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Devaluation and Exports in Interwar Japan:

The Effects of Sharp Depreciation of the Yen in the Early 1930s

Mariko HATASE *

Abstract

Exports are often regarded as the driving force of Japanese economic recovery in the 1930s. This paper focuses on the background of export recovery and the effects of exchange rate depreciation on the export expansion at that time. A detailed examination of the export recovery process during the 1930s reveals that the main export items and destinations changed considerably over time. This paper attempts to verify the effects of relative price decreases caused by exchange rate depreciation upon export expansion for different industries, destinations, and periods. The United States, India, and Korea are selected as destinations of Japanese export products, namely raw silk, cotton fabrics, and heavy industrial and chemical products. Empirical analyses are conducted to measure the effects of exchange rate depreciation and income effects on exports to these different destinations. The results suggest that factors influencing real export differ significantly from destination to destination, and that the effects of devaluation were thus not identical on exports to all destinations.

Key words: exchange rate, export, gold embargo, interwar economy

JEL classification: F1, L67, N65

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Contents

I. Introduction

In the interwar period, the Japanese economy experienced significant fluctuations; the boom during and following the First World War, the deflationary period of the 1920s, the Great Depression in the early 1930s, and the recovery period after 1932. These economic developments were greatly influenced by exports, as reflected in the following comment: "With slight exaggeration, we can summarize our findings by saying that the growth and fluctuations of the prewar Japanese economy were dominated by exports" (Iwami, Okazaki, and Yoshikawa [1998]).

In the midst of the Great Depression of the early 1930s, almost all national economies experienced a serious downturn. The slowdown in the Japanese economy was relatively mild, however, and the growth rate in real terms remained positive. [1] After 1932, while major countries remained mired in recession, the Japanese economy began to recover. There have been numerous studies of the factors contributing to this early recovery. The favorable influence of exports on economic conditions is cited in previous literature. Numerically speaking, exports consistently contributed to expanding growth rates until the mid-1930s (Figure 1).

Japanese exchange rates declined rapidly in the first half of the 1930s due to the abandonment of the gold standard in December 1931. The dollar /yen rate, which stood at $49 per 100 yen just before the departure from the gold standard, dropped to levels slightly higher than $20 in December 1932, declining almost 60% in a single year. The previous literature has linked this significant decline to export recovery after 1932. Some researchers find the main cause of export growth to be depreciating exchange rates (Nakamura [1983]), while quite a few others stress factors other than the exchange rate declines. Some of the latter point out the importance of wage reductions and enhanced labor productivity in the textile industry, the core business sector driving exports. Others emphasize the importance of exports to colonies and semi-colonies, linked to the expansion of Japanese political and economic power in these regions after the Manchurian Incident in 1931 (Hashimoto [1984], Okura and Teranishi [1994], and other authors).

Exchange rates from the end of 1931 to 1932 showed the largest decline in the history of

[1] While the growth rate of Japan's real GNP in 1932 was +4.4% over the previous year, the figure of real GDP growth in the United States was –14.8%. In the case of the United Kingdom it was +0.3% compared with the previous year.

the Japanese economy, except for that recorded after the Plaza Accord (Ito, Okina, and Teranishi [1988]). Analyses of the influences of exchange rate depreciation on exports during the 1930s are likely to have implications for the relationship between exchange rate developments and economic trends. Therefore, this paper focuses on exports, which are generally regarded to have driven economic recovery in the 1930s, and specifically the background of the export recovery process and the role played by the depreciation of exchange rates in enhancing exports. A detailed examination of the export recovery process during the 1930s reveals that the main export items and destinations changed considerably over time. This paper recognizes the importance of this point and attempts to verify the effects of relative price declines caused by exchange rate depreciation on expanding exports in different industries, destinations, and periods.

In Section II, exchange rate trends in the 1930s and structural changes in exports taking place during the course of the export recovery are summarized. An overall picture of related arguments on factors contributing to the export recovery is described in the same section. In section III, the effects of exchange rate depreciation on exports are assumed to have differed by export destination, based on the fact that a relatively small number of items (raw silk and cotton fabrics, etc.) were exported to specified destinations in interwar Japan. Empirical analyses of price and income effects on exports for different destinations are conducted to verify the different effects of exchange rate depreciation on promoting exports in terms of different industries, export destinations, and periods. In Section IV, important factors for evaluating the effects of exchange rate declines on exports at the time are summarized, based on estimates of the preceding section. Future topics for study are presented in the same section, including price elasticity of demand for export items, exchange rate pass-through (the extent of changes in local currency denominated sales prices against changes in exchange rates), wage decreases, improvements in labor productivity, and the effects of increased raw material prices due to yen depreciation. In the appendixes, some points to be noted in this analysis in the treatment of colonies and semi-colonies, trends in global trade restrictions from the 1920s through the 1930s, and various statistics used to estimate export functions are summarized.

II. Trends in exchange rates and exports in the 1930s

(1) Exchange rate developments

In the first half of the 1930s, the Japanese currency regime changed from the gold standard

to the managed currency system, and exchange rates fluctuated significantly during this period (Figure 2). During the First World War, the United States and major European countries had suspended the gold standard. Then in the 1920s, the gold standard system was almost completely restored internationally, with a return to the system by major developed countries.[2] Japan also returned to the gold standard at pre-war parity ($49.845 per 100 yen; hereafter, unless otherwise specified, the exchange rate is shown in dollar value per 100 yen), in January 1930, a little later than other countries. However, the Japanese gold standard system remained in effect for less than two years. Due to massive yen sales triggered by the United Kingdom's abandonment of the gold standard system in September 1931, Japan reinforced the gold embargo in December 1931 and departed from the gold standard system.[3] The exchange rate at the time temporarily plummeted from parity, $49.845, to below $20 in November 1932.

