

**Imposed Efficiency of Treaty Ports  
Japanese Industrialization  
and Western Imperialist Institutions\***

ISS Discussion Paper Series

F-142

December 2013

Masaki Nakabayashi<sup>†</sup>

Institute of Social Science

The University of Tokyo

**Abstract**

An intrinsic feature of a pre-modern society is its diversity of industries and its fragmentary markets. Fragmentary markets are more likely to fail in coordination of resource allocation. However, if a concentrated market is exogenously formed and the market could provide the only price to local markets, the market can work as a pivot of coordination for development. Treaty port markets imposed on nineteenth-century Japan worked as the pivot and ignited Japan's industrialization. This work examines the silk-reeling industry, which was the major exporter and led Japanese industrialization, and role of treaty ports in its development.

**Key words:** international trade; institutions; economic openness; treaty port; empire effect

**JEL:** O19; F14; N75

---

\*The author appreciates comments from the anonymous referee, Mathias Hoffmann, Kaliappa Kalirajan, Eline Poelmans, Tetsushi Sonobe, Kaoru Sugihara, Patrick O'Brien, Albrecht Ritschl, and the participants of Midwest International Trade Conference Spring 2012, Rimini Conference in Economics and Finance 2012, and the workshops at Osaka University, National Graduate Institute for Policy Studies, London School of Economics, The University of Tokyo, Tohoku University, Keio University, and K.U. Leuven. JSPS Grant-in-Aid (22243022).

<sup>†</sup>Corresponding address: Institute of Social Science, The University of Tokyo, Hongo 7-3-1, Tokyo 103-0033, Japan. E-mail: mn@iss.u-tokyo.ac.jp Phone: +81-3-5841-4936. Fax: +81-3-5841-4905.

# 1 Introduction

## 1.1 Key role of treaty ports outside of Western empires

The expansion of impersonal market trades has been the driving force of modern economic growth. Third-party governance that emerged in Western states has thus far been the only institutional arrangement to have stimulated this type of development (North 2005). Indeed, the “Westernization” of non-Western countries has generally accelerated the growth of economies in the long term (Parente and Prescott 1994; Hall and Jones 1999; Acemoglu, Johnson and Robinson 2001). The question then arises as to how some economies have been Westernized while others have not.

Efficient types of institutions invented in the North Atlantic spread across the world from the mid-nineteenth century under the imperialist integration of the global economy. The nexus of these institutions, represented by free trade and the international financial system, functioned as world-wide “public goods” (O’Brien 2002). By the early twentieth century, almost every economy had been incorporated into the global free trade regime and the well-standardized international financial market centered at London.

Synchrony of external openness and economic growth has been rigorously established (Cieřlik and Tarsalewska 2011). As for potential causalities between trade openness and institutional changes, both directions have been argued for. Regions annexed by empires or under the control of imperialist power generally enjoyed the benefits of increased trade volume in a market integrated under efficient institutions (Ferguson and Schularick 2006 and Mitchener and Weidenmier 2008), at least as long as imperialist policies focused on market integration though it does not necessarily hold otherwise (Price 2003). Meanwhile, Faber and Gerritse (2012) supports direction from trade openness to institutional changes. Japan, along with China, maintained independence from the Western empires, was forced to join the free trade regime before institutional modernization, and finally accomplished institutional changes and industrialization through learning (Hsiao and Hsiao 2004), providing an appropriate example.

Pre-modern economies often consist of diverse and fragmentary markets, each of which is governed by a specific institution. In such a context, country-wide coordination failure might be expected. For economies in which the coordination failed, the outcome was not simply something that had yet to happen. Domestic commodity and factor markets governed by domestic institutions, which were often characterized by a personal and relational governance mechanism, could work together as obstacles to the Westernization of governance.

However, if a concentrated market is exogenously formed, and if the market provides “the” price information to local markets, the market could serve as a pivot for the coordination of local and diverse markets into an integrated market. East Asia in the late nineteenth century provides such an example. In East Asia from the late nineteenth to the early twentieth centuries, international commodity trades were governed under Western imperialism, and domestic trades were governed by independent states. East Asian countries that faced military threats from the British or the Americans were forced to open several ports as “treaty ports,” to allow Western merchants to settle, to admit consular jurisdiction, and to commit to free trades under third-party enforcement by the consuls within treaty port concessions from

the mid-nineteenth century. As a result, in several treaty ports, such as Yokohama in Japan and Shanghai in China, there was a large influx of exports from the inland areas. In addition, the ports were connected to international telegraph networks through Western trading companies and to financial markets through Western banks. While treaty ports then grew as extremely concentrated commodity markets, where information about foreign markets was rapidly shared, the inland—outside of the treaty ports—belonged to the sovereignty of the domestic states in Japan and China, neither of which was colonized.

Significant differences exist between the “first age” of globalization in the nineteenth century and the “second age,” which began in the 1980s and was driven by the international capital market. In the first age, as compared to the second age, capital flows between developed and developing economies were less responsive to economic conditions and yields were more weakly synchronized (Mauro, Sussman and Yafeh 2002; Clemens and Williamson 2004). The commodity market therefore had a larger relative importance as the driving force behind the world-wide economic growth.

Furthermore, the stipulations of the treaties between Japan or China and Western countries enhanced the relative importance of the efficiency of treaty port markets. While both Japan and China opened treaty ports for the free trade of commodities, neither officially allowed foreigners to engage in any business outside of the treaty ports. This implied that the financial claims of foreign businesses inland were not protected by the domestic court. Thus, treaty ports played a critical role as centers of businesses.

## **1.2 East Asia in the first age of globalization**

China and Japan were incorporated into the global market by imposed free trade in 1844 and 1859, respectively. Japan began to show clear signs of modern economic growth in the mid-1880s. Responding to the free trade regime, relative prices drastically changed in favor of exports, inducing the reallocation of resources to industries with comparative advantages and fostering growth (Huber 1971; Bernhofen and Brown 2004, 2005). While it took 40 years for Japan to fully modernize its legal system from the 1860s to the 1890s, international free trades increased Japan’s growth as soon as it opened its ports to foreign trades. A driving force behind Japan’s industrialization was the silk-reeling industry.

Raw silk threads are reeled from cocoons of silkworms. Farmers raised silkworms and had them make cocoons. Then they hand-reeled raw silk threads from cocoons. This is traditional silk-reeling. The global leader of traditional silk-reeling had been China. Hand-reeled raw silk was massively exported to Europe after China was integrated with the global free trade regime after the Opium War in 1844. The Chinese integration with the global market 17 years earlier than the Japanese one, when the European economy was buoyant, provided China with deeper dependence on the European market.

At the same time, in the mid-nineteenth century, the silk-reeling process was separated and mechanized in Italy and France, which gave birth to the modern silk-reeling industry. This technology was then introduced to Japan. In the late nineteenth century, when rayon was not yet commercially viable, silk was a major textile in the world and the international market of raw silk was well-integrated (Ma 1996). The role of treaty ports in Japan’s rapid

development was critical, especially for raw silk trades, which accounted for approximately 30 percent or more of the total Japanese exports from the 1860s to the 1920s. Raw silk exports were heavily concentrated at the Yokohama treaty port in Japan. This implies that the treaty port market set “the” prices of the major exports and that these prices reflected the demand and prices in foreign markets.

When Japan began to trade with Western countries under the commercial treaties in 1859, traditional hand-reeled raw silk, “hanks,” was exported to Europe, especially to France (**Figures 1 and 2**). Hanks were produced by farmers engaged in cocoon cropping. However, this trade suffered a decrease in demand due to a depression in France in the mid-1880s. In contrast, the development of the modern silk fabric industry from the late 1870s in the United States created new demand. Responding to an increase in the American modern fabric industry’s demand for machine-reeled raw silk, “filature,” as raw material, the modern silk-reeling industry emerged as a factory industry in the mid-1880s in Japan, and thereafter, exports of raw silk to the United States rose dramatically (**Figure 1**). The Japanese share in the American raw silk market rose from 30 percent to 50 percent during the 1880s, 60 percent in the late 1900s, 70 percent in the 1910s, and 80 percent in the 1920s (Nakabayashi 2003, pp. 473-477). The development of the modern silk-reeling industry constituted a rapid shift from a traditional cottage industry to a factory industry that employed 300-500 employees at the largest establishments, and provided Japan with its first experience with a strong export industry driving its economic development. **INSERT Figure 1 and Figure 2 here**

Meanwhile, the development of the modern silk-reeling industry required a well-functioning market for large trade volumes of cocoon, the raw material. Railway lines and telegraph networks were constructed from the 1880s, and this new infrastructure promoted the convergence of local cocoon markets. Furthermore, the modern banking system introduced by the government from the 1870s to the 1880s financed the purchases of cocoon by silk-reeling manufacturers. This market convergence led to the reorganization of sericulture. Farmers, who had been engaged both in sericulture and in the hand-reeling of raw silk, decreased production of the latter and began to supply cocoons to the modern silk-reeling manufacturers.

Intriguingly, the reorganization of sericulture began in earnest in the mid-1880s, coinciding with the international demand shifting from France to the United States. Reflecting the structural change of the international market, the relative price of filature in New York to hanks in Lyon rose. The Yokohama market immediately followed suit, and the silk-reeling manufacturers responded to this shift. Due to concentration of trades at Yokohama, any order within the port was immediately reflected in the prices. As Western trading companies at the port placed orders in response to the prices of the London market, the New York market, the Lyon market, the Shanghai market, and other major markets, which were reported by the telegraph networks, any public information about foreign trades was reflected in the prices at the Yokohama market. The best response of silk-reeling manufacturers was to simply watch and follow the prices at the efficient treaty port market of Yokohama.

Responding to the increase in the relative price of filature to hanks at Yokohama, Japanese manufacturers changed their production line to increase the supply of raw silk suitable to the United States, and their rapid action provided them with the opportunity to earn higher-than-normal, or excessive, returns in the mid-1880s, while other supplier countries failed to meet

the rapid growth in American demand. The excessive returns stimulated the growth of modern silk-reeling and the reorganization of sericulture, and these paved the path to dominance in the American market. The efficient treaty port market of Yokohama served as the pivotal junction for the coordinated change.

### **1.3 Data and informational efficiency of price formation**

The literature from Huber (1971) to Bernhofen and Brown (2005) has clarified that incorporation of Japan into the free trade market rapidly changed the relative prices of tradable goods and had a positive impact on Japan's growth and industrialization. A remaining issue is to determine how the relative price change of tradable goods was transmitted to the resource reallocation in the hinterland and led to the growth of factory industries. A study on this question must evaluate the performance at a micro-level institutional setting—the treaty port—and for such an empirical work, it is essential to utilize the indices of price and inventory at high frequencies. Thus, a major part of this research effort has been devoted to building new price and inventory data series of raw silk based on primary sources. The obvious cost of this approach is the potential oversimplification by considering the most successful case of the silk-reeling industry as a representative, but the benefit is a close examination of the industry's response to the international market.

This paper uses the weekly series of price and inventory of raw silk at the Yokohama treaty port market and the monthly price series of the London and New York markets constructed by the author.<sup>1</sup> High-frequency price indices enable us to directly evaluate the responsiveness of the Yokohama market to the international markets through estimating which market prices led the others by vector-auto regression. Then, high-frequency inventory indices are expected to show the inland producers' response to the prices at Yokohama.

Some of the raw silk prices at London, Yokohama and New York, and the exchange rates have unit roots and are  $I(1)$  processes, indicating that these prices have a random walk. This implies that these prices were efficiently formed such that public information was reflected within the term of data frequency, one week at Yokohama and one month at London and New York, satisfying the weak-form efficiency. None of these series is  $I(1)$  in the first-order difference, and thus time series analyses are later performed on the first-order differences in the common logarithmic expressions.

## **2 Rise of the Japanese silk-reeling industry**

### **2.1 Chinese and Japanese dominance in the old and new West**

After China was integrated with the free trade regime by the treaties in 1844 after the Opium War, export of hand-reeled raw silk, mainly "Tsatlee," to Europe rapidly increased. The largest market was France, which housed the traditional silk fabric industry. Through the United Kingdom in the mid-nineteenth century, and directly then, exports continuously increased to

---

<sup>1</sup>See the data description in the Appendix.

dominate the French market until the 1920s. In contrast, Japanese exports of hand-reeled raw silk to France increased only shortly after it joined the free trade regime in 1859. In the 1870s, when the European economy entered the phase of long-term deflation that lasted until the mid-1890s, Japanese exports stagnated (**Figures 1 and 2**).

AS the growth of the European traditional fabric industry slowed, the modern mechanized fabric industry emerged in the United States from the 1880s. Adjusting to this, the Japanese silk-reeling industry modernized itself, and drastically increased exports of machine-reeled filature raw silk to the United States. The Japanese share in the American market reached 50 percent by the end of the 1880s, and even 80 percent in the 1920s (**Figure 3**).

INSERT **Figure 3** here

For 50 years from 1880 to 1930, the raw silk output of Italy increased from 2,872 to 3,881 tons, or 35 percent; that of China from 12,000 to 19,500 tons, or 62.5 percent; and that Japan from 1,722 to 42,521 tons, or 2,369 percent (Federico, 1997, p. 203). The Italian stagnancy and the Chinese fair growth came from the Chinese dominance in the European market after the Opium War. The abnormal performance of the Japanese silk-reeling almost solely came from its grip of the demand from the rising modern fabric industry in the United States particularly from the 1880s (**Figures 1 and 2**). In either case, the Opium War and the integration of China with the old Western world unleashed an expansion of the cottage industry in China, while the American gunboat diplomacy and the integration of Japan with the new Western world triggered the rise of Japan's modern manufacturing.

## **2.2 Japanese silk-reeling industry in the changing international market**

The shogunate strictly controlled international trades until when Japan was forced to join the free trade regime in 1859, and raw silk produced in Eastern Japan was shipped to Yedo (renamed to Tokyo in 1868), and Kyoto, the largest consumer cities. These domestic trades were governed by guilds authorized by the shogunate. However, once free trade began in 1859, sericultural farmers found that export of hand-reeled raw silk was more profitable and thus switched their shipments to Yokohama, the treaty port. The traditional governance of raw silk trade collapsed.

Japanese exports of hand-reeled raw silk then stagnated from the 1870s (**Figure 1**). In particular, the decrease in prices and the subsequent stagnation for several years after 1882 severely affected the sericultural farmers who were engaged in the hand-reeling of raw silk and this adverse effect was exacerbated by the deflationary policy of the government (Nakabayashi 2003, pp. 88-93). Meanwhile, in the 1880s, the price of Japanese machine-reeled filature raw silk in the New York market rose relative to that of Japanese hand-reeled raw silk, hanks in the Lyon market (Nakabayashi 2006, p.187).

The silk fabric industry in Lyon maintained its propensity for using hand-reeled raw silk as a raw material until the 1900s by the sustained demand for hand-loomed fabric that was used in the luxurious fashions of the times (Duran 1913, pp. 72-77; Rawlley 1919, pp. 66-73; Cottreau 1997). Because even coarse raw silk could be processed by skilled hand-throwers, France imported various types of raw silk as raw material for the silk fabric industry; this raw silk ranged from high-quality Italian filature to low-quality Asian hand-reeled raw silk.

In contrast, in the late 1870s, the American fabric industry began to produce goods for mass consumption in earnest. As the use of power-throwing machines and power looms rapidly prevailed, the factory system for mass production was established. As a result, the American silk fabric manufacturers avoided traditional hand-reeled hanks with their uneven threads that rendered the hanks unsuitable for power throwing machines and power looms and instead actively sought machine-reeled filature, with even threads as the primary raw material (Wyckoff 1879, pp. 8, 25-27, 29-30; Wyckoff 1883, p. 18), while demanding a small amount of improved hand-reeled raw silk, “re-reels” from Japan and re-reeled Tsatlee from China.<sup>2</sup> In the early 1880s, the dominant supplier of filature in the United States was Italy.

While machine-silk-reeling was gradually dispersed from the end of the 1870s in Japan. Japanese manufacturers failed to supply filature raw silk with even threads. Western trading companies at Yokohama bought filature of uneven threads from Japanese exporters, inspected the raw silk, classified the raw silk, added their own trademarks—“chop”—and exported the raw silk under own brand names. The quality premium from relevant classification belonged to Western trading companies.

Several years later, a cooperative of silk-reeling manufacturers in the Suwa county of Nagano prefecture in Central Japan, Kaimeisha, formed a new organization. In 1884, the cooperative established a facility for jointly finishing and inspecting raw silk produced by member manufacturers, and from then on began strictly inspecting and classifying produced raw silk, putting its own trademark on only those products that satisfied the standard, and exporting the raw silk under its own brand name to the United States. American silk fabric manufacturers preferred “original chops” by manufacturers over “private chops” by trading companies and willingly paid a “premium” for original chops of good quality (Duran 1913, pp. 105-109; Nakabayashi 2006, pp. 193-197). The Kameisha’s original chop succeeded in acquiring a large demand and earning a considerable premium. This success was rapidly followed and shared by other manufacturers. In the mid-1880s, Japanese exports of raw silk to the United States exceeded those to France (Nakabayashi 2006, pp.184-197; **Figure 3**).

The rapid dispersion of the new production organization and the rapid growth of machine-reeling prompted by the organization was a direct response to the international market. Increased demand for filature raw silk of even threads led to a sharp rise in its relative price in the international market in 1885 and 1886 (Nakabayashi 2006, p.187). This shows that there was a tentative gap between the sharply increasing demand and supply, which provided suppliers with an opportunity to acquire excessive returns by taking prompt action, and that the opportunity was informed by the prices at Yokohama. Reflecting a steep rise of the relative price of filature raw silk to hanks in the international market, the price of filature raw silk relative to hanks in the Yokohama market rose accordingly in 1885 and 1886 (Nakabayashi 2006, p.188). The informed opportunity to earn excessive returns provided incentives to adopt the new organization and stimulated the growth in the modern silk-reeling industry.

From cocoon cropping to hand-silk-reeling, the nexus of the supply chain consisted of complementary production functions at each stage. If the transmitted exogenous shocks were smaller, the older equilibrium that supported hand-reeling might have held. The quickly ris-

---

<sup>2</sup>Re-reeled raw silk was hand-reeled raw silk that was reeled again after being reeled from cocoons to decrease the unevenness of threads.

ing relative price of filature raw silk and the accompanying excessive returns had enough impact that cocoon cropping farmers left hand-reeling and silk-reeling manufacturers rapidly increased their production capacity toward the new equilibrium of modern silk-reeling.

A noteworthy phenomenon was that a considerable portion of the returns from the increased demand for filature was also shared by sericultural farmers. In the mid-1880s, the supply of cocoons became more profitable than the supply of hand-reeled raw silk, and the gap in profits between the supply of cocoons and hand-reeling became significant from about 1885 to 1886 (Nakabayashi 2006, p.190). This increase in returns encouraged sericultural farmers to promptly switch. In the early 1880s, owing to the recession in France, there was a decrease in the production of cocoons and raw silk in all areas of East Japan. From the mid-1880s, however, the production of raw silk had exceeded that of cocoons in terms of growth in Nagano Prefecture, while the production of cocoons had surpassed that of raw silk in terms of growth in the neighboring prefectures, indicating the transition from hand-reeling to the provision of cocoons to the machine-reeling manufacturers (Nakabayashi 2006, pp. 187-191). This whole reorganization process appears to have been accelerated by the rise of the relative price of filature raw silk to hanks in the international market, which was immediately reflected in the Yokohama market.

The rise of the modern silk-reeling industry entailed the integration of the cocoon markets. After the late 1880s, local cocoon markets of sericultural regions in East Japan converged at a remarkable speed as the coefficient of the variation of cocoon prices in East Japan fell from 0.28 in 1886 to under 0.1 in the mid-1900s (Nakabayashi 2003, pp. 136-139). This development was related to a unique aspect of Japanese sericulture and silk-reeling. In Italy, silk-reeling factories were dispersed and the silk-reeling manufacturers procured cocoons from nearby local markets. In contrast, in Japan, silk-reeling factories were concentrated in areas such as Suwa, while sericulture prevailed across the whole of East Japan. Then, a necessary condition for the integration of the local cocoon markets was the construction of trunk lines by the Japan Railways Company, a state-subsidized company, and the government-run National Railway Agency. The local cocoon markets were linked to the silk-reeling districts by the railways, and the links to Suwa County of Nagano Prefecture were especially important (Nakabayashi 2003, pp. 124-134). The Japanese silk-reeling industry was based on the mass procurement of material and on the mass production of raw silk, whereas the Italian industry remained a small rural industry (Federico 1997, pp. 146-151).

### 2.3 Increased labor productivity

**Figure 4** presents the growth of output per basin, at each of which a female reeling worker operated, showing both increase in inputs and improvement of labor productivity, and real daily wage of reeling female workers in Suwa. Real wage stepped forward to the long-term growth in the 1880s, representing increased labor productivity. Roughly, the silk-reeling district entered the phase of labor productivity increase beyond the “turning point” (Lewis (1954)).

INSERT **Figure 4** here

Advantage of low wages against the Italian competitors was thus lost. By 1904 comparison, skilled silk-reeling workers, most of whom were young females, in Suwa earned 19 US



cents on average with life expenses such as foods and dormitories being additionally paid by employers, which is estimated to have been 7.5 US cents per day. In Italy, skilled workers earned 19.3-21.2 US cents in Milan, Lombardy, 19.3-22.2 US cents in Leghorn, Tuscany, 23.2 US cents in Bologna, Emilia, and 16.4-20.3 US cents in Messina, Sicily.<sup>3</sup> The Italian competitors lost to the Japanese counterparts not because of their higher wages.

Japan as a whole then was still a low-income economy. Indeed, small silk-reeling factories dispersed in the country could hire cheap labor. However, this does not mean that industrial regions specialized in export-quality raw silk could capitalize on the cheap labor. In Japan, then a developing country, labor markets were highly fragmented, and thus growth of manufacturing in a region was inevitably accompanied by a shortage of labor. In the American market, in particular, evenness of threads was strongly required, and this was realized by larger scales of factory, of the order of factories with at least 100 basins and preferably with 300 or more basins around in the 1900s. Demand for more than 100 full-time workers could not be accommodated by the Lewisian reserve of underemployed labor in local communities.

### **3 Efficient pricing of raw silk at treaty ports**

#### **3.1 Structure and efficiency of treaty ports**

Under the Qing Dynasty of China, international trades had been controlled by monopoly merchants authorized by the government. However, the United Kingdom defeated China in the Opium War, 1839-1842, and the treaties in 1842 and 1843 between the United Kingdom and China in 1843 prescribed that China was presumed to open Shanghai and four other ports for free trade, to allow consular jurisdiction within concessions in the five ports, to unilaterally provide the most-favored-nation treatment to the United Kingdom, and to waive tariff autonomy. Following this, the treaties with France and the United States in 1844 that contained the same stipulations fully integrated China with the global free trade regime through the ports opened by the stipulations in the treaties without any tariff autonomy. This “treaty port” system became the standard measure for Western countries to incorporate Asian independent countries into the free trade regime. Though sovereignty was sacred outside of the concessions, the Western legal system was implemented within the concessions.

The Japanese shogunate entered into a treaty that allowed consular jurisdiction within concessions to the United States in 1854, being pressured by the American navy. Then, the treaties of friendship and commerce with the United States, the United Kingdom, France, Russia, and the Netherlands in 1858 prescribed that Japan was to open Yokohama and four other ports as treaty ports in 1859, where free trades were guaranteed, to waive tariff autonomy, and to give Western parties consular jurisdiction in these ports. These extraterritorial privileges were effective until 1899, when the renewed treaties with the Western countries that abandoned consular jurisdiction came into effect. Almost all of the raw silk exports were traded at one of the five ports, Yokohama.

---

<sup>3</sup>The Japanese data are for a factory of Seinojo Miyasaka, a medium-sized enterprise. See Nakabayashi (2003), p. 203. The Italian data are from “Tabulation of bottom facts regarding sericulture in Italy, China, and Japan,” *The American Silk Journal*, vol. 24, no. 4, Apr 1905, pp. 38-39.

Given prohibition of foreigners from practicing business outside the concessions, they traded with Japanese merchants specialized in the trade of exports and imports within the concessions of treaty ports. Western trading companies, Japanese exporters, and Japanese importers gathered in a very small enclosed space inside the concession of Yokohama, where all trade transactions were settled. Silk-reeling manufacturers shipped and consigned their products to Japanese exporters, and the Japanese exporters in turn sold them to Western trading companies on the behalf of silk-reeling manufacturers. Prices of exported raw silk were determined by the negotiations between Japanese exporters and Western trading companies in the confined space of Yokohama. Thus, the place where all players gathered to trade products was very small, and accounted for most of the raw silk exports from Japan, with the transactions being spot traded under the Western legal system. These factors made the place a nearly perfect market from the standpoint of informational symmetry because any information about raw silk trades was quickly shared among all the players.

