housing all according to their own preferences.<sup>17</sup> Moreover, by the right of extraterritoriality, foreigners were subject not to local but the laws governing their own lands. Although the Chinese were not permitted to own property in the foreign settlement, they could and increasingly did, rent property in the foreign settlements.

In the area of trade, the key organization created by Western countries was the Imperial Maritime Customs service (after 1911, the Chinese Maritime Customs service, or CMC). It was formed in the year 1854 by Western consuls because rebel forces of the Triad

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<sup>16</sup> By outports the writer means the other ports in China’s treaty port system; see below.

<sup>17</sup> The American Settlement was established in 1863, forming with the British area the “International Settlement.” The French Settlement was independent of the International Settlement.

Society that merged later with the Taiping Rebellion put the official Qing customs house out of action (Murphey 1977, 198). The Qing government had established customs stations along the south coast to organize the collection of tariffs on both Chinese and foreign trade in the late 17<sup>th</sup> century, and by 1730 Shanghai had taken over from Suzhou as the main customs station of Jiangsu province.<sup>18</sup> During the years 1853 and 1854 however these customs duties went unpaid.

The CMC took charge of the collection of tariffs and duties on foreign trade, and it also oversaw the increase in the number of the Chinese ports open to foreign trade, or “treaty ports” (see Map 2 for their location).<sup>19</sup> While the service was formally under the Chinese Foreign Service it was *de facto* led by Western (initially mostly British) individuals. Nevertheless, the CMC’s long-time leader, Robert Hart, stressed that each member of the CMC was “a paid agent of the Chinese government for the performance of specified work”.<sup>20</sup> The CMC produced its flagship publication, the annual *Report on Trade* with detailed figures on the trade at each treaty port from the year 1859 to the year 1948; we will rely on it in section 4 below.

A juncture came for Shanghai in the year 1941 with the Japanese occupation. This year marks the end of the treaty port era for Shanghai. The occupation was the final phase of Japan’s colonization attempt of China that reached back to the First Sino-Japanese War (1894/95), intermittent warfare (1931-37) and full-scale invasion by Japan in 1937. Japan was the one country that together with Britain had the most substantial interests in China during the 19<sup>th</sup> century. Like Britain, Japan was interested in the potential market of China. However, while British interests in China were spread between Shanghai and Hong Kong,

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<sup>18</sup> Notably, the imperial edict designated Shanghai a “superior” customs station for foreign commerce, an indication that Qing officials also recognized that Shanghai had potential to be profitable for trade.

<sup>19</sup> For more on the CMC and the foreign presence in China, see Bickers (2006), van de Ven (2006), and Brunero (2006), as well as Keller, Li, and Shiue (2011a).

<sup>20</sup> Circular No. 8, June 21, 1864, by Robert Hart, “The Customs Service, the spirit that ought to animate it, the policy that ought to guide it, the duties it ought to perform; general considerations and special rules” in Documents illustrative of the Origin, Development, and Activities of the Chinese Customs Service, vol. 1 p. 36-47. Murphey (1977) claims that the CMC “stood out among foreign groups in China as freer of special interest, exploitative behavior, or blind arrogance toward things Chinese,” p.198.

Japanese business interests were based primarily in Shanghai.<sup>21</sup> In addition, Japan had territorial designs on China, specifically in occupying Manchuria and Shandong.

In the years before, the 1911 revolution had ended the Qing Dynasty. The Republican period from 1912-1937 brought a temporary period of industrial expansion and prosperity, as the industrialization of the 1920s was centered in Shanghai.<sup>22</sup> One of the foremost aims of the Nationalist Party (the *Guomindang*) was to take back China's national sovereignty from foreign countries.<sup>23</sup> The Nationalist regime, however, also acted in ways that were fundamentally detrimental to private industries and by 1937, war with Japan, government corruption, labor strikes, and the rise of the Communist Party of China (CPC) had turned the tide in terms of China's domestic politics. The Japanese invasion was repelled in the context of Japan's loss in World War II, while domestically the Chinese Communist Party emerged victorious over the Nationalists when the civil war ended in 1949.

In the following, we summarize Shanghai's evolution during the communist period. The evolution of Shanghai's trade for the period from 1949 until now can be broadly divided into the years before and after the market reforms of 1978.<sup>24</sup> Prior to this time, all of Shanghai's trade was held under central government control through state-owned Foreign Trade Companies (FTC's), more tightly so for imports than for exports. Shanghai was in the initial set of five former treaty port cities that was given permission to fulfill exports according to central plan by the year 1956. Generally, heavy industry was favored over the textile and light industries that were important in Shanghai (see Tian 1996, 11-19). The city was also required to remit large amounts of resources in order to support

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<sup>21</sup> The only Chinese port that may have rivaled Shanghai's importance at the time was Hong Kong. The latter had become a British colony since 1842, with the consequence that imports from and exports to Hong Kong were counted as foreign trade from China's point of view (which is the viewpoint of the CMC statistics). While Hong Kong remained nevertheless closely integrated with the Southern part of China's economy, in Hong Kong there was no production comparable to the silk and tea production in areas near Shanghai, and not nearly the access to inland provinces as Shanghai had. As a consequence Hong Kong had much more the character of a transshipment point—entrepôt trade—than ever was the case for Shanghai. The role of Hong Kong as entrepôt for China's trade is discussed in Keller, Li, and Shiue (2011a).

<sup>22</sup> This is a period that Bergere (2009) calls the "golden age of Shanghai capitalism."

<sup>23</sup> In fact, China did regain tariff autonomy between 1929 and 1934.

<sup>24</sup> For an overview of general developments in China, see Keller, Li, and Shiue (2011a). More details especially for the post-1978 reform period can be found in Lardy (2002), Branstetter and Lardy (2008).

investments in the interior regions to reduce regional inequalities and make the interior regions more economically self-reliant. Shanghai's exports were procured from provinces according to central plan, and Shanghai's share of total exports rose rapidly because of the simultaneous expansion of the industrial output in China and the need to pay back loans owed to the Soviet Union.<sup>25</sup>

China re-established its relationships with Western countries soon after the Cultural Revolution (1966 to 1970), which triggered a period of trade growth, in particular of imports.<sup>26</sup> During the 1970s, more and more regions of China were given permission to export directly to foreign countries. This affected the share of Shanghai's *gross* exports relative to China's total, not unlike to what had happened during the treaty port era with the opening of additional treaty ports. We will return to Shanghai's re-exporting activity and how its function as a hub has evolved over time below.

The liberalization of China's foreign trade and investment regime followed on the 1978 decision of the CPC to reform.<sup>27</sup> While Shanghai was not in the first batch of Special Economic Zones of the year 1980—they were all located in Guangdong and Fujian provinces—it was one of the 14 Coastal Port Cities in the year 1984. FDI, which was closed during the early reign of the CPC, was once again welcomed as part of China's reforms. As a Coastal Port City, the goal for Shanghai was to attract capital investments and technology transfers from foreign countries, as well as to help spur growth of the region, by means of tax and profit incentives. In the early 1990's the Pudong policy granted even more special privileges than Special Economic Zones had to Shanghai and the nearby Pudong area. Finally, a major step towards China's international economic liberalization was taken when China joined the World Trade Organization in the year 2001.

We conclude this overview with three observations. First, China is now relatively accessible to foreign trade. In the year 2005, its average statutory tariff was 8.9%, not far

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<sup>25</sup> Tian (1996), 18.

<sup>26</sup> Shanghai's annual import growth between 1970 and 1975 was three times the annual growth during the years 1957 to 1970, see Tian (1996, 19).

<sup>27</sup> The measures included the decentralization of the right to import and export to local areas, the loosening of controls on foreign exchange, and the use of tariffs, quotas and licenses in place of planned economy controls on imports and exports. See Lardy (2002).

in fact from the maximum of 5% that China was compelled to charge during the treaty port era. Second, starting from 1999, foreign firms in China can be fully foreign-owned—they no longer have to form a joint venture with a Chinese company. This recent policy actually corresponds to the policy during the treaty port era, when foreigners could establish wholly foreign-owned enterprises in China. Third, China's regime today privileges firms engaged in foreign trade and investment relative to firms that do not. Differential treatment of firms, depending on whether it was engaged in foreign markets, might be seen as a vestige of the treaty port era, when goods destined for export or foreign goods imported into China were in effect given preferential treatment relative to domestic trade. During the treaty port era, preference was given through the relatively efficient and consistent CMC policy towards foreign goods (and Chinese goods destined for foreign markets), and, through the payment of one relatively low duty on foreign goods, which should serve to increase the incentives to trade. It thus appears that China's trade and FDI policies today are in some major ways similar to those that China had to follow under pressure from Treaty Powers in the mid-19<sup>th</sup> century.

The following section describes the data that will be used below.

### 3. Data

The major source of information regarding trade of Shanghai and of China during the treaty port era is the reports produced by the Chinese Maritime Customs organization (CMC for short). We rely on the 170-volume compilation of the annual *Returns to Trade* and other Chinese Maritime Customs documents, cited as CMC (2001). The source covers the years 1859 to 1948 and contains information on (1) China's exports and imports and (2) Shanghai's exports and re-exports of Chinese goods, as well as imports and re-exports of foreign goods. All trade flows except re-exports of foreign goods are available by foreign partner country.

Information on Shanghai's trade in the communist period from 1949 onwards comes primarily from the Shanghai Statistical Yearbooks, cited as Shanghai YB (2010), which we have accessed via *China Data Online* (<http://chinadataonline.org/>). Parallel to the data available for the treaty port era, these yearbooks contain information on the

foreign trade of firms located in Shanghai proper (denoted local trade). This covers the years 1953 to 2009 for exports and 1955 to 2009 for imports. They also have data on the total trade through the Shanghai customs for the years 1990 to 2009 (denoted customs trade). This contains foreign trade activity of firms located in Shanghai as well as firms located elsewhere in China. We compute re-exports as customs trade minus local trade.<sup>28</sup> Trade data for China as a whole comes from China Statistical Yearbooks and *China Compendium of Statistics 1949-2008*, compiled by Department of Comprehensive Statistics, National Bureau of Statistics of China. These figures include trade using any mode of transportation (including air).

Trade figures for the treaty port era are given in current values, typically *Haiguan Liang*, but later also in (customs) dollars and gold denominated currency. We have converted all values into U.S. dollars using exchanges rates given in CMC (2001) and Hsiao (1974). The current U.S. dollar values are converted into constant 2006 U.S. dollars by linking two series on U.S. inflation available from the NBER Macro History database (<http://www.nber.org/macroyhistory/>).<sup>29</sup> These are also applied to the values on trade during the communist period, which are given in 100 million current U.S. dollars.

The figures on trade of major countries other than China and on world trade comes from Maddison (2001), the Groningen Growth and Development Centre of the University of Groningen ([www.ggdc.net](http://www.ggdc.net)), as well as the World Bank's Development Indicators database. Information on the number of residents by various foreign countries is available for the years 1872, 1891, 1901, 1911, and 1921 (sources: CMC 1873 Vienna World Exhibition, as well as CMC 2001, various volumes). The figures include men, women, and children, where it is reasonable to believe the large majority were men. The figures do not include temporary residents, such as seamen staying in the city between the arrival and departure of their ship. During the modern period, foreign resident data is based on information on visa requirements, and it is available in Shanghai YB (2010).

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<sup>28</sup> Customs trade also includes relatively small amounts of trade in form of foreign aid and gifts.

<sup>29</sup> NBER Macro History Series m04051, from 1860 to 1939, and U.S. Consumer Price Index from the Bureau of Labor Statistics, from 1913 to 2009.

Data on the number of firms from various foreign countries in Shanghai for the period 1872 to 1921 is available from the same sources as the foreign resident data. In the early years, foreign firms mainly engaged in importing and exporting, whereas especially after the turn of the 20<sup>th</sup> century they increasingly undertook manufacturing activities as well. For the modern period we estimate the number of foreign firms in Shanghai for a given foreign country by allocating the total number of foreign firms in proportion to the value of foreign capital absorbed, which is available by foreign country for the years 1995 to 2009. Both data series come from the Shanghai Statistical Yearbooks. As an alternative, we have also allocated the total number of foreign firms according to the number of contracted FDI projects with each foreign country; this gives similar results.

Data on the Chinese population of Shanghai during the treaty port era comes from CMC (2001) and Mitchell (1998). For the post-1949 period it comes from the Shanghai Statistical Yearbooks (Shanghai YB 2010). GDP of foreign countries is from the online database of the Groningen Growth and Development Centre (GGDC, <http://www.ggdc.net>), University of Groningen. The GGDC database reports all GDP data consistently using the 1990 International Geary-Khamis dollars. Historical GDP, if unavailable for a particular year, is estimated using data on the years 1870 and 1913. GDP of these two years are available for all countries in our sample. To estimate data for missing years, we compute the growth rate of a given country's GDP during this 43-year period and project its GDP for years using this growth rate. Distance between countries is available from the website [www.searates.com](http://www.searates.com). The website provides distance of ocean shipping in nautical miles between Shanghai and the major ports in the countries included in the analysis below.

In the following section we present the results of this paper.

#### **4. Empirical Analysis**

In this section the main findings of this paper are presented. We begin by summarizing the main consequences of the 19<sup>th</sup> century liberalization for China as a whole. Next, we quantitatively assess the importance of Shanghai for China's overall foreign economic relations starting in the 19<sup>th</sup> century. This is followed by examining the evolution

of Shanghai's foreign economic activity in terms of foreign imports, exports, re-exports, international migration and FDI. Our discussion covers both overall developments as well as trends relative to individual foreign countries. Further, we examine the changing pattern of Shanghai's foreign economic activity by employing gravity regressions.

The analysis focuses on two issues. First, we are interested in how well Shanghai's foreign economic activity today can be understood by developments that were set in motion with the 19<sup>th</sup> century liberalizations. Second, we want to better understand Shanghai's long-run function in connecting the rest of China to the rest of the world. To that end we conclude the section by comparing Shanghai's importance relative to other parts of China in the 19<sup>th</sup> versus the 21<sup>st</sup> century, and provide some evidence on how Shanghai mattered for China's growth in the world economy.

#### **4.1 China's Trade Opening in the 19<sup>th</sup> Century**

China's trade opening in the 19<sup>th</sup> century, as noted above, was the consequence of the First Opium War which concluded with the Treaty of Nanjing of the year 1842. Although there are no complete records of China's foreign trade at that time, we have information on the trade of individual countries with China before and after 1842. In Figure 1 we show the value of China's imports from Britain between 1828 and 1860. Two points stand out. First, there is an increase in trade after 1842, immediately following the opening of additional ports (including Shanghai). This however was reversed in the early 1850s. The second instance of trade growth, starting around 1854, is more substantial. The most plausible explanation for this is the Western-led Chinese Maritime Customs (CMC) service, which was founded in 1854 to take over China's customs system from the imperial authorities (see section 2).

While the level of China's foreign trade in the 1860s was several times its level in the 1830s, the growth of China's foreign trade in the initial decades of the treaty port era was not particularly high. As Figure 2 shows, only after the year 1885—a period of general commercial expansion and the absence of wars in the U.S. and Europe—does one see additional and sustained growth in China's foreign trade. Also notice that China typically ran a trade deficit versus the rest of the world during this period.



It is interesting to see how China's trade at the time compared to other countries in the world. Table 1 presents the shares for China and five other countries in foreign trade, starting with the year 1870. In that year, China's share of world exports was 2.78%. This value is considerably larger than that of Japan, which opened just about at that time to foreign trade. At the same time, China's share in world trade is much smaller than India's, which traded relatively more as part of the British Empire. The relatively high shares for the three Western countries, among them the United Kingdom with almost a quarter of world exports, are mainly due to the fact that these countries had already begun their process of industrialization. In Table 1 on the right, one notes that in the year 2008 China is the world's largest exporter with close to 10%, followed by Germany and the U.S.

Table 2 shows how the countries compared in terms of GDP over time. Note that China's share in world GDP in 1870 was around 17%, very similar to its share in the year 2008. India's GDP share has evolved in a similar but less pronounced U-shaped pattern. The share of the U.S. in world GDP peaked around the year 1950, around the same time China's share reached its low point of about 4.5%. Japan's share in world GDP peaked around the year 1990, at 8.5% according to Table 2. The population shares of these countries have evolved over time, with less dramatic swings than either GDP or export shares (Table 3).

We also show two measures of trade openness over time for these countries, namely exports to GDP (Table 4) and exports per capita (Table 5). While for some countries there are major differences between these, such as Britain for which exports relative to GDP has increased whereas exports per capita has declined, in the case of China the two measures tell a similar story: openness bottomed out around the year 1970 before increasing to its historically highest value today. We will return to these developments in section 4.8 below.

After this first look at China's foreign trade during the treaty port era, we now turn to quantifying Shanghai's role in this.

## 4.2 Shanghai's Role in the Foreign Trade of China

In the following we take a first step at pinning down Shanghai's position for China's foreign trade more precisely. Figure 3 shows the development of exports in China and Shanghai between the years 1870 and the most recent year for which data are available, 2009.<sup>30</sup> We choose the year 1870 as our initial year in part because by that time the treaty port of Shanghai had been up and running for more than two decades, so that the observed growth of trade is not mainly a start-up phenomenon. Even though the years 1932 to 1952 are omitted from the analysis because of unavailability of comparable data, we know that foreign trade severely contracted during this period, essentially extending the downward trend that is visible in the figure from 1925 onwards.<sup>31</sup>

We first note that China's and Shanghai's exports have evolved similarly over this period of nearly one and a half centuries. Figure 4 shows the analogous developments for imports over the period of 1870 to 2009.<sup>32</sup> Also here, there is a broad congruence in how foreign imports of China and Shanghai have changed over time.

The figures also confirm a number of factors that we have noted in section 2 above. First, there is the relatively fast growth in exports in the 1950s, mainly due to trade with the Soviet Union, which is not present for imports. Second, while during the period from 1960 to 1980 China's growth in exports and imports was comparable to that of the treaty port era, after 1980, the growth of trade has accelerated. During the treaty port era, China's exports grew annually at about 1.9% per year, faster than Shanghai's exports which grew at a rate of 1.1% per year (Figure 3). China's exports surpassed the level of exports projected with the treaty port era trend by the year 1975, whereas Shanghai's exports already in 1960 were well above what would have been expected based on the treaty port trend. This is consistent with the idea that Shanghai was particularly important for

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<sup>30</sup> Figure 3 shows log exports of Chinese-(respectively, Shanghai-) produced goods to foreign countries; other trade flows will be discussed below.

<sup>31</sup> These factors included the Great Depression, Japan's invasion of China, World War II, and the restrictive stance on foreign trade put in place by China's government.

<sup>32</sup> Shown in Figure 4 is (the log of) China's imports of foreign-produced goods, as well as imports of foreign-produced goods that stayed in Shanghai (net foreign imports).

achieving China's export goals in the early post-World War II period. Shanghai's imports during the treaty port era grew noticeably faster than China's imports (3.6% versus 2.3%, see Figure 4). Third, projecting Shanghai's level of imports from the treaty port era shows that its level was actually surpassed only around the year 2000. This is in part due to Shanghai's low levels of imports in the early years of communist rule that was noted above.

Turning to the post-World War II developments, before the year 1990 China's exports had grown faster than Shanghai's, with 6.8% per year compared to Shanghai's 4.8% per year. China's trade during the last two decades has grown exceptionally fast, due to a number of well-known factors—including reductions in trade barriers, new information and communication technologies and offshoring, together with income growth. The rise in Shanghai's exports has outpaced that of China's (close to 15%, compared to 13%, respectively). This suggests that recent changes in world trade have been particularly beneficial for Shanghai as an exporter. In terms of imports, Shanghai grew faster than China throughout the post-WWII period. While in the 1970s and 1980s this might have been in part because Shanghai recovered from depressed levels during the first decades of the communist reign, the figure shows that the relatively high rate of import growth for Shanghai continued in recent years (an annual rate of 19% per year since the year 1990).

Today Shanghai accounts for almost 15% of China's imports and exports. The fact that a city with about 1% of China's population accounts for close to 15% of China's foreign trade is in itself quite remarkable. Moreover, to the extent that China's high GDP growth is currently fueled by foreign trade, Shanghai is surely important for rising economic welfare in China as a whole. Nevertheless, Shanghai's role for China's development would still be underestimated. A closer look at Shanghai's involvement in foreign trade during the treaty port era shows why.

In fact, Shanghai accounted for roughly half of China's foreign trade between the years 1870 and 1930. On average, the import share of Shanghai was about 55% while its

export share was around 45%.<sup>33</sup> In contrast to what is shown in Figures 3 and 4, these numbers are *gross* in the sense that they include re-exports. As such, they measure the activity at the port of Shanghai. On the export side, they include goods shipped through Shanghai that were produced elsewhere in China, while on the import side they include foreign goods that are sent from Shanghai onwards to other Chinese regions.<sup>34</sup>

Figure 5 shows how Shanghai's import and export shares have changed over time. The import share falls from above 70% in 1870 to around 40% in 1910 before climbing back to over 50% by the year 1930. On the export side, Shanghai's share was highest in the early years, about 50% from 1895 to 1915, and then falling to around 35% by the year 1930.