The government initially accepted this sharp decline as part of its "exchange rate laissez-faire" policy. However, after the yen dipped below $20 in 1932 the government changed its stance to exchange rate stabilization (Ito [1982]).[4] Several instruments were introduced to achieve the exchange rate stabilization policy, including the "Capital Flight Prevention Law"[5] enacted in July 1932 and the "Foreign Exchange Control Law" enacted in May 1933. In addition, the United States abandoned the gold standard system in October 1933, weakening the sales pressure on the yen against the dollar. Following 1933, the exchange rate stabilized at low levels.[6]

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[2] Temin [1989] describes the detailed process of the recovery and collapse of the gold standard system in this period.

[3] The reimposition of the gold embargo in 1931 meant the *de facto* abandonment of the gold standard. The Coinage Act, which was the legal foundation for the gold standard in Japan, was not abolished but suspended for its implementation. However, it never became effective again.

[4] The initial purpose of abandoning the gold standard is controversial. One view is that the government intended to stimulate exports by stabilizing exchange rates at lower levels (Shima [1983], Nanto and Takagi [1985]). Others argue that the abandonment of the gold standard was not implemented as the export drive. For example, after analyzing daily exchange rates from 1932 through 1933, Ito, Okina, and Teranishi [1988] state that the exchange rate decline in 1932 was primarily caused by the sales by overseas traders who were concerned about the Manchurian Incident and the subsequent isolation of Japan in the international community. They negate the governmental initiative of a currency devaluation policy designed to promote exports.

[5] It has frequently been pointed out that the Capital Flight Prevention Law had many loopholes and was ineffective (Hashimoto [1984] and others).

[6] In discussions of the causes of the collapse of the gold standard system, one of the important issues often raised is whether the parity of each country diverged from its equilibrium rate. A prevailing notion is that exchange rates in the 1920s in Japan were overvalued (Okura and Teranishi [1994], Hashimoto [1984], and other authors). For the 1930s, views are divided between that of "more or less in equilibrium" (Okura and Teranishi [1994]) and "developing below purchasing power parity" (Hashimoto [1984]).

(2) Export trends

From the late 1920s to the early 1930s, tight economic policies targeting the return to the gold standard system at pre-war parity were enacted. These policies are occasionally referred to as "Inoue Economic Policy," after the Finance Minister at that time, Junnosuke Inoue. As the return to the gold standard system actually went into effect in the midst of the Great Depression, the Japanese economy slowed in the early 1930s. In 1930 and 1931, nominal imports dropped by over 20% from the previous year, primarily because yen-denominated export prices plunged dramatically (Figure 3 and Figure 4).[7] Textile products were the major export items at that time, and the decline in prices in this sector, particularly for raw silk bound for the United States, contributed to the decline in the total export price. Although real export figures declined slightly in both 1930 and 1931 compared to previous years, the extent of this decline was less severe than that of the nominal base (Figure 3).

Finance Minster Takahashi, who had taken office at the end of 1931, implemented a series of policies, including enforcement of the gold embargo, commonly referred to as "Takahashi Economic Policy." Partly as a result of these policies, signs of economic recovery appeared following 1932. Meanwhile, nominal exports recovered rapidly, as indicated by an increase of over 20% in 1932 from the previous year. This was followed by annual increases at an average of 10% until 1937, although minor fluctuations did occur. Export prices during this period first leveled off in 1932, increased in 1933, then remained flat until 1936, before turning upward after 1937 (Figure 3, Figure 4).

(3) Export recovery and trade structure

Trade in Japan around the 1930s primarily involved imports of raw materials and exports of relatively limited items, mainly textile products. Textile products, such as cotton fabrics and raw silk, accounted for about 50% of all exports in 1935. Heavy industrial and chemical products were also major export items. Chemical products, metal products, and machinery each accounted for about 10% of all exports (Figure 5, Figure 6).

[7] Due to the worldwide Great Depression, the prices of Japan's main export items, such as raw silk and cotton yarn, declined sharply in the international market. These sluggish market conditions led to the decline of the yen-denominated export prices of these products and yen-denominated export prices in Japan thus dropped by about 40% in the two years from 1929 to 1931.

In the meantime, from the 1920s through the 1930s, the trade structure underwent a drastic change (Figure 5, Figure 6).[8] In the 1920s, textile materials were imported, and raw silk, cotton yarns, and other textile-related materials were exported. In the 1930s, textile materials, such as cotton, were imported, and more highly processed textile products, such as cotton fabrics, and other kinds of fabrics, were exported. At the same time, raw fuel materials were imported and exports of heavy industrial and chemical products picked up, primarily to colonies and semi-colonies.[9] Different demand locations existed for different export products, and as export item structure changed, the export destination structure changed as well.

From 1932 through 1934, Japanese exports experienced a recovery led by the textile industry. As mentioned earlier, unlike the 1920s, when raw silk and cotton yarns played central roles,[10] export expansions from 1932 through 1934 were mainly led by fabrics and chemical textiles. According to Hashimoto [1984], three sectors in the textile industry led the expansion of exports in this period, namely the cotton industry importing cotton and exporting cotton fabrics, the rayon industry importing pulp and exporting rayon filament yarns and fabrics, and the wool industry importing woolen yarn and exporting woolen fabrics.[11] While raw silk, a primary export item in the 1920s, was mainly exported to industrialized countries such as the United States, cotton fabrics, which grew to be the biggest export item after 1932, were primarily exported to Asian countries, such as India. Against this background, exports to India and other Asian countries increased significantly in the first half of the 1930s (Figure 7, Figure 8).[12] [13]

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[8] For information on the details of changes in Japanese trade structure from the 1920s through the 1930s, see Ito [1982] and Hashimoto [1984].

[9] In analyses of Japanese exports prior to the Second World War, one controversial issue is whether colonies and semi-colonies should be treated as domestic or as equal to foreign countries. This paper treats them as equal to foreign countries. For more detailed explanations of this issue, see Appendix 1.