Before moving to the gold standard in October 1897, Japan was under the silver standard. With Western countries leaving the silver standard and joining the gold standard, silver prices in the international market were volatile and tended to go down in the late nineteenth century, which implied that the exchange rate of the Japanese yen against Western currencies was also volatile. Global convergence to the gold standard is estimated to have had a positive impact on the country's own volume of trade with lag of several years, by removing the volatility of the exchange rate (Estevadeordal, Frantz and Taylor 2003; López-Córdova and Meissner 2003). It then turns out that, before switching to the gold standard, whether the commodity market could quickly adjust to volatile exchange rates mattered for Japan's trade expansion.

The Yokohama raw silk market rapidly adjusted to the volatile exchange rate. A rough drop in the exchange rates, for instance from 1884 to 1886 when the yen dropped from 90 yen per the US dollar to about 75 yen per the US dollar, was perfectly adjusted for by the rapid rise in raw silk prices at Yokohama, which are observed on weekly bases. A regression of the weekly series of filature prices ( $YPJF$ ) at Yokohama to the weekly series of the exchange rate at Yokohama, in terms of dollars per 100 yen ( $YEXUSD$ ), shows that filature raw silk prices were adjusted to changes in the exchange rate within a week.<sup>4</sup>

Furthermore, raw silk prices significantly led the exchange rate in terms of Grenger causality through the 1880s.<sup>5</sup> The raw silk market more quickly predicts the volatility of the exchange market, and the prediction was inflected in the raw silk prices. This rapid response suggests that we can reasonably neglect the effect of changes in the exchange rate when analyzing the movements of raw silk prices at the Yokohama and New York markets.

This response also implies that instead of allowing a decrease in the relative price of

$${}^4\log [YPJF_t] = \frac{12.1606}{(26.1774^{***})} - \frac{1.2971}{(-12.3745^{***})} \log [YEXUSD_t]$$

Period: Jan 1884 to Dec 1886. Series frequency: weekly. Number of observations: 156. Estimation: OLS. Adjusted  $R^2$  : 0.495.  $F$ -static: 153.128\*\*\*. Numbers within parentheses in the equation are the  $t$ -statistics, and hereafter \*\*\*, \*\*, and \* respectively denote significance at the 1, 5, and 10 percent level.

<sup>5</sup>Summary of vector auto regression of  $YPJF$  and  $YEXUSD$ : (1) Response of  $\Delta \log [YPJF_t]$  to  $\Delta \log [YEXUSD_{t-k}]$ : Block exogeneity Wald test  $\chi^2$  : 4.6257. (2) Response of  $\Delta \log [YEXUSD_t]$  to  $\Delta \log [YPJF_{t-k}]$ :  $\chi^2$  : 23.7307\*\*\*. Period: Jan 1880 to Dec 1889. Data frequency: Weekly. Number of observation: 512. Akaike criterion optimal lag:  $k = 1, 2$ .

Japanese raw silk, the efficient Yokohama market immediately converted decreasing foreign exchange rates immediately an export-led inflation in the Japanese domestic market. The Japanese economy experienced inflation due to a decrease in the exchange rate in the late nineteenth century until October 1897, when Japan switched to the gold standard, and the prices of filature raw silk led consumer prices with a lag of several years. This export-led inflation increased the real income of silk manufacturers and cocoon-growing farmers, thus accelerating the mobilization of resources into the sector (Nakabayashi 2006, pp. 187-191).

### 3.2 Shanghai's synchronization with the European market

Monthly price indices of Tsatlee raw silk at the London market are available on *The Economist* from 1844, because London was the center of intermediate trades between Asia and Europe until the end of 1880s. Using the price indices, let us compare the price movements of Tsatlee raw silk from China, Bengalee from India, and Lombardia from Italy in the London market. We find that the Italian Lombardia (*LPIL*) responds more significantly to the Chinese Tsatlee (*LPCT*) than the Chinese Tsatlee (*LPCT*) did to the Italian Lombardia (*LPIL*) and the Indian Bengalee (*LPBC*) responded both to the Italian Lombardia (*LPIL*) and to the Chinese Tsatlee (*LPCT*) from the 1840s to the 1870s.<sup>6</sup>

Therefore, in the mid-nineteenth century, right after China was forced to integrate with the European market, the Chinese raw silk prices led the Indian and Italian raw silk prices, which indicates that the Chinese raw silk prices were recognized as more informative than other raw silk prices. This is a result consistent with the assumption of efficient treaty port markets. Both Italy and India were geographically closer to Northwestern Europe than China and were a Western country or a formal colony. These conditions might naturally have resulted in a lead of the Italian or Indian raw silk prices. The outcome was, however, not an Italian nor Indian but a Chinese lead. Potential causes of the improbable Chinese lead seem to have included the efficiency of the Shanghai market, the treaty port, as well as the strong demand for the Chinese raw silk in Europe. A combination of Western governance and concentrated trades in treaty ports in China made Chinese raw silk prices the leader in the European market.

Prices of Japanese hand-reeled raw silk, Maebashi (Mybashi), or hanks are available on *The Economist* from 1874. When comparing the price movements of the Chinese Tsatlee (*LPCT*), Indian Bengalee (*LPBC*), Italian Lombardia (*LPIL*) and Japanese Maebashi (*LPJM*), we get that still the Chinese Tsatlee (*LPCT*) was the leader, followed by the Indian Bengalee (*LPBC*) and Japanese Maebashi (*LPJM*), with the Italian Lombardia (*LPIL*) following all the others.<sup>7</sup>

<sup>6</sup>Summary of vector auto regression of *LPIL*, *LPCT*, and *LPBC*: (1) Response of  $\Delta \log[LPCT_t]$  to  $\Delta \log[LPBC_{t-k}]$ :  $\chi^2$  : 5.5418 and to  $\Delta \log[LPIL_{t-k}]$ :  $\chi^2$  : 9.7658\*\*. (2) Response of  $\Delta \log[LPBC_t]$  to  $\Delta \log[LPCT_{t-k}]$ :  $\chi^2$  : 55.3358\*\*\* and to  $\Delta \log[LPIL_{t-k}]$ : 13.3052\*\*\*. (3) Response of  $\Delta \log[LPIL_t]$  to  $\Delta \log[LPCT_{t-k}]$ :  $\chi^2$  : 46.3615\*\*\* and to  $\Delta \log[LPBC_{t-k}]$ :  $\chi^2$  : 25.6857. Period: Jul 1844 to Dec 1876. Frequency: Monthly. Observations: 335. Optimal lag:  $k = 1, \dots, 4$ .

<sup>7</sup>Summary of vector auto regression of *LPCT*, *LPBC*, *LPIL*, and *JPJM*: (1) Response of  $\Delta \log[LPCT_t]$  to  $\Delta \log[LPBC_{t-k}]$ :  $\chi^2$  : 6.3609\*\*, to  $\Delta \log[LPIL_{t-k}]$ :  $\chi^2$  : 2.7977, and to  $\Delta \log[LPJM_{t-k}]$ :  $\chi^2$  : 0.5862. (2) Response of  $\Delta \log[LPBC_t]$  to  $\Delta \log[LPCT_{t-k}]$ :  $\chi^2$  : 28.1248\*\*\*, to  $\Delta \log[LPIL_{t-k}]$ :  $\chi^2$  : 1.0199, and to  $\Delta \log[JPJM_{t-k}]$ :  $\chi^2$  : 1.5149. (3) Response of  $\Delta \log[LPIL_t]$

### 3.3 Yokohama's synchronization with the US market

From the 1880s, Italian filature raw silk and Japanese filature raw silk were actively traded in the New York market, and hence the complete price series for both goods are available on a monthly basis on *The American Silk Journal* from 1882. We find that the Japanese filature price (*NPJF*) strongly led the Italian filature price (*NPIF*) in terms of Granger causality.<sup>8</sup> After Chinese filature raw silk, mainly Shanghai filature raw silk, came to be actively traded in the New York market in the mid-1880s, the Japanese filature raw silk (*NPJF*) and Chinese filature raw silk (*NPCF*) led the Italian filature raw silk (*NPIF*), while there was no significant lag between the Japanese (*NPJF*) and the Chinese (*NPCF*).<sup>9</sup>

As expected, the New York and the Yokohama prices of the Japanese filature raw silk (*NPJF* and *YPJF*) were closely synchronized.<sup>10</sup> Therefore, the prices of exports from Japan, efficiently transmitted information about the Western world to their domestic markets, and information about domestic markets was efficiently transmitted to the New York market, which is shown as the lead of Japanese filature prices to the Italian filature prices. This system afforded opportunities to earn excessive returns to Japanese manufacturers and farmers.

Furthermore, not only the prices of machine-reeled filature but also those of re-reels produced by farmers (*NPJR* and *YPJR*) were efficiently transmitted between New York and Yokohama.<sup>11</sup> Then there was no lead-lag relation in terms of Granger between filature (*YPJF*) and re-reels (*YPJR*) at Yokohama even on weekly basis.<sup>12</sup> The Yokohama market efficiently transmitted the relevant information about the relative prices of filature and re-reels such that both the silk-reeling manufacturers and farmers could rationally respond to the international market. The Yokohama market transmitted the necessary information about the international market to farmers and local merchants as well as to silk-reeling manufacturers.

---

to  $\Delta \log[LPCT_{t-k}]$ :  $\chi^2$  : 8.2207\*\*, to  $\Delta \log[LPBC_{t-k}]$ :  $\chi^2$  : 14.0101\*\*\*, and to  $\Delta \log[LPJM_{t-k}]$ :  $\chi^2$  : 6.5595\*\*. (4) Response of  $\Delta \log[LPJM_t]$  to  $\Delta \log[LPCT_{t-k}]$ :  $\chi^2$  : 12.6644\*\*\*, to  $\Delta \log[LPBC_{t-k}]$ :  $\chi^2$  : 1.1325, and to  $\Delta \log[LPIL_{t-k}]$ :  $\chi^2$  : 1.3901. Period: Mar 1874 to Dec 1895. Frequency: Monthly. Observations: 85. Optimal lag:  $k = 1, 2$ .

<sup>8</sup>Summary of vector auto regression of *NPJF* and *NPIF*: (1) Response of  $\Delta \log[NPJF_t]$  to  $\Delta \log[NPIF_{t-k}]$ :  $\chi^2$  : 0.1595. (2) Response of  $\Delta \log[NPIF_t]$  to  $\Delta \log[NPJF_{t-k}]$ :  $\chi^2$  : 21.8720\*\*\*. Period: Oct 1882 to Dec 1903. Frequency: Monthly. Observations: 244. Optimal lag:  $k = 1$ .

<sup>9</sup>Summary of vector auto regression of *NPJF*, *NPIF*, and *NPCF*: (1) Response of  $\Delta \log[NPJF_t]$  to  $\Delta \log[NPIF_{t-k}]$ :  $\chi^2$  : 3.1823 and to  $\Delta \log[NPCF_{t-k}]$ :  $\chi^2$  : 37.3636\*\*\*. (2) Response of  $\Delta \log[NPIF_t]$  to  $\Delta \log[NPJF_{t-k}]$ :  $\chi^2$  : 11.9034\*\* and to  $\Delta \log[NPCF_{t-k}]$ :  $\chi^2$  : 23.5657\*\*\*. (3) Response of  $\Delta \log[NPCF_t]$  to  $\Delta \log[NPJF_{t-k}]$ :  $\chi^2$  : 28.4600\*\*\* and to  $\Delta \log[NPIF_{t-k}]$ :  $\chi^2$  : 4.7057. Period: Aug 1884 to Dec 1903. Frequency: Monthly. Observations: 188. Optimal lag:  $k = 1, \dots, 4$ .

<sup>10</sup>Summary of vector auto regression of *YPJF* and *NPJF*: (1) Response of  $\Delta \log[YPJF_t]$  to  $\Delta \log[NPJF_{t-k}]$ :  $\chi^2$  : 17.3401\*\*\*. (2) Response of  $\Delta \log[NPJF_t]$  to  $\Delta \log[YPJF_{t-k}]$ :  $\chi^2$  : 8.2633\*\*. Period: Oct 1881 to Dec 1903. Frequency: Monthly. Observations: 273. Optimal lag:  $k = 1, 2$ .

<sup>11</sup>Summary of vector auto regression of *YPJR* and *NPJR*: (1) Response of  $\Delta \log[YPJR_t]$  to  $\Delta \log[NPJR_{t-k}]$ :  $\chi^2$  : 17.6766\*\*\*. (2) Response of  $\Delta \log[NPJR_t]$  to  $\Delta \log[YPJR_{t-k}]$ :  $\chi^2$  : 7.6698\*. Period: Feb 1881 to Dec 1903. Frequency: Monthly. Observations: 160. Optimal lag  $k = 1, 2, 3$ .

<sup>12</sup>Summary vector auto regression of *YPJF* and *YPJR*: (1) Response of  $\Delta \log[YPJF_t]$  to  $\Delta \log[YPJR_{t-k}]$ :  $\chi^2$  : 42.1866\*\*\*. (2) Response of  $\Delta \log[YPJR_t]$  to  $\Delta \log[YPJF_{t-k}]$ :  $\chi^{t-k}$ :  $\chi^2$  : 115.4118\*\*\*. Period: Jan 1880 to Dec 1903. Frequency: Weekly. Observations: 1,222. Optimal lag:  $k = 1, \dots, 8$ .

## 4 Rapid industrialization as with the efficient market

### 4.1 Dynamic responses of manufacturers to prices

Even if the prices at Yokohama reflected the opportunities at New York with sufficient promptness, unless production and shipment quickly responded to the prices, the efficiently formed prices would not themselves have provided the Japanese silk-reeling industry with any real opportunities. Focusing on this effect, we here examine the arrivals of raw silk from inland to the Yokohama market.

The lead-lag relation between the arrivals of filature raw silk ( $YAJF$ ), prices of filature raw silk ( $YPJF$ ), and stocks of filature raw silk ( $YSJF$ ) at Yokohama shows that the arrivals of filature raw silk at Yokohama followed not only stocks of filature raw silk but also the prices at Yokohama in Granger's terms,<sup>13</sup> indicating that the silk-reeling manufacturers responded not only to stocks at Yokohama but also to the prices. The impulse response of ( $YAJF$ ) to a factored shock in ( $YPJF$ ) indicates that silk-reeling manufacturers responded to a sudden rise in prices with a shipment within 2 weeks.<sup>14</sup> Silk-reeling manufacturers, who depended on bank loans for the purchases of cocoons, did not generally hold large inventories and shipped filature raw silk immediately upon produced. The increase in shipments as a response to a price increase seems to suggest an increase in production, which took several weeks.

### 4.2 Responses of farmers and local merchants

However, shipments of re-reels, raw silk hand-reeled by farmers, behaved differently. The arrivals of re-reels to the Yokohama market ( $YAJR$ ) strongly responded to shocks in the stocks at Yokohama ( $YSJR$ ), but only weakly to the prices at Yokohama ( $YPJR$ ). Accordingly,  $YSJR$  did not respond to  $YPJR$ .<sup>15</sup>

Thus, the silk-reeling manufacturers responded to the prices at Yokohama by increasing the purchases of cocoons and the production of raw silk, and farmers responded by selling more cocoons to manufacturers, not necessarily by producing more hand-reeled re-reels. The sales of cocoons acted as a means to take the opportunity of earning excessive returns provided

---

<sup>13</sup>Summary of vector auto regression of  $YAJF$ ,  $YPJF$  and  $YSJF$ : (1) Response of  $\Delta \log[YPJF_t]$  to  $\Delta \log[YAJF_{t-k}]$ :  $\chi^2$  : 12.9835\*\* and to  $\Delta \log[YSJF_{t-k}]$ :  $\chi^2$  : 7.3323. (2) Response of  $\Delta \log[YAJF_t]$  to  $\Delta \log[YPJF_{t-k}]$ :  $\chi^2$  : 21.4080\*\*\* and to  $\Delta \log[YSJF_{t-k}]$ :  $\chi^2$  : 21.1488\*\*\*. (3) Response of  $\Delta \log[YSJF_t]$  to  $\Delta \log[YPJF_{t-k}]$ :  $\chi^2$  : 13.4810\*\* and to  $\Delta \log[YAJF_{t-k}]$ :  $\chi^2$  : 34.3174\*\*\*. Period: Nov 1888 to Dec 1903. Frequency: Weekly. Observations: 757. Optimal lag:  $k = 1, \dots, 5$ .

<sup>14</sup>Impulse response of  $\Delta \log[YAJF_t]$  to Cholesky one standard deviation innovations: (1) to  $\Delta \log[YPJF_{t-k}]$ :  $k = 1$  : 0.0725,  $k = 2$  : 0.0091,  $k = 3$  : 0.0032,  $k = 4$  : 0.0034,  $k = 5$  : -0.0268. (2) to  $\Delta \log[YAJF_{t-k}]$ :  $k = 1$  : 0.5028,  $k = 2$  : -0.1619,  $k = 3$  : 0.0500,  $k = 4$  : 0.0198,  $k = 5$  : -0.0307. (3) to  $\Delta \log[YSJF_{t-k}]$ :  $k = 1$  : 0.0000,  $k = 2$  : 0.0466,  $k = 3$  : -0.0156,  $k = 4$  : 0.0480,  $k = 5$  : -0.0326. Frequency: Weekly.

<sup>15</sup>Summary of vector auto regression of  $YPJR$ ,  $YAJR$  and  $YSJR$ : (1) Response of  $\Delta \log[YPJR_t]$  to  $\Delta \log[YAJR_{t-k}]$ :  $\chi^2$  : 13.0188\*\* and to  $\Delta \log[YSJR_{t-k}]$ :  $\chi^2$  : 10.1105. (2) Response of  $\Delta \log[YAJR_t]$  to  $\Delta \log[YPJR_{t-k}]$ :  $\chi^2$  : 12.0273\* and to  $\Delta \log[YSJR_{t-k}]$ :  $\chi^2$  : 65.0160\*\*\*. (3) Response of  $\Delta \log[YSJR_t]$  to  $\Delta \log[YPJR_{t-k}]$ :  $\chi^2$  : 9.8012 and to  $\Delta \log[YAJR_{t-k}]$ :  $\chi^2$  : 46.6847\*\*\*. Period: Nov 1888 to Dec 1903. Frequency: Weekly. Observations: 755. Optimal lag:  $k = 1, \dots, 6$ .

by the efficient pricing at Yokohama. The findings and inference suggest that in particular the close link between the treaty port market and the inland cocoon market had a positive impact on the growth of the modern silk-reeling, followed by the organizational change in sericulture.

### **4.3 Domestic financial market**

It must be noted at the same time that the prompt responses to price changes on the part of the silk-reeling manufacturers would not have been sufficient. These responses needed to be accompanied by an integrated cocoon market and a functional financial market. Once prices at Yokohama rose, the manufacturers borrowed large amounts of money and subsequently went to purchase the raw material from the cocoon markets linked by the railways. By the early 1880s, the modern financial market had been developed under governmental support, and the modern silk-reeling industry was one of the industries that aggressively capitalized on the newly created modern financial market. The active purchases of cocoons brought some profits to sericultural farmers and stimulated cocoon cropping. Thus, the governmental effort was well-coordinated with the manufacturers' rapid response to Yokohama prices (Nakabayashi 2001; Nakabayashi, pp. 205-208).

## **5 Discussion: Long-term implications of imposed efficiency**

As indicated by the fact that Japanese hand-reeled raw silk lost to Chinese hand-reeled raw silk in the European market (**Figure 1**), most of Japan's advancement can be explained by the rapid introduction of modern technology instead of its tradition of sericulture (Ma 2004).

Then, we could further state that the modernization effort of the Japanese government was well-coordinated with that of the silk-reeling manufacturers and sericultural farmers through the treaty port imposed by the West. The efficient treaty port market established by the Western powers accelerated the modernization of Japan's silk-reeling industry, marking the beginning of the industrialization of Japan, with infrastructure such as trunk roads, railways, and telecommunications constructed by the government along with the establishment of an efficient financial market. Yokohama prices quickly reflected New York price information with a sufficient speed. The prices at Yokohama thus presented the silk-reeling manufacturers with the relevant information in the international market, and they were able to exploit the opportunities to earn excessive returns by capitalizing on the shortage of filature raw silk in the United States. The trading of cocoons was supported by the infrastructure and the financial system. Our evidence consistently shows that the strong relationship between local markets and the treaty port was critical to induce cocoon cropping farmers to leave hand-reeling and to supply cocoons as raw material to silk-reeling manufacturers. Such trading resulted in a reorganization of sericulture that progressed rapidly in the 1880s on the back of strong American demands for machine-reeled filature. The treaty port played a pivotal role as the gateway of the "empire effect" (Ferguson and Schularick 2006; Mitchener and Weidenmier 2008) for Japan, which was not annexed by Western countries, and through this gateway, the trade openness stimulated changes in local institutions (Faber and Gerritse 2012) with infrastructure designed

or supplied by the government.

Industrialization in depths induced by such returns was not the only possible outcome. Along with Japan, China was also forced to accept the institutional framework of treaty ports. While political competition with Western countries encouraged the Japanese government to embrace institutional spillovers that resulted in growth with decreasing inequalities and thus with stability in Japan, the geographical size and the weak but still working central government of China deterred innovation (Acemoglu and Robinson 2002; Chaudhry and Garner 2006). A facet of the outcome was still dominant “self-government” like “the law merchant of medieval Europe” in the late late nineteenth century (Reinsch 1900), which led to international opportunities not being effectively connected with inland development. Instead, Chinese merchants utilized treaty ports to establish an intra-Asian trading network. They interlinked treaty ports in East Asia and led intra-Asian trades (Furuta 2005).

The deeper effects of the treaty port system on hinterland manufacturing in Japan and the only mercantile effects in China were a mid-term difference between Japan and China facing the same imposed efficiency. Century-long implications are, however, mixed. While the domestic market integration in early modern China has been thought to be the origin of the rise of modern China (Keller and Shiue 2007), Jia (forthcoming) additionally found that since the reopening of China since the 1980s, ex-treaty port regions in Japan have enjoyed better performance, which indicates that the imposed treaty port system had a very long-term positive effect on market integration and development. On the other hand, Hoffmann and Okubo (2012) established that local financial markets of ex-silk-reeling regions are less integrated with the national market and this weaker integration exacerbated ill-functioning corporate financing in the regions during the recessionary period from the 1990s to the 2000s. That is, silk-reeling regions successfully adjusted to the new business opportunities shown at the Yokohama market, and locally and densely interlinked corporate financing organizations were formed. Then, stronger interdependence between local banks and local manufacturers in silk-reeling regions enabled the local banks therein to weather the Great Depression in the 1930s, when most local banks in other regions were bankrupted or merged with large city banks, and to entrench themselves against market integration led by the city banks thereafter. The deeper effects of imposed efficiency into on corporate financing more than one century ago have given a way to a very long-term negative effect on the market integration in the 1900s and 2000s because of path-dependence dating back to the 1880s.

On the other hand, China, given that the relatively superficial and mercantile effects of the treaty port system on the hinterland ensured smaller impact for industrialization one century ago, the side effects one century on too are accordingly smaller. One century later, the weak relationship between the treaty port and the hinterland left the better market integration. By contrast in Japan, the large adjustment to the impact of the treaty port system prompted very rapid industrialization one century ago, but the leftover of the adjustment now has a negative effect. Path-dependence could have both negative and positive effects in the very long-run given an institutional arrangement.

## Appendix: Data description

**Raw silk prices at the London market** The data source is *The Economist*, London. The London prices of Chinese Tsatlee (*LPCT*) and the London prices of Bengalee Cossimbuzar (*LPBC*) are  $I(1)$  processes. None of the 1st deference series is an  $I(1)$  process. The data are included in appendix table **Data A**.

**Raw silk prices, raw silk inventory, and foreign exchange rates at the Yokohama market** The primary data source is a weekly journal, *Tokyo Keizai Zasshi (Tokyo Economic Journal)*, Tokyo: Keizai Zasshi sha. A newspaper, *Chugai Bukka Shimpō (Domestic and foreign prices mail)*, Tokyo: Bukka Shimpōsha, is used to fill the several gaps in price series. Prices are arithmetic means of prices of all chops (trademarks) traded on the day when the data are collected in the category of filature raw silk (machine-reeled raw silk) and re-reels (hand-reeled raw silk). The Yokohama exchange rate of the US dollar (*YHEXUSD*) is an  $I(1)$  process. None of the 1st deference series is an  $I(1)$  process. The data are included in appendix tables **Data B-1** and **Data B-2**

**Raw silk prices at the New York market** The primary data source is a monthly journal, *The American Silk Journal*, New York: The Silk Association of America. Data from the Treasury Department of the United States, *Annual Report and Statements of the Chief of the Bureau of Statistics on the Foreign Commerce and Navigation, Immigration, and Tonnage of the United States*, Washington DC: Government Printing Office, are used to fill some gaps. The New York prices of Chinese filature raw silk (*NPCF*) and the New York prices of Chinese Tsatlee (*NPCT*) are  $I(1)$  processes. None of the 1st deference series is an  $I(1)$  process. The data are included in appendix table **Data C**.