Why is the share of Shanghai in China's exports falling over this period? One reason is the expansion of the treaty port system. The number of ports open to foreign trade was increasing over time. For regions far away from Shanghai, exports were less likely to go through Shanghai before being shipped to a foreign country, which tends to reduce Shanghai's share in China's total exports. Because the same logic applies to the import share, this makes it more significant that the import share actually rose from around 40% to more than 50% between the years 1910 and 1930. The increase in import share reflects the increase in Shanghai's consumption of foreign goods, which is due to Shanghai's growing size and income relative to other parts of China.

The notion that Shanghai was the "heart" of foreign trade of China during the treaty port era (see the quote above), captures the idea that Shanghai was key for all of China's foreign trade. In order to assess Shanghai's role for China it is crucial to include not only

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<sup>33</sup> China's foreign trade refers to the trade in the CMC statistics; this excludes Hong Kong and the small amount of foreign trade that was not recorded by the CMC, see Keller, Li, and Shiue (2011b) for a discussion.

<sup>34</sup> One particularly noteworthy aspect of the data collected by the CMC is that it captures re-exports with great detail. This has been a frequent source of misunderstanding, and some observers have erroneously concluded that the CMC statistics massively overstate the actual trade that took place. For example, Murphey (1977) argues that by tracing the same goods as they are imported in Shanghai, then re-exported from Shanghai (to Tientsin), then imported by Tientsin (from Shanghai), and finally exported from Tientsin to some location of final demand, the CMC data would create a "statistical illusion" by "quadruple counting"; he then concludes that "the recorded figures probably inflated the real import and export of goods by close to 100 percent," pp. 213-214. In fact, there is neither double-counting nor quadruple-counting in the CMC trade data. The records do however, allow gross trade flows and net trade flows to be distinguished.

Shanghai's net trade, but also its gross trade. The latter is paramount for gauging the contribution of the trade at Shanghai for mobilizing other regions of China. We will turn to this in the next section, before moving from trade to other aspects of international economic activity such as foreign direct investment and international migration.

### 4.3 Shanghai's Exports, Imports, and Re-exports of Foreign Trade

We have just shown that during the treaty port era Shanghai was very active in connecting foreign markets with China's hinterland, both by re-exporting Chinese goods abroad and by re-exporting foreign imports to other regions of China. Here we describe some key aspects of this trade in more detail.

#### Shanghai's Foreign Exports

To begin with, consider the exports of Shanghai that are destined to foreign countries; these trade flows are typically called foreign exports. While a negligible portion of these exports are produced in foreign countries—during the treaty port era mostly in Japan—the large majority of these goods are produced in China. Among these China-produced goods destined for foreign markets, one part is produced in Shanghai while another is produced outside of Shanghai (but still in China). For the latter set of goods, Shanghai serves solely as the transshipment point, and from the point of view of Shanghai this trade is a re-export. In contrast, the former goods are exports in the typical sense of the word—produced in Shanghai and shipped from there to foreign countries.<sup>35</sup>

A natural question is the importance of these re-exports compared with exports of goods produced in Shanghai, and how it has changed over time. There is consistent information to examine this question both during the treaty port era (years 1870 to 1925) as well as for the last twenty years (1990 to 2009). During the treaty port era the re-exports share in Shanghai's total foreign exports was, with 58%, more than half, as shown in Figure 6A on the left. Interestingly, the share of re-exports in Shanghai's foreign exports between the years 1990 and 2009 is almost exactly the same (56%), as shown on the right in Figure 6A. This continuity is striking. Relatively little is known on the determinants of

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<sup>35</sup> Produced in Shanghai here means in the greater Shanghai area. The exact location of production is unknown to us, but for the good to be counted as export rather than re-export, the location must be closer to the port of Shanghai than to any other open port.

such re-export activity.<sup>36</sup> But from Figure 6A it is clear that vast changes in the nature of the traded goods, the general economic conditions in Shanghai, China, and overseas, the number of open ports, and also political factors do not need to affect the extent to which a particular port specializes in re-exporting goods for other regions.<sup>37</sup>

Another question is whether after China's mid-19<sup>th</sup> century trade liberalization and its late 20<sup>th</sup> century trade liberalization the relative importance of re-exports held steady or changed with the passing of time since the liberalization. For the treaty port era we see in Figure 6B that re-exports grew at a higher rate than exports, with an annual rate of 2.7% versus 1.6%. While during the period of 1990 to 2009 the export growth rates were much higher, also here Shanghai's re-exports grow at a higher rate than its exports, with about 20% versus 17% (see Figure 6C). We conclude that in both trade liberalizations, although some 100 years apart, Shanghai's indirect contribution in form of exporting non-local Chinese goods was larger than Shanghai's direct contribution by exporting locally produced goods, and the indirect effect also grew relative to the direct effect after the time of liberalization.

### Shanghai's Foreign Imports

Shanghai imported foreign goods almost exclusively from foreign countries.<sup>38</sup> These goods were either re-exported to other foreign countries (small amounts), or they were re-exported to other Chinese regions, or they were locally consumed. Here we focus on foreign imports that were locally consumed (net foreign imports) and on re-exports to other Chinese areas.

Figure 7A shows that on average during the treaty port years of 1870 to 1925, almost 60% of the foreign imports arriving at Shanghai were re-exported to other Chinese regions, while 40% stayed for final consumption in Shanghai. In contrast, in the last two decades, around 70% of foreign imports remained in Shanghai, and only around 30% were

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<sup>36</sup> While this trade shares some features with entrepôt trade, such as that at Hong Kong (Keller, Li, and Shiue 2011a, Feenstra and Hanson 2004), little is known on how far the similarities go.

<sup>37</sup> For the year 1956, Tian (1995, 86) reports 52% for the re-export share in Shanghai; it is not entirely clear that the figures are comparable though.

<sup>38</sup> In contrast, other treaty ports imported foreign goods in significant number also from Chinese treaty ports, in particular from Shanghai.

re-exported to other Chinese regions. That is, while on the export side the share of re-exports was similar in the earlier and the recent period, on the import side re-exports have generally lost in importance relative to net foreign imports to Shanghai. If we think of re-exporting as arising from the specialization of trade intermediaries in matching buyers and sellers, then these findings suggest that the search costs of foreign sellers to China relative to the intermediaries in Shanghai have fallen over time, while there is no decline in search costs relative to Shanghai intermediaries for Chinese sellers to foreign markets.

How about changes in the extent of re-exporting foreign imports over time? During the treaty port years, while re-exports have initially a higher level they grow slower than net foreign imports (1.3% versus 3.7% per year, Figure 7B). The difference in these trends is qualitatively the same in recent years, with re-exports growing at a lower rate than net foreign imports (Figure 7C). In the aftermath of both the 19<sup>th</sup> century and the 20<sup>th</sup> century trade liberalization Shanghai's re-exports of exports grow faster than local exports, while the re-exports of imports grow slower than net foreign imports. One possibility is that on the export side the developed port infrastructure of Shanghai always triggers relatively fast export growth from other Chinese regions. At the same time, the growing population and income of Shanghai that goes hand in hand with the developed port infrastructure means that an increasing fraction of Shanghai's total foreign imports will be consumed in the city itself.

We now turn to the bilateral trade pattern of Shanghai.

#### **4.4 Shanghai's Bilateral Trade**

In this section the composition of trade at Shanghai across foreign countries, and how that has changed over time, will be considered. We first discuss foreign imports.<sup>39</sup>

##### **Shanghai's Import Composition**

During the late 19<sup>th</sup> century, Shanghai imported mostly from Britain and its colonies. Figure 8A shows the top 5 sources of imports for the years 1870 to 1900; 37% of Shanghai's imports came from Britain proper, 27% from India and 16% from Hong Kong, making for a

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<sup>39</sup> The following are figures on gross imports from foreign countries; we have more bilateral information on gross rather than net imports.

total of 80% from possessions of the British Empire. Compared with China as a whole, Hong Kong plays a smaller role for Shanghai's imports; this is likely due to the fact that Hong Kong and Shanghai were alternative entry ways for imports to China.<sup>40</sup>

Other significant sources of imports were the U.S. and Japan. Note that foreign trade at the time was highly concentrated in the sense that all countries outside the top 5 import sources of Shanghai at the time accounted only for 8% of its imports. This degree of concentration follows from the relatively high degree of income inequality across countries at the time—only 100 years after the first country had begun its industrialization—which implied that only relatively few countries had the technological capacity as well as the resources to engage in large-scale foreign trade.

The top five sources of Shanghai's imports for the years 1990 to 2009 are shown in Figure 8B. Not only Britain but also its former colonies are absent in this figure, which strongly suggests that Britain's late 19<sup>th</sup> century role in Shanghai had been driven to some extent by its early industrialization and successful empire-building. Some continuity is preserved through the major roles of Japan (21%) and the USA (12%), which in the 19<sup>th</sup> century were ranked 4<sup>th</sup> and 5<sup>th</sup>, respectively. Other major sources of imports in Shanghai today include, with Taiwan and the Republic of Korea, two of the so-called "Asian Tigers" of the 1980s. Note that the top-five countries now account for much less of Shanghai's imports than in the 19<sup>th</sup> century (62%, versus 92%).

Figure 8C gives a direct comparison of Shanghai's import shares for virtually all economies that were significant sources in the late 19<sup>th</sup> century.<sup>41</sup> The shares of Continental Europe, Japan, and the United States have strongly increased at the expense of Britain and its former colonies.<sup>42</sup> At the same time, relatively nearby countries like Australia, Thailand, and the Philippines now take a sizable share of Shanghai's trade.

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<sup>40</sup> See also Table 1 in Keller, Li, and Shiue (2011a).

<sup>41</sup> Continental Europe in the 19<sup>th</sup> century means mostly France, followed by Germany and Italy; in the modern period, we compute it as trade with Europe less Britain. There is no data for 1990-2009 on imports from India, but it is reasonable to assume that the amounts are small as shown.

<sup>42</sup> Singapore is an interesting special case of a British colony whose share of trade has increased over time. In the CMC statistics this is Singapore Straits, a British crown colony consisting of Singapore, Penang, and



## Shanghai's Export Composition

The major export destination for Shanghai in the late 19<sup>th</sup> century was Continental Europe, with 45% (see Figure 9A). Britain accounted for 24% of Shanghai's exports, followed by the USA and Japan with 12% and 10%, respectively. These economies held more than 90% of Shanghai's exports during the years 1870 to 1900.

In the recent past, the U.S. and Japan have each accounted for 21% of Shanghai's exports, followed by Hong Kong with 13% (Figure 9B). Among the European countries, Germany now receives about 4% of Shanghai's exports, whereas Britain and France are not in the top five Shanghai export destinations anymore (each receives about 2% of Shanghai's exports). As in the case of imports, non-top 5 exporters account for about 38% of Shanghai's trade, indicating that the set of countries with which Shanghai trades has become much larger over time. Figure 9C shows the change in export composition in direct comparison. Mostly trade shares have been reallocated away from Europe and in favor of the USA, Japan, as well as a number of smaller but geographically closer economies.

In sum, the composition of Shanghai's trade, both historically and today, captures a number of aspects including market size and geographic location, with the latter becoming more important over time. We will return to this in our gravity equation analysis below. The following section discusses current levels of the bilateral trade of Shanghai in the light of the trade liberalization during the treaty port era.

## The Evolution of Shanghai's Bilateral Imports

In this section we consider the following scenario. Suppose that there would have been a forecaster living in the year 1900, trying to predict Shanghai's imports from Britain today. The forecaster was naïve, which is to say that she knew nothing other than the levels of Shanghai's imports from Britain between the years 1870 and 1900. What would that forecaster's prediction have been for Shanghai's imports from Britain today? In hindsight it is clear that the forecaster's task was not an easy one, as she was not aware of the fall of the Qing dynasty, two world wars, Japanese invasion, the Great Depression, and the restrictive

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Malacca. Its share may have increased over time as shown in the figure because we sum Shanghai's imports from Singapore and Malaysia, which is likely somewhat of an overestimate.

trade policy during the early years under the CPC government, as well as the opening in the years after 1978. Neither did the forecaster know about the growth of world incomes, falling trade costs, vertical specialization and offshoring, which also affect the level of trade that we see today.

It turns out that the forecaster would have gotten today's level of imports almost exactly right. To be precise, she would have predicted the level that was actually reached in the year 2000, see Figure 10A. Britain's exports to Shanghai during 1870 to 1900 did not grow much, but their levels were relatively high (37% of Shanghai's total imports, see Figure 8A above). Conversely, in recent years Shanghai's imports from Britain have grown at a rate of about 12%, but the level of trade had to be built up from its collapse after the year 1930. Together this means that Shanghai's imports from Britain today are quite close to what a simple forecast from the treaty port era would give.

At the same time, a backward projection using today's imports to tell us the level of historical imports would be far off, as Figure 10A indicates as well. The current rate of growth of imports from Britain is high by historical standards, suggesting that one should not expect it to last for very long.

In the following, we will employ this forecasting scenario to assess the evolution of Shanghai's trade over time also for other countries. In the case of imports from Continental European countries, a somewhat different picture emerges (see Figure 10B). Shanghai's imports from these countries during the late 19<sup>th</sup> century grew at about 8% per year, which leaves the projected value using the treaty port era trend considerably above the actual value of imports today. At the same time, currently Shanghai's imports from Continental Europe grow at about 13%, higher than the historical trend, and for this reason the naïve forecasting rule would yield roughly the year 2075 in which Shanghai's projected imports from the treaty port era will equal its actual imports from Continental Europe. A similar calculation for Japan yields virtually today (the year 2015, to be exact, see Figure 10C), while for the U.S. we obtain the year 2234 (Figure 10D). The later dates for Western countries reflect the higher growth rates of trade during the treaty port era, which itself is

due to the fact that Western countries, having industrialized, could provide more advanced products than Japan at the time.

### **The Evolution of Shanghai's Bilateral Exports**

On the export side, Shanghai's trade during the treaty port era grew slower than on the import side overall (recall Figures 3 and 4 above). The relatively slow growth of trade is largely due to trade to Britain, which fell substantially between the years 1870 to 1900, see Figure 11. While exports to Britain in fact grew slowly if at all, the stark pattern in the figure is mainly a reflection of the fact that London's role as entrepôt in Europe for trade with China was diminished over time. Goods from Shanghai were increasingly shipped directly to Amsterdam, Hamburg, and other European ports whereas before they had been destined to London first before being re-shipped to their ports of final destination. If we add Shanghai's exports to Britain and Continental Europe, it is essentially flat over the period of 1870 to 1900.

The U.S. is a country where such entrepôt trade matters much less. During the treaty port era, Shanghai's exports to the USA grew at around 6% per year (see Figure 12A). Since 1972, the year from which we have data, Shanghai's exports to the USA have grown at a much higher rate (around 16%). However, given the level of Shanghai's exports to the USA during the treaty port era, the actual exports in 2009 amounted only to about 40% of the projected exports using the historical trend of Shanghai's exports to the USA. Another interesting case is Japan. During the years 1870 to 1900, Shanghai's exports to Japan grew at a higher rate than after World War II (see Figure 12B), so that, technically speaking, the naïve forecasting rule would yield infinity as the time at which actual exports would equal the exports projected with the treaty port era trend.

Overall, our forecaster would typically overestimate today's bilateral exports of Shanghai. The Western countries in particular had relatively high GDP and experienced fast growth during the treaty port era, which meant a high growth rate of imports from Shanghai. If this growth rate is projected over a century then today's trade is overestimated. This is consistent with the idea that, seen from the viewpoint of Shanghai, China's trade today is not extraordinary.

It may be the case that our forecasting model is too simple. We therefore examine in the next section whether Shanghai's trade, today and in the past, follows across countries the typical patterns predicted by the gravity equation of trade.

### Shanghai's Trade and Gravity

We use the gravity equation of trade to examine Shanghai's bilateral trade with foreign countries, both during the treaty port era and in recent years. The use of the gravity equation is here compelling for two reasons. First, the gravity equation is a good benchmark for trade. Not only is the gravity equation usually highly successful in explaining bilateral trade in a statistical sense (with  $R^2$ 's upwards of 0.70 the norm), it is also well-known that many micro-founded trade models imply the gravity equation.<sup>43</sup> Second, the gravity equation allows us to directly investigate if Shanghai's bilateral trade patterns during the treaty port era were unusual. The fact that trade treaties were imposed upon China may give rise to doubts as to whether a model of trade based on voluntary exchange can fit the data.

The gravity equation of trade is, in its simplest form,

$$(1) \quad \text{TRADE}_{a,b} = \frac{\text{GDP}_a^\alpha \text{GDP}_b^\beta}{\text{DIST}_{ab}^\gamma},$$

where  $a$  and  $b$  are two trading economies, TRADE is either bilateral exports or imports, GDP is gross domestic product, and DIST is shipping distance. In its usual log regression form, it is

$$(2) \quad \ln \text{TRADE}_{ab} = \alpha \ln \text{GDP}_a + \beta \ln \text{GDP}_b - \gamma \ln \text{DIST}_{ab} + X'_{ab} \delta + \varepsilon_{ab},$$

where  $X$  refers to a set of control variables, and  $\varepsilon_{ab}$  is a regression error. The expected signs of coefficients are  $\hat{\alpha} > 0$ ,  $\hat{\beta} > 0$ , and  $-\hat{\gamma} < 0$ .

Here, economy  $a$  is a particular trade partner of Shanghai, and economy  $b$  is Shanghai. Our gravity regression also has a time dimension: a pair of trade partners presents itself multiple times over years. We have data on years 1869 to 1904 (the History sample) and 1953 to 2009 (the Modern sample). To reduce problems arising from

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<sup>43</sup> See Anderson (2010) for a review of the literature.

autocorrelation, we use five-year averages of the data. Since data on Shanghai's GDP for much of our sample period are unavailable, we use population instead. Population is the most natural replacement because GDP and population are interchangeable in measuring the size of an economy in many theories that provide micro-foundations for the gravity equation.

As Shanghai's trade partners we have the following countries: Continental Europe, Egypt, Hong Kong, Japan, Philippines, Singapore, Thailand, and United States.<sup>44</sup> Among those, Hong Kong and Singapore were major entrepôts, with unusually voluminous inflows and outflows of goods that are transshipments rather than goods locally consumed or manufactured. To control for these peculiarities, we include a dummy variable specifically for Hong Kong and Singapore.

We first run the gravity regression using data on the treaty port era. Results are reported in columns 1-2 of Table 6. There are positive coefficients on the GDP of trade partners and negative coefficients on shipping distance, while the population variable does not enter significantly.<sup>45</sup> Notably, the coefficients of GDP and distance are both around one, a finding that is in line with results reported in studies using a wide range of data sources.<sup>46</sup> This provides additional evidence for the generality of the gravity equation, considering that the treaty port era was more than a century ago and was initiated by China's defeat in the Opium War.<sup>47</sup>

Next, we run gravity regressions using the same set of countries but with modern data. Here, “modern” refers to the era starting after 1949, when the CPC took control of mainland China and established a new government.<sup>48</sup> The new government abolished all

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<sup>44</sup> Trade here is net not gross trade of Shanghai because data including re-exports become available only after 1990, which would reduce our “modern” sample.

<sup>45</sup> The latter may be because the sample has quite limited variation in terms of population, with only Shanghai. Also, we considered including time fixed effects, which are, however, highly collinear with the Population variable.

<sup>46</sup> See Chaney (2011) for a review on the coefficient estimates of the gravity equation.

<sup>47</sup> The gravity equation in a historical context is applied by Estevadeordal, Frantz, and Taylor (2003) as well as Jacks and Pendakur (2010), for example.

<sup>48</sup> Data on the years 1949-1952 are unavailable, such that the modern time in our analysis actually starts with the year 1953.

the trade treaties with Western powers. What interests us is the connection between the historical and modern gravity regressions.

To ensure comparability between historical and modern-time gravity regressions, we use, as before, five-year averages, Shanghai's population in place of its GDP, and the entrepôt dummy variable. Columns 3 and 4 in Table 6 report the results. The modern gravity regression results differ from the historical ones in a number of ways. First, the GDP of trade partners now has coefficients smaller in magnitude, in part because Western countries in the sample become less dominant than in the treaty port era. In other words, China currently trades with a more diversified set of countries than it did in the past (recall Figures 8 and 9).<sup>49</sup>

Second, Shanghai's population in the modern gravity regression has a positive and significant coefficient, consistent with results in the literature. Third, the coefficient of distance becomes smaller in absolute value, which is different from the common belief that the effect of distance on trade remains stable over time (e.g., Leamer and Levinsohn 1995). Fourth, the entrepôt dummy has a much smaller coefficient. Singapore and Hong Kong underwent rapid industrialization after World War II,<sup>50</sup> and they became independent from Britain in 1963 and 1997, respectively. Such changes have likely reduced the transshipments through these entrepôts.<sup>51</sup> Finally, note that the gravity regression for the treaty port sample has an  $R^2$  around 0.85, whereas for the modern period the  $R^2$  is lower, around 0.70. Thus, income and distance variation across countries determines the volume of Shanghai's bilateral trade. Not only is this relationship just as expected, but the effect is even stronger in the historical than in the modern sample.