[10] In the 1930s, exports of raw silk to the United States declined due to the Great Depression and the invention of nylon and other synthetic fiber products, which began to replace silk items (Yukizawa and Maeda [1978], Blumenthal [1981]).

[11] While the proportion of yarns to total textile export dropped from 57% in 1925 to 27% in 1935, the proportion of woven products increased from 35% to 51% in the same period.

[12] The country-by-country figures cited here are based on data found in *Kinyu-jikou Sankousyo (Reference Book of Financial Matters)* issued annually by the Financial Bureau of the Ministry of Finance. The sources of statistics referenced in this paper are: *Reference Book of Financial Matters, Estimates of Long-Term Economic Statistics* (hereafter referred to as *LTES*) *14* estimated by Yamazawa and Yamamoto [1978], and trade statistics compiled by Yukizawa and Maeda (Yukizawa and Maeda [1978], hereafter referred to as "Yukizawa/Maeda statistics"). As for Japanese trade data, complete enumerative surveys by the Ministry of Finance have been compiled since quite early times, as *Gaikoku Boueki Nenpyou (Annual Returns of Foreign Trade of Japan)*, and almost all statistical data contained in this paper is based on these. However, since the *Reference Book of Financial Matters* is compiled in accordance with prewar criteria, the handling of colonies

Increasing exports of textile products, primarily of woven products, intensified competition with the United Kingdom, which had dominant shares in textile product markets around the globe. As the textile industries of Japan and the United Kingdom had roughly identical export destinations (China, India, Hong Kong, Dutch Indies, and the Straits Settlements), and also had similar product structures, mainly consisting of cotton and woolen fabrics, there was severe competition between the two countries (Hashimoto [1984]). British exports of textile products had already decreased in the latter half of the 1920s, partly due to Britain's return to the gold standard system in 1925 at pre-war parity.[14] In the 1930s, as overall demand around the world declined due to the Great Depression, British exports of cotton products experienced significant declines. However, Japan's exports of cotton products increased dramatically after 1932. As a result, by 1933, the cotton fabric export positions of Japan and the United Kingdom had been reversed (Figure 9).[15]

Rapid expansion of Japanese product shares in the international textile product markets grew to be a political problem in the United Kingdom and its colonies, such as India. The tension between Japan and the British Empire induced tariff escalation and the enforcement of import quotas, designed to protect British and its colonial industries. Specifically, after the Ottawa Conference of the United Kingdom and its colonial states in July to August 1932, while preferential treatment was recognized for the United Kingdom and its colonies, movements to raise tariffs against other countries, including Japan, or to impose import quotas, intensified.[16]

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and other matters differ somewhat from those compiled after the Second World War. In the *LTES*, annual long-term chronological data is compiled on exports by destination and by industry. In the Yukizawa/Maeda statistics, export values of detailed items for different locations are summarized for every five years.

[13] It should be noted that exports to Korea and Taiwan are excluded from data in the *Reference Book of Financial Matters*. The export value to Asia referred to here is the sum of the figure for Asia from the *Reference Book of Financial Matters*, and export values to Korea and Taiwan from the *LTES*. While Japanese trade statistics are FOB-based, exports to Korea and Taiwan are compiled on a CIF basis. In the adjustment method adopted here, exports to Korea and Taiwan are quite probably overestimated, compared to those for other trade destinations (Yukizawa and Maeda [1978] consider overestimate for exports to Korea and Taiwan to be around 5–10%).

[14] The development of cotton industries in India and China also caused the shrinkage of the United Kingdom's share in the global textile market at that time (Sharkey [2001]).

[15] The company history of Kurashiki Bouseki Kabushiki Gaisha (Kurabo Industries Ltd.) describes the condition of the global cotton fabric market at that time as "split by the Japanese and British, with fierce competition between East and West (Kurashiki Bouseki Kabushiki Gaisha [1953])."

[16] For example, India maintained a tariff for cotton fabrics against the United Kingdom at 25%, but raised the same to 75% against other countries, including Japan. Considering the high ratio of Japanese products in Indian cotton fabric imports at the time, this trade restriction measure could be regarded as targeting Japanese products. These trade restraints expanded to other countries, such as Canada and Australia, and "by 1936 Japanese cotton fabric exports were restricted in 78 of 128 markets (Hashimoto [1984])."

[17] (For more details on trade restrictions from the 1920s through the 1930s, see Appendix 2.)

Under these circumstances, textile product exports to Asia peaked after 1935, while those to new markets such as Africa and South America began to grow. However, the increased exports to these new markets were not enough to offset losses in exports to the major markets. Textile export increases thus slowed in the middle of the 1930s, with the growth of total exports decelerating as well.

From the mid 1930s toward the end of the decade, exports to Japan's colonies and semi-colonies became as the driving forces of export expansion (Figure 7, Figure 8).[18] [19] The enhanced trade restrictions mentioned above led to shift export destinations. In addition, with increased military expansion into mainland China taking place after the Manchurian Incident in 1931, investments in colonies and semi-colonies accelerated (Ito [1982], Hashimoto [1984]).[20] These investments in colonies and semi-colonies after 1932 were an important factor contributing to increased exports to these regions. As Hashimoto [1984] points out, "Investments in Manchuria were the driving force of the export expansion to that region." Increases in exports of heavy industrial and chemical products were most noteworthy in these areas.[21]

As observed above, Japan's exports in the 1930s maintained relatively high levels of

[17] The purpose of the preferential tariff bloc of the British Empire established after the Ottawa conference has recently been interpreted as intended "to promote export expansion of primary products from colonies, rather than that of products from the British mainland (Akita and Kagotani [2001])." For more details, see Kagotani [2001] and Sugihara [2001]. For views emphasizing the promotion of British exports to its colonies, see Yanagisawa [2001].