## References

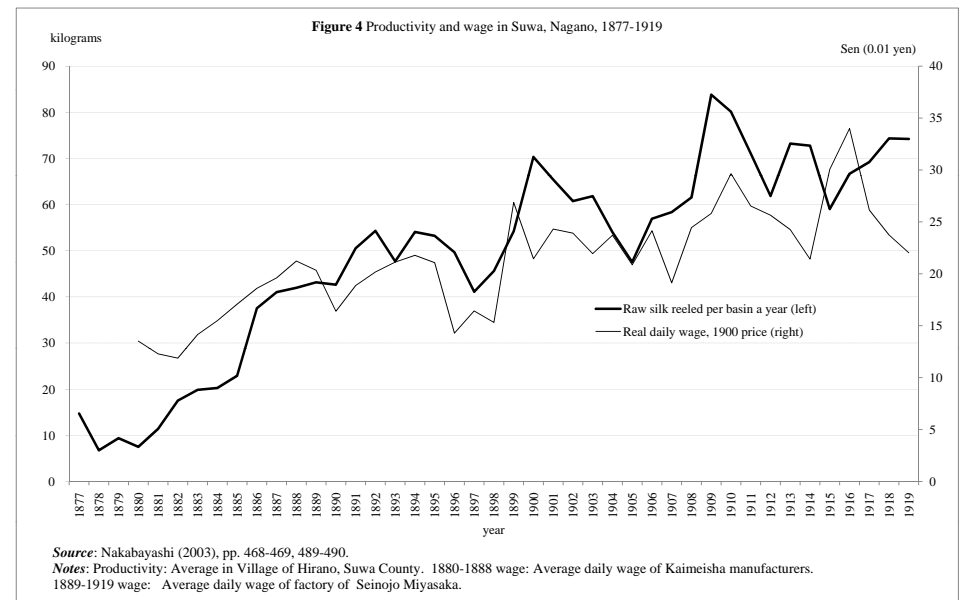
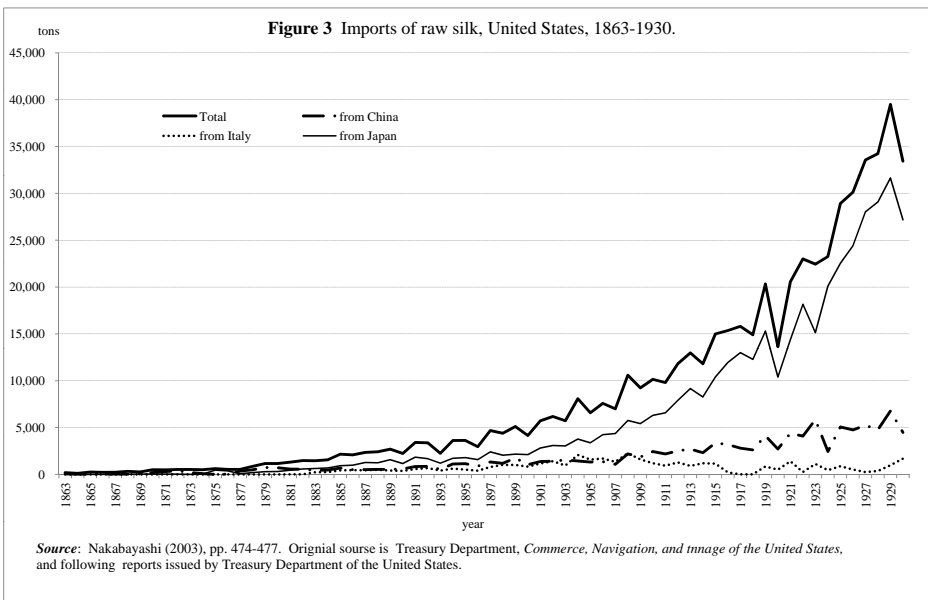
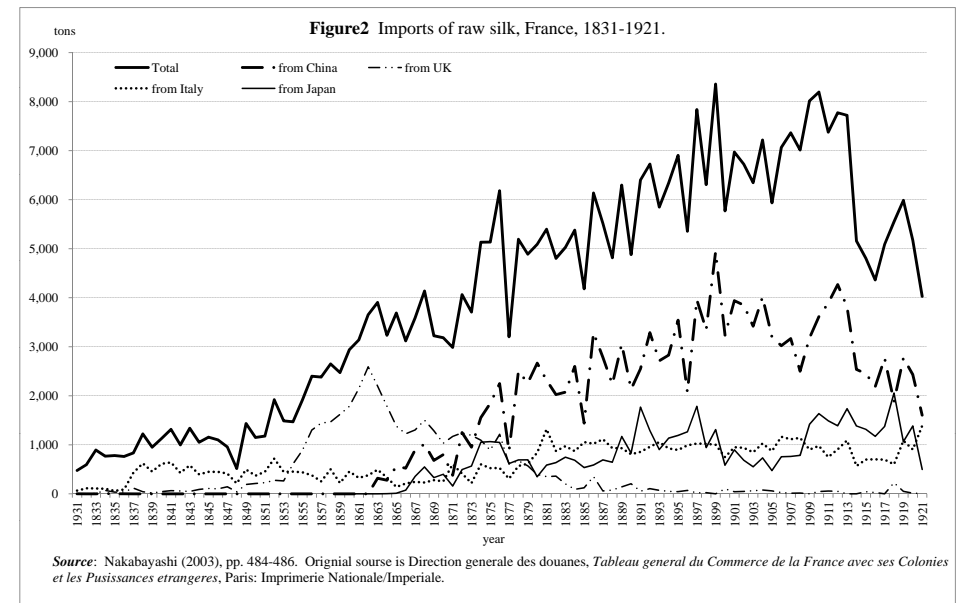
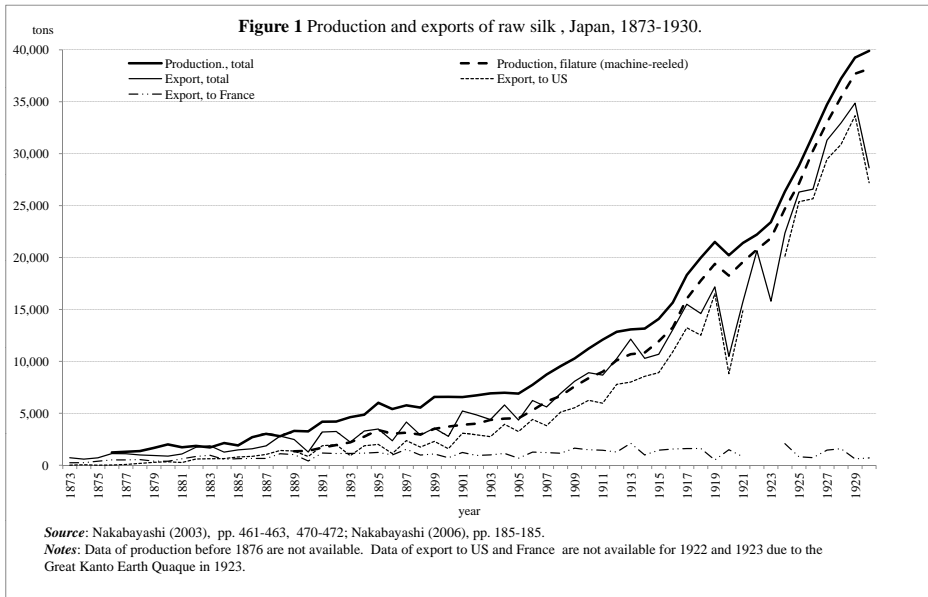
- Acemoglu, Daron and James A. Robinson, “The Political Economy of the Kuznets Curve,” *Review of Development Economics*, 2002, 6, 183–203.
- , Simon Johnson, and James A. Robinson, “The Colonial Origins of Comparative Development: An Empirical Investigation,” *The American Economic Review*, 2001, 91, 1369–1401.
- Bernhofen, Daniel M. and John C. Brown, “A Direct Test of Theory of Comparative Advantage: The Case of Japan,” *The Journal of Political Economy*, 2004, 112, 48–67.
- and ———, “An Empirical Assessment of the Comparative Advantage Gains from Trade: Evidence from Japan,” *The American Economic Review*, 2005, 95, 208–225.
- Chaudhry, Azama and Phillip Garner, “Political Competition Between Countries and Economic Growth,” *Review of Development Economics*, 2006, 10, 666–682.
- Cieřlik, Andrzej and Monika Tarsalewska, “External Openness and Economic Growth in Developing Countries,” *Review of Development Economics*, 2011, 15, 729–744.



- Clemens, Michael A. and Jeffrey G. Williamson**, “Wealth Bias in the First Global Capital Market Boom, 1870-1913,” *The Economic Journal*, Apr 2004, 114, 304–337.
- Cottureau, Alain**, “The Fate of Collective Manufactures in the Industrial World: The Silk Industries of Lyons and London, 1800–1850,” in Charles F. Sable and Jonathan Zeitlin, eds., *World of Possibilities: Flexibility and Mass Production in Western Industrialization*, Cambridge University Press Cambridge 1997, pp. 75–152.
- Duran, Leo**, *Raw Silk: A Practical Hand-book for the Buyer*, New York: Silk Publishing Company, 1913.
- Estevadeordal, Antoni, Brian Frantz, and Alan M. Taylor**, “The Rise and Fall of World Trade, 1870-1939,” *The Quarterly Journal of Economics*, 2003, 118, 359–407.
- Faber, Gerrit and Michiel Gerritse**, “Foreign Determinants of Local Institutions: Spatial Dependence and Openness,” *European Journal of Political Economy*, 2012, 28, 54–63.
- Federico, Giovanni**, *An Economic History of the Silk Industry, 1830–1930*, Cambridge: Cambridge University Press, 1997.
- Ferguson, Niall and Moritz Schularick**, “The Empire Effect: The Determinants of Country Risk in the First Age of Globalization, 1880-1913,” *The Journal of Economic History*, June 2006, 66, 283–312.
- Furuta, Kazuko**, “Kobe Seen as Part of the Shanghai Trading Network: The Role of Chinese Merchants in the Re-export of Cotton Manufactures to Japan,” in Kaoru Sugihara, ed., *Japan, China and the Growth of the Asian International Economy, 1850–1949*, Oxford University Press Oxford 2005, pp. 23–48.
- Hall, Robert E. and Charles I. Jones**, “Why do Some Countries Produce So Much More Output Per Worker Than Others?,” *The Quarterly Journal of Economics*, 1999, 114, 83–116.
- Hoffmann, Mathias and Toshihiro Okubo**, “By a Silken Thread: Regional Banking Integration and Pathways to Financial Development in Japan’s Great Recession,” 2012. The Research Institute of Economy, Trade and Industry, RIETI Discussion Paper Series, 12-E-026.
- Hsiao, Frank S.T. and Mei-Chu W. Hsiao**, “Catching Up and Convergence: Long-run Growth in East Asia,” *Review of Development Economics*, 2004, 8, 223–236.
- Huber, Richard J**, “Effect on Prices of Japan’s Entry into World Commerce After 1858,” *The Journal of Political Economy*, May/June 1971, 79, 614–628.
- Jia, Ruixue**, “The Legacies of Forced Freedom: China’s Treaty Ports,” *Review of Economics and Statistics*, forthcoming.

- Keller, Wolfgang and Carl H. Shiue**, “Market Integration and Economic Development: A Long-run Comparison,” *Review of Development Economics*, 2007, 11, 107–123.
- Lewis, Arthur W.**, “Economic Development with Unlimited Supplies of Labour,” *The Manchester School of Economic and Social Studies*, 1954, 22, 139–191.
- López-Córdova, J. Ernesto and Christopher M. Meissner**, “Exchange-rate Regimes and International Trade: Evidence from the Classical Gold Standard Era,” *The American Economic Review*, 2003, 93, 344–353.
- Ma, Debin**, “The Modern Silk Road: The Global Raw-silk Market, 1850-1930,” *The Journal of Economic History*, 1996, 56, 330–355.
- , “Why Japan, Not China, was the First to Develop in East Asia: Lessons from Sericulture, 1850-1937,” *Economic Development and Cultural Change*, 2004, 56, 369–394.
- Mauro, Paolo, Nathan Sussman, and Yishay Yafeh**, “Emerging Market Spreads: Then versus Now,” *The Quarterly Journal of Economics*, 2002, 117, 695–733.
- Mitchener, Kris James and Marc Weidenmier**, “Trade and Empire,” *The Economic Journal*, 2008, 118 (533), 1805–1834.
- Nakabayashi, Masaki**, “The Rise of Modern Silk Reeling Industry and Financial Institutions: The Formation of the Institution of Providing Advances on Documentary Bills,” *Japanese Yearbook on Business History*, 2001, 18.
- , *Kindai Shihonshugi no Soshiki: Seishigyo no Hatten ni Okeru Torihiki no Tochi to Seisan no Kozo (An Organization in Modern Capitalism: The Governance of Trade and the System of Production in the Development of the Silk Reeling Industry)*, Tokyo: The University of Tokyo Press, 2003.
- , “The Rise of a Factory Industry: Silk reeling in Suwa, Nagano,” in Masayuki Tanimoto, ed., *The Role of Traditional Factors in Japanese Industrialization: 1880–1920*, Oxford University Press Oxford 2006, pp. 183–216.
- North, Douglass C.**, *Understanding the Process of Economic Change*, Princeton: Princeton University Press, 2005.
- O’Brien, Patrick Karl**, “The pax Britannica and American Hegemony: Precedent, Antecedent or Just Another History?,” in Patrick Karl O’Brien and Armand Classe Burlington, eds., *Two Hegemonies: Britain 1846–1914 and the United States 1941–2001*, Ashgate Aldershot 2002.
- Parente, Stephen L. and Edward C. Prescott**, “Barriers to Technology Adoption and Development,” *The Journal of Political Economy*, 1994, 102, 298–321.

- Price, Gregory N.**, “Economic Growth in a Cross-section of Nonindustrial Countries: Does Colonial Heritage Matter for Africa?,” *Review of Development Economics*, 2003, 7, 478–495.
- Rawley, Ratan C.**, *The Silk Industry and Trade*, London: P. S. King and Son, Ltd., 1919.
- Reinsch, Paul S.**, “Cultural Factors in the Chinese crisis,” *Annals of the American Academy of Political and Social Science*, 1900, 16, 91–101.
- Wyckoff, WM. C.**, *The Silk Goods of America: A Brief Account of the Recent Improvements and Advances of Silk Manufacture in the United States, published under the Auspices of the Silk Association of America*, Washington DC: D. Van Nostrand, Publisher, 1879.
- , “Report on the silk manufacturing industry of the United States,” in Census Office Department of the Interior, ed., *Report on the Manufactures of the United States at the Tenth Census (June 1, 1880)*, Government Printing Office Washington DC 1883.



**Data A** Montly series of raw silk prices at the London Market.

Period	Chinese	Bengalee	Italian	Japanese
Itmes	Tsatlee,	Cossimbuza	Lobardy,	Mybashi,
yyyyymm	average:	r, average:	average:	average:
	<i>LPCT</i>	<i>LPBC</i>	<i>LPIL</i>	<i>LPJM</i>
	pence	pence	pence	pence
184407	23.00	14.25		
184408	23.00	14.25		
184409	23.00	14.25		
184410	23.00	14.25		
184411	23.00	14.25		
184412	23.00	14.25		
184501	19.00	13.00	25.00	
184502	18.50	13.00	25.00	
184503	18.50	13.00	24.50	
184504	17.50	12.50	24.50	
184505	17.50	12.50	23.50	
184506	17.00	12.00	23.50	
184507	19.25	13.25	26.00	
184508	19.25	13.25	27.00	
184509	19.25	13.25	27.00	
184510	20.25	13.00	26.00	
184511	18.00	12.50	26.00	
184512	18.00	12.50	25.50	
184601	17.25	12.50	24.50	
184602	16.25	12.50	24.50	
184603	16.50	11.75	24.50	
184604	15.25	11.75	24.00	
184605	15.25	11.75	24.00	
184606	16.50	11.75	23.50	
184607	16.75	11.75	25.00	
184608	16.75	11.75	24.50	
184609	16.75	11.75	24.00	
184610	16.75	11.75	23.00	
184611	15.75	11.50	22.00	
184612	15.75	11.50	22.00	
184701	15.50	11.00	22.00	
184702	15.50	11.00	22.00	
184703	13.25	9.75	21.00	
184704	13.25	9.75	21.00	
184705	14.25	9.75	21.00	
184706	14.25	9.75	21.00	
184707	14.50	9.75	20.00	
184708	14.50	9.75	20.00	
184709	13.50	9.75	20.00	
184710	13.50	9.75	19.00	
184711	13.25	10.75	19.00	
184712	13.25	10.75	19.00	
184801	13.50	10.00	19.00	
184802	13.75	11.00	19.00	
184803	12.75	11.00	19.00	
184804	12.50	11.00	19.00	
184805	12.50	11.00	19.00	
184806	12.50	11.00	17.00	
184807	12.50	9.50	15.00	
184808	12.50	9.50	15.00	
184809	12.50	9.50	14.00	
184810	13.25	9.50	14.00	
184811	14.75	11.13	15.00	
184812	13.25	10.75	19.00	
184901	15.00	11.00	16.00	
184902	15.00	10.75	16.00	

184903	15.25	10.25	16.00
184904	14.50	10.25	16.00
184905	14.75	10.25	16.00
184906	14.75	10.25	16.00
184907	14.75	10.67	16.00
184908	15.00	10.25	18.50
184909	15.25	10.25	19.75
184910	15.50	10.50	19.75
184911	16.75	10.75	20.00
184912	16.75	11.00	21.00
185001	17.00	11.25	20.75
185002	17.25	11.75	20.50
185003	17.25	11.75	20.50
185004	18.00	11.75	20.50
185005	17.75	11.50	19.00
185006	18.00	11.17	20.75
185007	18.00	11.50	22.50
185008	19.75	12.00	23.50
185009	19.75	13.00	25.50
185010	19.75	13.00	25.00
185011	19.75	13.00	24.50
185012	20.00	13.25	24.00
185101	20.25	13.50	24.50
185102	20.25	13.50	24.50
185103	20.25	13.50	24.50
185104	20.25	13.50	24.50
185105	20.25	13.50	24.50
185106	20.25	13.50	24.50
185107	18.50	12.50	23.00
185108	18.50	12.50	23.00
185109	18.50	12.50	23.00
185110	17.25	12.58	23.00
185111	17.25	12.58	23.00
185112	17.00	12.00	20.25
185201	17.00	12.00	20.25
185202	17.00	12.00	20.25
185203	17.00	12.75	21.50
185204	18.50	12.75	21.50
185205	18.50	12.75	23.00
185206	18.50	12.75	23.00
185207	18.50	12.75	23.00
185208	18.50	12.75	23.00
185209	18.50	12.75	23.00
185210	18.50	12.75	23.00
185211	18.50	12.75	23.00
185212	18.50	12.75	23.00
185301	18.25	12.75	23.00
185302	18.50	12.75	23.00
185303	17.50	13.75	23.75
185304	17.50	13.75	23.75
185305	17.50	13.75	23.75
185306	17.50	13.75	24.25
185307	17.50	13.75	23.75
185308	17.50	13.75	23.75
185309	19.50	15.25	26.75
185310	19.50	15.25	26.75
185311	17.25	14.50	24.50
185312	17.25	14.42	24.50
185401	17.50	14.50	
185402	17.50	14.50	24.00
185403	17.00	14.25	24.00
185404	16.00	12.75	21.00
185405	15.50	14.00	
185406	14.63	13.00	

185407	14.50	13.00	
185408	15.00	13.00	
185409	14.75	12.50	
185410	16.50	12.00	
185411	15.00	12.50	
185412	16.50	12.50	
185501	15.75	12.50	
185502	15.25	12.00	
185503	14.75	11.75	
185504	14.75	11.75	
185505	15.00	11.75	21.50
185506	15.50	11.75	21.50
185507	16.00	12.25	21.50
185508	16.25	12.25	22.50
185509	16.25	13.00	22.50
185510	18.00	13.00	22.50
185511	17.63	13.50	22.50
185512	16.75	13.50	22.50
185601	17.00	13.50	25.25
185602	18.25	13.25	26.00
185603	20.50	14.50	28.50
185604	21.00	14.50	28.50
185605	20.50	16.00	27.50
185606	22.63	12.75	27.50
185607	23.50	17.00	30.00
185608	25.00	18.50	30.00
185609	24.50	21.50	37.00
185610	21.50	19.25	38.50
185611	22.25	20.25	38.50
185612	22.25	20.25	38.50
185701	25.75	20.50	38.50
185702	25.25	23.00	38.50
185703	25.50	23.50	38.50
185704	25.00	23.50	38.00
185705	25.50	23.50	37.50
185706	26.50	23.50	39.00
185707	26.50	23.50	39.00
185708	26.00	23.50	42.00
185709	26.00	23.50	42.00
185710	20.92	23.00	38.50
185711	19.50	20.25	34.50
185712	17.75	18.25	34.50
185801	19.25	17.50	25.00
185802	19.50	16.50	29.00
185803	19.25	16.50	29.00
185804	18.75	16.50	26.50
185805	18.00	16.50	26.50
185806	17.50	15.00	26.50
185807	17.50	16.25	25.00
185808	17.50	16.25	26.00
185809	19.50	16.75	29.00
185810	20.25	16.75	29.00
185811	19.75	16.75	29.00
185812	19.75	16.00	29.50
185901	20.50	16.00	29.50
185902	20.50	16.00	29.50
185903	20.50	16.00	29.50
185904	20.50	16.00	29.50
185905	20.00	16.00	29.50
185906	20.00	16.25	29.50
185907	20.75	16.50	34.00
185908	20.75	16.50	34.00
185909	21.25	16.50	34.00
185910	22.75	16.50	34.00

185911	22.75	16.50	34.00
185912	23.50	17.75	39.50
186001	23.50	17.75	39.50
186002	23.50	17.75	39.50
186003	23.50	18.50	39.00
186004	23.50	18.50	39.00
186005	23.25	18.50	39.00
186006	23.25	18.50	39.00
186007	23.25	18.50	39.00
186008	23.25	18.50	39.00
186009	23.25	18.50	39.00
186010	23.25	18.50	39.00
186011	23.25	18.50	39.00
186012	23.25	18.50	39.00
186101	22.25	18.50	33.50
186102	19.88	16.00	31.50
186103	19.50	17.00	31.50
186104	19.75	17.00	31.50
186105	20.75	17.00	31.50
186106	20.25	15.50	31.50
186107	20.25	17.00	29.50
186108	19.75	17.00	27.50
186109	20.00	16.50	27.00
186110	20.00	16.50	27.00
186111	20.00	16.50	27.00
186112	19.25	16.00	25.25
186201	19.00	15.50	24.00
186202	19.75	15.50	24.00
186203	21.00	15.50	25.00
186204	22.00	16.00	26.00
186205	21.50	16.75	25.00
186206	21.50	17.25	26.00
186207	22.00	17.25	29.00
186208	22.00	17.25	29.00
186209	20.50	17.25	29.00
186210	21.25	17.00	29.00
186211	21.50	16.75	29.00
186212	22.00	16.75	29.00
186301	22.00	16.75	29.00
186302	22.75	18.50	29.00
186303	22.50	16.50	29.00
186304	22.25	16.75	29.00
186305	21.75	16.75	28.50
186306	20.88	17.50	28.50
186307	21.25	16.75	26.50
186308	21.25	16.75	26.50
186309	20.50	16.25	26.50
186310	22.00	18.25	26.50
186311	22.00	18.25	26.50
186312	21.00	16.00	24.75
186401	21.00	16.00	24.75
186402	20.38	16.75	24.75
186403	20.75	15.75	23.50
186404	20.75	15.75	23.50
186405	21.00	15.25	23.50
186406	23.25	18.50	23.50
186407	22.75	16.75	23.50
186408	23.75	17.00	26.00
186409	24.75	18.00	26.50
186410	25.00	19.50	26.50
186411	24.75	18.00	30.50
186412	24.75	18.00	32.00
186501	24.75	18.00	32.00
186502	25.75	17.75	32.00



186503	25.50	17.75	32.00
186504	25.75	18.25	32.00
186505	26.25	19.00	
186506	29.25	20.50	
186507	30.75	24.50	
186508	29.25	24.50	
186509	27.75	23.50	39.00
186510	27.75	21.00	39.00
186511	29.25	22.50	39.50
186512	29.25	22.50	39.00
186601	23.75	23.00	39.50
186602	28.50	22.25	39.50
186603	28.50	23.00	39.50
186604	27.75	22.50	37.50
186605	27.75	22.50	37.50
186606	24.00	22.50	37.50
186607	26.00	21.00	32.50
186608	27.00	22.00	38.00
186609	29.50	22.00	38.00
186610	30.75	20.50	38.00
186611	30.75	20.50	38.00
186612	30.25	21.00	38.00
186701	30.25	21.00	38.00
186702	30.25	21.00	38.00
186703	30.25	21.00	38.00
186704	28.25	21.00	38.00
186705	28.25	21.00	38.00
186706	27.79	20.25	38.00
186707	27.79	20.25	38.00
186708	26.25	20.25	38.00
186709	26.75	19.75	
186710	26.75	19.75	
186711	26.75	19.75	
186712	26.00	18.50	38.50
186801	26.00	18.50	38.50
186802	24.75	18.00	38.50
186803	24.75	18.00	38.50
186804	24.50	18.00	38.50
186805	25.25	19.50	38.50
186806	25.25	19.50	41.00
186807	26.75	21.25	
186808	26.25	21.25	49.50
186809	26.50	21.25	48.00
186810	25.54	19.75	48.00
186811	26.50	21.00	48.00
186812	26.00	21.00	48.00
186901	24.25	20.25	46.00
186902	24.25	21.75	42.00
186903	26.25	22.25	42.00
186904	26.25	22.25	42.00
186905	25.00	22.25	42.00
186906	24.83	20.50	42.00
186907	24.25	21.50	42.00
186908	24.00	22.00	39.00
186909	26.00	19.75	35.50
186910	24.25	21.00	35.00
186911	24.25	21.00	35.00
186912	26.50	20.25	35.00
187001	27.50	22.75	38.25
187002	27.25	24.00	39.00
187003	28.50	23.50	39.00
187004	28.50	23.50	39.00
187005	29.00	23.50	40.50
187006	28.08	23.25	40.50