The modern time is a six-decade period, during which Shanghai, China, and the world changed in dramatic ways. In particular, in 1978, China began its transition to a market economy; in 1984, Shanghai was designated by China's central government as a Coastal Port City which was given flexible regulations, business-friendly policies, and trade-

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<sup>49</sup> This effect is actually underestimated in Table 6, because only Shanghai's trade partners in the treaty port era are included in the regression.

<sup>50</sup> They are two out of the four "Asian Tigers"; the other two are Taiwan and South Korea.

<sup>51</sup> Also, Feenstra and Hanson (2004) find that starting from the 1990s, Chinese products made in regions that are far from Hong Kong are less re-exported via Hong Kong.

promotion measures (see section 2). To account for these structural changes, we specifically examine the post-1978 and post-1984 periods in Table 7. Several of the aforementioned changes to the gravity regression become more pronounced in Table 7. Notably, population now has a sizable coefficient, which may be due to slow population growth following the nationwide enforcement of the one-child policy,<sup>52</sup> as well as the contemporaneous rapid trade growth.

As above, we again want to know how history predicts modern trade. Our focus now, however, is on the bilateral trade pattern. To this end, we plug modern country characteristics into the historical gravity equation (columns 1 and 2 in Table 6), and then compare actual patterns with the projected bilateral trade patterns. The comparison will demonstrate how far modern trade patterns deviate from historical ones.

The results are reported in Figure 13. The upper and lower rows of the figure correspond to exports and imports, respectively. Diagonals in all the graphs of Figure 13 are 45-degree lines, any point on which denotes a perfect match between projected (horizontal) and actual (vertical axis) trade volumes. Column 1 of Figure 13 shows projected export and import patterns in 1904, the latest year with available historical bilateral trade data. This column serves as a benchmark, given that the projected pattern, by construction, fits well the actual pattern. Column 2 of Figure 13 does the projection and comparison using data on the year 1974, 70 years after 1904. The projected exports are similar to the actual volume, while the projected imports are higher than the actual volume. This contrast is most likely politically driven by the Cultural Revolution and state planning.

Column 3 of Figure 13 does the projection and comparison using data on the year 2004, 30 years after 1974, and three years after China's accession into the World Trade Organization in 2001. Now, the projected exports are slightly lower than the actual volume, while the projected imports are quite close to the actual volume. Exceptions are Singapore and Hong Kong, which are as discussed above, economies with fading roles as entrepôts. Column 4 uses data on 2009, the latest year with available bilateral trade data,

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<sup>52</sup> The annual growth rate of Shanghai's population between 1984 and 2009 is approximately 0.6% on average.

when the pattern shown in column 3 becomes clearer still. Projected exports further deviate from the actual volume, while projected imports are close to the actual volume. In sum, the cross-sectional pattern of Shanghai's trade during the treaty port era as pinned down by a gravity equation fits quite well the recent past.

Another measure of foreign economic integration is the movement of people, to which we turn now.

#### 4.5 International Migration: Foreign Residents in Shanghai

The relationship between international migration and other aspects of economic integration is multi-faceted. Research has emphasized that international labor movements might be complementary to trade in that migration prepares the ground for international trade relations (Poole 2010, Cristea 2011). It could be merchants following their goods or meeting buyers. Alternatively, migration might substitute for trade because it relocates factors of production that otherwise might have been traded embodied in goods (Heckscher 1919, Ohlin 1933). Migration may also benefit the international flow of ideas and innovation (Hovhannisyan and Keller 2011). The motives for migration might be different during the treaty port era compared to today. In addition, international migration may or may not be associated with the operation of multinational firms, a topic that will be discussed in the next section.

There is information on the number of foreign residents for two time periods, the years 1872 to 1921, and the years 2000 to 2009. During the roughly five decades between 1872 and 1921, the great majority of foreigners in Shanghai were nationals of the treaty powers. The largest groups were Japanese (29%) and British (28%), respectively, followed by 10% US American, 7% German, and 4% French, see Figure 14A. During these treaty port era years, about 22% of foreign residents came from countries outside the top-5 origins.<sup>53</sup>

A somewhat different picture emerges for the period from 2000 to 2009 (Figure 14B). First, the distribution of foreign residents in Shanghai has become more dispersed, with almost half coming from countries not ranking in the top-5 origins. Second, while

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<sup>53</sup> Russia became a major source of foreign residents especially in the Northern Chinese cities.



Japan, the USA, and France are again among the top-5 sources, Britain and Germany are replaced by two more geographically proximate countries, Singapore and South Korea (Republic of Korea). This suggests that the 19<sup>th</sup> century pattern was more affected by income and less by geography than the early 21<sup>st</sup> century pattern. Figure 14C shows the change in the relative importance of residents from the major sources during the treaty port era; the decline in the relative importance of British nationals is striking.

In addition to the composition, we are interested in the level and growth in the number of foreign residents. To begin with, the total number of foreign residents in Shanghai in the year 1872 was 2,074, of which 319 were U.S. American. For comparison, in San Francisco there were 73,719 foreign-born people in the year 1870, out of which 11,729 were from China.<sup>54</sup> Thus the number of Chinese in a major U.S. city in the late 19<sup>th</sup> century was about 35 times the number of U.S. Americans in Shanghai, the most international Chinese city (outside of Hong Kong). The main reason for this difference in the level of migrants presumably was income (wage) differences due to the U.S. becoming a major industrialized country. In the year 1921, the number of foreign residents in Shanghai was 31,893.<sup>55</sup> This amounts to an annual average growth rate of 5.6%, which is faster than Shanghai's imports from foreign countries (3.6%, see Figure 4).

We now turn to the dynamics of international migration from some specific countries. As seen above, Japan was and still is the major source of foreign residents living in Shanghai. We return to the naïve forecaster's problem during the treaty port era that was discussed before, asking now what the level of Japanese residents in Shanghai would be if our forecaster would only know the past change in residency.

As Figure 15A shows, the number of Japanese in Shanghai was increasing at about 12% per year. Given the treaty port era levels of Japanese residents in Shanghai, the forecaster would decisively overestimate today's Japanese in Shanghai. In fact, the number of Japanese in Shanghai was around 17,000 both in the year 1915 and in the year 2004.

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<sup>54</sup> Data from Ninth Census of the United States. Statistics of Population, Table VIII.

<sup>55</sup> Thus, the stock of foreign residents in Shanghai, which accounted for about a third of all foreign residents in China, increased by about 28,000 over roughly 50 years in Shanghai. For comparison, the flow of immigrants to the U.S. in a typical year between 1870 and 1910 was about 500,000 (US Senate document, Table 2).

One explanation for this result might be that Japan had colonial intentions during the treaty port years but does not today.

Because the population of Shanghai in 1915 was around 1 million while in the year 2004 it was around 13.5 million, as a fraction of Shanghai's total population the size of the Japanese population in Shanghai has decreased. Note that the current rate of growth of Japanese residents in Shanghai is only somewhat larger than the historical growth rate, which implies that at the current trend it will be a long time until Shanghai's Japanese population is as large as the projection level based on the treaty port era trend.

The U.S. and Britain turn out to be similar qualitatively in how the levels of their residency in Shanghai have evolved over time. For both U.S. and British residents we would overestimate today's levels by using the treaty port era trends (see Figure 15B and Figure 15C); for Britain for example the prediction of our forecaster for the year 2009 would be about 68,000 residents, whereas in fact there were only about 5,000 of them. At the same time, the growth rate of U.S. and British residents in Shanghai has been high recently (about 17% per year), so that the actual number of residents should be equal to the projected treaty port values fairly soon, around the year 2020 (see Figures 15B and 15C). A slightly different picture emerges for Germany, where current foreign resident levels already exceed the projected treaty port era values (Figure 15D). This is due to a lower rate of growth during the historical period, likely a consequence of being on the losing side of World War I with the consequent reduction of overseas power and ambition.

We also use the gravity equation to examine international migration that went to Shanghai. Our gravity regression for international migration is analogous to that for trade.<sup>56</sup> Migration is measured by the number of residents from a particular foreign country in Shanghai. In our sample, the countries are France, Germany, Japan, Britain, and the U.S., and the sample years for the History sample are 1872, 1891, 1901, 1911, and 1921.<sup>57</sup>

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<sup>56</sup> While we know of no particular micro foundations for this gravity equation for international migration, foreign country GDP can be considered a 'push' factor while sea distance plausibly captures migration costs.

<sup>57</sup> Data on some country-year combinations are unavailable, and the number of observations is low.

Results are reported in Table 8. Columns 1 and 2 are the gravity regression for foreign residents, where the coefficients are similar to those in the trade gravity regression. The results are somewhat dependent on whether or not Japan is included in the sample. When Japan is included, the coefficient of GDP is insignificant while when Japan is excluded, the coefficient of GDP becomes positive and significant but the coefficient of distance changes to be marginally positive. As a comparison, column 3 applies the same specification to the modern data, where the coefficients are all in line with expectations.<sup>58</sup> Since bilateral distances remain constant over time, the only difference between the historical and modern Japan is its GDP relative to other countries.<sup>59</sup>

To summarize, the patterns of foreign residency in Shanghai basically follow the gravity equation, with Japan as an influential observation. We now turn to international capital movements in form of FDI to Shanghai as another indicator of international economic integration.

#### **4.6 Foreign Direct Investment in Shanghai**

A distinguishing feature between the current era of globalization and the wave towards more economic integration before World War I is the much smaller extent to which firms in the earlier period operated multi-country production networks. Setting aside the commission agents of merchants and banks, which were around in the Middle Ages, multinational production in manufacturing can be found not much earlier than the middle of the 19<sup>th</sup> century, with substantial investments found only towards the end of the century (Kindleberger 1985).<sup>60</sup> Also in China during the treaty port era, it was firms associated with foreign trade that were the first multinationals, before manufacturing activity became

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<sup>58</sup> The coefficient of Shanghai's population is large in magnitude, just as in the trade gravity regression with recent data (Table 7).

<sup>59</sup> Japan's GDP was the smallest of all foreign countries in our 1911 sample, but was the second largest in the world starting from the 1960s until 2011.

<sup>60</sup> Among the earliest investors known were several British who invested in Naples in the 1840's, as well as the American Haviland producing fine China in France in 1842. The German Siemens company was established in 1847 and in the early 1850's had a plant in Russia, and a plant in Britain by 1857; see Kindleberger (1985).

more important. At the same time, whatever FDI did exist might have been particularly important.<sup>61</sup> In this section we examine the volume and pattern of FDI in Shanghai.

The total number of foreign firms in Shanghai was 152 in the year 1872, which was growing to 1,741 in the year 1921 (annual growth rate of about 5%). Figure 16A shows the largest five source countries of these firms originated. Japan was the largest source, accounting for 35%, followed by Britain with 30%. Other major sources were other treaty powers, the USA, Germany, and France. Other countries accounted for 13% of the number of foreign firms in Shanghai.

A look at the composition of FDI in Shanghai with recent data shows that while Japan's importance has remained, the U.S. has gained relatively while Britain's importance has declined (Figure 16B).<sup>62</sup> This is confirmed by a direct comparison of the two time periods (Figure 16C). Interestingly, the share of FDI by non-top 5 sources has roughly changed constant between the historical period and today (13% versus 11%, respectively). Taking this as the measure of the concentration of international economic activity in Shanghai, then the degree of concentration of FDI has remained unchanged while in contrast that of international migration and trade has fallen over time.

Also here we examine the forecaster's prediction for the number of foreign firms based on the treaty port era trends. We find that typically the forecaster would overestimate the number of firms today in Shanghai by a substantial margin. The exception is Germany, presumably because its overseas ambitions were stunted because of its loss in World War I (see Figure 17A). Moreover, for the USA FDI during the treaty port era grew at a higher rate than in recent years, so the forecast based on the historic trend will be increasingly off over time (Figure 17B). The rate of FDI growth from Britain is now higher than it was between the years 1872 and 1921 (Figure 17C). The only country—apart from Germany—for which actual FDI levels are forecasted to catch up with the projected historical levels quite soon is France (Figure 17D).

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<sup>61</sup> We have not been able to locate complete information on the industry or the size of these firms. For a critical discussion of the foreign firm and resident data provided by the CMC, see Feuerwerker (1976, pp.16-18).

<sup>62</sup> These figures are derived from foreign capital actually absorbed, and they do not include capital from Hong Kong, Macao, and Taiwan.

Overall, while the forecaster will often overestimate FDI and foreign resident levels, the levels of trade can be over- or underestimated. FDI and foreign resident flows into Shanghai grew at a higher rate than Shanghai's imports during the treaty port era because trade was already more established than FDI and foreign residents at Shanghai. Thus the difference may capture to some extent a start-up effect.

As in the case of Shanghai's trade and foreign residency, we examine Shanghai's FDI employing a gravity equation framework. At least since the mid-1980s, it is well-known that FDI can have similar micro-foundations as international trade, which lead to the gravity equation.<sup>63</sup> Keller and Yeaple (2011) have recently shown that gravity for FDI across countries holds even at the level of individual multinational firms. Columns 4 and 5 in Table 8 turn to examine FDI. The FDI gravity regression, using either historical or modern data, gives coefficients in line with expectations. The results are also consistent with those of the trade gravity regression.<sup>64</sup> One difference is that for FDI, the empirical fit of the gravity equation during the treaty port era is lower than the FDI gravity fit in recent years. The result appears to be primarily due to the much larger coefficient on Shanghai's population, which may be indicative of a relatively greater importance of the Chinese market in the more recent years.

Our finding that FDI patterns in Shanghai around the year 1900 follow the gravity equation prediction are important for understanding FDI. These results indicate that a close similarity between trade and FDI patterns can empirically be traced back by more than a century, far earlier than when empirical studies started paying attention to FDI in the 1970s.<sup>65</sup>

We now turn to the question of the impact of trade and other forms of openness on Shanghai and China as a whole.

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<sup>63</sup> See Helpman (1984), Markusen (1984).

<sup>64</sup> The coefficient of Shanghai's population is large in magnitude, just as in the trade gravity regression and the migration gravity regression with recent data (Table 7 and columns 1-2 of Table 8, respectively).

<sup>65</sup> See Caves (2007, Chapter 1) for a summary of the early literature on FDI.

## 4.7 Shanghai as Cornerstone of China's Integration into the World Economy

This section begins by summarizing Shanghai's varying participation in foreign economic activity over the last 150 years, before asking what this has done for economic development in Shanghai as well as for China as a whole.

First, we examine Shanghai's foreign trade per each one of its inhabitants. This can be viewed as a measure of trade openness, similar to trade to GDP. The data for the period 1870 to 2009 is shown in Figure 18A.<sup>66</sup> The figure suggests continuity in that the levels of openness during the treaty port era are comparable to those of the year 2000. The suppression of foreign trade during the early years of CPC rule appears to have no long-term impact. It also speaks of change in the sense that the post-2000 levels of openness are unprecedented in the history of Shanghai.

Next we turn to Shanghai's share of China's foreign trade as well as the city's share of China's population since the year 1870; see Figure 18B. Two features stand out. First, there is a difference in scale between Shanghai's trade share and its population share. As we have noted earlier, today Shanghai has about 1% of China's population and it accounts for close to 15% of China's foreign trade. In fact, historically Shanghai's importance for foreign trade in per capita terms was far larger than today's numbers suggest. Specifically, around the year 1925, when the two series in Figure 18B cross, Shanghai's share of trade to population was 100 to 1.<sup>67</sup> At the time, clearly, Shanghai was quite different from most Chinese areas. And yet China's status today as one of the world's largest traders indicates that over time, China has become more like Shanghai rather than the other way around.

Second, the figure shows important differences in the evolution of Shanghai's trade compared to its population share. The trade share has fallen over time from about 20% in 1870 to about 13% in 2009, largely due to the economic development of other parts of China. What is most interesting is the speed at which Shanghai loses its share of China's trade: on average, Shanghai lost one half of a percent of trade for every decade. This fairly

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<sup>66</sup> Trade is measured here as the sum of locally produced foreign exports plus net foreign imports.

<sup>67</sup> The scale on the left is 1/100 of the scale on the right.

gradual pace suggests a great deal of persistence in the position of Shanghai for China's trade.

At the same time there is a large increase in Shanghai's population share. The year 1930 appears to be a watershed for Shanghai. Notice that both for the earlier period and the later period there is a positive relationship between Shanghai's trade and Shanghai's population (see Figure 18C), as one would expect from the gravity equation. However, what explains the upward shift in the population share by almost an order of magnitude?<sup>68</sup> While a number of factors may have been at work, one explanation is that the foreign trade with industrialized countries had benefited Shanghai in a number of ways.

Finally, there is the question to what extent the evolution of Shanghai's foreign exchange might have mattered for China's economic development at the country level. To be sure, a city of about 250,000 people cannot be expected to determine the fate of a vast country with about 350 million inhabitants (both figures for the year 1870). At the same time, the strong recent trade performance is frequently mentioned as one of the primary reasons for China's recent high growth rates. Thus it is worth asking how Shanghai, the city that is the "heart" of China's foreign trade system, fits into this.

To what extent can we trace out China's economic growth with Shanghai's involvement in foreign trade? First, in Figure 19 China's share of world GDP since the year 1870 is shown (recall Table 2). Today, China is with about 17.5% of world GDP the world's second largest economy, after the U.S. In the year 1870, China was almost as large relative to the world, with 17.1%. In between is a dip with a low point in the GDP share of around 4.5% for the years 1950 to 1970. Also shown in Figure 19 are two measures of openness. The first is for China, the second is for Shanghai. The correlation between the two openness series is more than 90% high, which underlines that Shanghai accounts for an important part of China's foreign trade. However, note that China's share in world GDP follows more closely the Shanghai openness measure than the China openness measure.

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<sup>68</sup> Before 1930, Shanghai's population share averages 0.15% while after 1955 the mean population share of Shanghai is 1.2%.

The correlation of Shanghai's openness with China's world GDP share is 0.74, whereas it is only 0.50 with the China openness variable.<sup>69</sup>

While China's long-run growth performance is driven by a number of factors, there is evidence that the foreign trade conducted at Shanghai has played a major role in it. The results are consistent with the idea that Shanghai's integration into the world economy during the treaty port era has, through re-exporting and other activities, contributed to the trade and development of other Chinese areas.

## 5. Conclusions

Recent observers have routinely characterized China's growth in trade and income with superlatives, so much so that it would be easy to believe that China has entered a new period in the history of its trade. In this paper, we attempt to see which part is hyperbole and which is not, using historical benchmarks that extend back to the treaty port era, which we define as the period from 1843 to 1941. Since Shanghai is currently the largest port in the world, and the most important port in China, we use this city as a lens with which to better understand China's trade.

We find that while some features of China's recent performance are extraordinary, others are not. First, there is evidence of historical continuity in some important dimensions. We find that the level of openness in Shanghai at the turn of the 21<sup>st</sup> century was the same as what it was at the end of the 19<sup>th</sup> century. Moreover, Shanghai not only receives a large share of provincial re-exports, but this share in recent years is comparable to the share of the late 19<sup>th</sup> century when it was established as an open port under the control of Western powers. Specifically, the share of re-exports in Shanghai's foreign exports between the years 1990 and 2009 is almost exactly the same, at 56%. This is true even though quite evidently many events have occurred in China, Shanghai, and the world in the intervening years between the Opium Wars and today.

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<sup>69</sup> Data availability necessitates defining openness slightly differently. China's openness is exports to GDP whereas for Shanghai it is exports plus imports over population. First of all, for Shanghai we have no GDP data during the historical period. We have experimented with using trade to population for the China openness measure; this leads to similar results. Also, we use only exports in the China openness measure because the Groningen database, the source of the GDP data, has no information on imports.



Implied by the continuity is an underlying tendency towards recovery. China's trade was severely suppressed during the early planned economy years relative to historic trends. The depression of foreign trade in the communist period, however, appears to have had no long-term impact. Shanghai has to a large extent reverted back to its historical role in channeling the foreign trade of China. The implication of this is that it would be wrong to believe that recent trends could continue indefinitely, or that recent gains are mainly due to the reforms since 1978. In fact, Shanghai's imports from Britain today are quite close to what a naïve forecast using trends from the treaty port era would give. Our gravity regressions, in which we plug modern country characteristics into the historical gravity relationship and then compare the projected bilateral trade pattern with the actual pattern also show that today's trade patterns are not far off the mark from what might be expected based on historical patterns.

Some of the continuities may be policy induced. There are certainly similarities in trade and FDI policy between the treaty port era and China's current trade liberalization regime. Today, as well as in the 19<sup>th</sup> century, low tariffs are enforced, preferential treatment is given to foreign firms, and foreign firms can wholly own businesses in China. The difference is that these policies were imposed upon China in the 19<sup>th</sup> century by foreigners, while in the recent era of reform, it is the Chinese government that has implemented policies such as the Special Economic Zones, which are oriented towards foreign markets—strikingly, virtually all of these modern zones selected by the Chinese government were former treaty ports or in areas closely neighboring former treaty ports.<sup>70</sup>

Despite similarities in policy, we suspect, nevertheless, that other factors besides policy, such as geography and the accumulation of experience play a part too in explaining why China has been able to return so swiftly to a market-economy after three decades of central planning. China's inherent comparative advantage historically was in its large labor pool, and this may still be the case even as China assembles and exports electronics and information technology products. Future research will allow us to use the quantitative

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<sup>70</sup> We may include Hong Kong in this list, although it is technically a former colony.

information in the CMC records to further investigate the commodity composition of trade in order to provide a clearer view on this.