[18] As a result, exports to Asia accounted for 60% of total exports in the mid-1930s.

[19] In the latter half of the 1930s, exports to China increased. The figures for exports to China, available in *Reference Book of Financial Matters* and adopted here, include those to Kwantung Province, a territory leased to Japan. According to Yamamoto [1989], the majority of exports to Kwantung Province were re-exported to Manchuria and North China, except for a small portion consumed in the Province itself.

[20] Hashimoto [1984] states that the scale of the investment in Manchuria was about 1.1–1.2 billion yen for five years from 1932 through 1936. Assuming that about 200 million yen was invested annually, the figure represents about 1% to 2% of the GNP of mainland Japan at that time.

[21] In the 1930s, domestic products gradually replaced imported products in heavy and chemical industries. In this field, however, the quality of domestic products appeared to have been inadequate to compete in the world market with products from more industrialized countries. For example, Okura and Teranishi [1994] contend that increased exports of heavy industrial and chemical products to colonies and semi-colonies did not reflect the technical superiority of Japan. They point out that even after the domestic production ratios had increased in the machinery industry, heavy machinery, particularly larger and more sophisticated models, continued to be imported from Western countries, with domestic production limited to smaller and less sophisticated models. Thus, the destinations of export expansion in the heavy industrial and chemical products were limited to colonies and semi-colonies, since exports to those destinations were mainly accompanied by investment activity.

growth,[22] while trade structures changed with the passage of time. Since the characteristics of exports changed in different periods, the 1930s is hereafter divided into four periods for the analysis of the causes of export expansion based on different export patterns. The first period is 1930–31, in which nominal exports plummeted due to price declines. The second period is 1932–34, in which exports expanded with textile products (primarily cotton fabrics) for developing countries. The third period is 1935–36, in which the growth of textile exports peaked due to enhanced trade restrictions and other factors, making the entire export growth level sluggish. Finally, the fourth period is after 1937, when exports became more dependent on colonies and semi-colonies.

(4) Factors promoting exports

There have been many studies of factors contributing to the rapid improvements in exports in and after 1932, but opinions diverge on the extent to which lower relative prices of export products, led by exchange rate declines, had on the recovery of exports. Some scholars emphasize the contribution of lowered relative prices of export products brought about by exchange rate depreciation. Others recognize the effects of exchange rate declines, but simultaneously emphasize other factors.[23] Of the latter, many stress factors that helped cap yen-denominated export prices, specifically, the roles of (a) wage reductions, and (b) improved labor productivity brought by streamlining and technological innovations. Furthermore, in addition to price factors, many emphasize (c) the contribution of increasing exports to colonies and semi-colonies to the overall export expansion. (For the main issues raised in the previous literature, see Table 1.)

Nakamura [1983] and Patrick [1971] emphasize the role of decline in relative prices of export items caused by exchange rate depreciation. Nakamura [1983] argues that the major cause of export increases was the depreciation of exchange rates, stating that “Japan was almost alone in seeing exports increase; this would have been difficult during the world depression

[22] In Japan, exports recovered faster in the 1930s than in other major countries. For example, in 1933, yen-denominated nominal exports from Japan had already returned to 1930 levels, while the United States and United Kingdom did not return to that level until 1940 and 1946, respectively.

[23] Another view argues that the exchange rate declines had very limited influence over increases in export volume. Takagi [1989] conducts a time-series analysis on the effects of exchange rate fluctuations on industrial production, exports, and imports from the latter half of the 1920s through the first half of the 1930s, and states that real exchange rates had very limited influence over the figures converted into real terms by WPI.

without a drastic devaluation of more than 40%." Patrick [1971] also comments, "Japanese export prices had dropped to comparatively low levels, and (in 1933) exports had risen to 38 per cent above the 1928 level."

However, many previous studies mention other factors besides depreciation of exchange rates as the cause of export growth in the 1930s. While many of these studies recognize the influence of the lowered exchange rate over exports, they regard these influences as rather limited compared to the first view.

It is frequently pointed out that wage declines, especially in the textile industry, reduced production costs and even yen-denominated product prices, supporting exports. For example, Hashimoto [1984] comments that export prices of cotton fabrics in Japan were capped by wage reduction. While wages in the United Kingdom, Japan's chief competitor, showed downward rigidity, wages in Japan declined significantly in the 1930s, helping to reduce production costs of cotton fabrics in Japan to levels 17–18% lower than the United Kingdom. Hashimoto [1984] thus concludes, "declines in both exchange rates and wages were the supporting factors for Japan's cotton industry advance in the world."[24] [25] In fact, comparing nominal wages in the cotton industries of both the United Kingdom and Japan, while wage levels in the United Kingdom in 1934 dipped slightly, to 9% below the 1930 level, Japanese wages dropped by 29% in the same period (Figure 10).[26]

Furthermore, Lewis [1949] points out that more flexible price structures than in other

[24] According to Hashimoto [1984], wages in Japan consistently declined during the first half of the 1930s before finally seeming to bottom-out in 1936; in particular, wage reductions for female workers in the textile industry were conspicuous. Although the speed of the decline was moderate, the actual decline from the beginning to the middle of the 1930s was among the steepest in the world, comparable only to the decline in Germany.

[25] In the early 1930s, domestic textile companies implemented major streamlining measures, such as closure of unprofitable operations and workforce reductions, in addition to wage cuts. For example, the company history of Kurashiki Bouseki Kabushiki Gaisha (Kurabo Industries Ltd.) indicates implementation of labor reductions twice in the latter half of 1930 and in 1931. As a result, employee numbers were reduced by 25% (Kurashiki Bouseki Kabushiki Gaisha [1953]).