187007	28.08	23.25	40.50	
187008	28.25	23.00	40.50	
187009	28.25	23.00	40.50	
187010	25.75	22.00	33.00	
187011	27.50	22.50	33.00	
187012	27.50	21.50	32.00	
187101	27.50	20.00	31.50	
187102	28.50	19.75	29.50	
187103	27.00	20.00	29.50	
187104	27.00	21.25	29.00	
187105	27.00	21.00	27.50	
187106	26.50	20.25	27.50	
187107	27.00	20.75	28.00	
187108	27.75	20.75	28.00	
187109	27.00	20.75	28.00	
187110	25.75	20.00	30.00	
187111	27.00	20.00	30.00	
187112	27.00	19.75	30.00	
187201	27.00	19.25	30.00	
187202	27.04	19.00	30.00	
187203	27.00	19.75	30.00	
187204	27.00	19.75	30.00	
187205	26.50	20.25	30.00	
187206	27.04	19.00	30.00	
187207	27.25	20.75	34.00	
187208	27.25	20.75	34.00	
187209	27.25	20.25	34.00	
187210	26.00	17.79	34.00	
187211	26.00	19.00	34.00	
187212	26.25	19.50	34.00	
187301	26.00	19.75	34.00	
187302	24.75	19.50	34.00	
187303	24.50	18.50	34.00	
187304	23.75	18.50	34.00	
187305	21.75	18.50	34.00	
187306	22.00	18.50	34.00	
187307	20.25	18.50	34.00	
187308	20.88	17.75	32.00	
187309	19.63	17.25	32.00	
187310	19.50	17.25	32.00	
187311	19.50	17.00	32.00	
187312	19.50	17.00	32.00	
187401	18.75	16.75	29.00	
187402	18.50	16.75	29.00	
187403	18.00	16.75	29.00	21.50
187404	18.00	16.75	29.00	21.50
187405	18.00	16.75	29.00	21.50
187406	17.00	15.50	29.00	21.50
187407	16.25	14.25	29.00	20.50
187408	15.50	14.00	26.50	19.75
187409	15.13	13.25	26.50	17.33
187410	16.00	13.25	26.00	17.25
187411	16.00	13.50	26.00	17.25
187412	15.75	13.25	26.00	17.25
187501	16.00	13.00	26.00	17.25
187502	16.13	13.00	26.00	17.25
187503	16.13	13.00	26.00	17.25
187504	16.13	12.00	26.00	16.25
187505	16.13	12.00	26.00	16.25
187506	15.88	11.00	26.00	16.25
187507	15.88	11.00	26.00	16.25
187508	15.50	10.00	22.50	15.50
187509	15.50	10.00	22.50	15.50
187510	15.50	8.83	22.50	15.50

187511	15.50	10.25	22.50	15.00
187512	15.38	10.00	17.00	14.75
187601	15.38	10.00	17.00	14.75
187602	15.75	10.00	17.00	14.75
187603	15.75	10.00	17.00	14.75
187604	15.75	11.00	17.00	14.75
187605	15.38	11.25	17.00	15.25
187606	15.38	12.00	19.00	15.50
187607	22.50	13.25	22.00	19.00
187608	22.00	19.50	25.00	25.50
187609	26.75	21.75	27.00	31.00
187610	26.75	25.25	37.00	33.00
187611	26.00	23.75	37.00	31.50
187612	23.25	21.00	35.00	27.00
187701	25.50	21.50		29.75
187702	23.25	21.50		28.25
187703	22.25	17.58		28.25
187704	22.00	18.75		26.00
187705	20.00	17.25		24.00
187706	20.00	17.75		22.50
187707	18.25	17.00		20.50
187708	18.25	17.00		18.75
187709	18.25	17.00		17.50
187710	17.75	16.00		17.00
187711	18.25	16.75		17.00
187712	18.75	16.50		16.50
187801	18.75	16.50		17.25
187802	18.25	16.50		16.50
187803	17.75	16.00		16.75
187804	16.75	16.00		16.75
187805	16.75	16.00		16.75
187806	17.50	16.00		17.50
187807	16.50	15.50		17.50
187808	17.25	15.00		17.25
187809	17.25	14.75		17.00
187810	17.00	13.75		17.50
187811	16.25	13.00		16.50
187812	16.00	13.00		16.25
187901	15.75	13.00		16.00
187902	15.75	12.50		16.00
187903	15.50	12.38		15.00
187904	14.50	12.38		15.25
187905	17.75	17.50		20.50
187906	18.25	15.25		20.25
187907	16.00	15.00		18.25
187908	16.00	15.25		19.00
187909	15.75	15.00		18.50
187910	16.50	16.00		19.50
187911	17.25	16.25		20.00
187912	16.50	15.50		19.50
188001	18.00	15.50		
188002	18.00	15.75		19.50
188003	18.00	16.00		19.50
188004	18.00	16.00		19.50
188005	18.00	16.00		19.50
188006	16.75	15.75		15.13
188007	16.75	15.50		16.50
188008	16.75	15.00		16.25
188009	16.25	15.00		16.00
188010	16.25	15.00		16.00
188011	16.25	15.00		15.75
188012	16.25	15.00		15.75
188101	16.25	15.00		15.75
188102	16.25	15.00		16.25

188103	16.25	15.25	17.00
188104	16.25	15.25	17.00
188105	16.25	15.25	17.00
188106	16.75	15.50	17.00
188107	17.75	15.50	17.50
188108	17.75	15.50	17.75
188109	18.00	15.50	18.00
188110	18.75	15.50	18.17
188111	18.75	15.50	19.00
188112	19.00	15.63	18.50
188201	19.00	15.63	18.00
188202	19.00	15.50	17.75
188203	19.00	15.50	17.25
188204	18.50	16.25	17.25
188205	16.00	15.75	17.50
188206	15.63	15.75	17.50
188207	15.63	15.75	17.50
188208	14.38	15.88	16.75
188209	14.63	15.75	16.50
188210	14.46	15.17	16.00
188211	14.50	15.75	16.50
188212	14.50	15.75	16.00
188301	14.50	15.75	16.00
188302	14.50	15.75	15.50
188303	14.50	15.25	15.50
188304	14.50	15.00	15.75
188305	14.50	14.75	15.75
188306	14.50	14.75	15.75
188307	15.50	12.50	15.75
188308	15.13	15.00	15.75
188309	15.13	15.00	15.75
188310	15.00	13.75	15.75
188311	15.00	13.75	15.75
188312	14.50	13.38	15.00
188401	14.50	13.38	15.00
188402	14.88	13.38	15.00
188403	14.88	13.38	15.00
188404	14.63	13.38	15.00
188405	14.63	13.50	15.25
188406	14.25	13.38	14.50
188407	13.75	13.00	14.50
188408	12.75	13.00	14.25
188409	12.75	10.75	14.25
188410	12.50	10.75	14.25
188411	12.25	10.75	14.25
188412	11.75	10.25	14.00
188501	11.75	10.25	14.00
188502	12.00	9.75	14.00
188503	12.00	9.75	14.00
188504	12.00	10.00	14.00
188505	12.00	10.50	14.00
188506	12.00	10.00	14.25
188507	12.00	10.00	14.25
188508	10.88	9.75	13.13
188509	11.00	9.75	13.13
188510	11.00	9.75	13.13
188511	11.00	9.75	13.13
188512	12.00	10.75	13.25
188601	12.63	11.00	13.75
188602	12.50	12.25	15.00
188603	12.50	12.00	15.00
188604	12.50	12.00	15.00
188605	12.50	12.00	15.00
188606	12.50	12.13	14.25

188607	12.50	12.13		14.25
188608	12.50	12.75		14.25
188609	12.50	14.75		15.00
188610	12.50	14.75		15.00
188611	12.50	14.75		15.00
188612	13.50	15.00		16.75
188701	14.00	15.00		16.75
188702	14.50	15.50		17.25
188703	14.50	15.50		17.25
188704	14.25	15.00		16.25
188705	14.25	15.00		16.25
188706	14.00	14.75		15.25
188707	13.50	14.75		16.25
188708	13.50	14.00		15.25
188709	13.50	14.00		14.25
188710	13.50	13.75		14.50
188711	13.50	13.75		14.50
188712	13.00	13.50		14.75
188801	13.00	13.50		13.25
188802	13.00	13.50		13.50
188803	12.75	13.00		12.75
188804	12.75	12.50		12.75
188805	12.50	12.50		12.75
188806	12.50	12.50		12.25
188807	12.50	12.50		12.25
188808	12.50	12.50		12.25
188809	12.50	12.75		12.50
188810	12.50	12.75		14.50
188811	12.63	12.75		13.50
188812	13.63	12.63		12.50
188901	13.63	12.63		12.50
188902	13.50	13.88		12.50
188903	13.50	13.50		13.25
188904	13.25	13.50		13.00
188905	13.00	13.00	17.75	13.00
188906	12.50	12.75	17.75	12.75
188907	12.50	12.75	17.75	12.88
188908	12.50	13.13	19.00	13.13
188909	12.50	13.13	19.00	13.25
188910	12.50	13.13	19.75	13.25
188911	12.50	13.13	19.75	13.25
188912	13.00	13.13	19.75	15.25
189001	13.00	13.13	20.78	15.88
189002	13.25		20.75	15.75
189003	13.25		20.75	15.75
189004	13.25	13.50	20.75	15.75
189005	13.25		20.75	15.50
189006	13.25		20.75	15.50
189007	13.25	14.00	20.75	15.50
189008	13.25	14.25	20.75	15.50
189009	13.75	14.25	20.75	15.50
189010	12.83	14.25	20.75	16.13
189011	12.83	14.38	20.75	16.13
189012	13.50	14.63	20.75	15.00
189101	13.50	15.00	20.00	15.00
189102	13.50		20.00	15.00
189103	13.50	14.25	20.00	15.00
189104	13.25	14.25	20.00	15.50
189105	13.25	14.25	18.00	15.00
189106	13.25	14.25	18.00	15.00
189107	13.25	14.25	18.00	15.00
189108	12.38	13.00	18.00	14.75
189109	12.38	13.00	18.17	14.13
189110	12.38	13.00	18.17	14.13

189111	12.38	13.00	18.17	14.13
189112	12.38	13.00	18.17	14.13
189201	11.88	13.00	18.00	14.13
189202	11.75		18.00	13.50
189203	11.75		18.00	13.50
189204	11.75		18.00	13.50
189205	11.25		15.00	13.50
189206	11.25	12.25	15.00	12.25
189207	11.25	12.00	15.00	13.00
189208	11.25	12.00	15.00	13.00
189209	11.25	12.00	15.00	13.00
189210	11.75	11.88	18.00	14.75
189211	11.75	11.88	18.00	13.75
189212	11.75	11.88	18.00	13.75
189301	11.75	12.38	18.00	15.00
189302	11.75	12.38	18.00	15.00
189303	12.50	15.00	21.00	16.00
189304	12.75	15.25	23.00	15.50
189305	12.75	15.25	23.00	15.50
189306	11.46	15.00	23.00	15.50
189307	11.75	11.00	21.00	15.50
189308	11.75	11.00	21.00	
189309	11.50	13.75	17.00	15.00
189310	10.79	13.88	16.00	15.00
189311	10.79	13.88	16.00	15.00
189312	10.50	12.75	16.00	13.25
189401	10.50	12.75	16.00	13.25
189402	11.33	12.50	15.00	13.25
189403	9.50	11.13	15.00	13.25
189404	9.50	11.13	14.00	13.25
189405	9.50	11.00	14.00	13.25
189406	9.50	11.00	14.00	12.50
189407	9.00	10.75	14.00	13.00
189408	9.00	10.25	14.00	13.00
189409	9.00	10.00	14.50	13.00
189410	9.00	10.00	14.50	13.00
189411	9.00	9.75	14.50	13.50
189412	8.75	9.75	14.00	13.00
189501	8.75	9.75	14.00	13.00
189502	8.75	9.38	13.00	12.50
189503	8.75	9.25	13.00	12.50
189504	8.75	9.25	13.50	12.25
189505	8.75	9.25	13.50	12.00
189506	8.75	9.38	14.00	13.00
189507	9.25	9.38	15.50	14.00
189508	9.38	9.75	15.50	14.00
189509	9.75	9.75	16.50	14.50
189510	9.88	9.75	16.50	14.50
189511	9.88	9.75	16.50	14.50
189512	9.88	9.88	16.50	14.63

---

*Source : The Economist .*

**Data B-1** Weekly series of prices, stocks, arrivals of raw silk and foreign exchange rates at the Yokohama market.

Period yyyy/mm/dd	Itmes						Foreign exchnage rates: <i>YEXUSD</i> Japanese yen per US dollar
	Prices of Japanese Filature, average: <i>vn m</i> Mexican dollars = Japanese yen	Arrival of Japanese Fialature at Yokohama ko (1 ko =33.75 kilograms)	Stock of Japanese Fialture at Yokohama ko (1 ko =33.75 kilograms)	Prices of Japanese Re-reels, average: <i>vn m</i> Mexican dollars = Japanese yen	Arrival of Japanese Re-reels at Yokohama ko (1 ko =33.75 kilograms)	Stock of Japanese Re-reels at Yokohama ko (1 ko =33.75 kilograms)	
18800107	726.7			697.5			90.00
18800117	745.0			712.5			90.25
18800124	745.0			712.5			91.00
18800131	745.0			716.7			91.00
18800204	762.5			716.7			91.00
18800207	762.5			716.7			90.50
18800218	765.0			717.5			89.75
18800228	720.0			670.0			89.75
18800303	765.0			670.0			89.75
18800306	765.0			735.0			89.50
18800313	765.0			735.0			90.00
18800319	765.0			735.0			90.50
18800327	765.0			735.0			91.00
18800410	716.7			720.0			91.25
18800414	716.7			720.0			93.00
18800421	716.7			720.0			94.00
18800428	716.7			720.0			95.00
18800505	656.7			680.0			95.00
18800515	656.7			680.0			94.75
18800520	643.3			680.0			93.00
18800526	705.0			680.0			93.00
18800605	620.0			650.0			92.50
18800609	620.0			650.0			91.00
18800616	600.0			650.0			90.25
18800623	600.0			650.0			91.50
18800703	600.0			650.0			91.00
18800710	600.0			650.0			90.38
18800714	600.0			650.0			90.75
18800721	602.5			605.0			90.25
18800728	650.0			610.0			90.50
18800804	615.0			610.0			90.50
18800811	615.0			610.0			90.50
18800816	628.3			610.0			90.25
18800821	630.0			602.5			90.25
18800828	612.5			605.0			90.00
18800905	615.0			600.0			90.25
18800911	612.5			600.0			90.25
18800918	612.5			590.0			90.25
18800925	601.3			580.0			90.00
18801002	595.0			580.0			90.00
18801009	602.5			580.0			90.50
18801016	591.3			560.0			90.25
18801025	575.0			555.0			90.25
18801030	575.0			555.0			90.25
18801106	577.5			555.0			90.00
18801115	550.0			530.0			90.00
18801120	573.3			530.0			89.75
18801127	583.8			525.0			89.50
18801205	611.7			585.0			89.25
18801215	600.0			565.0			89.25
18801222	600.0			565.0			89.25

18801228	598.8	545.0	89.25
18810104	598.8	572.5	89.25
18810110	598.8	555.0	89.25
18810119	605.0	575.0	89.00
18810129	606.4	577.5	89.00
18810205	605.0	575.0	88.50
18810212	602.9	575.0	88.50
18810216	600.0	580.0	88.75
18810226	645.0	595.0	89.50
18810302	615.0	595.0	90.50
18810309	655.0	595.0	89.50
18810312	637.5	640.0	89.75
18810319	640.0	600.0	89.75
18810330	648.8	603.3	90.00
18810406	648.8	603.3	90.25
18810409	660.0	555.0	90.25
18810416	626.7	555.0	90.50
18810420	622.5	582.0	90.50
18810504	640.0	582.0	90.50
18810511	625.0	610.0	90.50
18810518	625.0	610.0	90.50
18810525	625.0	595.0	90.50
18810601	645.0	615.0	90.00
18810608	625.6	625.0	90.75
18810615	615.8	602.5	90.25
18810622	656.0	625.0	90.25
18810625	651.3	625.0	90.25
18810709	690.0	625.0	91.00
18810716	687.9	625.0	91.00
18810723	691.5	625.0	90.25
18810730	683.3	625.0	89.75
18810810	687.5	675.0	89.50
18810817	682.5	675.0	89.50
18810821	682.5	675.0	89.50
18810827	693.8	680.0	89.75
18810831	674.2	677.5	89.50
18810907	717.0	677.5	89.50
18810914	697.5	645.0	89.50
18810920	708.0	721.7	89.50
18810928	702.5	710.0	89.50
18811005	702.5	710.0	89.50
18811012	702.5	710.0	90.00
18811019	702.5	710.0	89.88
18811026	702.5	710.0	89.88
18811102	702.5	710.0	89.75
18811109	702.5	710.0	89.75
18811116	702.5	710.0	90.00
18811126	710.0	710.0	90.00
18811203	650.0	698.3	90.00
18811210	700.0	697.5	90.00
18811217	697.5	682.5	90.00
18811228	706.7	692.5	90.00
18811228	680.0	672.5	90.00
18820107	682.8	675.0	90.00
18820114	660.0	655.0	90.00
18820121	647.5	630.0	90.00
18820128	647.5	626.7	90.25
18820204	616.7	620.0	90.00
18820211	584.4	620.0	90.50
18820218	648.3	630.0	90.00
18820225	640.7	628.8	90.50
18820304	660.0	632.0	90.50
18820311	674.3	622.0	90.38
18820318	667.5	620.0	90.50



18820325	650.8	621.8	90.50
18820401	655.0	623.8	90.75
18820408	645.0	615.0	90.75
18820415	626.9	632.5	90.75
18820419	626.9	632.5	91.25
18820429	650.0	628.0	91.50
18820506	650.0	627.5	92.50
18820513	650.0	628.0	92.75
18820517	650.0	628.0	93.00
18820527	650.0	635.0	93.00
18820603	681.7	622.5	92.50
18820610	650.0	628.0	92.63
18820617	660.0	627.5	92.63
18820621	660.0	627.5	92.50
18820701	655.0	591.7	92.50
18820708	622.5	590.0	92.25
18820715	645.0	600.0	92.25
18820720	662.5	645.0	92.00
18820727	662.5	645.0	91.75
18820805	655.0	620.0	91.75
18820812	665.0	625.0	91.75
18820817	665.0	625.0	91.75
18820826	635.0	615.0	91.75
18820902	635.0	620.0	91.75
18820912	632.5	615.0	91.75
18820916	627.1	612.5	91.75
18820921	646.9	615.0	91.75
18820930	645.0	620.0	91.75
18821007	629.4	622.5	91.75
18821014	620.6	616.9	91.75
18821019	622.5	600.0	91.75
18821102	623.6	608.3	91.75
18821102	616.7	610.0	91.75
18821109	631.1	590.0	91.00
18821118	609.4	585.0	90.75
18821125	606.3	558.6	89.50
18821202	602.1	567.0	89.25
18821205	600.0	576.7	89.00
18821216	599.3	555.0	89.00
18821223	578.0	540.8	88.00
18821226	597.5	583.3	88.00
18830104	605.5	576.0	88.50
18830113	596.0	565.0	87.75
18830120	596.0	565.0	87.75
18830125	592.5	562.5	87.75
18830201	606.7	526.7	88.00
18830217	576.9	574.5	88.25
18830217	583.3	550.0	87.75
18830224	573.3	550.0	88.25
18830306	611.9	550.0	88.50
18830310	610.0	555.0	88.50
18830317	571.9	552.5	88.50
18830324	603.3	555.0	88.50
18830331	599.1	555.0	88.50
18830410	598.0	532.5	88.25
18830417	574.3	553.6	88.25
18830421	575.0	542.5	88.25
18830426	583.6	557.0	88.25
18830505	574.6	571.7	88.25
18830512	575.0	545.0	88.00
18830517	578.5	542.5	88.00
18830526	575.0	542.5	87.75
18830602	575.0	542.5	88.25
18830609	575.0	542.5	88.25

18830616	575.0	542.5	88.13
18830623	561.7	542.5	88.50
18830630	633.3	622.5	89.75
18830707	561.7	542.5	88.75
18830714	561.7	542.5	88.50
18830728	635.0	625.0	88.25
18830728	611.7	595.0	88.75
18830804	615.0	595.0	88.50
18830811	624.3	597.5	88.50
18830818	612.1	597.5	88.50
18830825	612.1	597.5	88.75
18830901	612.1	597.5	88.75
18830908	612.1	597.5	88.75
18830915	628.0	577.5	88.88
18830920	618.1	588.3	88.88
18830927	603.8	570.0	89.00
18831006	596.8	570.0	89.25
18831011	595.5	570.0	89.25
18831020	580.0	570.0	89.25
18831027	573.4	545.0	91.50
18831101	578.9	558.3	91.50
18831110	569.0	558.3	91.00
18831117	568.0	558.3	89.50
18831124	562.1	510.0	89.50
18831204	565.9	526.7	90.25
18831208	569.6	550.0	90.25
18831213	584.3	580.0	90.38
18831222	582.8	555.0	90.38
18831229	588.8	577.5	90.75
18840110	606.7	580.0	89.75
18840112	585.0	580.0	89.75
18840119	574.3	562.5	89.50
18840126	597.0	562.5	89.13
18840205	583.2	550.0	88.75
18840209	578.3	555.0	88.75
18840216	593.9	555.0	88.25
18840223	581.7	567.5	88.25
18840301	613.5	565.0	88.50
18840306	601.7	565.0	88.25
18840318	610.0	565.0	88.00
18840322	593.0	582.5	88.00
18840327	623.0	582.5	88.00
18840405	614.4	580.0	87.75
18840412	590.0	582.5	87.75
18840419	610.0	550.0	87.75
18840426	651.7	568.3	89.00
18840501	641.4	568.3	89.00
18840510	641.4	568.3	89.00
18840517	642.5	568.3	90.00
18840524	642.5	568.3	90.00
18840531	618.3	582.5	89.50
18840607	614.2	530.0	89.50
18840614	575.5	530.0	89.50
18840621	573.5	550.0	89.50
18840628	570.7	540.0	89.50
18840705	563.4	540.0	89.50
18840712	580.5	553.3	89.50
18840722	561.4	531.3	89.50
18840726	564.3	546.3	89.50
18840802	561.9	513.3	89.50
18840809	555.5	540.0	89.50
18840816	575.4	530.0	89.50
18840823	571.3	560.8	89.50
18840830	563.1	540.3	89.50

18840906	569.0	555.0	90.00
18840913	571.7	563.8	90.00
18840920	550.4	549.2	90.00
18840927	570.6	511.5	90.00
18841004	552.5	525.0	89.75
18841011	552.5	523.3	89.75
18841018	543.5	511.2	89.75
18841023	568.6	521.0	89.13
18841101	573.1	502.5	89.00
18841106	549.4	490.6	89.00
18841115	557.7	485.0	88.50
18841122	571.9	512.5	87.50
18841129	542.7	486.5	87.50
18841204	552.9	492.1	87.50
18841211	555.8	516.7	86.50
18841220	552.0	507.2	86.50
18841230	572.0	492.5	87.00
18850106	586.7	492.5	87.00
18850113	554.0	500.0	87.00
18850122	582.8	496.3	87.00
18850131	569.6	516.0	86.00
18850205	584.3	500.0	86.00
18850217	586.3	560.0	85.75
18850224	577.5	560.0	85.00
18850228	546.8	499.0	85.50
18850305	580.7	486.3	86.00
18850312	574.2	500.0	85.50
18850321	577.5	491.4	85.75
18850328	577.5	491.4	85.75
18850404	577.5	501.7	85.25
18850409	567.5	501.7	85.25
18850416	577.5	517.5	85.75
18850423	577.5	508.0	85.75
18850502	592.0	510.0	85.75
18850507	615.0	472.5	86.00
18850512	575.6	472.5	86.00
18850521	572.5	472.5	85.50
18850530	587.5	496.0	85.50
18850604	575.0	505.8	85.00
18850611	575.0	501.3	84.75
18850620	554.5	515.0	84.75
18850627	567.5	515.0	85.50
18850704	545.7	510.0	85.50
18850711	558.5	510.0	86.00
18850718	541.1	497.5	86.25
18850729	551.7	497.5	86.25
18850808	548.8	505.0	86.50
18850811	570.0	511.7	86.50
18850815	549.1	504.4	86.50
18850823	538.7	509.6	86.00
18850830	547.7	513.9	85.50
18850902	546.7	520.3	85.50
18850915	565.6	512.5	84.75
18850922	577.5	512.5	82.75
18850925	564.2	505.0	83.25
18851003	577.8	523.0	83.50
18851010	559.6	517.5	83.00
18851021	576.3	506.7	83.00
18851023	565.0	525.0	84.25
18851031	551.9	485.0	84.25
18851108	564.5	516.7	82.50
18851115	579.6	536.6	83.25
18851122	610.0	533.3	83.00
18851129	601.7	543.1	82.25