Second, there are several notable changes in trade patterns between the 19<sup>th</sup> century and the performance of Shanghai during the last decade. The most evident differences are Shanghai's import and export composition. Whereas British and Japanese interests in Shanghai were predominant a century ago, Shanghai's trade today has normalized in the sense that much of its trade is with geographically proximate places. We do find that growth in trade has reached extraordinary levels, but only since the year 2000. At the same time, the greater Shanghai area has become, perhaps as a result of its success in trade, a very large urban metropolis with over 20 million permanent residents. Another change, related to the context of the 19<sup>th</sup> century is that Shanghai's trade, FDI, and foreign residency is now spread among a larger set of countries than what was the case during the 19<sup>th</sup> century. Shanghai also retains a larger share of foreign imports than it did in the mid-19<sup>th</sup> century, a reflection of the fact that there are more ports of entry for foreign goods into China today.

Finally, our regional approach to trade seems to make sense in the case of China. The growth of Shanghai raises questions about the dynamic implications of re-exporting on Shanghai and the Yangzi Delta region. Examining foreign trade at the sub-national level may usefully identify the relationship between foreign trade and domestic trade, and permit a better understanding of the sources of trade and growth. Shanghai and the wider Yangzi Delta area have served as central locations for China's domestic trade long before the arrival of Western gunboats. Given the important relation between international and domestic trade, Shanghai's accession today in the international arena would appear to crucially depend on its access to the domestic networks within China, which in this paper we capture with the re-exports variable. Other ports in China, also opened under western force, did not attain the same level of trade and modernization because they had more limited access to domestic networks than did Shanghai. Guangzhou, for example, although already trading with Europe for a century longer than Shanghai, had primary access only to a southern network of domestic trade.

For a large country like China, where not all regions are equally trading internationally, an aggregate analysis of trade may not make as much sense as asking where the trading cities are. The importance of looking at localization in trade is emphasized in our quantitative measures related to growth. Shanghai's trade, for instance, seems to capture better the relationship between trade and growth in China than an overall measure of China's trade. The correlation between Shanghai's trade openness and China's share in world GDP over a century and a half is 0.74 while the correlation between China's openness and China's share in world GDP over the same period is only 0.50. The key role that Shanghai has in China's trade suggests that a better understanding of trends in China's trade requires examining persistence in the patterns of within-country trade. There may be persistence despite the fact that transport costs, production, goods, and China's main trading partners have all changed over time. Our finding of this striking persistence in Shanghai's trade highlights such empirical patterns must be a plausible outcome in any theoretical framework that integrates domestic trade within the international trading system.

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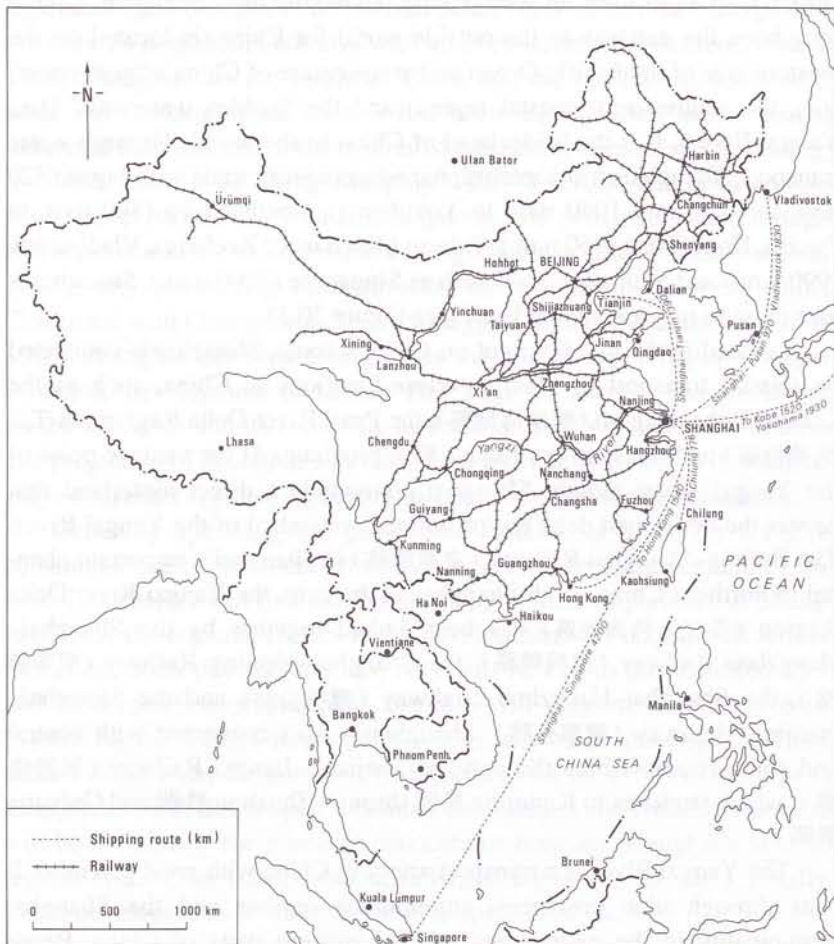
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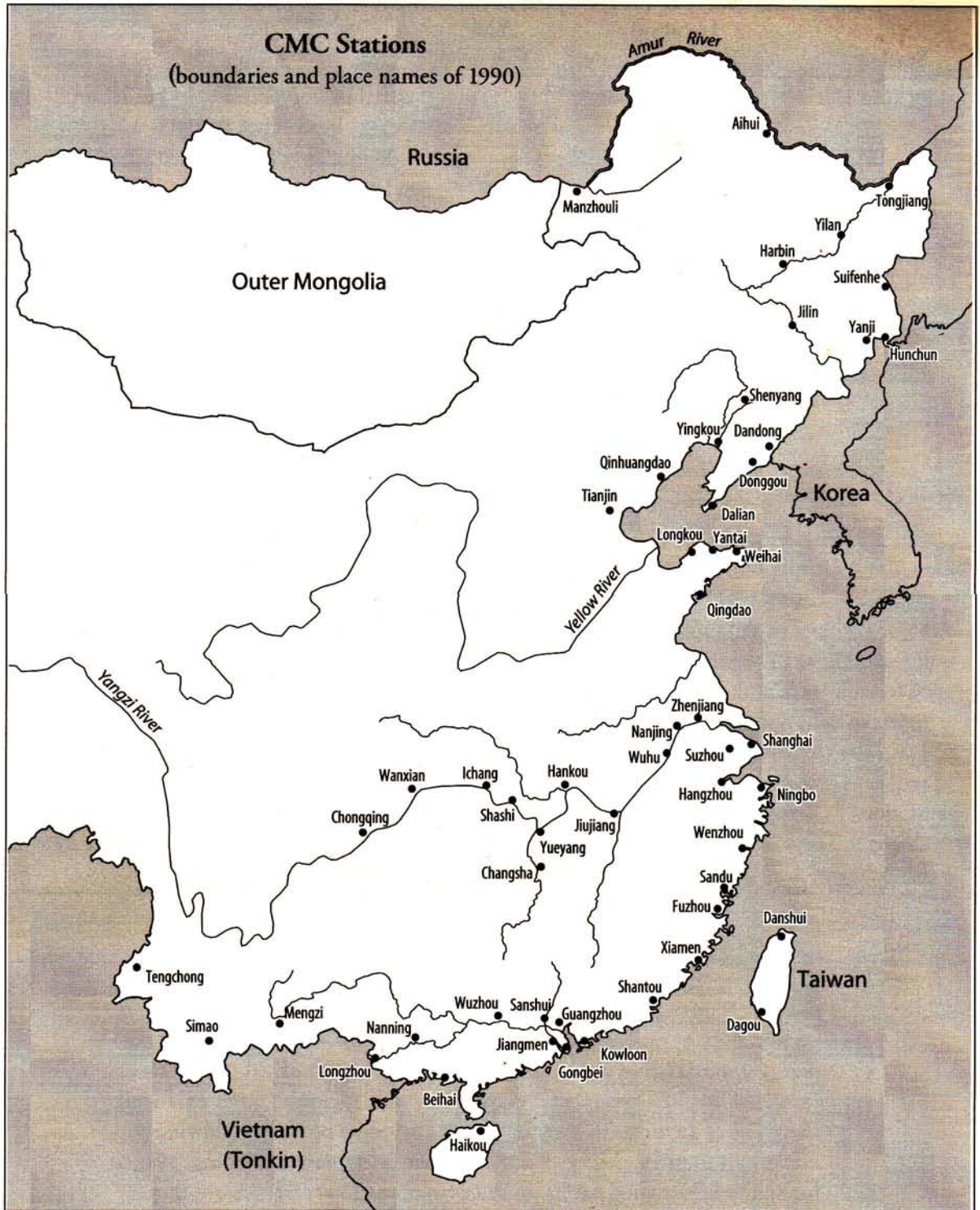
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# Map 1. The Geographical Position of Shanghai



Reprinted from Yeung and Sung (1996).

Map 2. Treaty Ports



Reprinted from Lyons (2003).

**Table 1: China's Share of World Merchandise Exports in Comparison, 1870 to 2009**

(In percent)

	1870	1913	1929	1950	1960	1970	1980	1990	2000	2009
<b>China</b>	2.78	1.98	2.50	2.14	2.08	0.76	0.92	1.79	3.86	9.62
<b>Germany</b>	13.43	17.98	14.03	4.46	9.23	11.27	9.77	12.12	8.55	9.02
<b>United Kingdom</b>	24.31	18.52	12.80	10.00	8.58	6.40	5.58	5.33	4.42	2.82
<b>United States</b>	4.96	9.04	12.15	14.58	16.66	14.24	11.43	11.33	12.11	8.45
<b>India</b>	6.88	4.46	3.28	1.86	1.08	0.67	0.44	0.52	0.66	1.30
<b>Japan</b>	0.10	0.79	1.74	1.20	3.28	6.36	6.61	8.28	7.42	4.65

**Table 2: China's Share of World GDP in Comparison, 1870 to 2008**

(In percent)

	1870	1913	1929	1950	1960	1970	1980	1990	2000	2008
<b>China</b>	17.10	8.83	7.05	4.59	5.24	4.63	5.20	7.83	11.77	17.48
<b>Germany</b>	6.50	8.68	6.74	4.97	6.62	6.12	5.52	4.66	4.24	3.36
<b>United Kingdom</b>	9.03	8.22	6.46	6.52	5.37	4.35	3.64	3.48	3.30	2.84
<b>United States</b>	8.87	18.93	21.68	27.29	24.27	22.39	21.12	21.39	21.89	18.61
<b>India</b>	12.15	7.47	6.23	4.16	3.88	3.41	3.18	4.05	5.18	6.70
<b>Japan</b>	2.29	2.62	3.29	3.02	4.45	7.36	7.83	8.55	7.16	5.70

**Table 3: China's Share of World Population in Comparison, 1870 to 2009**

(In percent)

	1870	1913	1929	1950	1960	1970	1980	1990	2000	2009
<b>China</b>	28.06	24.38	22.55	21.63	21.93	22.17	22.10	21.54	20.78	19.68
<b>Germany</b>	3.08	3.63	3.00	2.70	2.38	2.11	1.76	1.51	1.35	1.22
<b>United Kingdom</b>	2.46	2.55	2.11	1.98	1.72	1.51	1.27	1.09	0.98	0.90
<b>United States</b>	3.15	5.44	5.66	6.02	5.94	5.56	5.13	4.75	4.64	4.54
<b>India</b>	19.83	16.94	15.42	14.20	14.27	14.66	15.29	15.92	16.52	17.10
<b>Japan</b>	2.70	2.88	2.93	3.32	3.09	2.83	2.63	2.34	2.09	1.88

**Table 4: China's Trade Openness in Comparison, 1870 to 2008**

Merchandise Exports to GDP, in percent

	1870	1913	1929	1950	1960	1970	1980	1990	2000	2008
<b>China</b>	0.74	1.74	2.28	2.59	2.57	1.22	2.76	2.92	4.38	9.75
<b>Germany</b>	9.37	16.10	13.37	4.97	9.03	13.68	27.68	33.30	26.90	51.24
<b>United Kingdom</b>	12.22	17.52	12.73	11.00	10.35	10.93	23.99	19.60	17.88	19.29
<b>United States</b>	2.54	3.71	3.60	2.96	4.44	4.73	8.46	6.78	7.39	8.24
<b>India</b>	2.57	4.64	3.39	2.47	1.80	1.45	2.14	1.64	1.69	3.46
<b>Japan</b>	0.20	2.35	3.39	2.20	4.77	6.42	13.19	12.39	13.84	16.35
<b>World</b>	4.54	7.77	6.43	5.54	6.47	7.43	15.63	12.80	13.36	19.20

**Table 5: China's Exports per Capita in Comparison, 1870 to 2009**

	1870	1913	1929	1950	1960	1970	1980	1990	2000	2009
<b>China</b>	0.10	0.08	0.11	0.10	0.09	0.03	0.04	0.08	0.19	0.45
<b>Germany</b>	4.37	4.96	4.68	1.65	3.87	5.35	5.54	8.05	6.32	7.37
<b>United Kingdom</b>	9.88	7.28	6.05	5.04	4.98	4.25	4.40	4.89	4.51	3.16
<b>United States</b>	1.57	1.66	2.15	2.42	2.81	2.56	2.23	2.39	2.61	1.76
<b>India</b>	0.35	0.26	0.21	0.13	0.08	0.05	0.03	0.03	0.04	0.07
<b>Japan</b>	0.04	0.28	0.59	0.36	1.06	2.25	2.51	3.53	3.56	2.58
<b>World</b>	0.06	0.18	0.18	0.18	0.28	0.43	1.09	1.02	1.24	2.23

**Table 6: Gravity Equations for Historical and Modern Trade**

	(1)	(2)	(3)	(4)
	log Exports	log Imports	log Exports	log Imports
<b>log GDP</b>	1.504*** (0.105)	1.722*** (0.110)	0.945*** (0.082)	1.197*** (0.318)
<b>log Shanghai population</b>	-0.565 (0.533)	-0.308 (0.427)	1.575*** (0.408)	3.686* (1.966)
<b>log distance</b>	-0.755*** (0.262)	-1.944*** (0.203)	-0.471*** (0.127)	-0.856*** (0.290)
<b>Entrepot dummy</b>	7.771*** (0.606)	9.725*** (0.641)	3.580*** (0.346)	2.464** (1.195)
<b>Sample</b>	History	History	Modern	Modern
<b>Observations</b>	58	54	69	52
<b>R-squared</b>	0.81	0.89	0.76	0.62

Robust standard errors in parentheses. Constant terms not reported.

\* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%

**Table 7: Gravity Equations for Modern Trade, Different Periods**

	(1)	(2)	(3)	(4)
	log Exports	log Imports	log Exports	log Imports
<b>log GDP</b>	1.030***	1.141***	1.161***	1.125***
	(0.092)	(0.242)	(0.052)	(0.237)
<b>log Shanghai population</b>	5.273***	21.530***	23.475***	28.432***
	(1.841)	(2.941)	(2.418)	(5.863)
<b>log distance</b>	-0.526***	-0.740***	-0.621***	-0.570***
	(0.147)	(0.192)	(0.084)	(0.194)
<b>Entrepot dummy</b>	3.172***	2.229**	3.208***	2.299**
	(0.368)	(0.928)	(0.211)	(0.922)
<b>Sample</b>	Post-1978	Post-1978	Post-1984	Post-1984
<b>Observations</b>	49	39	35	29
<b>R-squared</b>	0.83	0.85	0.96	0.79

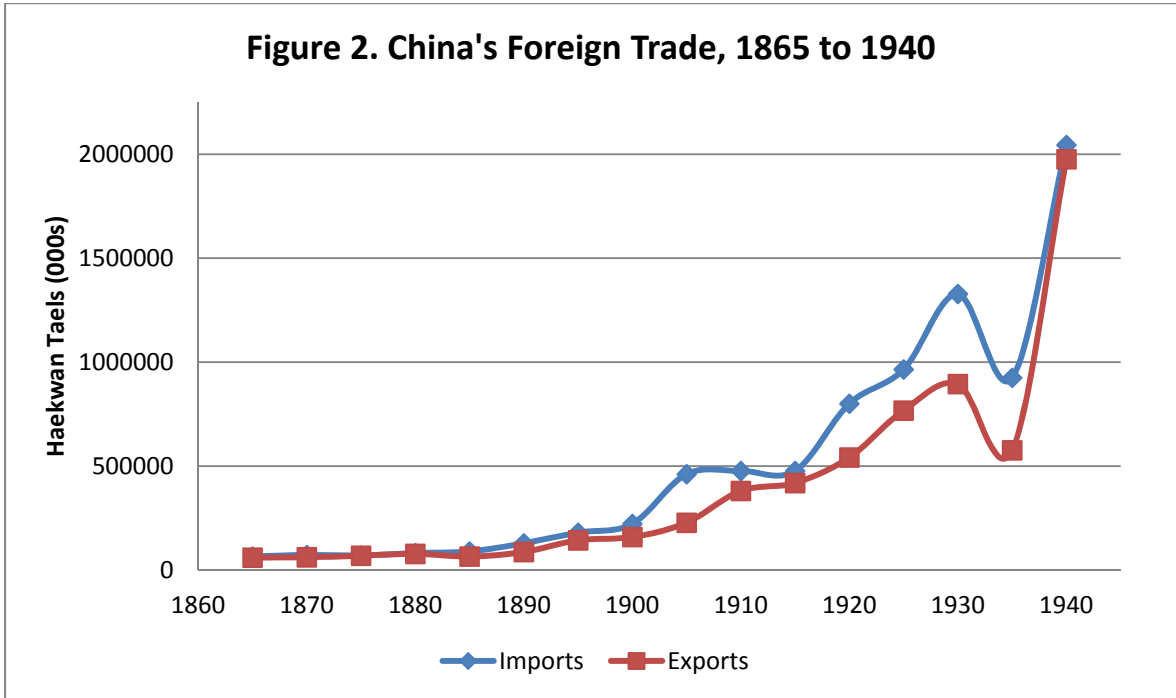
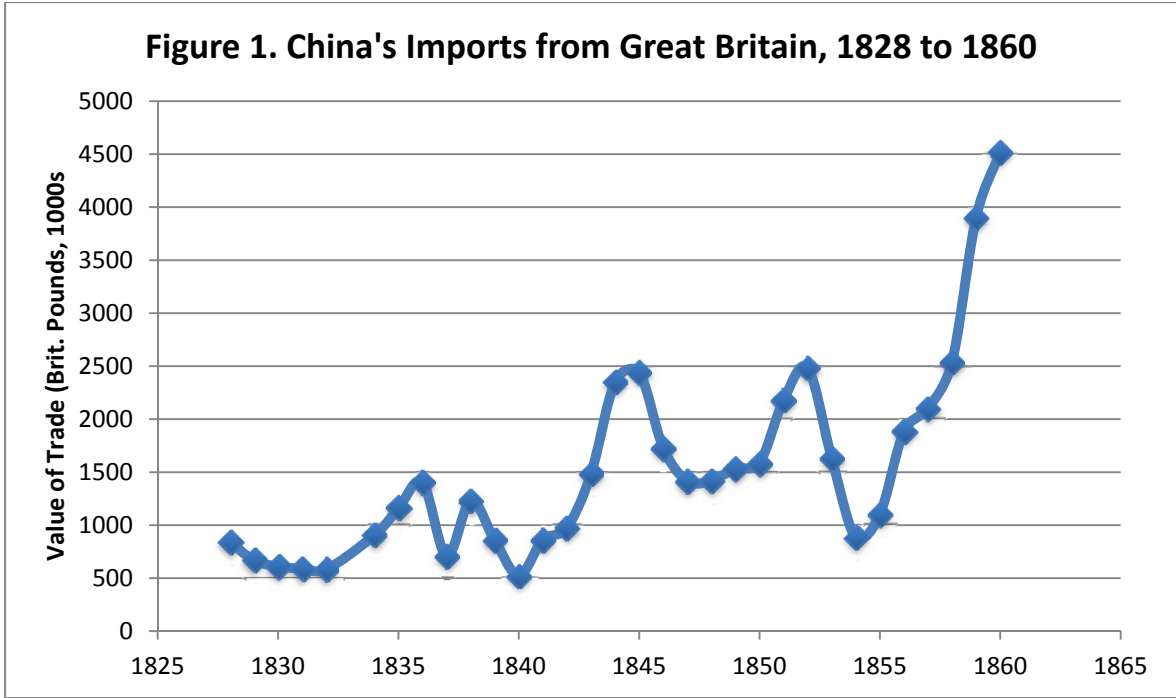
Robust standard errors in parentheses. Constant terms not reported.  
 significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