[26] The rapid expansion of exports of Japanese products supported by these low labor costs was perceived in the United Kingdom as the result of "social dumping," a strategy whereby export industries apply unfair low wages in order to maintain their competitiveness. This view may have been used as the justification for the imposition of the subsequent trade restrictions. For more details on this issue, see Takahashi [1950]. Similar arguments were also presented in Japan after the Second World War. For example, concerning the increased export figures in cotton fabrics, Nakanishi [1968] comments, "the expansion of cotton fabric exports was caused by the use of so-called foreign exchange dumping as an export promotion tool." This "so-called foreign exchange dumping" is not clearly defined, but by quoting a comment by a textile company executive at the time ("Profits can be generated by squeezing and reducing costs of labor") ,it may be seen to refer to wage reductions implemented simultaneously with exchange rate declines. On this account, more detailed analyses will be required, such as analyses of the cost structures of the cotton industry and comparisons with similar industries in other countries.

countries, including those for wages, helped alleviate Japan's production declines during the Great Depression.

It is also frequently pointed out that improved labor productivity due to streamlining and technological innovations, contributed to cap yen-denominated export prices, thus leading to export expansion. During and after the 1920s, the Japanese cotton industry improved labor productivity significantly by introducing new technologies and large-scale capital investments.[27] Ito [1982] suggests that this upward trend in labor productivity continued in the 1930s. In fact, labor productivity in the cotton-spinning industry, as measured by total labor input, significantly increased in the first half of the 1930s (Figure 11). In this regard, Abe [1995] points out the possibility that the new trend of introducing new and powerful machines in small to medium sized enterprises, as well as newly constructed factories, subsequently spread to major spinning companies and greatly improved labor productivity in the first half of the 1930s.[28]

The contribution of increased exports to colonies and semi-colonies to recovery in the entire export sector has also frequently been pointed out (Okura and Teranishi [1994], Iwami, Okazaki, and Yoshikawa [1998]). Several factors are believed to have existed that particularly affected trade with colonies and semi-colonies, and these factors must be taken into account when analyzing trade with these regions, in addition to those affecting foreign trade. These particular factors can be either economic (such as tariffs and currencies) or political (such as colonial policies). During these periods, such factors helped promote Japan's trade with its colonies and semi-colonies. For example, tariffs were lifted for trade between Japan and its colonies in both directions.[29] And, as mentioned above, investments in colonies and semi-colonies greatly increased during the Japanese military encroachment into China in the 1930s.[30]

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[27] In the 1920s, high-draft machines entered wide use, contributing to significant process reductions in the spinning industry. In addition, for woven fabrics, new technologies were rapidly introduced for labor savings, such as the Toyota automatic looms invented in 1924. Furthermore, large-scale investments were also made to prepare for the elimination of late-night work by female and minor workers, which was to be implemented in 1929 (Hashimoto [1982,1984], Sharkey [2001]). Simultaneously, air-conditioning facilities were improved and installed to adjust temperature and humidity to enable cotton yarn to be made stronger, and to allow sophisticated equipment to operate properly (Abe [1995]).

[28] It is also pointed out that the closure of inefficient factories, implemented in 1929–30 in some sectors, helped improve productivity at that time (Napier [1981]).

[29] Colonization did not immediately lead to tariff exemptions, since tariff exemptions with colonies and semi-colonies were implemented at different times, depending on government policies. For more details on this point, see Appendix 1.

[30] The previous literature frequently points out that export expansions dependent on colonies and semi-colonies faced limitations in terms of cash flows of foreign currencies (Nakamura [1983], Ito [1982] and other authors). While exports to colonies and semi-colonies at that time were mainly comprised of heavy

(For differences in colonies and semi-colonies in terms of legal status and economic systems and the precautions reflecting these differences in implementing analyses, see Appendix 1.) Okura and Teranishi [1994] comment that Japan's export growth in the 1930s, unlike European countries during the same period,[31] cannot be totally explained by declining exchange rates. According to their empirical analysis, although the impact of exchange rate depreciation was significant in the early stages (specifically 1932 and 1933), this impact subsequently and rapidly diminished. They conclude that the effects of Japan's political and economic expansion into colonies and semi-colonies on export increases cannot be denied.[32]

To some extent, the effects of exchange rate fluctuations on exports depend on the price elasticity of demand for export items. In this regard, Sato [1978] measures the income elasticity and the price elasticity of demand for raw silk, a major export product in the 1920s through the 1930s, in the United States, the largest export destination for this product. Sato [1978] concludes that with income elasticity at 3.5 and the price elasticity at -0.3, demand for raw silk was significantly susceptible to influence by income factors. Sato [1981] also estimates the price elasticity of cotton product demand at "roughly -2 to -3."

3. Empirical analysis of exports by destination

(1) Objectives and methods for estimating export functions for different destinations

As noted in the previous section, Japan's overall exports continued to increase relatively rapidly throughout the 1930s. Nevertheless, a breakdown analysis of these exports indicates that the items and destinations that recorded significant increases changed over time. Despite

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industrial and chemical products, raw materials for these products must have been imported from regions other than the colonies or semi-colonies. Since these colonies and semi-colonies were in the yen bloc, increased exports to these regions did not contribute to foreign exchange earnings; however, imports from outside regions required foreign currencies. Thus, after 1937, while trade surpluses were recorded for mainland Japan, it was difficult for foreign currency flows to cover trade deficits against industrialized countries.

[31] Eichengreen and Sachs [1985] estimate the effects of exchange rate reductions in the 1930s on European economies and report a correlation between exchange rates and exports; that is, the lower the exchange rate, the more exports the country can expect.