18851204	560.0	545.3	82.50
18851208	616.7	543.3	82.00
18851213	604.1	535.8	87.75
18851218	621.5	563.3	81.75
18851230	635.0	613.8	81.75
18860109	656.7	597.5	81.50
18860117	656.5	618.6	81.25
18860122	666.7	622.5	81.75
18860128	660.6	623.0	81.00
18860203	662.5	616.7	80.50
18860211	671.9	653.3	80.75
18860220	643.3	615.0	81.00
18860228	591.7	565.0	80.50
18860304	687.0	595.0	80.50
18860312	632.9	570.0	80.25
18860320	606.7	650.0	80.00
18830325	663.3	650.0	80.25
18860406	616.0	582.5	80.25
18860418	622.2	592.5	80.50
18860418	627.0	525.0	80.25
18860422	598.3	525.0	80.25
18860430	619.4	618.3	80.50
18860506	610.0	618.3	80.50
18860514	588.3	618.3	80.50
18860523	581.3	532.5	80.00
18860526	581.3	540.0	80.00
18860604	577.4	540.0	80.00
18860613	577.4	540.0	80.50
18860620	636.0	540.0	80.00
18860626	652.1	606.3	80.00
18860706	652.1	606.3	80.00
18860714	647.7	600.0	77.75
18860721	674.9	600.0	77.50
18860723	665.1	617.8	77.50
18860730	691.7	650.0	76.00
18860804	688.8	658.3	74.25
18860813	698.8	664.2	73.50
18860818	736.7	675.0	73.00
18860826	670.0	665.0	74.00
18860901	706.7	685.0	73.75
18860914	706.7	670.0	76.25
18860922	694.2	673.8	76.25
18860929	707.1	694.3	77.50
18861006	727.9	680.0	77.75
18861011	732.5	697.4	78.00
18861016	788.0	700.2	78.50
18861022	800.0	706.0	78.00
18861029	739.5	706.0	78.25
18861108	690.5	641.0	78.50
18861113	734.5	695.0	79.50
18861122	761.8	724.2	81.00
18861126	779.7	724.2	80.00
18861203	743.3	691.6	78.25
18861210	827.5	736.8	79.75
18861217	783.5	723.4	79.50
18861224	753.8	714.2	77.75
18861228	745.0	720.0	77.50
18870106	745.8	715.0	79.00
18870115	723.3	715.0	80.25
18870122	740.0	658.0	79.75
18870131	713.0	655.0	80.00
18870210	750.0	652.5	78.00
18870212	707.0	652.5	78.75
18870218	707.0	615.0	78.00

18870226	700.0	592.5	77.50
18870301	672.5	642.5	77.75
18870308	634.3	642.0	78.00
18870315	658.3	625.0	77.00
18870323	646.7	617.0	75.50
18870330	670.6	638.8	75.00
18870405	630.9	656.0	73.50
18870413	677.9	656.0	74.25
18870420	692.5	656.0	74.50
18870426	694.5	637.4	76.00
18870503	685.0	660.0	75.50
18870512	659.4	635.4	75.75
18870517	667.5	650.0	75.50
18870524	645.0	637.5	75.25
18870531	645.7	637.7	75.00
18870601	697.5	637.7	75.00
18870613	672.5	637.7	74.75
18870625	582.5	570.0	75.25
18870629	604.2	565.0	75.75
18870704	632.1	608.3	75.25
18870712	673.0	634.2	75.25
18870719	681.1	635.4	75.25
18870726	670.5	638.8	75.75
18870802	674.0	633.8	75.75
18870808	618.3	627.0	75.75
18870816	630.0	626.3	75.75
18870823	678.5	633.6	76.25
18870930	688.8	648.9	77.00
18870903	713.0	649.4	76.75
18870913	666.7	655.0	76.00
18870920	684.8	628.3	76.50
18870927	689.5	625.6	76.75
18871004	657.3	618.3	76.75
18871011	661.5	643.6	76.50
18871018	635.7	597.1	76.00
18871025	655.0	596.7	76.00
18871101	665.6	605.0	75.75
18871108	654.5	596.7	75.25
18871115	630.0	576.0	75.75
18871122	621.2	583.1	75.50
18871129	623.0	564.6	75.00
18871206	614.7	567.5	75.00
18871213	609.2	567.6	75.50
18871220	621.4	563.3	76.50
18871229	613.6	574.5	75.75
18880103	652.5	575.8	76.50
18880110	623.3	565.5	74.75
18880117	617.5	565.5	75.00
18880124	633.3	556.3	75.25
18880131	633.3	512.5	75.25
18880207	552.5	534.3	75.00
18880214	602.5	530.0	74.75
18880221	602.5	530.0	74.75
18880228	598.3	557.5	74.25
18880306	570.0	560.0	73.50
18880313	625.0	570.0	73.25
18880320	608.3	540.0	73.75
18880327	608.3	540.0	73.50
18880403	582.0	540.0	72.25
18880410	578.0	507.5	73.25
18880417	559.2	516.3	73.50
18880424	562.9	534.4	73.25
18880430	581.3	508.0	73.75
18880508	581.3	508.0	73.00

18880515	576.3			562.5			73.25
18880522	574.0			562.5			72.25
18880529	591.7			555.0			73.00
18880605	575.0			555.0			73.75
18880612	576.7			563.3			73.25
18880619	571.7			547.5			73.50
18880626	560.0			521.7			73.50
18880703	597.5			528.0			73.75
18880710	645.0			560.0			73.50
18880717	605.0			550.0			73.75
18880724	598.3			550.0			73.25
18880731	598.3			615.0			73.25
18880807	650.0			608.8			73.25
18880814	662.5			622.5			73.50
18880821	667.1			622.5			73.25
18880828	628.5			575.0			73.25
18880904	626.0			540.0			74.00
18880911	640.0			553.3			75.00
18880918	630.0			540.0			75.75
18880926	595.7			510.0			75.00
18881003	606.3			532.5			76.00
18881010	587.2			537.5			75.00
18881017	595.6			551.3			74.75
18881024	585.0			531.7			75.55
18881030	578.3			534.0			74.75
18881107	578.3		9,326.0	536.5		4,555.0	75.00
18881114	592.9	922.0	9,318.0	520.0	953.0	4,264.0	75.00
18881121	578.8	1,472.0	10,719.0	520.0	1,010.0	5,170.0	75.50
18881128	555.0	991.0	10,632.0	540.0	707.0	4,694.0	75.25
18881205	563.3	966.0	11,423.0	542.5	167.0	3,775.0	75.00
18881212	587.9	853.0	10,357.0	553.3	558.0	3,575.0	74.50
18881219	621.6	911.0	7,832.0	575.0	577.0	2,113.0	74.75
18881226	633.3	732.0	6,517.0	560.0	506.0	1,804.0	74.75
18890109	620.0	1,056.5	8,224.0	570.0	536.5	2,544.0	75.00
18890116	626.7	371.0	8,590.0	575.0	193.0	1,819.0	75.00
18890123	606.3	198.0	8,280.0	584.2	144.0	1,799.0	74.50
18890130	611.0	154.0	6,581.0	597.5	110.0	1,125.0	74.75
18890206	630.0	378.0	6,565.0	578.3	341.0	1,173.0	75.75
18890213	617.5	122.0	9,580.0	577.5	72.0	1,235.0	75.75
18890220	630.0	202.0	6,120.0	580.0	85.0	1,014.0	74.75
18890227	626.3	35.0	5,043.0	565.0	54.0	960.0	74.50
18890306	632.1	384.0	4,339.0	590.0	219.0	779.0	75.50
18890313	611.9	28.0	3,901.0	590.0	86.0	711.0	74.25
18890320	611.9	95.0	3,711.0	581.7	6.0	681.5	74.50
18890327	585.0	65.0	3,276.0	600.0	73.0	645.5	74.25
18890403	615.0	84.0	3,098.0	596.7	43.0	575.5	73.50
18890410	621.3	163.0	2,555.0	580.8	17.5	805.0	74.00
18890417	623.8	73.0	2,249.0	575.0	69.0	697.0	73.75
18890424	601.6	142.0	2,079.0	611.7	47.0	660.5	73.75
18890431	598.1	137.0	1,621.0	611.7	61.0	1,621.5	74.00
18890508	612.5	168.0	1,198.5	590.0	4.0	765.5	74.00
18890515	615.7	183.0	1,104.5	590.0	37.0	701.5	74.25
18890522	614.4	216.0	993.5	590.0	13.0	631.5	74.50
18890529	609.4	181.0	968.0	598.8	27.0	643.5	74.25
18890605	597.5	94.0	817.0	589.4	14.0	519.5	74.25
18890612	610.3	51.0	737.0	600.0	6.0	321.0	74.25
18890619	600.8	84.0	694.0	600.0	4.0	273.0	74.25
18890626	631.5	158.0	620.5	590.0	23.0	246.0	74.50
18890703	637.0	244.0	723.5	595.0	141.0	322.0	74.25
18890710	650.4	538.0	941.0	612.5	228.0	377.0	74.75
18890717	661.8	1,027.0	1,287.5	630.0	413.0	523.0	74.75
18890724	696.2	1,003.0	1,798.5	657.5	549.0	767.0	74.75
18890731	700.0	818.0	1,844.0	643.8	483.0	844.5	74.75
18890807	692.5	1,541.0	2,869.0	643.8	713.0	1,098.5	74.75

18890815	719.0	1,017.0	3,453.0	625.0	1,166.0	1,647.0	75.00
18890821	678.1	1,263.0	3,770.0	643.0	676.0	1,823.5	75.00
18890829	665.0	732.0	3,199.0	618.3	911.0	1,637.0	75.00
18890904	664.9	1,187.0	2,820.0	625.0	959.0	1,482.0	75.00
18890911	660.4	1,359.0	3,035.0	591.7	963.0	1,999.0	75.25
18890925	671.3	935.0	3,165.0	610.6	982.0	2,048.0	75.25
18890925	699.0	1,256.0	2,395.0	631.5	1,781.0	1,924.0	75.25
18891002	703.9	1,617.0	2,920.0	610.0	1,472.0	2,559.0	75.50
18891009	706.3	1,384.0	3,727.0	661.7	1,617.0	2,853.0	75.50
18891016	720.0	1,781.0	3,525.0	658.3	1,164.0	2,344.0	76.50
18891023	770.0	122.0	1,413.0	727.5	1,257.0	2,210.0	76.75
18891030	780.0	1,378.0	1,652.0	737.5	1,248.0	2,163.0	78.25
18891106	784.6	1,323.0	2,435.0	750.0	1,185.0	3,348.0	78.00
18891113	758.9	1,297.0	3,413.0	700.0	736.0	3,938.0	78.50
18891120	792.1	1,492.0	3,889.5	730.0	658.0	3,341.0	78.25
18891127	768.5	1,010.0	3,117.5	745.0	540.0	3,241.0	79.00
18891204	762.9	666.0	3,207.5	745.0	395.0	3,170.0	78.75
18891211	765.4	826.0	2,864.0	728.8	347.0	3,057.0	78.00
18891218	789.2	715.0	2,895.0	735.0	246.0	3,250.0	77.50
18891225	758.2	305.0	1,104.5	700.7	245.0	2,447.0	77.50
18900108	786.0	1,468.0	1,260.5	725.0	225.5	2,141.0	77.00
18900115	781.4	221.0	395.5	745.0	84.0	1,451.0	77.25
18900122	773.8	141.0	2,033.5	625.0	174.0	2,376.5	77.25
18900129	775.0	223.0	1,689.5	740.0	213.0	2,065.5	77.75
18900205	771.9	71.0	975.5	722.5	40.0	1,308.5	76.75
18900212	747.5	173.0	1,049.0	732.5	101.0	995.5	75.50
18900219	785.0	129.0	1,015.0	741.7	73.0	964.5	75.50
18900226	787.5	18.0	1,007.0	764.2	86.0	2,013.5	75.50
18900305	801.0	69.0	1,035.0	769.3	58.0	2,018.0	76.50
18900312	797.5	12.0	1,014.5	750.0	71.0	1,992.0	75.00
18900319	797.5	63.0	1,025.5	688.0	125.0	2,072.0	74.75
18900326	769.2	108.0	1,090.5	661.3	53.0	1,868.0	74.75
18900402	760.6	108.0	1,119.5	692.5	53.0	1,818.0	75.75
18900409	670.0	75.0	1,434.0	625.0	31.0	1,925.0	75.75
18900416	676.7	165.0	1,556.0	635.0	92.0	1,992.0	78.25
18900423	700.0	153.0	1,677.0	635.0	34.0	2,001.0	78.25
18900430	703.3	194.0	1,503.0	650.0	15.0	1,939.0	81.00
18900507	683.3	128.0	1,408.0	635.0	5.0	1,941.0	80.50
18900514	668.0	374.0	1,500.0	638.3	47.0	1,775.0	82.00
18900521	693.6	26.0	1,406.0	665.0	34.0	1,675.0	82.25
18900528	693.6	37.0	1,302.0	612.5	19.0	1,611.0	82.00
18900604	664.4	42.0	1,255.0	612.5	10.0	1,621.0	79.50
18900611	664.4	54.0	1,230.0	612.5	6.0	1,596.0	83.75
18900618	646.7	252.0	1,254.0	600.0	60.0	1,623.0	83.75
18900625	680.0	508.0	1,099.0	609.3	143.0	1,588.0	82.50
18900702	695.6	611.0	1,262.0	692.5	247.0	1,619.0	82.00
18900709	711.4	742.0	1,706.0	670.0	428.0	1,841.0	82.75
18900716	706.1	859.0	2,263.0	688.5	544.0	2,172.0	86.50
18900723	722.5	1,282.0	3,392.0	632.7	653.0	2,620.0	87.00
18900730	701.7	1,050.0	4,247.5	658.8	686.0	3,050.0	86.75
18900806	683.0	1,199.0	5,622.0	632.5	818.0	3,613.0	88.00
18900813	653.3	1,145.0	6,565.0	611.7	551.0	3,845.0	89.00
18900820	630.0	1,309.0	7,677.0	611.7	645.0	4,353.0	93.00
18900827	616.4	787.0	8,189.0	620.0	475.0	4,710.0	92.00
18900903	620.6	835.0	8,616.0	584.3	557.0	5,088.0	93.00
18900910	646.4	1,207.0	9,174.0	574.0	613.0	5,373.0	91.75
18900917	653.1	1,640.0	10,672.0	587.5	600.0	5,920.0	91.75
18900924	636.3	1,448.0	12,074.0	605.5	687.0	6,002.0	89.00
18901001	649.8	1,521.0	13,243.0	603.0	701.0	6,505.0	85.00
18901008	647.3	1,228.0	14,189.0	618.6	727.0	7,056.0	84.50
18901015	669.7	1,262.0	15,426.0	618.6	598.0	7,264.0	83.75
18901022	664.0	1,433.0	16,056.0	612.0	916.0	8,001.0	83.75
18901029	641.2	1,116.0	16,706.0	606.7	825.0	8,268.0	83.00
18901105	640.8	1,708.0	17,894.0	576.7	607.0	8,354.0	83.00

18901112	648.3	1,069.0	18,454.0	582.5	473.0	8,515.0	81.50
18901119	575.3	941.0	19,183.0	543.2	517.0	8,818.0	79.00
18901126	592.5	732.0	18,768.0	555.8	288.0	8,265.0	82.00
18901203	589.0	748.0	18,590.0	525.0	359.0	8,397.0	83.50
18901210	577.5	628.0	18,093.0	531.7	240.0	8,299.0	82.00
18901217	545.7	672.0	17,815.0	531.7	413.0	8,202.0	86.50
18901224	576.7	559.0	17,365.0	540.0	319.0	8,304.0	82.50
18910107	566.2	386.5	16,919.0	530.0	328.5	8,417.0	82.50
18910114	569.4	253.0	16,462.0	500.0	111.0	8,135.0	84.75
18910121	550.0	146.0	15,476.0	508.8	52.0	7,582.0	84.00
18910128	554.5	212.0	12,270.0	549.3	123.0	6,448.0	83.00
18910204	560.3	129.0	10,531.0	549.3	201.0	6,184.0	80.25
18910211	572.8	156.0	10,066.0	578.0	154.0	6,025.0	79.00
18910218	607.5	297.0	9,224.0	593.5	65.0	5,587.0	77.00
18910225	614.4	305.0	8,307.0	587.7	360.0	5,586.0	76.75
18910304	593.6	427.0	7,931.0	560.0	169.0	5,640.0	78.00
18910311	580.7	402.0	7,427.0	592.0	159.0	5,321.0	78.00
18910318	579.6	353.0	6,759.0	545.0	263.0	5,287.0	77.75
18910325	580.6	174.0	5,241.0	555.0	212.0	5,078.0	76.75
18910401	593.1	339.0	2,525.0	543.3	154.0	4,400.0	77.00
18910408	607.3	525.0	2,019.0	580.4	110.0	2,637.0	77.50
18910415	594.5	384.0	1,859.0	555.0	142.0	2,483.0	77.50
18910422	591.9	583.0	1,992.0	568.3	108.0	1,563.0	76.50
18910429	605.5	303.0	1,727.0	575.0	131.0	1,385.0	77.75
18910506	607.4	300.0	1,926.0	584.3	169.0	1,445.0	77.25
18910513	591.8	232.0	2,008.0	566.5	162.0	1,481.0	77.25
18910520	573.3	235.0	2,111.0	535.0	140.0	1,600.0	77.50
18910527	581.2	135.0	1,802.0	567.5	124.0	1,592.0	76.75
18910603	584.3	189.0	1,387.0	559.7	16.0	1,472.0	77.25
18910610	579.6	157.0	1,330.0	540.0	93.0	1,382.0	77.50
18910617	542.2	140.0	1,230.0	520.0	20.0	1,375.0	77.50
18910624	553.0	217.0	1,352.0	550.0	87.0	1,394.0	80.25
18910701	554.2	725.0	1,710.0	534.7	205.0	1,330.0	79.00
18910708	540.9	788.0	2,005.0	533.0	279.0	1,381.0	79.75
18910715	554.6	995.0	2,197.0	528.7	337.0	1,366.0	79.25
18910723	546.1	1,281.0	2,758.0	510.0	626.0	1,537.0	78.50
18910729	551.0	1,244.0	3,442.0	510.0	974.0	1,964.0	78.75
18910805	540.2	1,436.0	3,902.0	525.0	1,112.0	2,294.0	79.00
18910812	551.0	1,571.0	4,140.0	502.5	1,201.0	2,180.0	77.50
18910819	549.6	1,789.0	4,518.0	517.0	1,298.0	3,454.0	78.25
18910826	561.6	1,560.0	4,970.0	517.0	924.0	3,980.0	78.50
18910902	549.2	1,446.0	5,792.0	513.0	1,024.0	4,703.0	78.50
18910909	548.0	1,846.0	6,378.0	513.0	1,122.0	5,310.0	78.50
18910916	559.2	1,708.0	6,480.0	517.0	1,330.0	6,198.0	78.50
18910923	568.9	1,776.0	5,455.0	546.3	1,189.0	6,598.0	78.00
18910930	576.9	1,958.0	8,503.0	560.0	1,383.0	6,275.0	78.25
18911007	581.5	2,006.0	10,311.0	541.1	1,492.0	7,455.0	77.50
18911014	559.6	1,692.0	11,798.0	508.3	1,210.0	8,162.0	77.50
18911021	562.6	1,789.0	11,269.0	536.0	1,208.0	8,558.0	77.00
18911028	560.8	1,836.0	11,102.0	548.3	1,135.0	8,392.0	76.25
18911104	556.2	1,351.0	10,892.0	530.0	837.0	8,511.0	75.75
18911111	581.5	1,823.0	12,413.0	527.5	956.0	8,462.0	75.75
18911118	570.0	1,234.0	12,868.0	529.5	911.0	8,621.0	75.25
18911125	583.3	1,728.0	11,731.0	536.5	754.0	7,568.0	75.25
18911202	582.6	1,397.0	12,229.0	570.0	844.0	7,984.0	75.00
18911209	585.5	1,524.0	11,420.0	550.0	594.0	7,521.0	75.25
18911216	576.4	1,625.0	12,542.0	550.0	933.0	8,050.0	76.00
18911223	568.9	1,530.0	10,852.0	548.0	440.0	8,110.0	75.25
18920106	577.0	885.5	12,002.0	538.6	507.0	8,841.0	75.00
18920113	580.6	929.0	11,658.0	537.5	280.0	8,859.0	73.75
18920120	584.3	480.0	11,227.0	571.7	159.0	8,705.0	73.50
18920127	576.6	292.0	10,613.0	524.0	170.0	8,463.0	72.25
18920203	574.5	729.0	9,928.0	524.0	165.0	8,362.0	72.50
18920210	577.9	180.0	8,081.0	555.0	142.0	7,882.0	71.00



18920217	570.7	73.0	7,005.0	570.0	108.0	6,924.0	71.75
18920224	571.0	162.0	6,419.0	522.5	183.0	7,005.0	72.00
18920302	574.3	164.0	6,087.0	522.0	53.0	6,855.0	72.00
18920309	571.6	135.0	5,863.0	522.7	90.0	6,358.0	72.00
18920316	561.0	146.0	5,413.0	527.5	137.0	6,246.0	71.00
18920323	582.6	279.0	5,119.0	531.5	92.0	6,099.0	70.25
18920330	581.4	144.0	4,697.0	555.0	139.0	5,891.0	67.75
18920406	553.3	185.0	4,477.0	520.0	60.0	5,536.0	69.00
18920413	567.7	291.0	4,363.0	530.0	93.0	5,420.0	68.75
18920420	601.3	375.0	4,220.0	590.0	71.0	5,194.0	68.75
18920427	584.1	296.0	3,574.0	620.0	138.0	5,001.0	69.50
18920504	591.3	214.0	3,206.0	535.0	15.0	4,648.0	69.50
18920511	641.2	315.0	2,549.0	520.0	156.0	4,223.0	69.25
18920518	622.0	398.0	2,359.0	591.5	23.0	3,821.0	70.00
18920525	637.8	113.0	1,883.0	560.0	50.0	3,546.0	70.25
18920601	591.0	89.0	1,198.0	505.0	82.0	3,119.0	70.75
18920608	630.0	208.0	852.0	615.0	60.0	996.0	71.50
18920615	630.0	76.0	923.0	615.0	126.0	1,087.0	71.75
18920622	635.0	81.0	979.0	615.0	29.0	1,106.0	71.00
18920629	661.6	519.0	1,116.0	615.0	105.0	1,090.0	70.25
18920706	682.5	805.0	1,353.0	649.3	165.0	852.0	70.25
18920713	675.7	176.0	1,323.0	606.3	115.0	922.0	69.75
18920720	663.7	1,069.0	1,404.0	606.3	504.0	1,222.0	69.50
18920727	682.5	1,052.0	1,873.0	637.1	598.0	1,512.0	68.75
18920803	680.4	1,685.0	2,251.0	623.2	925.0	2,182.0	69.00
18920810	715.2	2,372.0	2,372.0	623.0	1,093.0	2,493.0	68.75
18920817	736.4	1,940.0	2,281.0	653.8	1,306.0	3,371.0	69.50
18920824	765.9	1,408.0	2,096.0	674.3	971.0	2,837.0	68.75
18920831	787.4	2,202.0	1,736.0	647.4	1,501.0	3,689.0	68.75
18920907	748.3	2,157.0	4,466.0	645.6	1,377.0	3,592.0	69.00
18920914	773.7	1,902.0	4,308.0	650.0	756.0	3,502.0	69.50
18920921	796.7	2,257.0	3,866.0	696.4	1,495.0	3,688.0	69.25
18920928	859.2	1,848.0	3,109.0	787.9	1,645.0	3,869.0	69.50
18921005	868.8	2,850.0	5,455.0	747.5	2,033.0	5,295.0	69.50
18921012	831.8	2,168.0	4,421.0	843.3	1,036.0	5,385.0	70.00
18921019	841.9	2,218.0	5,986.0	782.5	1,271.0	6,268.0	70.75
18921026	783.3	2,619.0	6,717.0	704.0	1,154.0	6,520.0	70.50
18921102	833.9	1,526.0	5,956.0	715.0	725.0	5,832.0	69.75
18921109	806.5	1,488.0	6,038.0	700.0	841.0	7,060.0	68.50
18921116	813.3	1,129.0	6,239.0	743.3	684.0	7,247.0	67.75
18921123	780.6	1,565.0	6,783.0	685.7	859.0	7,793.0	67.50
18921130	788.0	1,500.0	7,295.0	767.5	476.0	7,537.0	67.75
18921207	780.0	1,267.0	7,635.0	710.0	479.0	7,705.0	66.75
18921214	800.5	928.0	4,029.0	743.8	464.0	6,964.0	65.25
18921221	805.4	928.0	7,338.0	743.8	464.0	7,896.0	65.25
18930104	821.4	2,773.0	4,988.0	663.7	1,146.0	5,097.0	66.00
18930111	810.5	909.0	4,594.0	600.0	289.0	4,973.0	66.00
18930118	854.7	602.0	3,792.0	810.0	213.0	4,898.0	66.00
18930125	828.1	420.0	3,478.0	755.0	249.0	4,784.0	66.50
18930202	866.3	289.0	2,179.0	812.5	257.0	4,549.0	66.50
18930208	872.7	292.0	1,468.0	750.0	223.0	4,366.0	66.50
18930215	863.4	488.0	1,254.0	755.0	229.0	4,386.0	66.50
18930222	882.8	208.0	791.0	715.0	212.0	4,016.0	66.50
18930301	897.5	294.0	664.0	880.0	108.0	3,806.0	66.50
18930308	955.7	185.0	350.0	880.0	148.0	3,150.0	66.00
18930315	899.4	213.0	222.0	780.0	80.0	3,088.0	66.25
18930322	869.0	288.0	409.0	868.8	103.0	2,947.0	65.25
18930329	1,013.2	349.0	430.0	904.2	98.0	2,768.0	66.00
18930405	1,011.5	388.0	549.0	807.5	20.0	2,550.0	66.00
18930412	1,036.1	496.0	1,336.0	807.5	115.0	914.0	65.75
18930419	1,085.3	695.0	1,197.0	936.3	74.0	856.0	65.50
18930426	972.7	526.0	1,072.0	798.3	76.0	631.0	65.75
18930503	1,028.5	658.0	1,259.0	760.0	17.0	536.0	67.00
18930510	993.8	476.0	1,394.0	920.0	42.0	466.0	66.50