\*

**Table 8: Gravity Equations for Resident and FDI Movements to Shanghai**

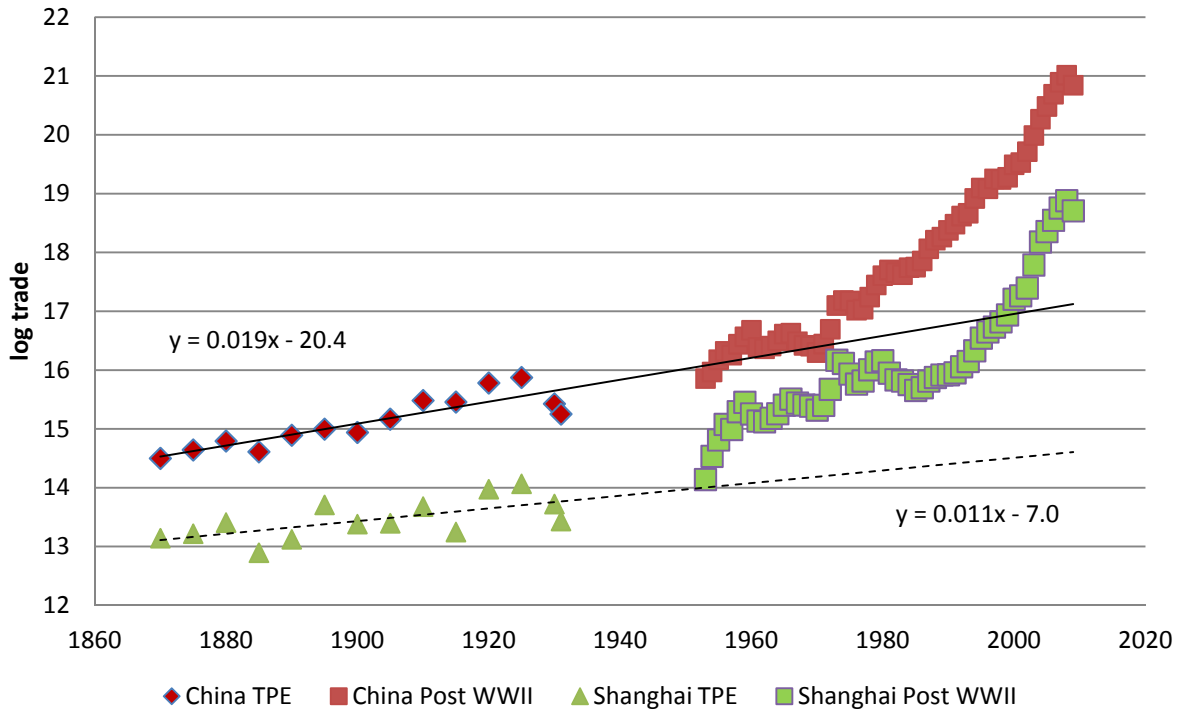
	(1)	(2)	(3)	(4)	(5)
	Residents	Residents	Residents	FDI	FDI
<b>log GDP</b>	0.014	0.852***	0.376***	0.772**	1.232***
	(0.217)	(0.192)	(0.039)	(0.325)	(0.119)
<b>log Shanghai population</b>	2.436***	1.135**	49.967***	1.235**	15.167**
	(0.717)	(0.355)	(5.615)	(0.567)	(5.329)
<b>log distance</b>	-0.656**	0.673*	-0.627***	-0.488**	-0.776***
	(0.228)	(0.350)	(0.042)	(0.205)	(0.077)
<b>Sample</b>	History	History	Modern	History	Modern
	All	No Japan	All	All	All
<b>Observations</b>	14	11	8	19	15
<b>R-squared</b>	0.80	0.91	0.99	0.59	0.95

Robust standard errors in parentheses. Constant terms not reported.  
 \* significant at 10%; \*\* significant at 5%; \*\*\* significant at 1%.

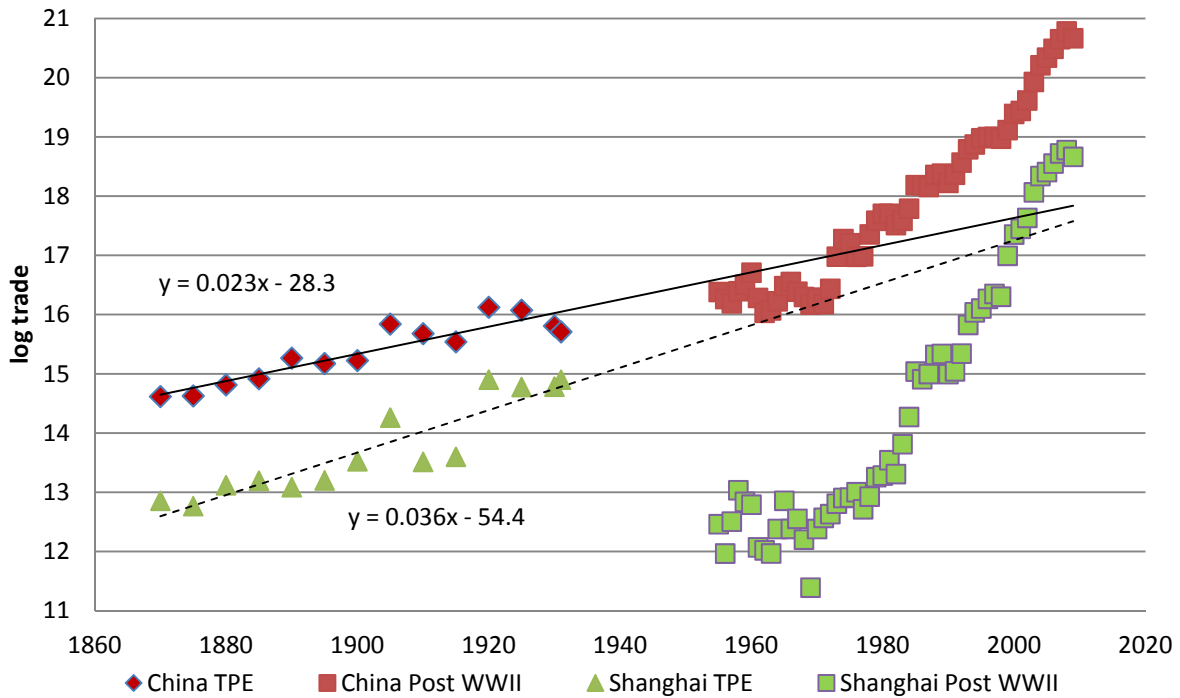




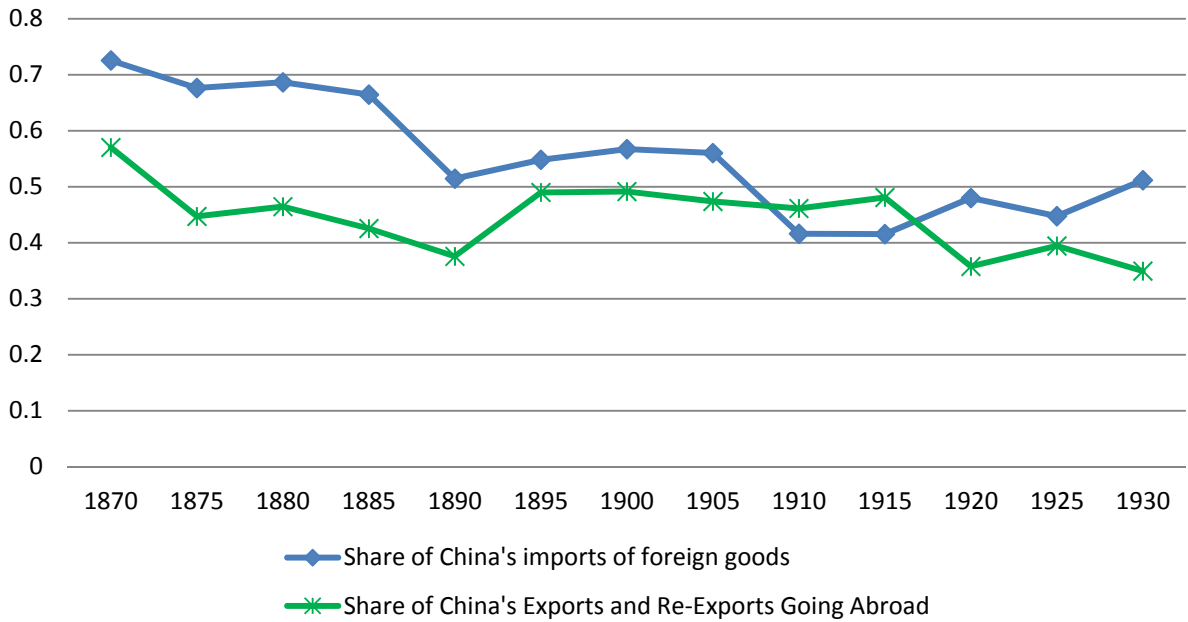
**Figure 3. Exports of Shanghai and China**



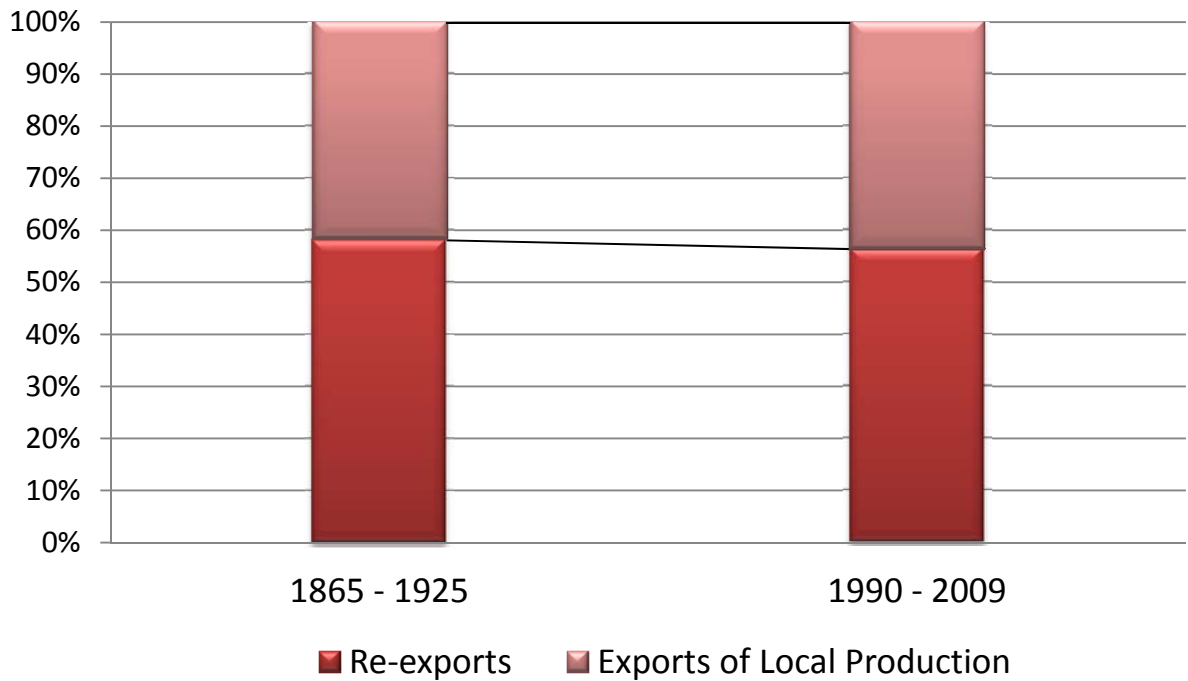
**Figure 4. Imports of Shanghai and China**



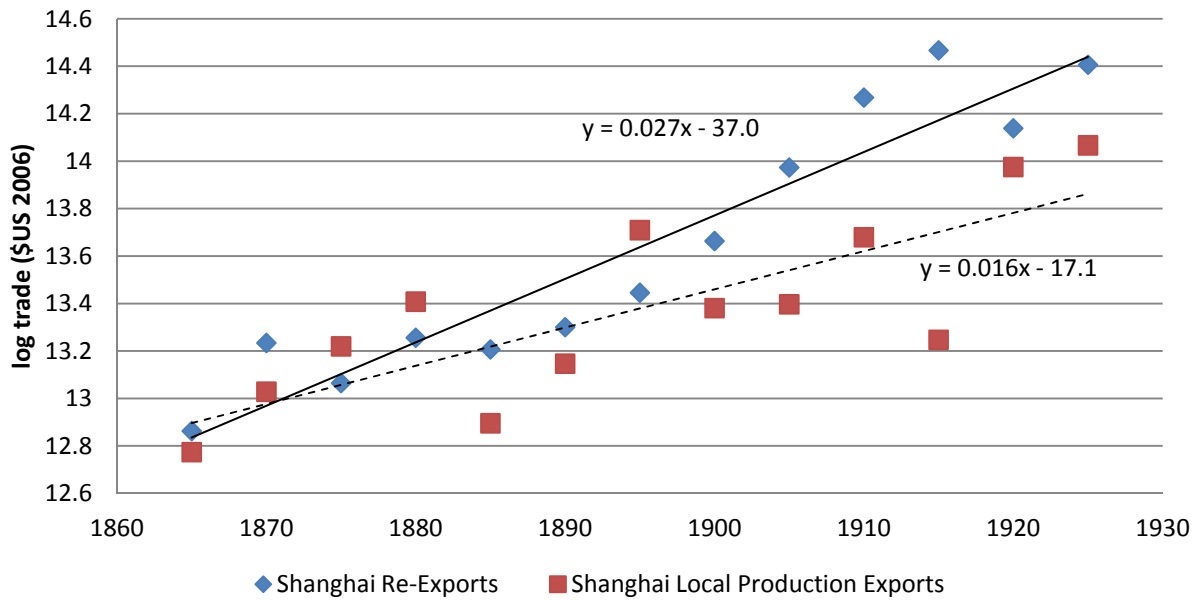
**Figure 5. Shanghai's Share in China's Trade including Re-Exports, 1870 to 1930**



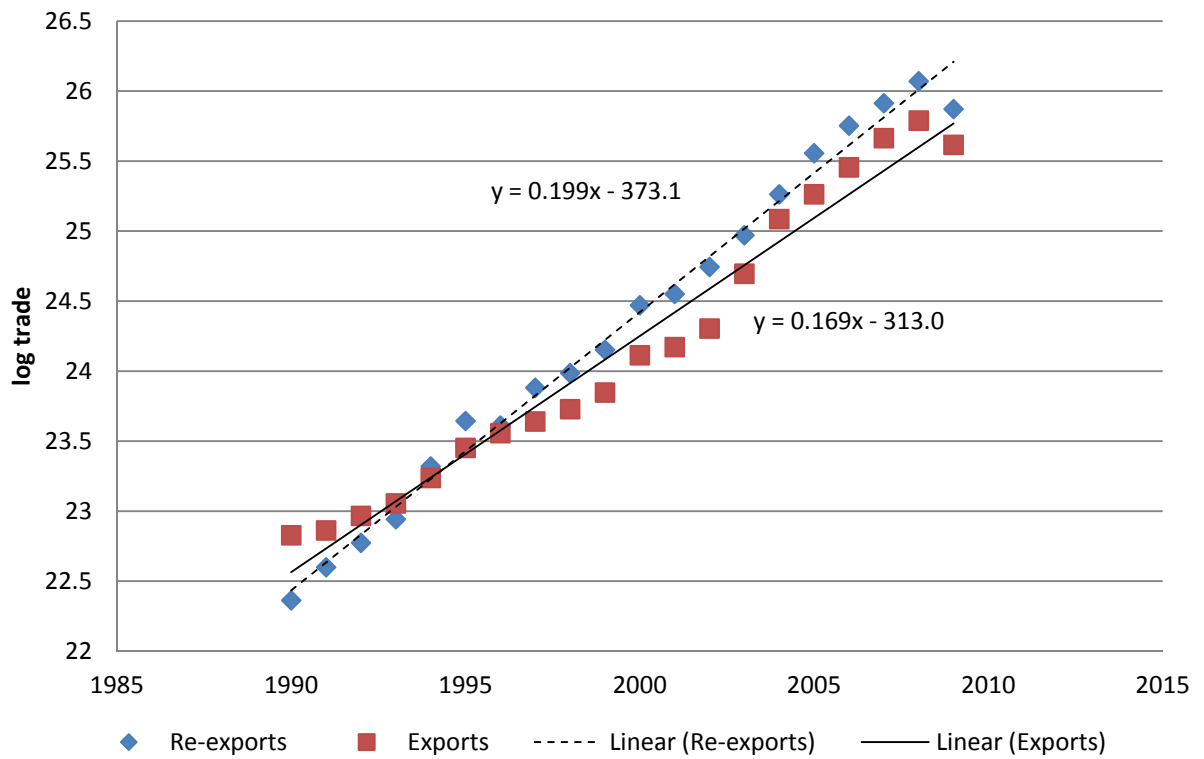
**Figure 6A. Shanghai's Foreign Exports: Breakdown into Local Production and Re-exports By Time Period**



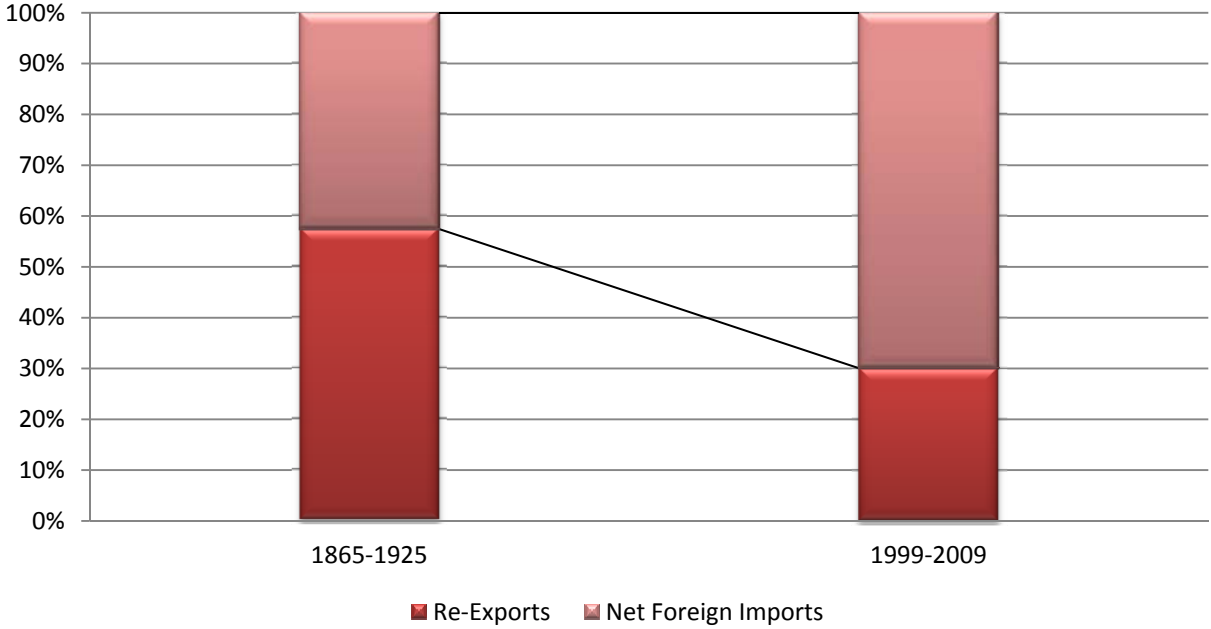
**Figure 6B. Shanghai Re-Exports and Exports Abroad, 1870 to 1925**



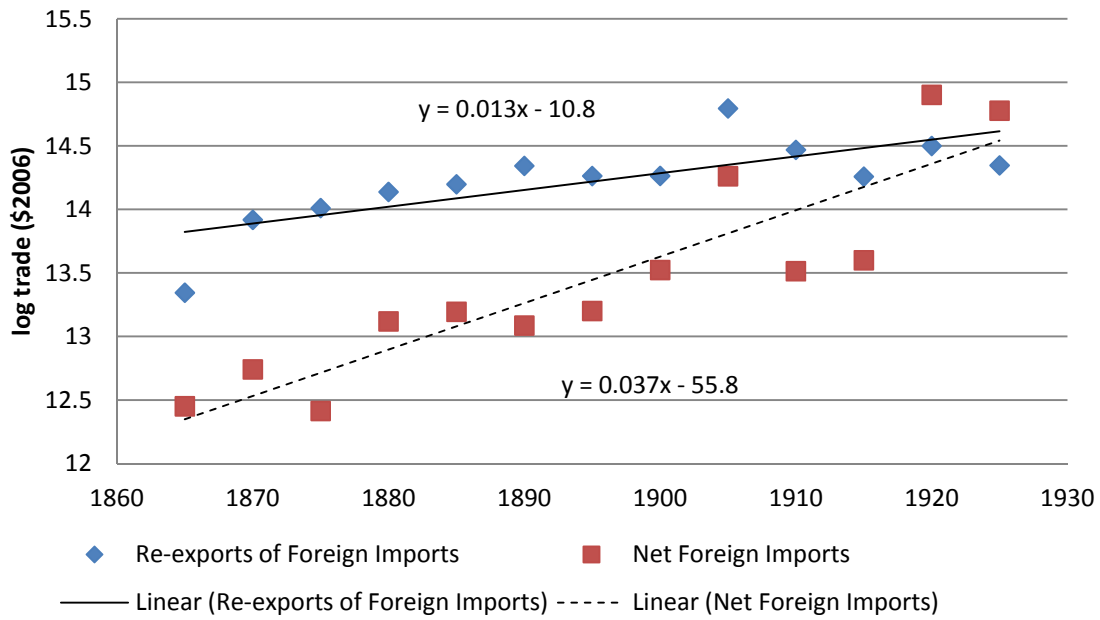
**Figure 6C. Shanghai Re-Exports and Exports Abroad, 1990 to 2009**