[32] Okura and Teranishi [1994] state that the performance of the export function with the "East Asian dummy" variable comprised of export quantities for colonies and semi-colonies is better than that without the dummy variable. (Other explanatory variables common for those two estimates are import quantity indexes of major Japanese export destinations, as a proxy variable for income factor, and the relative export prices of Japan as price factors). They thus conclude that export expansion to colonies and semi-colonies became an important factor in increasing exports throughout the 1930s.

the existence of empirical analyses of Japan's total exports and case studies on individual export items, studies summarizing the effects of exchange rate fluctuations for different export destinations seem to be rare. Based on the export structure at the time, in which specific items were exported to specific destinations, breakdown analyses for export destinations are expected to present more detailed explanations of the relationship between exchange rates and exports. This section will therefore analyze export functions for different destinations (the United States, India, and Korea) in order to specify factors, which affect exports to each destination.

The purpose of empirical analysis here is to conduct comparative studies on the effects of three factors on export increases for each destination. These factors are (a) exchange rates, (b) income factors of destination countries/regions, and (c) enhanced colonial policies, including increased investment in Japan's colonies and semi-colonies. In this estimate, real exports are treated as dependent variables, and real exchange rates, real GDP, and direct investments from Japan are treated as explanatory variables.

First, in the estimation of total real exports (excluding figures for China and Manchuria),[33] [34] real effective exchange rate and the real GDP for the world are treated as explanatory variables. The effective exchange rate is compiled by an export value based weighting system.[35] The real GDP for the world consists of the GDPs of major countries and regions with an export value based weighting system.[36] (For real export and real effective exchange rate, refer to

[33] From the 1920s through the 1930s, China, including Manchuria, was an important export destination for Japan, accounting for 10–20% of total Japanese exports. However, exports to China (including Manchuria from 1931) are excluded from the dependent variables in this analysis, due to the insufficient data. Chinese real GDP figures are available from 1929 in Madison [2000], but are insufficient to conduct estimate using data set from 1910. For other countries, there are countries and regions in which long-term chronological data concerning real GDP is not available (Hong Kong, Straits Settlements, and other regions). Exports to these countries and regions are not excluded from the dependent variables, since they raise no serious problems, being regarded as minor in terms of export values.

[34] The export price indexes of Table 5 in the *LTES 14* are utilized to convert export values into real terms.

[35] Real effective exchange rates are compiled from real exchange rates for nine regions from which continuous nominal exchange rates and price index data are available, and which were among the top 20 destinations of Japan's exports in the 1910s, 1920s, and 1930s. For details of the calculation methods, see Appendix 3.

As stated by Sugihara [2001], the scope of previous literature analyzing real effective exchange rates has been limited to the United States and the United Kingdom. In this regard, in Iwami, Okazaki, and Yoshikawa [1998], the analytical scope is expanded to include India and China.

As represented by Madison [2000], since more substantial long-term chronological data from each country have recently become available, it is expected that the scope of analysis will be expanded. As for nominal exchange rates for China, Sugihara [2001] conducts analyses that incorporate the effects of the monetary regime reform of China in the 1930s.

[36] Real GDP for the world is compiled from data for the regions from which continuous real GDP data is available, and which were among the top 20 of Japan's export destinations in the 1910s, 1920s, and 1930s. For details of the calculation methods, see Appendix 3.

Figure 13.) For real effective exchange rates, the figures for the current and previous terms are both made explanatory variables, considering the time lag after which exchange rate fluctuations affect trade volume. The sample period is 1914–37, a period during which nominal exchange rates and real GDP figures for each country or region are available. For all data, annual figures are transformed into indexes established by setting the 1934–36 average as 100, logarithms of which are utilized.

Next, export functions of major destination countries and regions, representing destinations of major export items at the time, are estimated. The major Japanese export items at the time were raw silk, cotton products, and heavy industrial and chemical products. In the three regions of study, the United States was the biggest export partner for raw silk.[37] India was an important export destination for cotton products and a typical example of increasing exports, primarily of cotton products in the second period (1932–34), while Korea was a typical example of a colonial or semi-colonial export destination.[38]

In all these cases, the data is on an annual basis, and the sample period is 1912-1937, a period in which horizontal comparisons of the three regions can be made. (For real exports and real exchange rates for the United States, India, and Korea, refer to Figures 14, 15, and 16.) The dependent variables are real exports for each country or region. In the case of the United States and India, the explanatory variables are real exchange rates against the currencies of the destination countries, [39] and the real GDP of the destination countries as income factors. For

[37] The proportion of raw silk export to total exports to the United States remained at 62% in 1935, although it decreased year by year, due to the Great Depression and the emergence of substitute products such as synthetic fibers.

[38] The scales and the growth rates of investments in the 1930s from Japan were more significant in Manchuria than in Korea. For Manchuria, chronological data became available only after 1932, when "Manchukuo" was established. The analysis here thus involves Korea as its data is comparable with that available from the other countries, and since its situation was similar to that in Manchuria, where increased investment from Japan followed colonial policy changes. This investment, as in Manchuria, was particularly evident in the heavy and chemical industries in the 1930s.

Korea experienced rapid industrialization in the 1930s. This may be attributed to the fact that the status of Korea in Japan's colonial policies changed from being a food supply base to a base for supplying basic materials required for heavy and chemical industries (Yamamoto [1992]). This industrialization policy in Korea, as in that of Manchuria, quite probably induced exports of heavy industrial and chemical products from Japan. For example, in the case of facilities of the Konan Factory of Chosen Chisso Kabushiki Gaisha, which was a manufacturer of chemical products and invested significant amounts in Korea among Japanese-affiliated private enterprises, "all the necessary facilities and equipment were ordered to Japanese manufacturers" (Nihon Chisso Hiryo Kabusiki Gaisha [1937]).