18930517	1,046.0	386.0	1,549.0	920.0	25.0	477.0	65.25
18930524	1,055.7	391.0	1,603.0	920.0	38.0	494.0	65.50
18930531	986.9	236.0	1,772.0	920.0	24.0	475.0	65.50
18930607	922.9	116.0	990.0	690.0	2.0	406.0	65.75
18930614	898.6	142.0	830.0	690.0	0.0	318.0	65.75
18930621	788.2	149.0	706.0	690.0	4.0	294.0	65.50
18930628	775.7	232.0	620.0	690.0	15.0	287.0	62.50
18930705	897.8	634.0	1,007.0	690.0	253.0	507.0	61.75
18930713	865.0	1,086.0	1,690.0	670.0	218.0	544.0	59.75
18930719	897.6	1,397.0	2,795.0	690.0	558.0	826.0	61.50
18930726	870.7	1,969.0	3,914.0	816.0	659.0	1,132.0	60.00
18930802	872.0	1,924.0	5,308.0	826.7	1,076.0	2,172.0	60.00
18930809	855.0	2,060.0	6,356.0	826.7	1,018.0	2,898.0	60.25
18930816	834.2	2,342.0	7,656.0	685.0	1,151.0	3,631.0	59.50
18930823	851.4	1,707.0	8,549.0	692.5	1,129.0	4,169.0	61.00
18930830	776.8	2,035.0	9,867.0	645.5	763.0	4,704.0	59.75
18930906	789.4	2,092.0	10,771.0	646.7	892.0	4,860.0	58.50
18930913	781.4	1,616.0	10,709.0	685.0	810.0	5,184.0	59.75
18930920	783.0	2,424.0	12,281.0	685.0	1,005.0	5,735.0	59.50
18930927	760.7	2,221.0	13,577.0	673.0	1,058.0	6,196.0	58.75
18931004	755.6	2,334.0	14,707.0	671.3	1,211.0	6,820.0	58.75
18931011	753.6	2,334.0	15,477.0	651.3	1,211.0	7,370.0	58.50
18931018	755.1	1,838.0	15,561.0	651.3	1,108.0	7,816.0	58.25
18931025	725.0	2,443.0	16,563.0	630.0	745.0	8,336.0	58.50
18931101	742.5	2,360.0	18,395.0	685.0	948.0	8,372.0	55.00
18931108	727.5	2,001.0	17,800.0	613.5	946.0	8,349.0	57.50
18931115	716.8	1,872.0	19,252.0	670.0	690.0	8,363.0	56.25
18931122	714.9	1,042.0	19,798.0	628.8	698.0	8,140.0	56.50
18931129	703.9	1,622.0	20,691.0	649.0	859.0	8,436.0	56.25
18931206	730.8	1,518.0	18,339.0	662.5	853.0	8,198.0	56.25
18931213	718.3	1,643.0	18,633.0	665.0	477.0	7,942.0	56.00
18931220	665.7	1,659.0	18,276.0	673.5	466.0	7,862.0	55.75
18931227	737.5	1,327.0	17,967.0	632.5	529.0	7,452.0	55.50
18940110	774.4	2,241.0	15,579.0	755.0	1,189.0	6,943.0	55.00
18940117	751.3	419.0	15,728.0	730.0	573.0	7,352.0	54.50
18940124	725.8	570.0	16,122.0	730.0	278.0	7,373.0	53.50
18940131	758.0	580.0	16,221.0	697.0	218.0	7,336.0	53.50
18940207	732.5	337.0	16,113.0	722.5	279.0	7,309.0	52.25
18940214	719.7	258.0	16,110.0	722.5	96.0	7,228.0	51.00
18940221	755.0	279.0	15,945.0	660.0	113.0	7,118.0	50.00
18940228	755.4	191.0	14,268.0	755.0	235.0	6,663.0	48.50
18940306	754.7	303.0	12,728.0	730.0	68.0	6,069.0	47.50
18940313	747.9	502.0	11,387.0	730.0	141.0	5,919.0	48.00
18940321	785.0	468.0	9,754.0	735.0	161.0	5,439.0	47.25
18940328	787.1	704.0	8,070.0	730.0	107.0	5,085.0	48.25
18940404	807.3	734.0	6,912.0	785.0	182.0	4,781.0	50.00
18940411	801.4	896.0	7,113.0	785.0	152.0	4,863.0	50.50
18940418	763.8	816.0	7,747.0	720.0	72.0	4,919.0	50.75
18940425	751.1	930.0	7,670.0	720.0	78.0	4,879.0	50.75
18940502	735.0	163.0	7,629.0	657.0	97.0	4,923.0	51.00
18940509	754.3	419.0	7,570.0	708.3	153.0	5,039.0	51.25
18940516	740.6	633.0	6,835.0	690.7	85.0	5,003.0	50.50
18940523	670.0	501.0	6,624.0	690.7	41.0	4,616.0	51.00
18940530	674.7	392.0	5,720.0	630.0	6.0	4,310.0	50.50
18940606	669.3	246.0	4,537.0	645.0	8.0	4,062.0	50.75
18940613	684.2	249.0	4,277.0	635.0	84.0	3,985.0	50.50
18940620	661.7	812.0	4,578.0	635.0	4.0	3,932.0	50.50
18940627	686.1	1,157.0	4,889.0	635.0	307.0	4,127.0	50.50
18940704	668.6	1,421.0	7,402.0	626.7	282.0	1,658.0	50.50
18940711	666.2	1,545.0	8,127.0	625.0	478.0	1,870.0	50.75
18940718	675.6	1,909.0	8,724.0	627.0	568.0	1,998.0	50.50
18940725	676.0	2,199.0	9,456.0	633.5	600.0	2,249.0	50.75
18940801	678.4	2,291.0	10,328.0	652.5	630.0	2,827.0	50.75
18940808	694.6	2,139.0	11,154.0	631.7	1,078.0	3,492.0	50.75

18940815	689.7	2,330.0	11,434.0	631.3	986.0	4,153.0	51.00
18940822	707.7	2,634.0	10,174.0	645.0	830.0	3,886.0	52.00
18940929	753.3	1,950.0	8,197.0	703.3	930.0	3,488.0	53.25
18940905	734.6	2,768.0	9,663.0	660.0	1,038.0	4,395.0	53.00
18940912	719.4	3,184.0	12,239.0	625.0	1,075.0	5,265.0	52.75
18940919	726.7	2,676.0	13,874.0	670.0	824.0	5,297.0	52.50
18940926	715.3	2,748.0	14,743.0	698.8	733.0	5,810.0	52.50
18941003	714.6	2,871.0	15,757.0	695.0	803.0	6,076.0	52.00
18941010	708.3	3,151.0	17,231.0	709.2	1,258.0	6,617.0	52.00
18941017	699.0	3,321.0	19,111.0	642.5	1,002.0	6,742.0	51.75
18941024	747.0	2,648.0	20,637.0	692.0	1,006.0	6,922.0	51.00
18941031	728.2	1,552.0	17,238.0	677.5	693.0	5,561.0	51.00
18941107	714.0	1,218.0	18,352.0	718.8	457.0	5,852.0	50.75
18941114	746.4	3,211.0	17,238.0	722.0	1,060.0	5,561.0	50.75
18941121	725.8	3,482.0	20,357.0	722.0	920.0	6,362.0	49.50
18941128	742.4	1,857.0	20,970.0	750.0	520.0	6,410.0	48.00
18941205	757.8	1,577.0	20,284.0	705.0	563.0	6,403.0	48.50
18941212	762.5	1,913.0	19,980.0	675.0	396.0	5,752.0	48.50
18941219	759.3	1,351.0	18,994.0	655.0	340.0	5,831.0	48.00
18950109	777.6	5,660.0	13,680.0	655.0	1,114.0	4,669.0	48.25
18950116	845.5	1,129.0	10,555.0	815.0	125.0	4,746.0	47.00
18950123	770.0	505.0	7,657.0	815.0	229.0	4,703.0	46.75
18950130	798.6	459.0	7,156.0	765.0	223.0	4,820.0	46.75
18950206	811.3	355.0	7,122.0	795.0	141.0	4,912.0	47.25
18950213	803.0	275.0	6,530.0	792.9	51.0	4,848.0	46.75
18950220	812.2	196.0	6,099.0	792.9	112.0	4,859.0	47.50
18950227	839.3	226.0	4,824.0	792.9	71.0	4,888.0	47.25
18950306	809.3	168.0	3,999.0	800.0	69.0	4,898.0	47.25
18950313	831.3	297.0	2,791.0	790.0	94.0	4,356.0	47.25
18950320	814.6	359.0	3,500.0	800.0	55.0	2,114.0	49.25
18950327	806.5	239.0	2,839.0	800.0	62.0	2,081.0	50.00
18950404	821.7	412.0	2,538.0	808.5	69.0	2,069.0	52.00
18950410	806.7	535.0	2,934.0	808.5	68.0	2,137.0	51.75
18950417	781.7	428.0	3,064.0	753.3	55.0	2,080.0	52.25
18950515	735.0	1,881.0	2,545.0	705.0	151.0	2,037.0	52.75
18950522	751.8	2,070.0	1,136.0	705.0	154.0	322.0	52.25
18950529	760.6	134.0	546.0	705.0	0.0	118.0	52.25
18950605	744.5	122.0	1,040.0	705.0	6.0	225.0	52.00
18950612	747.2	126.0	898.0	705.0	11.0	207.0	51.75
18950619	775.0	410.0	917.0	705.0	1.0	155.0	51.75
18950626	831.3	756.0	1,115.0	705.0	97.0	239.0	51.25
18950703	908.0	1,251.0	1,658.0	880.0	368.0	304.0	52.00
18950717	885.3	2,839.0	3,122.0	890.0	371.0	517.0	52.25
18950717	832.3	2,837.0	5,070.0	870.0	783.0	1,154.0	52.00
18950724	815.0	2,911.0	6,303.0	870.0	1,106.0	1,876.0	52.00
18950731	829.1	3,755.0	7,783.0	780.0	922.0	2,400.0	51.75
18950807	826.1	2,468.0	8,177.0	779.4	1,004.0	3,110.0	52.00
18950814	850.9	3,498.0	7,493.0	835.0	1,296.0	3,523.0	52.50
18950821	861.3	4,424.0	8,208.0	775.0	1,509.0	3,751.0	52.50
18950828	901.4	3,062.0	6,760.0	862.5	1,342.0	4,078.0	52.75
18950904	922.1	3,534.0	8,024.0	795.0	1,450.0	4,323.0	52.75
18950911	893.3	3,391.0	9,663.0	861.3	1,384.0	4,627.0	53.00
18950918	935.0	2,757.0	8,474.0	865.0	1,217.0	3,143.0	53.25
18950925	906.7	2,789.0	9,896.0	870.0	1,281.0	3,543.0	53.25
18951002	922.5	2,476.0	11,546.0	810.0	1,490.0	4,870.0	53.50
18951009	915.9	3,630.0	14,308.0	827.5	1,336.0	5,509.0	54.25
18951016	908.0	3,421.0	16,549.0	841.7	1,159.0	6,153.0	54.00
18951023	918.4	3,239.0	19,017.0	841.3	917.0	6,797.0	53.50
18951030	909.2	3,391.0	21,625.0	846.0	675.0	7,002.0	54.00
18951106	865.9	2,723.0	20,843.0	807.5	904.0	7,003.0	53.75
18951113	878.1	2,834.0	20,800.0	805.0	928.0	7,621.0	53.75
18951120	899.0	2,665.0	22,994.0	782.5	481.0	7,904.0	53.00
18951127	902.0	2,337.0	22,485.0	805.0	629.0	7,569.0	53.50
18951204	845.5	2,248.0	23,701.0	786.0	504.0	7,715.0	52.85

18951211	845.3	2,557.0	25,260.0	792.5	371.0	7,760.0	51.75
18951218	836.8	2,034.0	24,733.0	792.5	436.0	7,191.0	51.75
18951225	875.0	2,891.0	24,449.0	815.0	226.0	6,740.0	52.00
18960108	827.5	2,620.0	24,734.0	735.0	351.0	8,693.0	52.50
18960115	823.8	1,326.0	25,029.0	747.5	116.0	8,554.0	52.75
18960122	780.0	663.0	25,255.0	747.5	155.0	8,535.0	52.75
18960129	765.0	492.0	24,715.0	747.5	198.0	8,354.0	53.12
18960205	764.7	410.0	24,055.0	747.5	50.0	8,196.0	53.50
18960212	741.8	380.0	23,360.0	747.5	179.0	8,105.0	53.50
18960219	749.1	455.0	22,101.0	701.7	92.0	7,991.0	52.87
18960226	767.8	306.0	19,684.0	680.0	105.0	7,610.0	54.00
18960304	716.3	370.0	19,153.0	680.0	75.0	7,285.0	53.75
18930311	702.9	245.0	20,060.0	655.0	36.0	7,539.0	54.62
18960318	662.5	324.0	19,676.0	630.0	46.0	7,397.0	54.75
18960325	673.6	413.0	19,279.0	600.0	31.0	7,199.0	54.12
18960401	654.4	500.0	18,867.0	610.0	63.0	7,078.0	54.12
18960408	664.4	642.0	18,520.0	610.0	134.0	7,041.0	53.88
18960416	668.8	900.0	17,775.0	610.0	37.0	6,871.0	53.75
18960422	649.3	703.0	16,829.0	630.0	45.0	6,766.0	53.88
18960429	676.4	644.0	14,382.0	630.0	49.0	6,428.0	54.00
18960506	675.0	927.0	11,716.0	612.5	47.0	6,272.0	54.00
18960513	692.1	695.0	11,221.0	612.5	11.0	6,055.0	54.00
18960520	660.0	561.0	10,617.0	612.5	100.0	6,113.0	54.00
18960527	644.5	437.0	9,946.0	612.5	19.0	6,064.0	54.00
18960603	651.9	480.0	9,476.0	615.0	10.0	6,001.0	54.00
18960610	656.1	354.0	8,701.0	615.0	12.0	5,889.0	54.00
18960617	668.1	280.0	7,819.0	615.0	1.0	5,791.0	54.00
18960624	687.5	361.0	7,225.0	615.0	44.0	5,696.0	54.00
18960701	708.8	582.0	7,089.0	615.0	99.0	5,704.0	54.00
18960708	730.0	689.0	7,491.0	615.0	92.0	5,735.0	54.00
18960715	730.0	1,336.0	8,195.0	615.0	295.0	5,851.0	54.00
18960722	697.5	1,754.0	9,530.0	615.0	226.0	6,022.0	53.75
18960729	691.8	820.0	10,057.0	615.0	310.0	6,280.0	53.75
18960805	690.0	1,179.0	10,646.0	655.0	301.0	6,501.0	53.75
18960812	695.2	2,155.0	12,101.0	655.0	468.0	6,748.0	53.75
18960819	763.1	2,407.0	13,384.0	655.0	574.0	6,811.0	52.50
18960826	755.0	1,904.0	14,216.0	690.0	853.0	6,589.0	51.50
18960902	751.9	1,680.0	15,050.0	695.0	481.0	6,698.0	51.38
18960909	742.5	1,854.0	16,347.0	695.0	534.0	7,225.0	51.13
18960916	730.0	812.0	16,587.0	703.8	464.0	7,573.0	49.75
18960923	762.8	1,049.0	16,643.0	711.7	333.0	7,656.0	50.25
18960930	772.1	4,155.0	18,162.0	758.5	994.0	8,133.0	51.25
18961007	828.0	3,081.0	18,266.0	790.0	917.0	8,684.0	50.75
18961014	805.8	2,432.0	19,577.0	758.3	1,117.0	9,510.0	50.25
18961021	805.8	2,285.0	21,143.0	744.6	761.0	10,104.0	51.00
18961028	789.0	3,423.0	22,655.0	748.8	1,001.0	10,498.0	51.25
18961104	803.1	1,919.0	22,035.0	807.5	562.0	10,486.0	52.00
18961111	794.4	3,351.0	23,470.0	807.5	749.0	10,843.0	52.00
18961118	795.3	2,304.0	23,817.0	695.0	655.0	11,248.0	51.50
18961125	778.2	1,587.0	22,881.0	690.0	472.0	10,615.0	51.75
18961202	732.2	2,604.0	23,835.0	707.5	720.0	10,738.0	51.50
18961209	707.5	2,078.0	24,253.0	703.8	283.0	10,659.0	51.75
18961216	690.0	1,621.0	24,015.0	705.0	214.0	10,312.0	52.25
18961223	705.0	1,421.0	23,343.0	700.0	242.0	9,732.0	51.75
18970106	718.8	2,037.0	23,393.0	702.5	345.0	9,540.0	51.50
18970113	741.0	1,017.0	22,504.0	710.8	145.0	9,476.0	51.25
18970120	723.1	682.0	22,313.0	710.8	267.0	9,583.0	51.00
18970127	700.0	554.0	21,784.0	710.8	157.0	9,481.0	51.25
18970203	707.9	678.0	20,766.0	643.3	165.0	9,435.0	51.25
18970210	720.7	468.0	19,933.0	702.5	122.0	9,290.0	51.25
18970217	720.4	587.0	11,267.0	635.0	124.0	7,519.0	51.25
18970224	708.9	459.0	9,244.0	658.1	54.0	7,118.0	51.13
18970303	730.9	332.0	7,956.0	680.0	110.0	6,801.0	50.38
18970310	766.6	514.0	6,450.0	738.8	173.0	6,403.0	50.00

18970317	767.5	344.0	4,102.0	737.5	94.0	5,860.0	49.50
18970324	812.2	601.0	2,875.0	737.5	117.0	5,789.0	49.88
18970331	823.6	889.0	4,684.0	720.0	116.0	2,832.0	46.25
18970407	779.2	781.0	4,020.0	715.0	170.0	2,870.0	49.38
18970414	792.5	1,101.0	4,407.0	723.3	138.0	2,608.0	49.38
18970421	772.5	850.0	4,435.0	723.3	78.0	2,625.0	49.38
18970428	782.5	973.0	4,823.0	730.0	163.0	2,704.0	49.25
18970505	780.7	718.0	3,988.0	785.0	163.0	2,356.0	49.00
18970512	773.6	874.0	3,768.0	790.0	97.0	2,343.0	48.63
18970519	749.0	635.0	3,596.0	790.0	95.0	2,247.0	48.38
18970526	757.5	730.0	2,440.0	660.0	65.0	2,197.0	48.25
18970602	743.3	453.0	2,550.0	730.0	128.0	2,589.0	48.25
18970609	736.7	395.0	1,737.0	745.0	67.0	1,497.0	48.50
18970616	748.0	305.0	1,219.0	745.0	3.0	1,445.0	48.50
18970623	753.3	292.0	510.0	745.0	40.0	1,207.0	48.38
18970630	827.5	605.0	257.0	745.0	21.0	776.0	48.63
18970707	858.6	701.0	985.0	745.0	34.0	268.0	48.38
18970716	855.6	1,583.0	2,309.0	810.0	303.0	594.0	48.25
18970721	846.5	1,989.0	3,484.0	795.0	265.0	692.0	48.63
18970728	828.9	2,509.0	5,324.0	797.5	377.0	905.0	48.50
18970804	809.6	2,460.0	6,286.0	810.0	483.0	1,104.0	48.38
18970811	873.8	2,715.0	4,666.0	830.0	690.0	1,403.0	48.50
18970818	854.2	3,005.0	5,627.0	835.0	820.0	1,829.0	48.63
18970825	881.0	2,224.0	2,692.0	830.0	807.0	1,996.0	48.75
18970901	887.5	2,187.0	3,150.0	850.0	1,009.0	2,722.0	48.75
18970908	857.0	2,690.0	5,103.0	850.0	944.0	2,217.0	48.75
18970915	874.2	2,178.0	4,851.0	857.5	731.0	2,741.0	48.88
18970922	910.0	2,755.0	3,816.0	882.5	850.0	2,636.0	49.00
18970929	914.4	3,827.0	4,426.0	895.0	1,049.0	2,269.0	49.00
18971006	891.3	2,985.0	5,208.0	880.0	1,336.0	2,757.0	49.00
18971013	909.4	2,407.0	3,617.0	895.0	1,155.0	2,721.0	49.00
18971020	937.5	3,320.0	2,653.0	900.0	1,150.0	2,538.0	49.13
18971027	917.5	3,954.0	3,420.0	770.0	1,176.0	3,134.0	49.00
18971103	911.1	3,333.0	5,070.0	830.0	988.0	3,688.0	49.00
18971110	871.3	2,657.0	7,109.0	840.0	660.0	4,325.0	49.00
18971117	865.0	2,632.0	8,644.0	852.5	895.0	5,011.0	48.88
18971124	848.8	1,322.0	8,988.0	835.0	405.0	5,349.0	49.00
18971201	830.8	3,060.0	10,096.0	835.0	1,010.0	5,882.0	48.88
18971208	866.7	2,554.0	11,470.0	860.0	553.0	5,945.0	48.88
18971215	868.0	1,677.0	10,473.0	817.5	450.0	5,990.0	48.88
18971222	930.8	1,821.0	10,166.0	880.0	505.0	5,828.0	48.88
18980105	907.5	3,697.0	8,191.0	885.0	599.0	5,001.0	48.88
18980112	910.0	2,265.0	9,412.0	890.0	527.0	5,470.0	48.88
18980119	923.1	985.0	8,729.0	900.0	256.0	5,708.0	48.88
18980126	880.0	781.0	8,698.0	900.0	254.0	5,765.0	48.88
18980202	881.7	522.0	8,179.0	900.0	262.0	5,836.0	48.88
18980209	894.4	364.0	7,826.0	900.0	75.0	5,887.0	48.88
18980216	914.3	525.0	6,849.0	855.0	194.0	5,791.0	48.88
18980223	919.3	436.0	4,888.0	892.5	136.0	5,687.0	48.88
18980302	912.5	398.0	3,762.0	892.5	118.0	3,628.0	48.88
18980309	915.6	597.0	3,866.0	892.5	118.0	3,710.0	49.00
18980316	925.5	658.0	3,632.0	870.0	145.0	2,724.0	49.00
18980323	869.0	519.0	3,518.0	825.0	177.0	3,845.0	48.88
18980330	865.0	754.0	3,952.0	825.0	161.0	3,954.0	48.88
18980406	865.0	986.0	4,396.0	825.0	142.0	4,044.0	48.88
18980413	865.0	738.0	4,549.0	825.0	144.0	4,184.0	48.88
18980420	870.0	1,037.0	5,188.0	825.0	134.0	4,306.0	48.75
18980427	800.8	894.0	5,965.0	752.5	126.0	4,253.0	48.75
18980504	785.9	810.0	9,308.0	792.5	97.0	1,505.0	48.75
18980511	827.1	789.0	9,211.0	790.0	28.0	1,434.0	49.00
18980518	831.3	705.0	7,890.0	790.0	95.0	1,326.0	49.00
18980525	825.0	471.0	7,096.0	790.0	15.0	1,300.0	49.13
18980601	836.4	416.0	5,932.0	790.0	20.0	883.0	49.13
18980608	817.5	147.0	5,091.0	790.0	5.0	803.0	49.13