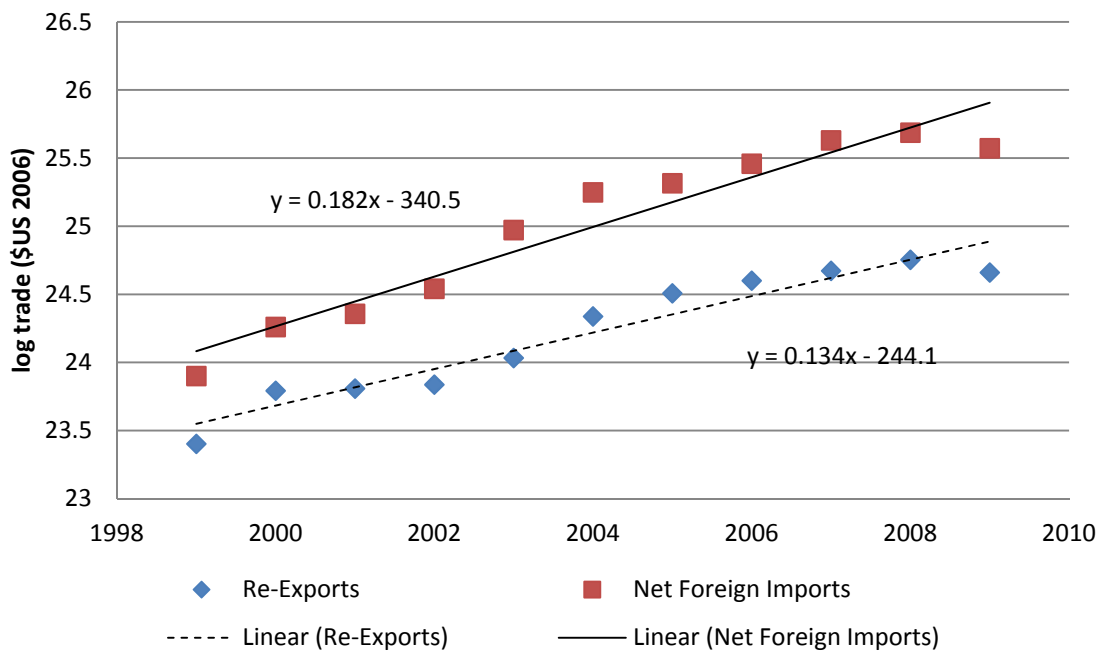
**Figure 7A. Shanghai Net Foreign Imports and Re-exports of Foreign Goods**

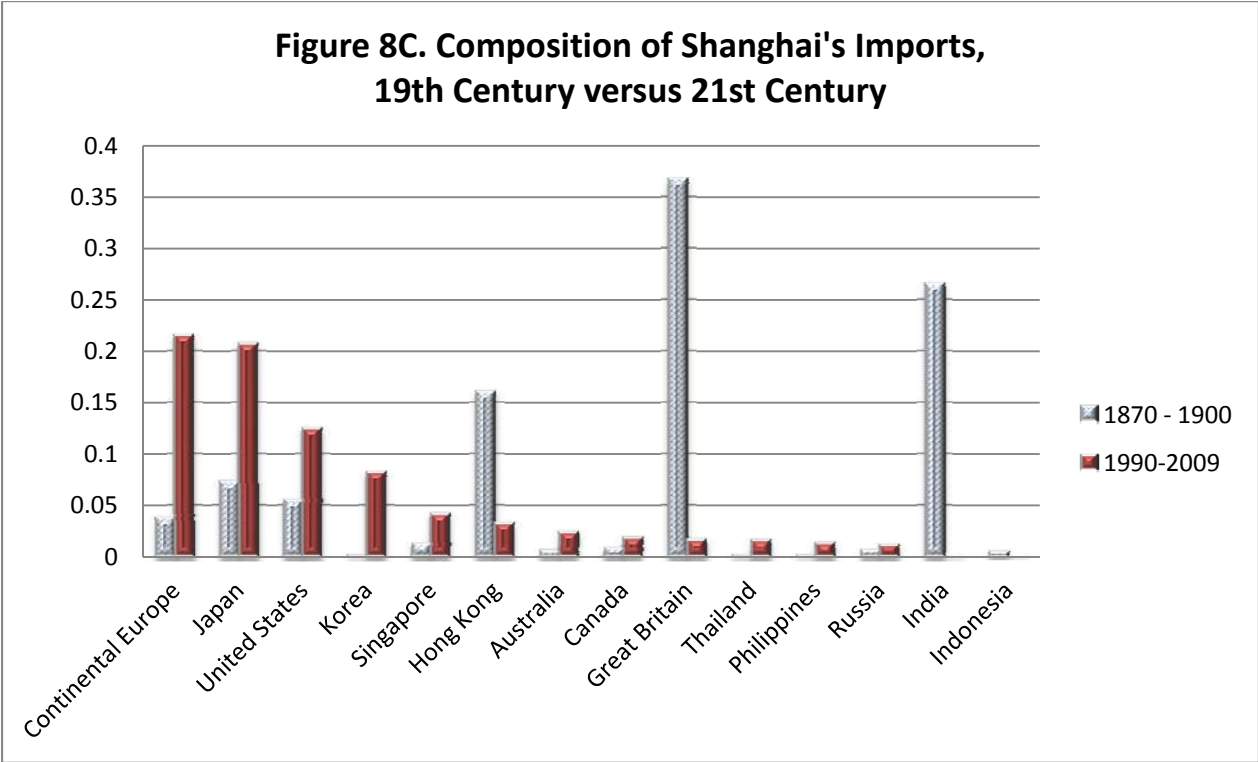
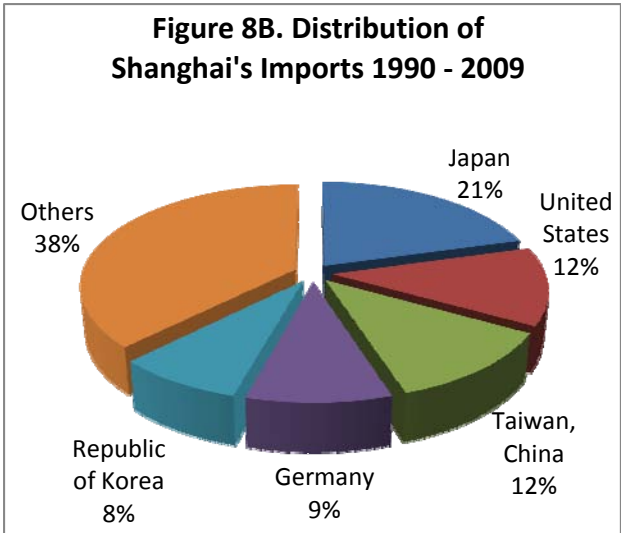
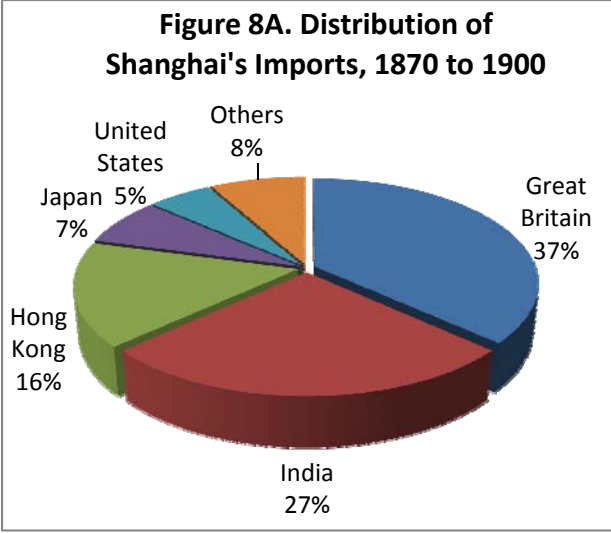


**Figure 7B. Shanghai Net Foreign Imports and Re-exports, 1870 - 1925**

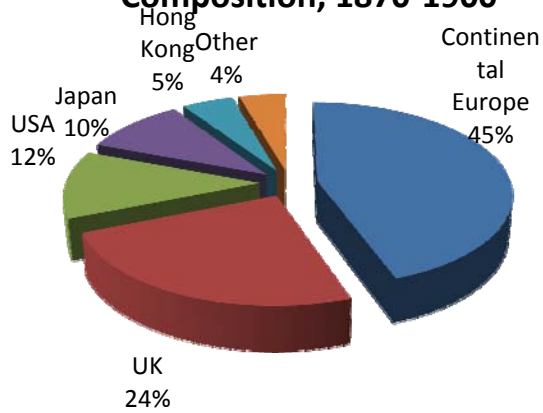


**Figure 7C. Shanghai Net Foreign Imports and Re-exports, 1999 - 2009**

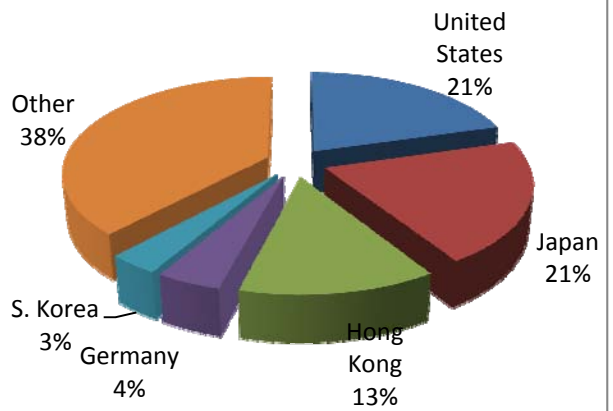




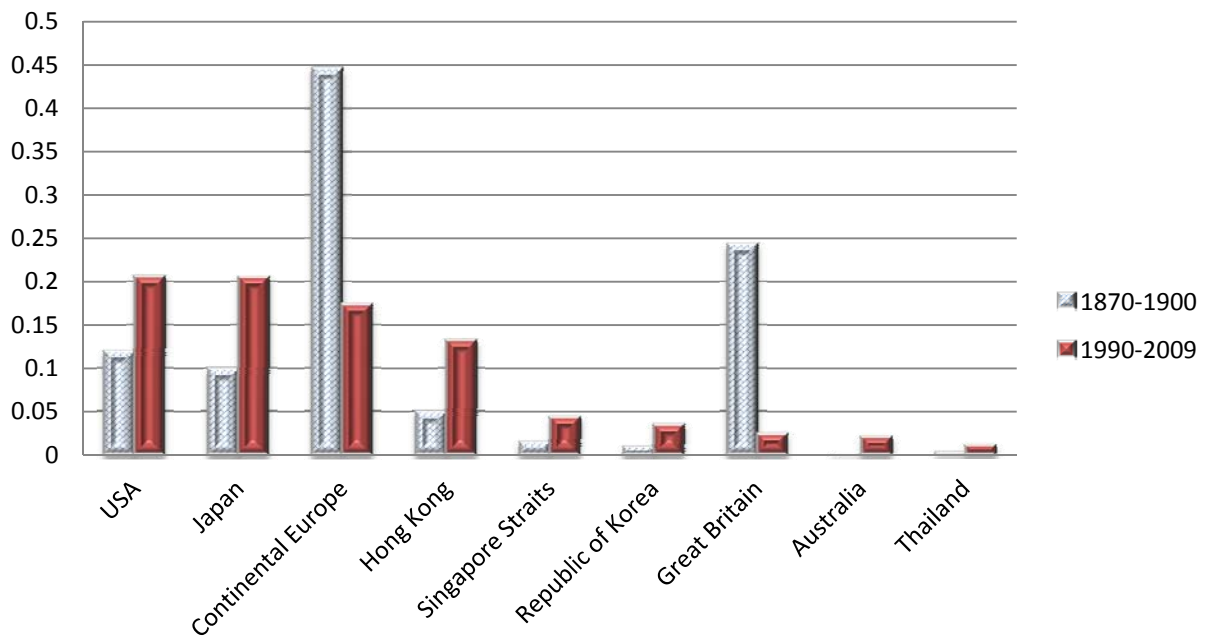
**Figure 9A. Shanghai Export Composition, 1870-1900**



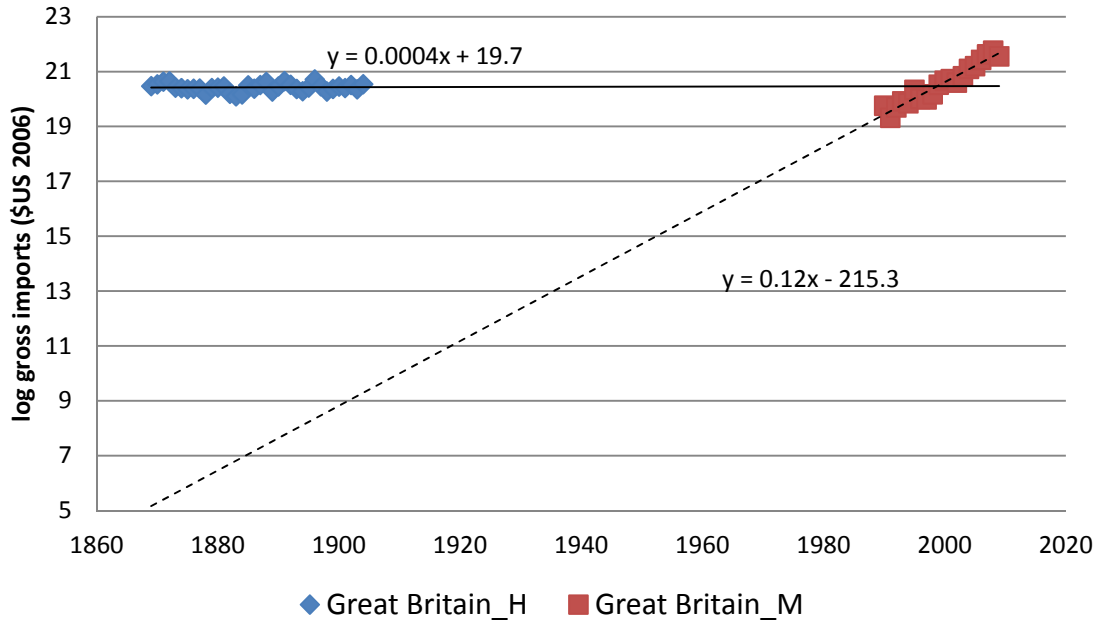
**Figure 9B. Shanghai's Export Composition 1990-2009**



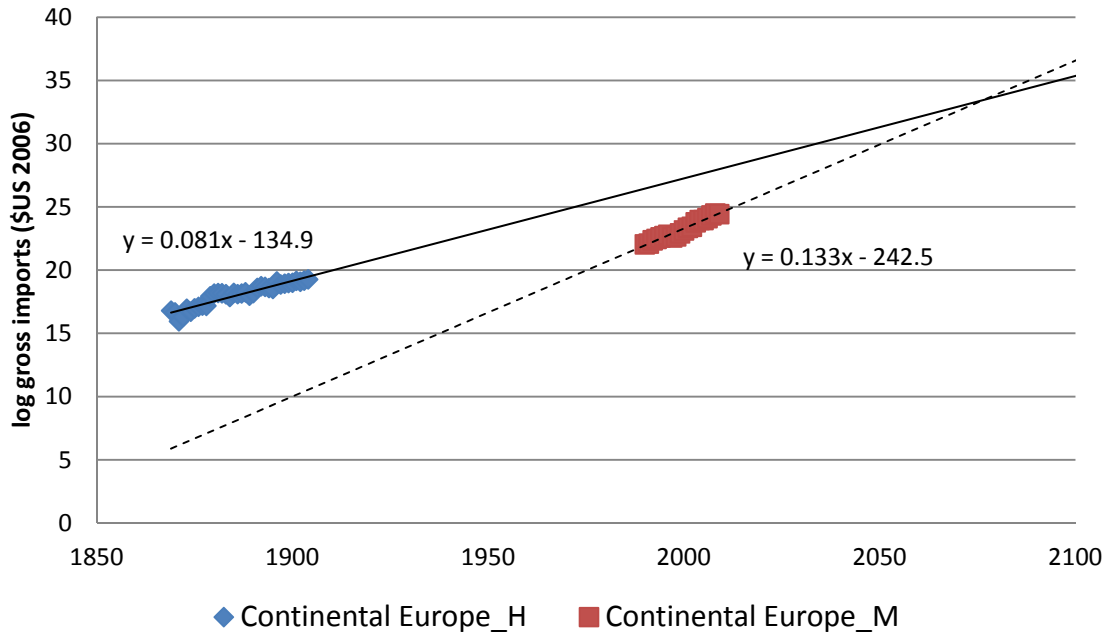
**Figure 9C. Shanghai's Export Composition, 19th Century versus 21st Century**