[39] Currencies used for settlement of these exports to the United States and India were not necessarily the currencies of the destination countries. However, if the yen depreciates against the currencies of the destination countries, the relative prices of the goods exported from Japan decline in those currencies, and this should effect an increase in export quantities for Japan. Thus, real exchange rates against the currencies of the destination countries are used as explanatory variables. According to Ito [1979], prior to the First

Korea, besides an estimate with real exchange rates and real GDP as explanatory variables, two additional estimates are conducted; with real GDP and real direct investments as explanatory variables, and with real GDP and lagged dependent variable as explanatory variables. [40] Real exchange rates for both the current and previous terms are treated as explanatory variables, considering the time lag after which exchange rate fluctuations affect trade volume. For India, the First World War dummy variable is also added to estimates between 1914–1918, as exports to India during this period temporarily jumped due to the United Kingdom's participation in the First World War.[41] [42]

All data are derived from annual figures transformed into indexes with the average of 1934 to 1936 set to 100. For real exports, the nominal export values for each country or region are converted into indexes, which are further deflated by export price indexes for each country or region, after which the resulting indexes are transformed into logarithms. The export price indexes for each country or region are basically estimated with the Export Price Indexes Classified by Industry, available in Table 5 of the *Long-Term Economic Statistics* (hereafter referred to as *LTES*) 14. However, these indexes are export prices for the entire world and are unable to reflect structural differences in exports for different destinations in terms of textile products comprising the majority of exports. They are therefore adjusted on the basis of the export prices of major textile items.[43] Exchange rates are changed into real terms by utilizing wholesale price indexes of Japan and the United States for the United States. For India and

World War, Japanese trade settlements were mostly made on the basis of the pound sterling (even raw silk exports to the United States were settled in London on a pound sterling basis), but after the 1920s, the settlement currencies diversified into pound, dollar, yen, and silver.

[40] At that time, a currency linked to the Japanese yen was used in Korea (see Appendix 1), and no nominal exchange rate fluctuations took place between these two currencies. If there are gaps in these two countrys' domestic price developments, real exchange rates may fluctuate, even under a fixed exchange rate system. Therefore, the real exchange rates against Korea are also treated as explanatory variables. As for direct investments, security and business investments from Japan in Korea, obtained from Table 20 of the *LTES* 14 (Korean receipt and payment against Japan mainland) are utilized. These amounts are equivalent to the sum of direct investments and securities investments under the current framework for balance of payments.

[41] Prior to the First World War, the Indian cotton product market was dominated by British products. However, a "cutting off the supply" (Nakanishi [1968]) took place due to the War, leading to increased exports of Japanese cotton yarns to India.

[42] For comparison, estimates are also made by adding the First World War dummy variable to the export functions for the world, the United States and Korea. The results are insignificant, however.

[43] Export price indexes for different countries or regions are basically estimated by utilizing price indexes by industry in Table 5 of the *LTES* 14 except textiles. As for textiles, the price index is compiled from export prices for major textile items. The weights are calculated using classified export values for each country or region given in the Yukizawa/Maeda statistics. For more details on the calculations and the reasons for adjustments for textile products, see Appendix 3.

Korea, retail price indexes of India and Korea, together with Japanese wholesale price indexes are used due to the lack of availability of wholesale prices.[44] Japanese direct investments in Korea are converted into real terms by utilizing Japanese wholesale price indexes.

(2) Estimated results of export functions for different destinations and their interpretations

The estimated results are as indicated in Table 2. The effects of each factor on exports suggest significant differences for each export destination. First, for real exports to the entire world, the coefficients of the real effective exchange rates for both the current and previous terms are significant, the coefficients being slightly greater for the previous term. The coefficient of the real GDP, as an income factor, also turns out to be significant. Given these results, it may be surmised that significant exchange rate depreciations supported real exports in the second period (1932-34) under conditions in which the real GDP for the world declined.

Next, the United States real GDP turns out to be greater than the real exchange rate in terms of both the coefficient and t-value. Specifically, the coefficient of the real exchange rate for the previous term is insignificant.[45] On the other hand, in India, the coefficient of the real exchange rate is significant only for the previous term, and the coefficient of the real GDP is negative (meaning that when real GDP increases, exports decrease). The coefficient of the real exchange rate during the term in which it is significant is greater for India than for the world or the United States. For Korea, the coefficients of the real exchange rate for the previous term and the real GDP turn out to be significant. When real GDP and real direct investment in Korea from Japan are made explanatory variables, the coefficients of both turn out to be significant.[46] In addition, in order to avoid serial correlation, lagged dependent variables are added as

[44] Mitchell [1998] has been used for retail price indexes in India. Figures for 1912–13 and 1915–20 are unavailable, and therefore, linear interpolations are conducted on the assumption that the rates of change were consistent from 1914 to 1921.

[45] Durbin-Watson statistic indicates the serial correlation in the estimates for the United States, and final judgment should be reserved when interpreting the results. Lagged dependent variables are added as explanatory variables to eliminate correlation, and while coefficient signs produce the same results for exchange rates in both the current and previous terms, the coefficients of these variables are insignificant. At the same time, the coefficient of real GDP is significant. However, Durbin's *h* statistic of –2.56 implies that correlation may not have been completely eliminated. These estimates will therefore require further study in order to draw any strong conclusions.

[46] When the real exchange rates of the current and previous terms are added as explanatory variables, the coefficient of exchange rates for the previous term prove significant, while that of real direct investments from Japan are insignificant.

explanatory variables. As a result, the lagged dependent variables and real GDP prove to be significant.[47]

In the above estimated results, the coefficients of the factors in the export function vary from destination to destination. This may reflect the fact that different sets of items were exported to each destination.[48] Major items for the United States were silk products, primarily raw silk used as intermediate materials for luxury clothing, for which demands may have been dependent on American domestic incomes rather than price factors. The estimated results here are consistent with the results of the analyses conducted by Sato [1978], concluding that the absolute values of income elasticity of demands for silk products are greater than the absolute values of price elasticity.[49] Next, real exports to India increased significantly after 1932 (Figure 15), which may have been due to the decline in real exchange rates after 1931. As exports to India primarily consisted of cotton products,[50] it may be possible to surmise that the exports of cotton product were easily promoted by exchange rate declines. As for Korea, local income factors played an important role. Export increases in the 1930s may reflect the fact that economic growth in Korea was accelerated partly as a result of enhanced industrialization policies for colonies.