18980615	814.2	163.0	4,416.0	790.0	43.0	846.0	49.25
18980622	815.9	267.0	3,202.0	790.0	11.0	707.0	49.25
18980629	885.0	544.0	1,985.0	790.0	27.0	751.0	49.25
18980706	902.3	983.0	1,450.0	790.0	81.0	675.0	49.25
18980713	900.0	2,056.0	1,891.0	825.0	225.0	729.0	49.00
18980720	872.9	2,362.0	3,764.0	860.0	340.0	530.0	49.25
18980727	876.4	2,268.0	4,922.0	805.0	448.0	983.0	49.25
18980803	896.8	2,626.0	5,920.0	853.8	437.0	1,219.0	49.25
18980810	903.9	2,235.0	5,925.0	870.0	696.0	1,521.0	49.25
18980817	979.4	3,179.0	6,988.0	876.7	1,021.0	2,161.0	49.25
18980824	908.1	2,879.0	7,761.0	875.0	624.0	2,286.0	49.25
18980831	932.9	2,445.0	8,862.0	880.0	749.0	2,612.0	49.25
18980907	911.0	3,214.0	11,261.0	905.0	864.0	3,382.0	49.25
18980914	899.0	1,289.0	11,920.0	847.5	571.0	3,821.0	49.25
18980921	927.0	639.0	11,853.0	800.0	703.0	4,346.0	49.25
18980928	897.0	2,583.0	13,153.0	847.5	589.0	4,389.0	49.25
18981005	926.5	3,093.0	13,961.0	860.0	727.0	4,339.0	49.25
18981012	903.0	2,625.0	15,146.0	860.0	897.0	4,848.0	49.25
18981019	941.4	2,122.0	15,097.0	860.0	732.0	5,066.0	49.25
18981026	895.0	3,871.0	16,431.0	857.5	985.0	5,275.0	49.25
18981102	882.2	2,813.0	17,980.0	850.0	748.0	5,653.0	49.25
18981109	866.3	1,828.0	18,569.0	845.0	474.0	5,949.0	49.25
18981116	855.0	2,160.0	19,182.0	840.0	471.0	6,212.0	49.25
18981123	836.1	1,883.0	18,455.0	845.0	451.0	5,912.0	49.25
18981130	844.0	1,867.0	17,576.0	840.0	478.0	2,841.0	49.25
18981207	890.8	1,372.0	16,129.0	865.0	271.0	5,688.0	49.38
18981214	915.0	1,762.0	13,555.0	860.0	487.0	5,670.0	49.38
18981221	897.5	1,781.0	12,852.0	838.8	169.0	5,366.0	49.38
18981227	918.2	81.0	11,884.0	865.0	187.0	5,413.0	49.63
18990110	912.3	1,834.0	11,264.0	895.0	499.0	5,399.0	49.75
18990118	913.1	604.0	7,112.0	911.3	76.0	3,432.0	50.00
18990125	925.0	685.0	5,078.0	902.5	78.0	2,894.0	49.88
18990201	998.6	898.0	2,540.0	937.5	60.0	2,109.0	49.88
18990208	1,020.0	575.0	1,566.0	945.0	60.0	1,698.0	49.88
18990215	1,000.8	788.0	1,976.0	955.0	54.0	1,069.0	49.88
18990222	987.9	303.0	1,358.0	955.0	10.0	659.0	49.88
18990301	1,019.2	312.0	926.0	1,010.0	108.0	736.0	50.88
18990308	1,050.0	266.0	781.0	1,010.0	17.0	416.0	49.50
18990315	1,027.1	295.0	682.0	1,010.0	56.0	472.0	49.63
18990322	1,065.6	501.0	636.0	1,010.0	26.0	396.0	49.50
18990329	1,064.8	394.0	467.0	1,010.0	30.0	394.0	49.63
18990405	1,058.5	604.0	677.0	1,010.0	36.0	373.0	49.63
18990412	1,076.5	699.0	698.0	1,010.0	33.0	297.0	50.00
18990419	1,105.5	754.0	579.0	1,067.5	10.0	296.0	50.00
18990426	1,065.6	651.0	598.0	1,100.0	28.0	271.0	50.00
18990503	1,123.0	874.0	1,273.0	1,100.0	12.0	260.0	50.00
18990510	1,074.3	486.0	1,514.0	1,100.0	3.0	260.0	50.00
18990517	1,081.7	273.0	1,572.0	1,063.8	1.0	194.0	50.00
18990524	1,088.3	304.0	1,545.0	1,063.8	0.0	176.0	50.00
18990531	1,024.4	227.0	1,488.0	1,063.8	0.0	176.0	50.00
18990607	1,001.8	176.0	1,010.0	1,063.8	0.0	132.0	50.00
18990614	1,014.4	170.0	745.0	1,063.8	0.0	118.0	50.00
18990621	1,063.3	593.0	539.0	1,063.8	70.0	128.0	50.00
18990628	1,090.5	1,241.0	767.0	1,090.0	65.0	281.0	50.00
18990705	1,110.0	2,440.0	1,350.0	1,060.0	434.0	548.0	50.00
18990712	1,076.0	2,139.0	1,762.0	1,060.0	630.0	929.0	50.00
18990719	1,072.5	2,281.0	2,084.0	1,060.0	479.0	835.0	50.00
18990726	1,065.3	2,575.0	3,048.0	1,055.0	780.0	1,041.0	50.00
18990802	1,089.5	1,422.0	3,180.0	1,006.3	1,033.0	1,828.0	50.00
18990809	1,105.6	2,794.0	3,546.0	1,086.3	1,035.0	2,134.0	50.00
18990816	1,133.9	2,656.0	3,128.0	1,080.0	878.0	2,421.0	50.00
18990823	1,160.8	2,825.0	4,009.0	1,090.0	1,137.0	2,986.0	50.00
18990830	1,168.2	3,497.0	4,472.0	1,096.7	1,205.0	3,515.0	49.75
18990906	1,118.9	2,312.0	6,135.0	1,032.5	782.0	4,058.0	49.75

18990913	1,101.6	3,158.0	5,463.0	1,050.0	796.0	4,079.0	49.75
18990920	1,176.1	2,819.0	6,886.0	1,044.4	880.0	4,262.0	49.75
18990927	1,105.7	3,245.0	6,225.0	1,050.0	1,581.0	4,967.0	49.50
18991004	1,125.6	2,625.0	6,358.0	1,037.5	587.0	5,144.0	49.38
18991011	1,119.3	2,957.0	5,966.0	1,048.3	921.0	5,309.0	49.38
18991018	1,112.3	2,299.0	5,274.0	1,065.0	890.0	5,460.0	49.50
18991025	1,161.3	3,505.0	5,852.0	1,085.0	773.0	5,361.0	49.50
18991031	1,185.4	1,632.0	4,973.0	1,098.3	757.0	4,931.0	49.63
18991108	1,214.3	3,424.0	5,035.0	1,151.3	949.0	5,002.0	49.63
18991115	1,238.2	2,127.0	4,913.0	1,180.0	440.0	4,370.0	49.50
18991122	1,355.0	2,185.0	3,336.0	1,230.0	644.0	3,987.0	49.50
18991129	1,357.0	2,284.0	3,921.0	1,280.0	268.0	3,698.0	49.50
18991206	1,338.6	2,443.0	4,822.0	1,302.5	242.0	3,661.0	49.50
18991213	1,335.0	1,840.0	6,488.0	1,280.0	234.0	3,605.0	49.63
18991220	1,267.9	1,808.0	7,887.0	1,270.0	206.0	3,496.0	49.63
18991226	1,287.5	1,429.0	8,925.0	1,265.0	161.0	3,566.0	49.63
19000110	1,274.7	2,970.0	10,619.0	1,250.0	331.0	3,657.0	49.50
19000117	1,274.7		10,619.0	1,250.0		3,657.0	49.50
19000124	1,293.9	1,540.0	9,800.0	1,251.7	108.0	2,930.0	49.50
19000131	1,228.3	554.0	12,307.0	1,245.0	118.0	2,355.0	49.50
19000207	1,219.4	688.0	10,425.0	1,170.0	95.0	2,144.0	49.50
19000214	1,213.6	422.0	8,407.0	1,205.0	81.0	1,832.0	49.50
19000221	1,185.5	336.0	8,050.0	1,185.0	104.0	1,517.0	49.50
19000228	1,118.7	341.0	7,714.0	1,185.0	53.0	1,147.0	49.50
19000307	1,165.5	544.0	7,638.0	1,185.0	70.0	1,098.0	49.38
19000314	1,155.0	718.0	7,005.0	1,185.0	135.0	1,152.0	49.25
19000321	1,181.1	483.0	5,382.0	1,150.0	78.0	1,172.0	49.25
19000328	1,124.2	930.0	4,885.0	1,150.0	16.0	1,045.0	49.25
19000404	1,170.0	636.0	5,281.0	1,150.0	28.0	1,068.0	49.25
19000411	1,200.0	1,328.0	5,238.0	1,150.0	137.0	1,105.0	49.25
19000418	1,055.0	1,088.0	6,026.0	1,000.0	41.0	1,125.0	49.25
19000425	1,011.3	1,015.0	6,349.0	1,000.0	42.0	1,124.0	49.25
19000502	1,011.3	1,091.0	6,198.0	1,000.0	42.0	1,166.0	49.25
19000509	985.6	1,037.0	5,553.0	890.0	34.0	1,077.0	49.25
19000516	953.9	663.0	5,600.0	890.0	19.0	1,066.0	49.25
19000523	902.9	794.0	5,393.0	890.0	22.0	1,003.0	49.25
19000530	878.1	494.0	4,589.0	890.0	0.0	940.0	49.25
19000606	867.5	304.0	3,932.0	890.0	0.0	918.0	49.25
19000614	866.3	197.0	3,290.0	890.0	33.0	945.0	49.25
19000620	876.9	254.0	2,656.0	890.0	20.0	712.0	49.25
19000627	964.3	659.0	2,874.0	890.0	4.0	715.0	49.25
19000704	988.8	1,131.0	3,477.0	900.0	69.0	784.0	49.25
19000711	978.8	2,261.0	4,870.0	900.0	265.0	1,049.0	49.25
19000718	984.4	2,250.0	6,506.0	950.0	641.0	1,652.0	49.38
19000725	926.8	2,794.0	8,600.0	950.0	487.0	1,998.0	49.38
19000801	907.2	2,820.0	10,008.0	870.0	523.0	2,284.0	49.38
19000808	880.7	3,365.0	12,060.0	830.8	864.0	2,786.0	49.38
19000815	873.0	3,493.0	14,011.0	845.0	943.0	3,460.0	49.38
19000822	871.7	2,588.0	14,162.0	857.5	744.0	3,550.0	49.38
19000829	863.4	1,593.0	14,030.0	816.7	715.0	4,033.0	49.38
19000905	845.6	2,326.0	15,505.0	820.0	848.0	4,579.0	49.38
19000912	811.5	2,779.0	17,445.0	805.0	652.0	4,854.0	49.38
19000919	805.5	2,477.0	19,212.0	757.5	703.0	5,463.0	49.38
19000926	797.3	2,713.0	20,305.0	755.0	644.0	5,617.0	49.38
19001003	797.4	2,846.0	22,383.0	761.0	642.0	6,024.0	49.38
19001010	827.7	2,659.0	22,590.0	800.0	856.0	6,421.0	49.38
19001017	907.7	2,404.0	21,808.0	873.3	715.0	6,585.0	49.38
19001024	855.0	3,273.0	23,386.0	873.3	969.0	7,447.0	49.38
19001031	891.5	1,899.0	24,109.0	810.0	530.0	7,885.0	49.38
19001107	891.3	2,793.0	24,464.0	800.0	620.0	8,560.0	49.38
19001114	891.3	3,890.0	25,499.0	836.7	1,068.0	9,202.0	49.38
19001121	859.6	2,491.0	27,357.0	760.0	527.0	9,584.0	49.38
19001128	834.7	2,536.0	29,281.0	790.0	424.0	9,737.0	49.38
19001205	828.5	1,991.0	28,949.0	770.0	544.0	10,027.0	49.38

19001212	854.0	2,287.0	29,651.0	795.0	316.0	9,946.0	49.38
19001219	863.6	1,889.0	29,089.0	800.0	498.0	9,654.0	49.38
19001226	829.4	1,695.0	30,176.0	802.5	326.0	9,778.0	49.38
19010109	840.0	4,287.0	31,701.0	800.0	826.0	8,874.0	49.38
19010116	840.8	1,850.0	30,652.0	815.0	288.0	8,308.0	49.38
19010123	814.0	1,020.0	30,562.0	800.0	120.0	7,486.0	49.38
19010130	793.2	763.0	30,527.0	790.0	86.0	7,373.0	49.38
19010206	800.0	1,604.0	29,624.0	810.0	113.0	6,971.0	49.38
19010212	822.3	894.0	28,437.0	770.0	25.0	6,441.0	49.38
19010220	851.2	956.0	27,214.0	735.0	31.0	6,156.0	49.38
19010227	834.5	833.0	23,793.0	810.0	82.0	3,080.0	49.38
19010306	836.2	484.0	20,792.0	800.0	125.0	4,568.0	49.38
19010313	817.5	984.0	19,468.0	800.0	96.0	4,322.0	49.38
19010320	820.3	886.0	18,723.0	745.0	22.0	4,168.0	49.38
19010327	812.7	947.0	18,270.0	795.0	94.0	3,875.0	49.25
19010403	822.1	1,498.0	17,047.0	750.0	28.0	3,553.0	49.25
19010410	812.5	1,020.0	14,790.0	770.0	83.0	3,515.0	49.25
19010417	813.2	1,460.0	13,248.0	757.5	120.0	3,365.0	49.25
19010424	834.9	1,772.0	10,710.0	815.0	104.0	3,342.0	49.25
19010501	811.0	1,782.0	9,516.0	778.8	96.0	3,211.0	49.25
19010508	811.1	1,573.0	8,971.0	721.3	126.0	3,145.0	49.25
19010515	825.0	1,472.0	8,664.0	721.3	96.0	8,568.0	49.25
19010522	818.6	1,521.0	7,534.0	810.0	162.0	2,250.0	49.25
19010529	840.0	1,276.0	6,723.0	820.0	53.0	1,912.0	49.25
19010605	824.0	917.0	4,792.0	777.5	125.0	1,749.0	49.25
19010612	838.9	797.0	3,160.0	800.0	42.0	1,294.0	49.38
19010619	888.4	800.0	2,203.0	800.0	18.0	1,280.0	49.50
19010626	903.2	1,091.0	1,574.0	852.5	5.0	1,196.0	49.50
19010703	882.5	1,816.0	2,062.0	852.5	217.0	1,371.0	49.63
19010710	869.4	1,684.0	3,102.0	852.5	95.0	1,442.0	49.63
19010717	890.0	2,618.0	4,018.0	850.0	431.0	1,619.0	49.63
19010724	885.1	2,862.0	5,633.0	851.7	391.0	1,844.0	49.63
19010729	885.0	3,126.0	7,456.0	880.0	696.0	2,053.0	49.63
19010807	901.3	2,990.0	8,230.0	872.5	865.0	2,677.0	49.75
19010814	915.9	2,792.0	8,514.0	890.0	1,068.0	3,075.0	49.75
19010821	931.1	3,143.0	8,793.0	865.0	1,009.0	3,146.0	49.75
19010828	927.0	2,979.0	8,558.0	932.5	1,019.0	3,110.0	49.75
19010904	942.5	3,758.0	9,206.0	947.5	1,119.0	3,483.0	49.75
19010911	910.5	2,548.0	10,240.0	850.0	815.0	3,605.0	49.75
19010918	928.3	3,071.0	10,487.0	902.5	961.0	4,138.0	49.75
19010923	903.8	3,637.0	12,161.0	815.0	956.0	4,620.0	49.75
19011002	917.5	3,573.0	13,734.0	925.0	772.0	4,635.0	49.08
19011009	921.6	3,957.0	15,706.0	912.5	1,074.0	5,179.0	49.50
19011016	910.3	2,587.0	16,575.0	925.0	934.0	5,071.0	49.25
19011023	902.8	3,535.0	17,622.0	925.0	565.0	4,748.0	49.25
19011030	900.0	3,447.0	17,801.0	912.5	1,106.0	5,078.0	49.25
19011106	891.9	2,316.0	16,808.0	910.0	656.0	5,514.0	49.25
19011113	897.0	3,641.0	17,269.0	910.0	955.0	5,771.0	49.25
19011120	892.5	2,575.0	16,082.0	910.0	695.0	5,784.0	49.25
19011127	881.7	2,562.0	16,801.0	896.3	662.0	5,939.0	49.50
19011204	902.0	3,527.0	16,169.0	887.5	701.0	6,151.0	49.50
19011211	920.0	2,448.0	12,770.0	940.0	404.0	5,229.0	49.50
19011218	933.1	2,703.0	12,595.0	900.0	394.0	5,154.0	49.50
19011223	890.8	2,282.0	13,633.0	917.5	379.0	5,204.0	49.50
19020108	921.7	4,033.0	16,764.0	930.0	682.0	5,645.0	49.50
19020115	938.6	1,219.0	14,291.0	930.0	102.0	5,024.0	49.50
19020122	908.8	1,219.0	10,986.0	890.0	102.0	4,838.0	49.50
19020129	918.6	914.0	9,874.0	870.0	208.0	4,622.0	49.50
19020205	934.6	989.0	6,791.0	915.0	164.0	4,165.0	49.50
19020212	951.3	673.0	6,252.0	930.0	81.0	3,635.0	49.63
19020219	975.5	862.0	4,340.0	980.0	71.0	3,706.0	49.75
19020226	953.8	443.0	3,390.0	905.0	72.0	3,290.0	49.75
19020305	928.3	501.0	3,312.0	900.0	100.0	3,227.0	49.75
19020312	912.5	611.0	3,384.0	900.0	74.0	3,231.0	49.75



19020319	915.6	624.0	3,490.0	900.0	94.0	3,318.0	49.75
19020326	920.5	1,038.0	3,468.0	900.0	85.0	3,356.0	49.63
19020402	912.1	1,174.0	3,834.0	922.5	37.0	2,418.0	49.63
19020409	928.9	1,365.0	3,867.0	935.0	141.0	2,357.0	49.63
19020416	943.1	1,297.0	3,902.0	900.0	86.0	2,302.0	49.63
19020423	923.8	1,189.0	2,286.0	920.0	77.0	1,865.0	49.63
19020430	941.7	1,342.0	1,812.0	895.0	76.0	1,891.0	49.63
19020507	923.6	1,274.0	1,691.0	910.0	61.0	1,021.0	49.50
19020514	898.2	907.0	1,976.0	912.5	107.0	661.0	49.50
19020521	918.3	629.0	1,916.0	912.5	57.0	281.0	49.50
19020528	935.0	509.0	632.0	922.5	3.0	249.0	49.50
19020604	945.0	430.0	774.0	895.0	41.0	281.0	49.50
19020611	942.0	299.0	485.0	922.5	2.0	283.0	49.50
19020618	942.0	340.0	405.0	922.5	11.0	275.0	49.63
19020625	948.3	465.0	773.0	900.0	3.0	278.0	49.75
19020702	931.9	1,087.0	1,619.0	885.0	115.0	387.0	49.88
19020709	936.4	2,025.0	2,940.0	893.8	143.0	511.0	49.88
19020716	950.0	2,267.0	2,723.0	945.0	232.0	705.0	50.00
19020723	958.5	2,838.0	5,178.0	936.3	635.0	1,061.0	50.00
19020730	960.4	2,423.0	5,055.0	935.0	508.0	989.0	50.00
19020806	943.8	4,191.0	6,724.0	935.0	1,100.0	1,690.0	50.13
19020813	959.5	2,838.0	8,057.0	935.0	994.0	2,327.0	50.13
19020820	964.5	3,644.0	9,322.0	923.8	1,085.0	2,902.0	50.13
19020827	953.2	3,339.0	9,922.0	908.5	828.0	3,258.0	50.13
19020903	965.8	2,124.0	8,433.0	955.0	1,239.0	3,451.0	50.13
19020910	983.1	3,501.0	9,393.0	931.3	1,183.0	3,999.0	50.13
19020917	967.3	3,001.0	9,478.0	938.3	995.0	4,078.0	50.13
19020924	1,001.3	3,827.0	9,456.0	980.0	949.0	3,646.0	50.13
19021001	1,013.6	3,661.0	10,160.0	987.5	981.0	4,017.0	50.13
19021008	1,015.0	4,806.0	11,661.0	997.5	1,058.0	4,092.0	50.13
19021015	1,014.0	4,136.0	14,940.0	965.0	943.0	4,905.0	50.13
19021022	992.1	3,761.0	17,030.0	935.0	899.0	5,571.0	50.13
19021027	1,015.7	3,486.0	16,698.0	1,000.0	754.0	5,358.0	50.13
19021105	996.1	2,906.0	15,692.0	1,000.0	813.0	5,368.0	50.13
19021112	1,002.5	4,252.0	17,324.0	1,010.0	917.0	5,793.0	50.13
19021119	1,000.0	3,665.0	18,513.0	997.5	879.0	5,986.0	50.13
19021126	1,008.1	3,165.0	18,909.0	1,025.0	775.0	5,704.0	50.13
19021203	1,021.4	3,860.0	17,175.0	1,045.0	772.0	5,281.0	50.13
19021210	1,013.0	2,937.0	16,559.0	1,035.0	535.0	5,049.0	50.13
19021217	1,018.3	3,053.0	16,110.0	985.0	355.0	4,762.0	50.13
19021224	1,028.0	2,813.0	14,704.0	937.5	366.0	4,605.0	50.13
19030107	1,045.9	3,448.0	13,944.0	1,060.0	664.0	4,535.0	50.13
19030114	1,031.8	2,294.0	12,894.0	1,037.5	196.0	4,145.0	50.13
19030121	1,039.4	1,149.0	9,366.0	1,070.0	194.0	3,859.0	50.13
19030128	1,056.1	1,189.0	6,698.0	1,085.0	213.0	3,344.0	49.75
19030204	1,060.0	1,028.0	6,357.0	1,090.0	135.0	3,078.0	49.75
19030211	1,055.3	1,281.0	5,782.0	1,070.0	177.0	3,087.0	49.75
19030218	1,055.5	1,045.0	6,199.0	1,035.0	53.0	2,571.0	49.75
19030225	1,038.1	911.0	6,499.0	1,055.0	42.0	2,603.0	49.75
19030304	1,042.5	857.0	6,393.0	1,008.8	17.0	2,504.0	49.75
19030311	1,043.1	630.0	4,733.0	965.0	53.0	2,454.0	49.75
19030318	1,033.5	1,081.0	4,644.0	1,005.0	48.0	2,373.0	49.75
19030325	1,058.3	990.0	4,541.0	997.5	79.0	2,168.0	49.75
19030401	1,044.4	1,240.0	4,128.0	997.5	20.0	2,112.0	49.75
19030408	1,021.9	1,476.0	4,440.0	997.5	42.0	2,147.0	49.75
19030415	1,003.0	1,243.0	4,290.0	997.5	39.0	2,173.0	49.75
19030422	956.0	1,161.0	4,063.0	940.0	89.0	2,244.0	49.75
19030429	1,030.8	1,410.0	3,116.0	945.0	3.0	1,504.0	49.75
19030506	1,029.2	1,385.0	2,124.0	980.0	7.0	745.0	49.75
19030513	1,050.0	1,314.0	2,047.0	1,010.0	66.0	396.0	49.75
19030520	1,061.9	738.0	1,245.0	1,045.0	23.0	183.0	49.75
19030527	1,077.0	503.0	497.0	1,045.0	0.0	71.0	49.75
19030603	1,068.1	523.0	428.0	1,045.0	0.0	72.0	49.88
19030610	965.8	351.0	571.0	1,045.0	9.0	64.0	49.88

19030617	977.0	279.0	499.0	1,045.0	0.0	64.0	49.88
19030624	1,038.0	598.0	575.0	1,045.0	20.0	84.0	49.88
19030701	1,044.6	1,494.0	1,788.0	1,010.0	76.0	160.0	50.00
19030708	1,045.0	2,485.0	3,224.0	1,010.0	310.0	314.0	50.00
19030715	1,030.8	2,399.0	4,444.0	1,000.0	250.0	492.0	50.00
19030722	1,017.2	3,477.0	6,666.0	981.7	656.0	1,065.0	50.00
19030729	1,019.1	3,055.0	8,349.0	1,005.0	636.0	1,502.0	50.00
19030805	1,027.3	4,232.0	9,955.0	1,012.5	926.0	1,705.0	50.00
19030812	1,028.8	3,583.0	11,058.0	1,030.0	1,042.0	2,009.0	50.00
19030819	1,010.0	3,835.0	10,797.0	1,030.0	1,182.0	2,341.0	50.00
19030826	1,046.7	3,414.0	11,098.0	1,020.0	975.0	2,489.0	50.00
19030902	1,066.9	3,592.0	10,842.0	1,050.0	1,360.0	2,949.0	50.00
19030909	1,066.4	3,604.0	11,444.0	1,050.0	1,170.0	3,402.0	50.00
19030916	1,066.4	3,415.0	13,478.0	1,040.0	945.0	3,983.0	50.00
19030923	1,071.1	3,000.0	14,082.0	1,005.0	1,025.0	4,376.0	50.00
19030930	1,057.9	3,934.0	16,754.0	971.3	900.0	4,780.0	50.00
19031007	1,018.3	4,111.0	18,534.0	971.3	937.0	5,430.0	50.00
19031014	1,002.5	3,700.0	20,617.0	1,000.0	1,068.0	6,200.0	50.00
19031021	1,016.3	4,254.0	22,629.0	975.0	840.0	6,554.0	50.00
19031028	999.4	3,913.0	24,068.0	940.0	990.0	7,358.0	50.00
19031104	996.9	2,526.0	24,295.0	955.0	705.0	7,648.0	50.00
19031111	998.3	4,584.0	26,722.0	926.3	940.0	8,035.0	49.50
19031118	961.3	3,258.0	27,905.0	970.0	643.0	8,010.0	49.38
19031125	952.4	2,164.0	28,890.0	895.0	465.0	7,965.0	49.38
19031202	948.8	3,588.0	30,888.0	895.0	715.0	8,380.0	49.38
19031209	951.6	2,834.0	28,860.0	940.0	178.0	8,209.0	49.38
19031216	927.5	2,043.0	28,210.0	920.0	235.0	8,266.0	49.38
19031223	918.3	2,463.0	28,241.0	920.0	524.0	8,131.0	49.38

**Sources :** *Tokyo Keizai Zasshi (Tokyo Economic Journal)* . The price series are supplanted by *Chugai Bukka Shimpo (Domestic and Foreign Prices Mail)* if *Tokyo Keizai Zasshi* was not issued or failed to report prices in the month.