**Figure 10A. Shanghai Imports from Great Britain, 1865 to 2009**

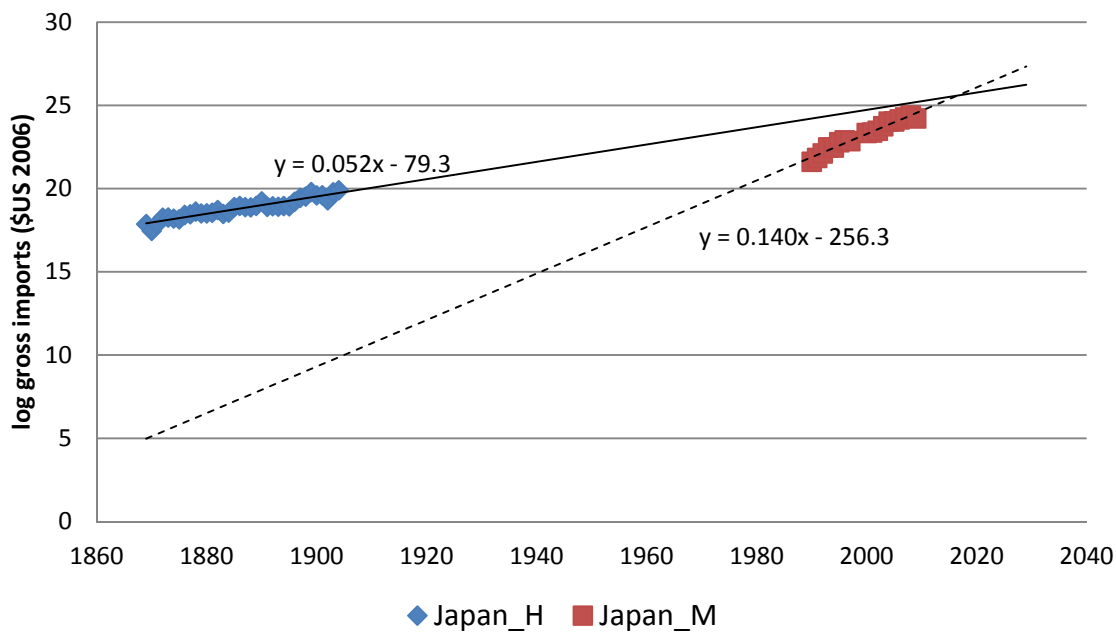


**Figure 10B. Shanghai's Imports from Continental Europe**





**Figure 10C. Shanghai Imports from Japan**



**Figure 10D. Shanghai Imports from the USA**

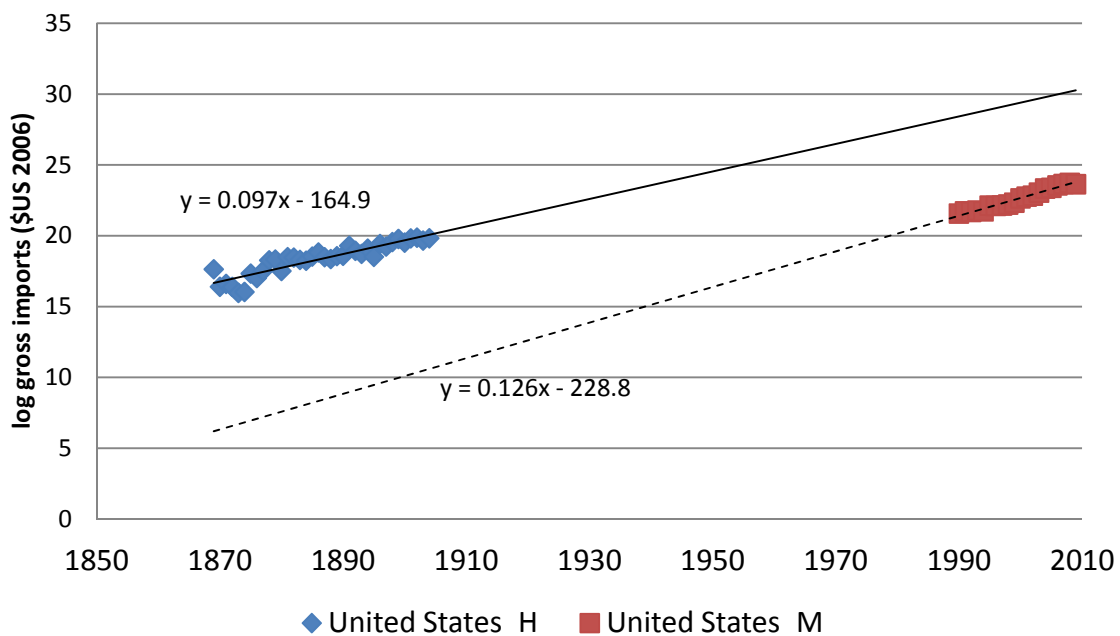
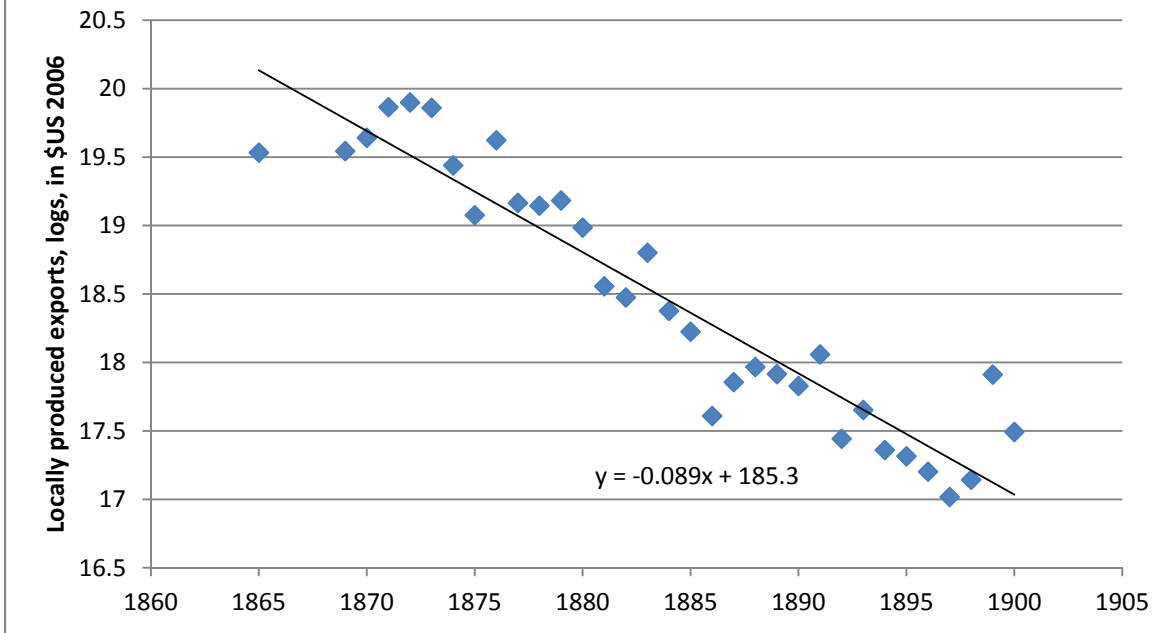
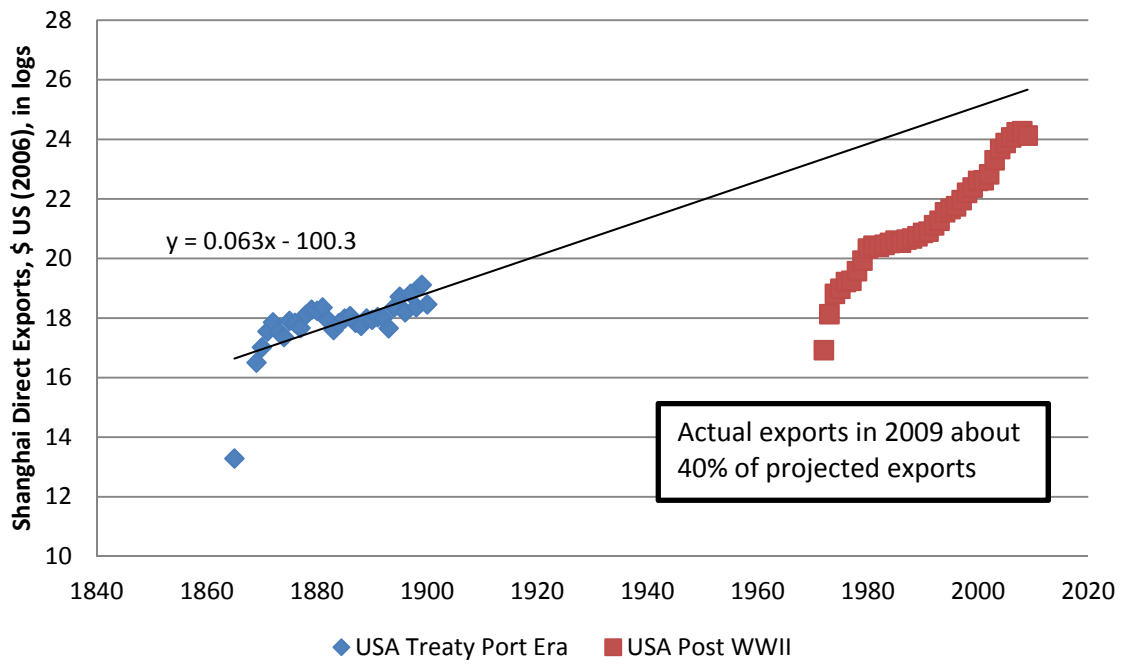


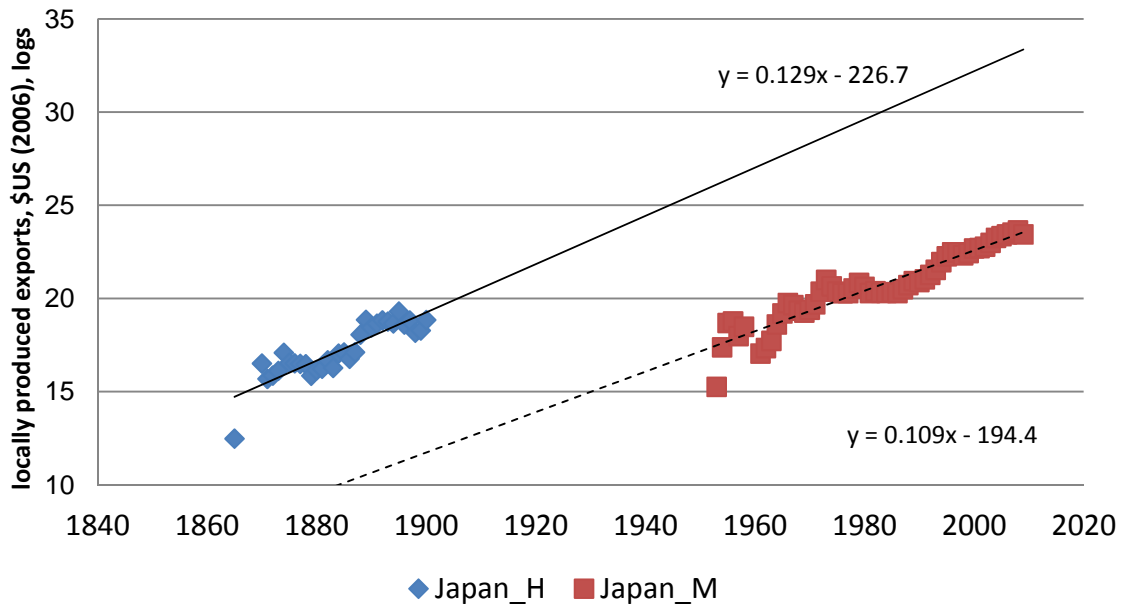
Figure 11. Shanghai Exports to Great Britain, 1865 to 1900



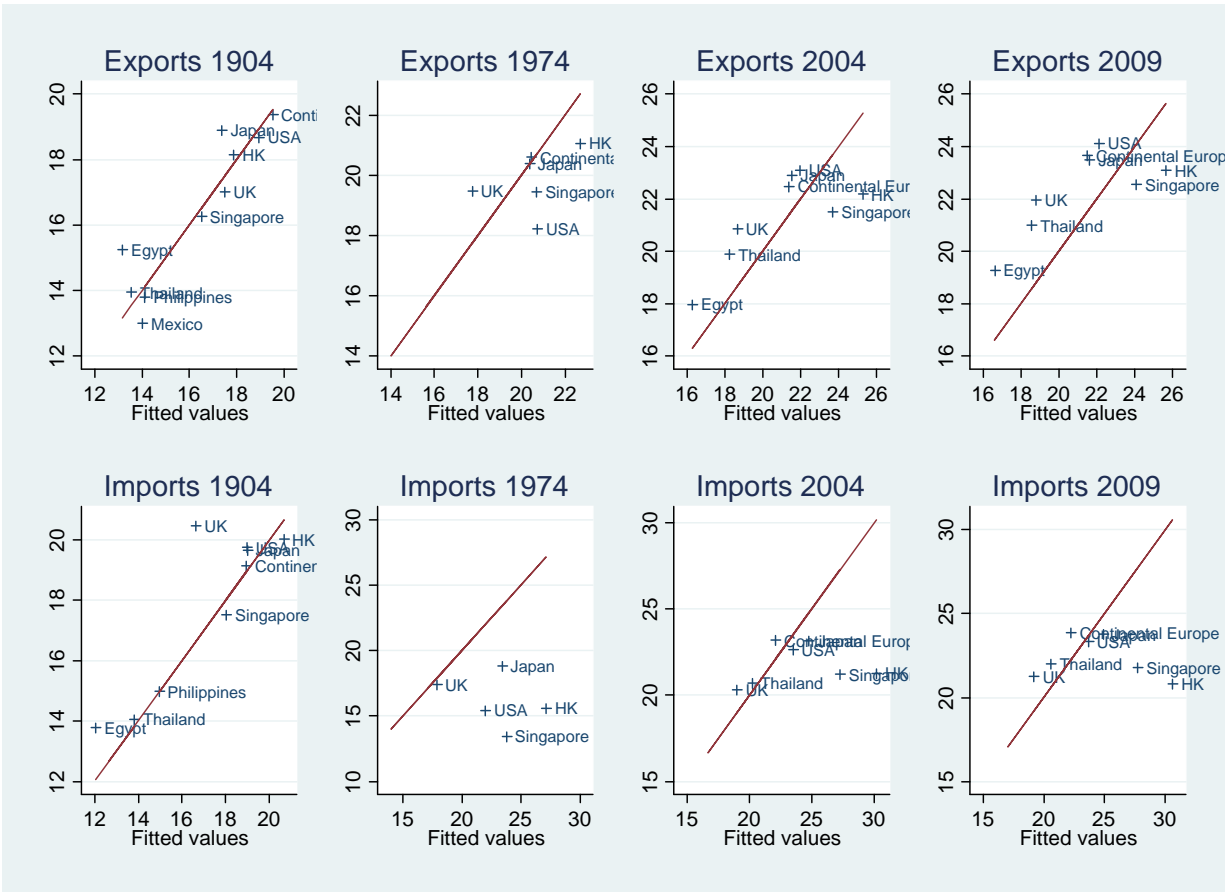
**Figure 12A. Shanghai Exports to USA, 1865 to 2009**



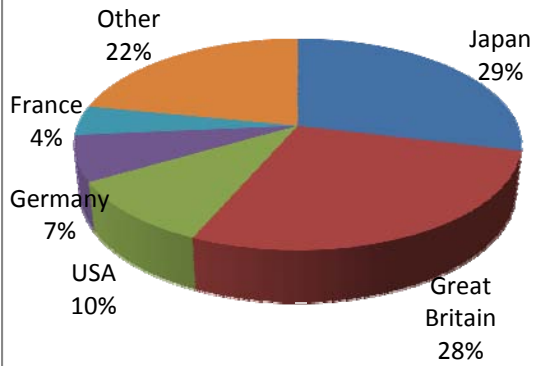
**Figure 12B. Shanghai's Exports to Japan, 1865 to 2009**



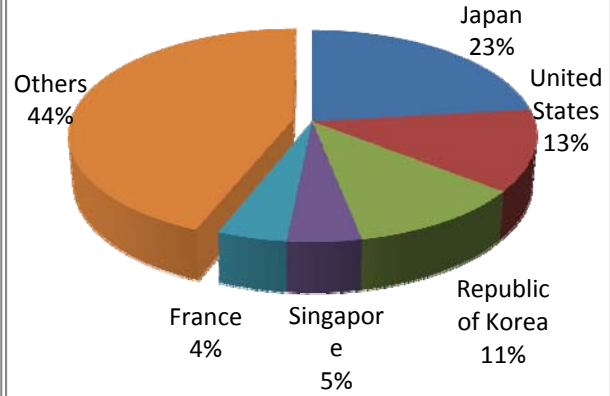
**Figure 13: Projected and Actual Bilateral Trade Patterns**



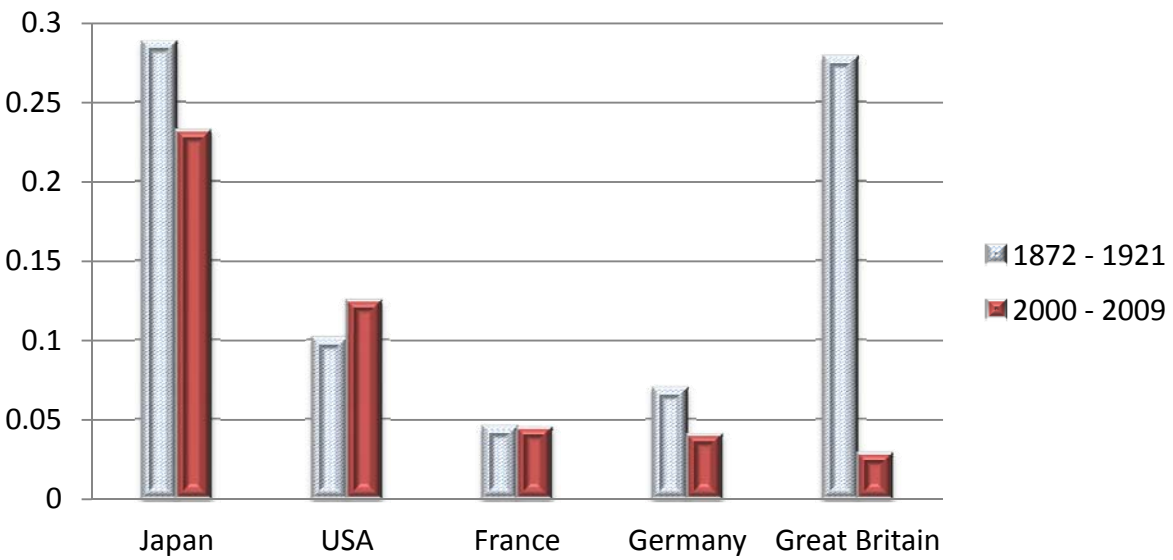
**Figure 14A. Composition of Foreign Residents, 1872 to 1921**

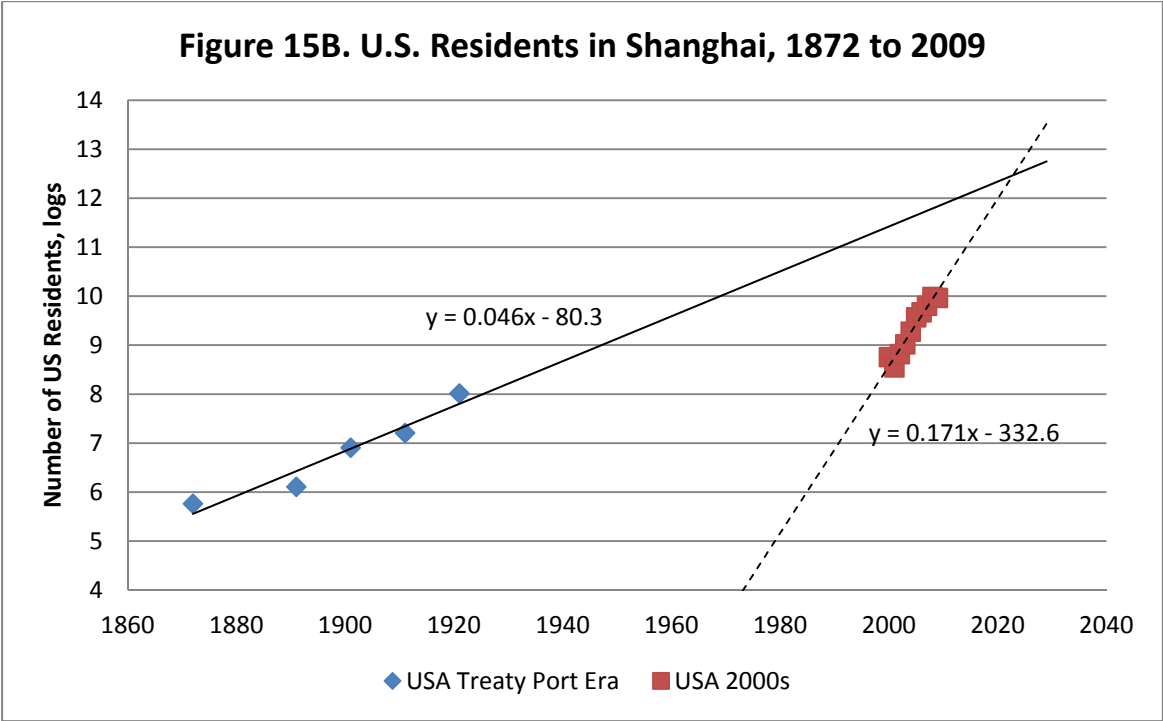
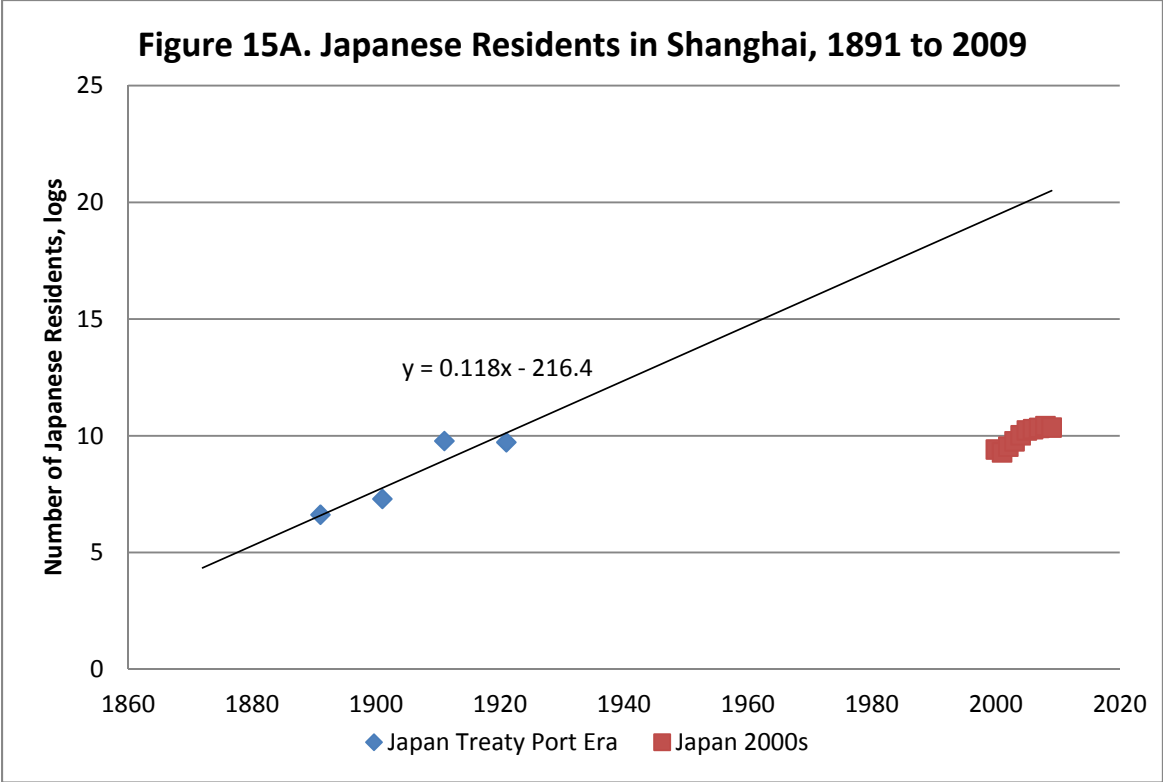