**Data B-2** Monthly series of raw silk prices and foreign exchange rates at the Yokohama market.

Period	Items	Prices of	Prices of	Foreign
yyyy/mm	Prices of Japanese Filature, average: $\overline{v_{jtf}}$ Mexican dollars = Japanese yen	Prices of Japanese Re-reels, average: $\overline{v_{jrp}}$ Mexican dollars = Japanese yen	Prices of Japanese Re-reels, average: $\overline{v_{jrp}}$ Mexican dollars = Japanese yen	exchange rates: $YEXUSD$ Japanese yen per US dollar
188101	605	575		89
188102	600	580		88.75
188103	640	600		89.75
188104	622.5	582		90.5
188105	625	610		90.5
188106	656	625		90.25
188107	691.5	625		90.25
188108	682.5	675		89.5
188109	708	721.7		89.5
188110	702.5	710		89.88
188111	702.5	710		90
188112	706.7	692.5		90
188201	647.5	630		90
188202	648.3	630		90
188203	667.5	620		90.5
188204	626.9	632.5		91.25
188205	650	628		93
188206	660	627.5		92.5
188207	662.5	645		92
188208	665	625		91.75
188209	646.9	615		91.75
188210	622.5	600		91.75
188211	609.4	585		90.75
188212	578	540.8		88
188301	596	565		87.75
188302	583.3	550		87.75
188303	571.9	552.5		88.5
188304	575	542.5		88.25
188305	578.5	542.5		88
188306	561.7	542.5		88.5
188307	635	625		88.25
188308	612.1	597.5		88.5
188309	618.1	588.3		88.88
188310	580	570		89.25
188311	568	558.3		89.5
188312	582.8	555		90.38
188401	574.3	562.5		89.5
188402	581.7	567.5		88.25
188403	610	565		88
188404	610	550		87.75
188405	642.5	568.3		90
188406	573.5	550		89.5
188407	561.4	531.3		89.5
188408	571.3	560.8		89.5
188409	550.4	549.2		90
188410	543.5	511.2		89.75
188411	571.9	512.5		87.5
188412	552	507.2		86.5
188501	582.8	496.3		87
188502	586.3	560		85.75
188503	577.5	491.4		85.75

188504	577.5	508	85.75
188505	572.5	472.5	85.5
188506	554.5	515	84.75
188507	541.1	497.5	86.25
188508	538.7	509.6	86
188509	577.5	512.5	82.75
188510	576.3	506.7	83
188511	610	533.3	83
188512	621.5	563.3	81.75
188601	666.7	622.5	81.75
188602	643.3	615	81
188603	606.7	650	80
188604	627	525	80.25
188605	581.3	532.5	80
188606	636	540	80
188607	674.9	600	77.5
188608	736.7	675	73
188609	694.2	673.8	76.25
188610	800	706	78
188611	761.8	724.2	81
188612	783.5	723.4	79.5
188701	740	658	79.75
188702	707	615	78
188703	646.7	617	75.5
188704	692.5	656	74.5
188705	667.5	650	75.5
188706	582.5	570	75.25
188707	630.5	635.4	75.25
188708	678.5	633.6	76.25
188709	684.8	628.3	76.5
188710	635.7	597.1	76
188711	621.2	583.1	75.5
188712	621.4	563.3	76.5
188801	617.5	565.5	75
188802	602.5	530	74.75
188803	608.3	540	73.75
188804	559.2	516.3	73.5
188805	574	562.5	72.25
188806	571.7	547.5	73.5
188807	605	550	73.75
188808	667.1	622.5	73.25
188809	630	540	75.75
188810	595.6	551.3	74.75
188811	578.8	520	75.5
188812	621.6	575	74.75
188901	606.3	584.2	74.5
188902	630	580	74.75
188903	611.9	581.7	74.5
188904	623.8	575	73.75
188905	614.4	590	74.5
188906	600.8	600	74.25
188907	661.8	630	74.75
188908	678.1	643	75
188909	671.3	610.6	75.25
188910	770	727.5	76.75
188911	792.1	730	78.25
188912	789.2	735	77.5
189001	773.8	625	77.25
189002	785	741.7	75.5
189003	797.5	688	74.75
189004	700	635	78.25
189005	693.6	665	82.25
189006	646.7	600	83.75
189007	722.5	632.7	87

189008	630	611.7	93
189009	653.1	587.5	91.75
189010	664	612	83.75
189011	575.3	543.2	79
189012	545.7	531.7	86.5
189101	550	508.8	84
189102	607.5	593.5	77
189103	579.6	545	77.75
189104	591.9	568.3	76.5
189105	573.3	535	77.5
189106	542.2	520	77.5
189107	546.1	510	78.5
189108	549.6	517	78.25
189109	568.9	546.3	78
189110	562.6	536	77
189111	570	529.5	75.25
189112	568.9	548	75.25
189201	584.3	571.7	73.5
189202	570.7	570	71.75
189203	582.6	531.5	70.25
189204	601.3	590	68.75
189205	622	591.5	70
189206	635	615	71
189207	663.7	606.3	69.5
189208	736.4	653.8	69.5
189209	796.7	696.4	69.25
189210	841.9	782.5	70.75
189211	780.6	685.7	67.5
189212	805.4	743.8	65.25
189301	854.7	810	66
189302	882.8	715	66.5
189303	869	868.8	65.25
189304	1085.3	936.3	65.5
189305	1046	920	65.25
189306	788.2	690	65.5
189307	897.6	690	61.5
189308	851.4	692.5	61
189309	783	685	59.5
189310	755.1	651.3	58.25
189311	714.9	628.8	56.5
189312	665.7	673.5	55.75
189401	751.3	730	54.5
189402	755	660	50
189403	785	735	47.25
189404	763.8	720	50.75
189405	670	690.7	51
189406	661.7	635	50.5
189407	675.6	627	50.5
189408	707.7	645	52
189409	726.7	670	52.5
189410	699	642.5	51.75
189411	725.8	722	49.5
189412	759.3	655	48
189501	770	815	46.75
189502	812.2	792.9	47.5
189503	814.6	800	49.25
189504	781.7	753.3	52.25
189505	751.8	705	52.25
189506	775	705	51.75
189507	832.3	870	52
189508	861.3	775	52.5
189509	935	865	53.25
189510	918.4	841.3	53.5
189511	899	782.5	53

189512	836.8	792.5	51.75
189601	780	747.5	52.75
189602	749.1	701.7	52.87
189603	662.5	630	54.75
189604	649.3	630	53.88
189605	660	612.5	54
189606	668.1	615	54
189607	697.5	615	53.75
189608	763.1	655	52.5
189609	762.8	711.7	50.25
189610	805.8	744.6	51
189611	795.3	695	51.5
189612	705	700	51.75
189701	723.1	710.8	51
189702	720.4	635	51.25
189703	767.5	737.5	49.5
189704	772.5	723.3	49.38
189705	749	790	48.38
189706	753.3	745	48.38
189707	846.5	795	48.63
189708	854.2	835	48.63
189709	910	882.5	49
189710	937.5	900	49.13
189711	865	852.5	48.88
189712	930.8	880	48.88
189801	923.1	900	48.88
189802	919.3	892.5	48.88
189803	869	825	48.88
189804	870	825	48.75
189805	831.3	790	49
189806	815.9	790	49.25
189807	872.9	860	49.25
189808	979.4	876.7	49.25
189809	927	800	49.25
189810	941.4	860	49.25
189811	836.1	845	49.25
189812	897.5	838.8	49.38
189901	913.1	911.3	50
189902	987.9	955	49.88
189903	1,065.6	1,010.0	49.5
189904	1,105.5	1,067.5	50
189905	1,081.7	1,063.8	50
189906	1,063.3	1,063.8	50
189907	1,072.5	1,060.0	50
189908	1,160.8	1,090.0	50
189909	1,176.1	1,044.4	49.75
189910	1,112.3	1,065.0	49.5
189911	1,355.0	1,230.0	49.5
189912	1,267.9	1,270.0	49.63
190001	1,293.9	1,251.7	49.5
190002	1,185.5	1,185.0	49.5
190003	1,181.1	1,150.0	49.25
190004	1,055.0	1,000.0	49.25
190005	902.9	890	49.25
190006	876.9	890	49.25
190007	984.4	950	49.38
190008	871.7	857.5	49.38
190009	805.5	757.5	49.38
190010	907.7	873.3	49.38
190011	859.6	760	49.38
190012	863.6	800	49.38
190101	814	800	49.38
190102	851.2	735	49.38
190103	820.3	745	49.38

190104	813.2	757.5	49.25
190105	818.6	810	49.25
190106	888.4	800	49.5
190107	890	850	49.63
190108	931.1	865	49.75
190109	928.3	902.5	49.75
190110	902.8	925	49.25
190111	892.5	910	49.25
190112	933.1	900	49.5
190201	908.8	890	49.5
190202	975.5	980	49.75
190203	915.6	900	49.75
190204	923.8	920	49.63
190205	918.3	912.5	49.5
190206	942	922.5	49.63
190207	958.5	936.3	50
190208	964.5	923.8	50.13
190209	967.3	938.3	50.13
190210	992.1	935	50.13
190211	1,000.0	997.5	50.13
190212	1,018.3	985	50.13
190301	1,039.4	1,070.0	50.13
190302	1,055.5	1,035.0	49.75
190303	1,033.5	1,005.0	49.75
190304	956	940	49.75
190305	1,061.9	1,045.0	49.75
190306	977	1,045.0	49.88
190307	1,017.2	981.7	50
190308	1,010.0	1,030.0	50
190309	1,071.1	1,005.0	50
190310	1,016.3	975	50
190311	961.3	970	49.38
190312	918.3	920	49.38

---

**Sources :** *Tokyo Keizai Zasshi (Tokyo Economic Journal)*. The price series are supplanted by *Chugai Bukka Shimpo (Domestic and Foreign Prices Mail)* if *Tokyo Keizai Zasshi* was not issued or failed to report prices in the month.

**Data C** Monthly series of raw silk prices and foreign exchange rates at the New York market.

Period	Itmes				
yyyy/mm	Japanese Filature, average: <i>NPJF</i> US dollars	Japanese Re-reels, average: <i>NPJR</i> US dollars	Italian Filature, average: <i>NPIF</i> US dollars	Chinese Filature, average: <i>NPCF</i> US dollars	Chinese Tsatlee, average: <i>NPCT</i> US dollars
188101	5.25				4.88
188102	5.25	4.60			4.94
188103	5.00	4.60			4.88
188104	4.90	4.80	5.38		4.75
188105	4.90	4.88			4.94
188106	4.95	4.70			4.94
188107	5.00	4.75			5.13
188108	5.05	4.90			5.38
188109	5.30	5.20			5.44
188110	5.40	5.40			5.44
188111	5.50	5.35			5.38
188112	5.40	5.00			5.38
188201	5.88	5.10			
188202	5.30	5.38			
188203	5.50	5.05			5.31
188204	5.30	5.15	6.00		5.19
188205	5.28	5.10			
188206	5.30	5.10			5.19
188207	5.20	5.38			5.06
188208	5.25	5.38	5.99		5.00
188209	5.25	5.38	5.99		5.00
188210	5.25		5.99		5.00
188211	5.06	5.25			5.00
188212	5.13	5.25	5.94		5.00
188301	5.06	5.00	5.88		5.00
188302	5.00	5.00	5.88		4.88
188303	5.00	4.70	5.75		4.88
188304	4.88	5.00			
188305	4.88	5.00	5.75		4.75
188306	4.88	5.00	5.75		4.75
188307	4.88	5.00	5.75		5.00
188308	4.88	5.00	5.75		5.00
188309	4.88	5.00	5.50		4.88
188310	4.88	5.00	5.50		4.88
188311	4.88	5.00	5.50		4.75
188312	4.88	5.00	5.50		4.88
188401	4.88	5.00	5.50		4.88
188402	4.88	5.00	5.50		4.88
188403	5.06	5.00	5.50	5.00	5.00
188404	4.88	5.25	5.50	5.12	4.88
188405	5.19	5.00	5.50	5.00	4.88
188406	4.91	4.70	5.30		4.75
188407	4.75	4.75	5.00	4.75	4.69
188408	4.75	4.63	5.35	4.63	4.63
188409	4.50	4.63	5.25	4.50	4.50
188410	4.44	4.63	5.15	4.50	4.25
188411	4.38	4.63	5.15	4.50	4.25
188412	4.38	4.25	5.15	4.50	4.25
188501	4.38	4.63	5.13	4.50	4.25
188502	4.38	4.63	5.06	4.50	4.25
188503	4.25	4.63	5.13	4.63	4.50
188504	4.25	4.63	5.13	4.63	4.50
188505	4.25	4.25	5.13	4.50	4.50
188506	4.13	4.00	5.13	4.13	4.25
188507	4.13	4.00	5.13	4.13	4.00



188508	3.63	3.75	4.75	4.00	3.75
188509	4.00	4.25	4.35	4.00	3.75
188510	4.13	4.63	4.35	4.50	3.88
188511	4.38	4.75	4.78	4.50	4.00
188512	4.56	4.88	5.00	4.75	4.38
188601	4.50	5.13	5.50	4.75	4.75
188602	4.63	5.25	5.50	4.88	4.75
188603	4.75	5.25	5.50	4.75	4.88
188604	4.75	5.00	5.50	4.75	4.75
188605	4.63	5.00	5.50	4.75	4.75
188606	4.50	5.00	5.35	4.75	4.75
188607	4.50	4.85	5.35	4.63	4.75
188608	4.43	4.85	5.35	4.63	4.50
188609	4.49	5.25	5.25	4.75	4.50
188610	4.88	5.38	5.43	5.00	4.63
188611	5.06	5.38	5.63	5.00	5.00
188612	5.06	5.50	5.63	4.75	5.00
188701	5.25	5.50	5.63	4.75	5.25
188702	5.13	5.50	5.50	4.75	4.75
188703	5.13	5.00	5.75	4.75	4.75
188704	4.68	4.75	5.50	4.75	4.50
188705	4.50	4.75	5.00	4.75	4.50
188706	4.50	4.50	5.00	4.50	4.50
188707	4.38	4.50	5.00	4.75	4.50
188708	4.38	5.00	5.00	4.90	4.50
188709	4.60	5.00	5.10	4.90	4.50
188710	4.60	4.00	5.10	4.63	4.50
188711	4.00	4.75	5.00	4.75	4.38
188712	4.38	4.50	5.00	4.50	4.50
188801	4.20	4.40	4.80	4.50	4.25
188802	4.08	4.40	4.80	4.40	4.25
188803	4.10	4.40	4.68	4.40	4.13
188804	4.10	4.40	4.55	4.40	4.13
188805	4.10	3.55	4.55		4.13
188806	3.95	4.25	4.19	4.50	
188807	4.45	4.25	4.75	4.30	4.38
188808	4.45	4.00	4.75	4.00	4.38
188809	4.15	3.80	4.30	4.00	4.00
188810	4.13	4.00	4.50	4.00	4.00
188811	4.18	4.20	4.50	4.00	4.00
188812	4.40	4.20	4.63	4.00	4.00
188901	4.43	4.20	4.63	4.00	4.00
188902	4.43	4.20	4.63	4.00	4.00
188903	4.15	3.90	4.35	3.90	3.75
188904	4.13	3.90	4.35	3.90	3.75
188905	4.13	4.30	4.35	3.90	3.75
188906	4.45	4.15	4.80	3.90	3.75
188907	4.38	4.15	4.70	3.90	3.75
188908	4.38	4.75	4.70	4.00	3.75
188909	4.98	5.00	5.35	4.25	3.80
188910	5.28	5.10	5.35	4.70	3.90
188911	5.28	5.10	5.45	4.70	4.20
188912	5.25	5.10	5.45	4.75	4.20
189001	5.63	5.10	5.45	4.38	4.20
189002	5.49	5.10	5.35	4.50	3.95
189003	5.50	5.10	5.35	4.50	4.40
189004	5.50	5.10	5.35	4.50	4.40
189005	5.50	5.10	5.35	4.50	4.40
189006	5.30	5.10	5.35	4.50	4.40
189007	5.30	5.20	5.35	4.65	4.40
189008	5.30	5.00	5.35	4.75	4.40
189009	5.25		5.30		4.00
189010	4.90				
189011	4.73				

189012	4.46	4.10			
189101	4.20	3.95		4.00	
189102	4.06	4.15	4.40	4.40	3.35
189103	4.26	4.15	4.45	4.40	3.50
189104	4.26	4.10	4.45	4.40	3.50
189105	4.26	4.00	4.45	4.40	3.50
189106	4.15	4.00	4.35	4.40	3.40
189107	4.15	4.00	4.35	4.40	3.40
189108	4.15	3.75	4.35	4.13	3.40
189109	3.93	3.75	4.38	4.13	3.40
189110	3.98	3.90	4.38	4.15	3.75
189111	4.00	3.90	4.33	4.15	3.40
189112	4.00	3.90	4.33	4.15	3.40
189201	4.00	3.90	4.33	4.15	3.40
189202	4.00	3.90	4.33	4.15	3.40
189203	4.00	4.00	4.33	4.50	3.40
189204	4.15	3.90	4.58		3.85
189205	4.05	3.90	4.44		3.00
189206	4.05	3.95	4.44	3.38	3.00
189207	4.10	4.50	4.56	3.60	2.94
189208	4.75	4.79	5.05	3.85	2.94
189209	4.88	4.75	5.44	3.90	3.40
189210	5.00	4.50	5.44	3.75	3.35
189211	4.80	5.00	5.19	4.00	3.30
189212	5.10	4.63	5.63	3.80	3.40
189301	5.00	5.50	5.69	4.25	3.38
189302	5.65	5.00	6.38	4.00	3.50
189303	5.25	4.88	6.19	4.00	3.55
189304	5.13	4.63	6.19	3.88	3.45
189305	5.00	4.38	5.95	3.50	3.35
189306	4.75	4.00	5.70	3.50	3.25
189307	4.25	3.75	5.44	3.18	3.15
189308	4.00	3.63	4.81	3.25	3.05
189309	3.88	3.50	4.69	3.20	2.95
189310	3.75	3.40	4.44	3.20	2.85
189311	3.60	3.40	4.25	3.25	2.78
189312	3.60	3.35	4.28	3.10	2.78
189401	3.55	3.25	4.18	2.95	2.73
189402	3.45	3.20	3.98	2.85	2.63
189403	3.35	3.15	3.88	2.80	2.58
189404	3.35	3.10	3.78	2.75	2.48
189405	3.25	3.15	3.68	2.80	2.43
189406	3.30	3.20	3.78	2.85	2.43
189407	3.35	3.40	3.83	3.00	2.43
189408	3.50	3.55	3.93	2.95	2.58
189409	3.40	3.25	3.83	2.90	2.48
189410	3.35	3.25	3.78	2.85	2.43
189411	3.33	3.30	3.73	2.85	2.38
189412	3.35	3.50	3.78	3.05	2.33
189501	3.55	3.40	3.98	2.83	2.43
189502	3.50	3.50	3.81	2.85	2.50
189503	3.63		4.10	3.05	2.50
189504	3.75		4.00	3.05	2.45
189505	3.75	4.00	4.00	2.93	2.45
189506	4.00	4.00	4.45	2.93	2.50
189507	4.00		4.45	3.50	2.50
189508	4.13	4.00	4.25	3.00	2.48
189509	4.00		4.60	3.50	2.48
189510	4.13		4.50	3.50	2.48
189511	4.13		4.50	3.50	2.48
189512	4.13		4.50	3.50	2.48
189601	4.08		4.50	3.50	2.45
189602	4.06		4.50	3.50	2.45
189603	4.04		4.50	3.50	2.45

189604	4.00		4.50	3.50	2.45
189605	4.00		4.40	3.50	2.45
189606	4.00		4.40	3.50	2.45
189607	4.00		4.30	3.63	2.45
189608	3.25		4.00	3.63	2.20
189609	3.25	3.55	4.00	3.63	2.20
189610	3.50	3.20	3.75	2.75	2.20
189611	3.25	3.15	3.65	3.40	2.05
189612	3.25		3.55	3.60	2.35
189701	3.25		3.60	3.40	2.00
189702	3.25	3.25	3.60	3.25	2.00
189703	3.38	3.25	4.00	3.20	2.50
189704	3.30	3.30	3.68	3.50	2.35
189705	3.35	3.40	3.90	3.50	
189706	3.40	3.50	3.95	3.65	
189707	3.45	3.50	3.93	3.65	
189708	3.55	3.70	4.00	3.90	
189709	3.85		4.10	3.50	
189710	3.80		3.90		2.00
189711	3.73	3.70	4.18	3.85	
189712	3.75	3.68	4.13	3.95	
189801	3.75		4.15	3.50	
189802	3.75		4.00	4.10	2.10
189803	3.80		4.00	4.00	2.10
189804	3.75		3.90	4.00	2.10
189805	3.65		3.80	4.00	2.10
189806	3.80		4.00	4.10	2.10
189807	3.65		3.95	4.10	2.10
189808	3.75		3.95	4.10	2.10
189809	3.65		4.00	4.10	2.10
189810	3.65		3.95	4.10	2.10
189811	3.65		3.95	4.15	2.10
189812	3.68		4.15	4.15	2.15
189901	3.68		4.15	4.55	2.15
189902	4.15		4.45	4.65	
189903	4.45		4.75	4.70	
189904	4.65		4.85	4.70	
189905	4.65		4.85	4.65	
189906	4.65		5.05	4.65	
189907	4.45		4.90	4.75	
189908	4.50		5.10	4.75	
189909	4.50		5.10	4.85	
189910	4.80		5.10	4.85	
189911	5.38		5.10	5.65	
189912	5.50		5.50	5.65	
190001	5.20		5.40	5.35	
190002	5.00		5.30	5.25	
190003	4.90		5.13	4.90	
190004	4.40		4.85	4.80	
190005	3.85		4.50	4.60	
190006	4.10		4.65	4.50	
190007	3.90		4.30	4.00	
190008	3.50		4.05	4.50	
190009	3.25		3.90	4.50	
190010	3.55		4.05	4.00	
190011	3.45		4.10	3.80	
190012	3.50		3.93	4.00	
190101	3.40		3.90	3.88	
190102	3.40		3.90	3.75	
190103	3.45			3.75	
190104	3.50		3.73	3.75	
190105	3.50	3.73	3.80	3.80	
190106	3.68	3.73	4.15	3.85	
190107	3.73	3.98	4.20	4.00	

190108	3.95	3.88	4.28	4.00	
190109	3.88		4.35	4.10	
190110	3.85	3.78	4.10		
190111	3.75		4.13	3.90	
190112	3.70		4.05	4.00	
190201	3.80		4.05	4.15	
190202	3.85		4.05	4.10	
190203	3.85		4.05	3.95	
190204	3.85	4.00	4.05	4.20	
190205	3.95	3.93	4.30	4.18	3.30
190206	3.90	3.93	4.45	4.18	
190207	3.90	3.93	4.45	4.28	
190208	3.93	4.15	4.35	4.53	
190209	4.16	4.15	4.50	4.53	
190210	4.13	4.29	4.48	4.53	
190211	4.15		4.48		
190212	4.34		4.58	4.45	
190301	4.39		4.58	4.45	
190302	4.40		4.58	4.45	
190303	4.30		4.58	4.40	
190304	4.25	4.35	4.68	4.40	
190305	4.34		4.85	4.75	
190306	4.30	4.28	4.65	4.55	
190307	4.28	4.35	4.85	4.95	
190308	4.29	4.35	4.89	4.98	
190309	4.30	4.18	5.00	4.78	
190310	4.13	3.88	4.90	4.35	
190311	3.85		4.70		
190312	3.85				

---

*Source : The American Silk Journal .*