**Figure 14B. Composition of Foreign Residents, 2000 to 2009**

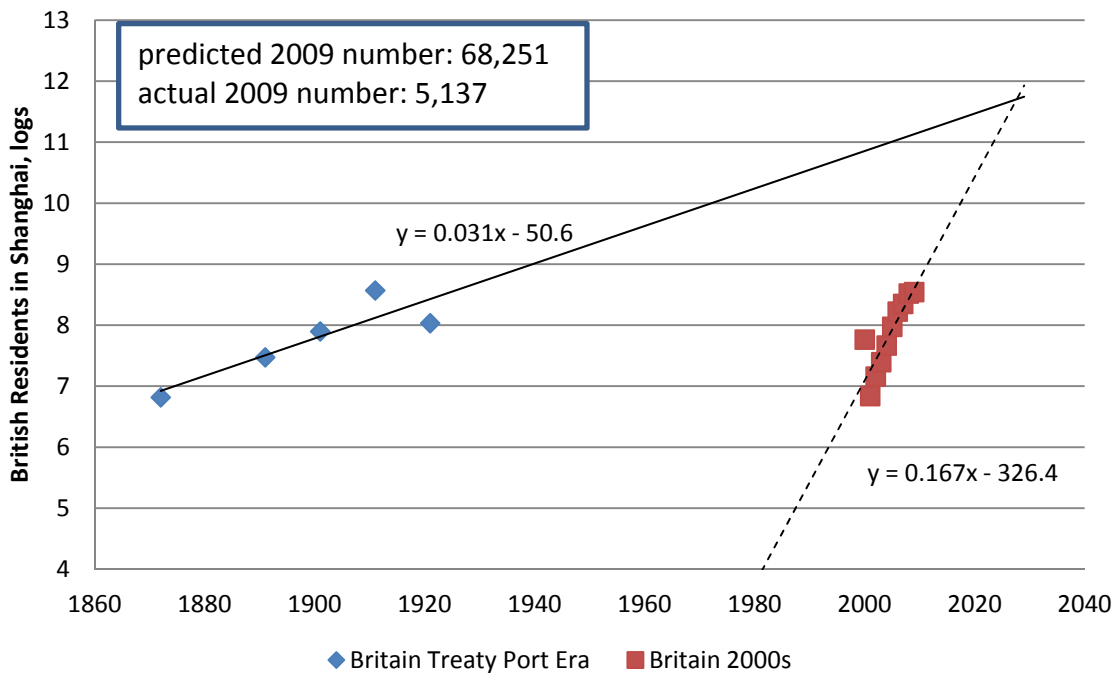


**Figure 14C. Change in Foreign Resident Composition over Time**

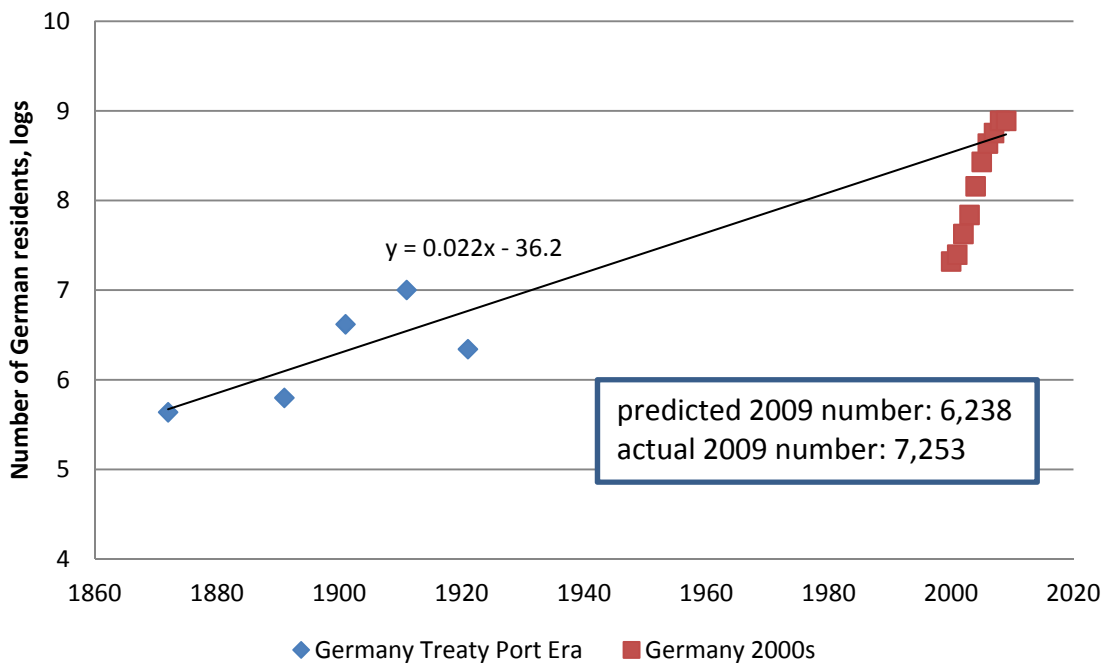


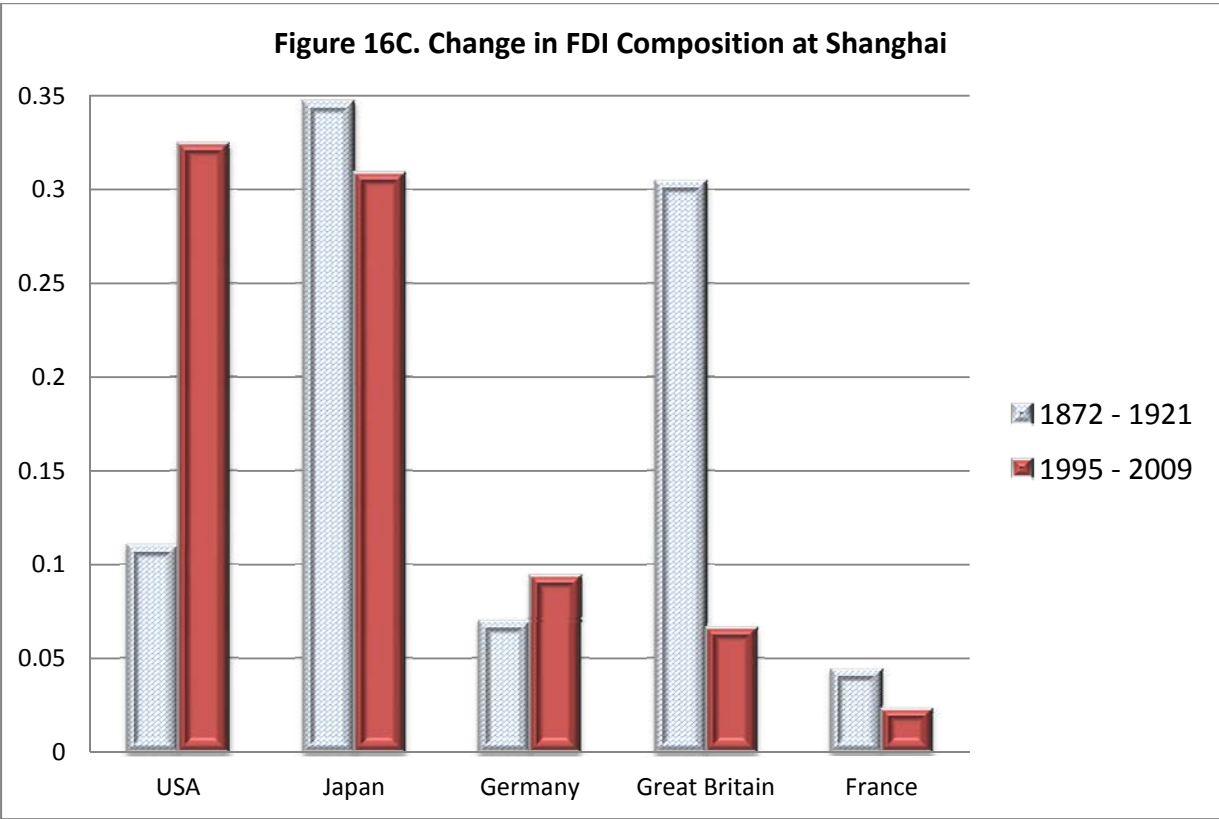
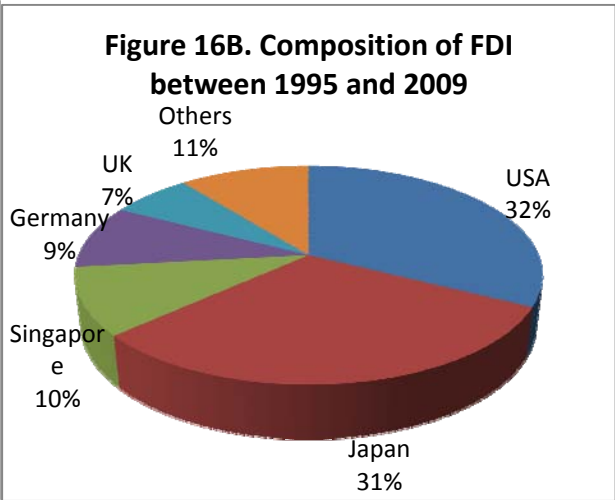
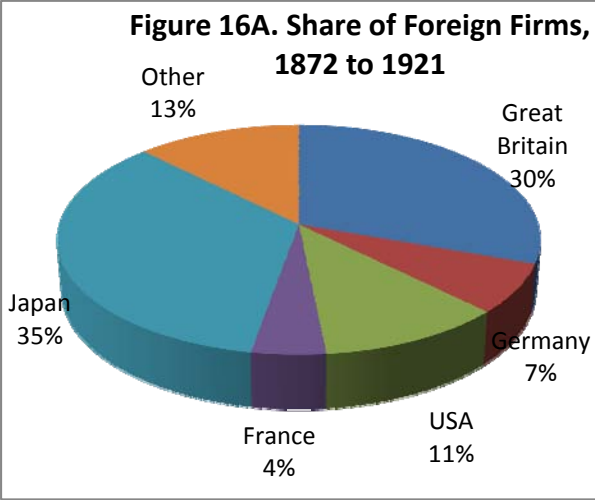


**Figure 15C. British Residents in Shanghai, 1872 to 2009**



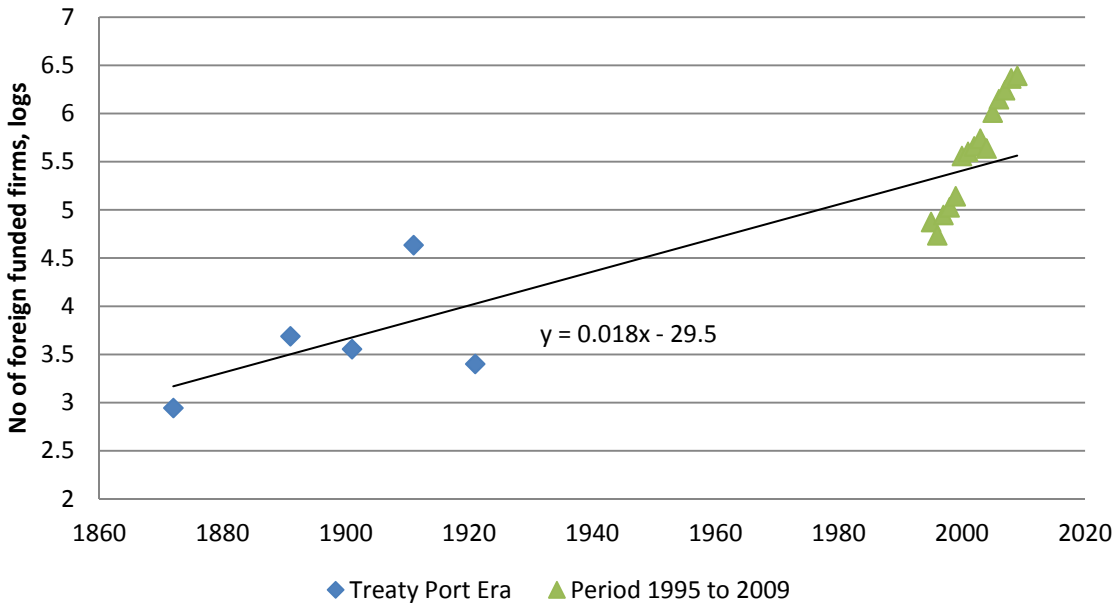
**Figure 15D. German Residents in Shanghai, 1872 to 2009**



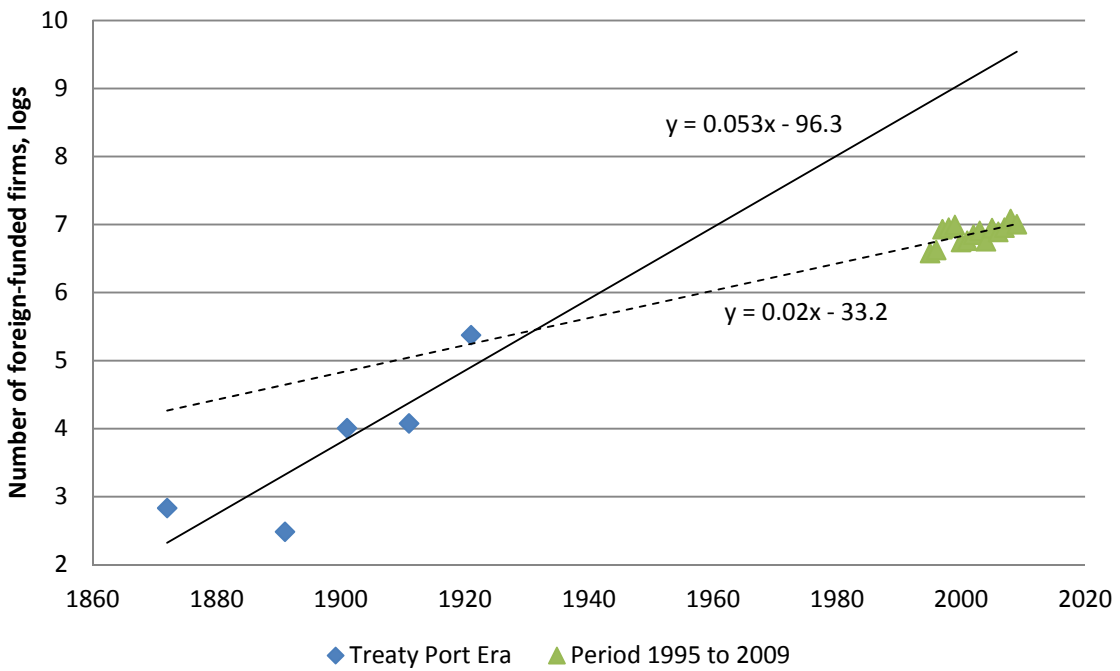




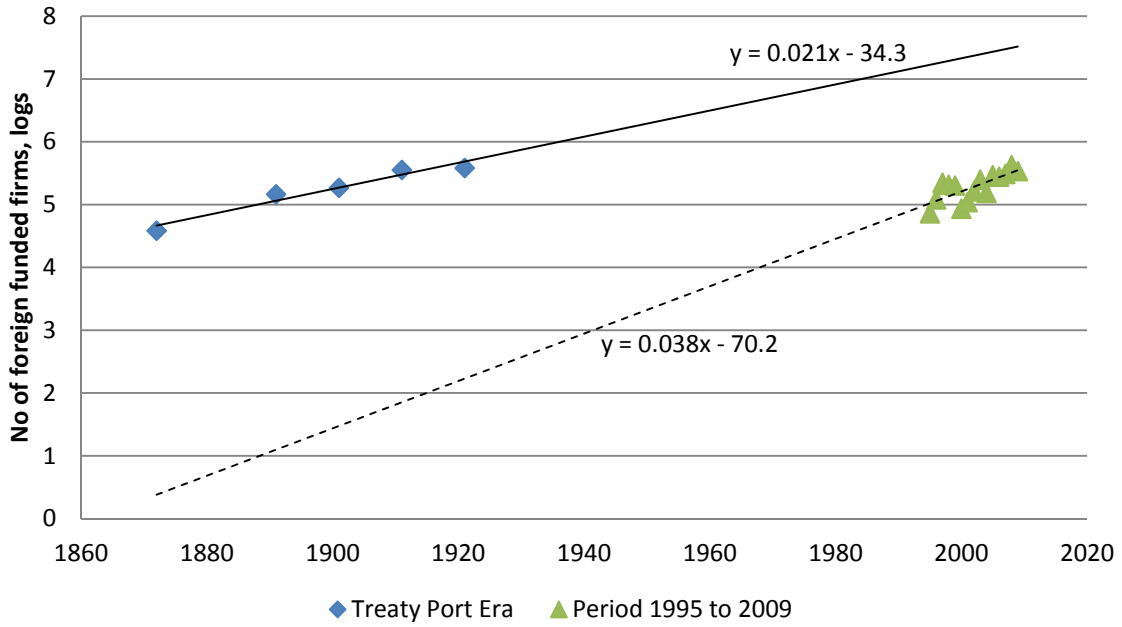
**Figure 17A. Number of German Firms in Shanghai**



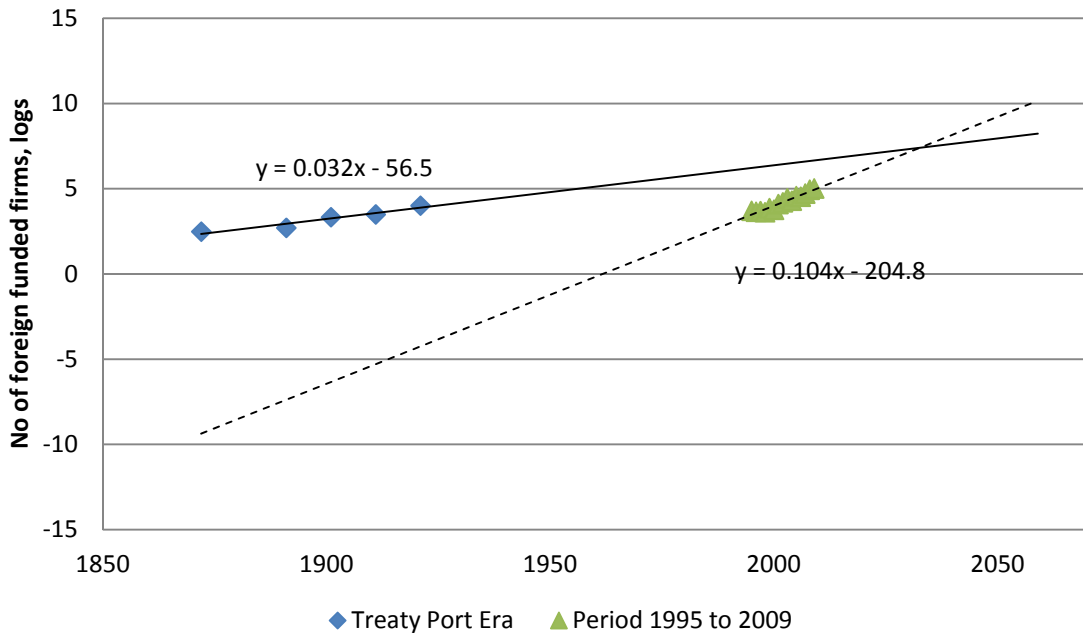
**Figure 17B. The number of US Firms in Shanghai**



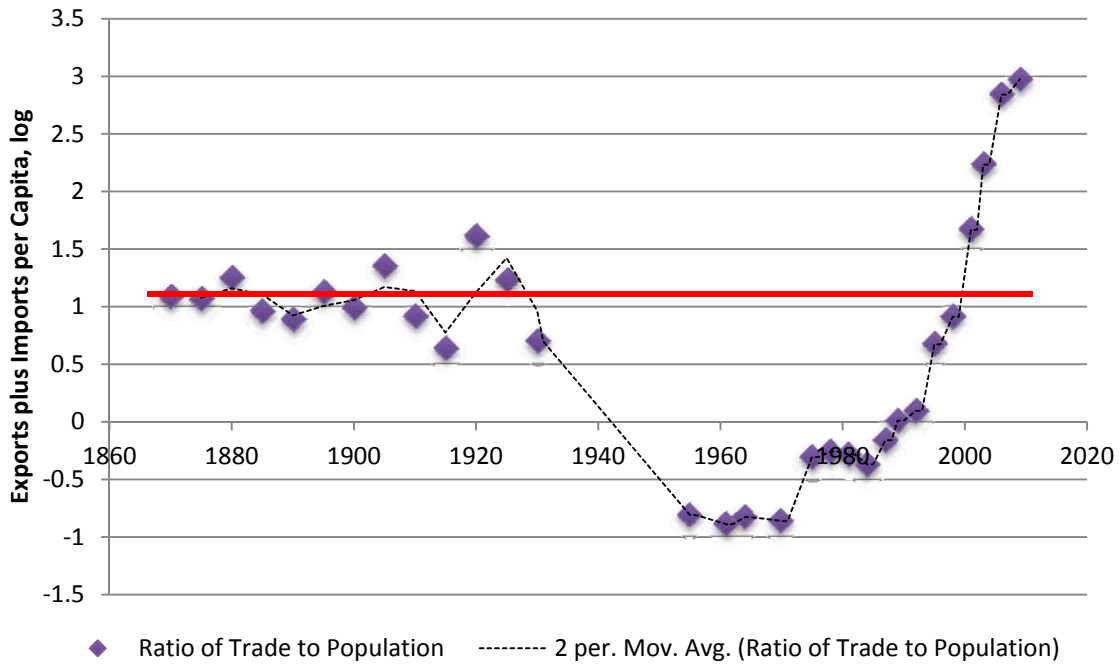
**Figure 17C. The Number of British Firms in Shanghai**



**Figure 17D. The Number of French Firms in Shanghai**



**Figure 18A. Shanghai's Per-Capita Foreign Trade, 1870 to 2009**



**Figure 18B. Shanghai's Trade and Population Share of China over Time**