Supposing different sets of factors affected exports by item and by destination, the factors affecting the entire export growth for different time periods may also have been different. Chronologically reviewed, the export growth in the second period (1932-34) was supported by cotton products. As already observed with regard to India, the price elasticity of cotton exports appears to be great, and exchange rate depreciation may have been the major factor in boosting

[47] When the explanatory variables are lagged dependent variables, real GDP, and real direct investments, the coefficient of real direct investments from Japan is insignificant, and the coefficient sign turns out negative. When direct investments for the previous term are made an explanatory variable, replacing those for the current term, the coefficient sign turns out to be positive, but the coefficient is insignificant (Durbin's *h* statistics for the respective estimations are 0.98 and –0.53). Furthermore, when lagged dependent variables, real exchange rates for the previous and current terms, and real GDP are made explanatory variables, the coefficient sign of the real exchange rates turns out to be negative, but the coefficient is insignificant (the Durbin's *h* statistic is –0.07).

[48] Strictly speaking, analyses must be broken down into regions and items in order to prove this point directly.

[49] It should be noted that while Sato [1978] analyzes the price elasticity of each item's demand, the elasticity available in the analysis of this paper is acquired through the entire exports from Japan to the United States and real exchange rates.

[50] The Yukizawa/Maeda statistics indicate that about 60–70% of exports to "other Southeast Asian countries," including India in 1925 and 1935, were textile products, about 50–60% of which were cotton fabrics.

exports in this period.[51] In particular, the depreciation of the yen against the currencies of the United Kingdom, a major competitor, and of British colonies, major export destinations, may have worked favorably for export competition. The decline against the pound sterling (Figure 2) may have had strong effects on Japanese competitiveness, since some British colonies pegged their currency to the British pound. Furthermore, as the previous literature reveals, labor productivity as measured by total labor input greatly improved from the 1920s through the 1930s in the cotton industry, and wage levels were reduced continuously for several years in the 1930s. These factors may have restrained increases or induced decreases in yen-denominated export prices, possibly contributing to expanding export. It may thus be necessary to somewhat underestimate the effects of the declines in exchange rates.[52] [53]

Finally, exports for colonies and semi-colonies, which supported exports in the third period (1935-36) and played a major role in enhancing exports during the fourth period (1937-), may have reflected accelerating economic growth due to enhanced colonial policies for these regions. In this case, it may be possible to surmise that colonial policies greatly influenced export expansion during these periods.[54]

4. Concluding remarks

The analyses performed in this paper so far indicate that the significant decline in

[51] The magnitude of elasticity here is the average for the estimation period. It should be noted that the elasticity may have changed during different time periods.

[52] As some researchers point out, in addition to price factors, systematic market research and efforts to gain access to the market may have influenced export expansions in the cotton industry during this period. For example, Hashimoto [1984] notes that the "highly systematized cotton industry operations of Japan" shown in overseas market was one of the most important factors for export expansion. These operations included research conducted by the Ministry of Trade and Industry via Overseas Establishments, the deployment of overseas sales networks by trading firms, and collaborations between trading firms and spinning companies.

[53] The company history of Kurashiki Bouseki Kabushiki Gaisha emphasizesthat enhanced productivity and improved quality contributed significantly to increased exports. "During the repeal of the gold embargo, from January 1930 to the end of 1931, we devoted our efforts to cutting production costs and improving product quality. As a result, we succeeded in producing high-quality, low-priced cotton products. In addition, due to the sudden declines in the exchange rates stated earlier, external prices for our cotton products became extremely cheap. Thus, our competitiveness against overseas products in export markets was enhanced, leading to dramatic increases in exports in and after 1932" (Kurashiki Bouseki Kabushiki Gaisha [1953]).

[54] When the yen depreciates against the currencies of trading partners, prices of Japanese products denominated in the currencies of those partners decrease in comparison to locally produced products, and the prices of Japanese products decrease in comparison to those of third-party countries exporting the same products to those trading partners. Export quantities increase through these two channels. As for colonies and semi-colonies using the yen or currencies based on the yen, only the latter channel worked to raise export to these regions.

exchange rates after the end of 1931 may have contributed to increasing exports to India in the second period (1932-34), but may not have significantly affected exports to the United States during the same period. The results of these analyses appear to suggest the possibility that the effects of exchange rate fluctuations on exports may vary in each industrial sector. Further studies are needed to clarify the causes of these differences. This section will suggest specific points to be covered in future studies.

Certain conditions should be met when export quantities are raised by exchange rate declines. First, it will be necessary for declines of sales prices in local currencies to stimulate demand for export items; in other words, for the price elasticity of demands to take sufficiently negative values. At the same time, it will also be a prerequisite condition that sales prices denominated in local currencies decrease when exchange rates decline. In other words, the exchange rate pass-through ratio must be sufficiently high.

For the cotton fabrics and raw silk discussed in this paper, their price elasticities of demand in overseas markets were different, according to the previous literature. The results of the analyses conducted in this paper are consistent with these results.

The difference between cotton fabric and raw silk in terms of price elasticity may have been caused by product characteristics and competitive conditions in each market. For example, the competitive environments for raw silk and cotton fabrics differed significantly. At that time, Japanese silk exports accounted for over 90% of the entire imported raw silk in the United States, which may be viewed as a noncompetitive market. However, for cotton fabric, as reviewed in Section II, the markets were competitive. How these factors affected the differences in price elasticity for each item, and how exchange rate depreciation contributed to increasing export quantities, may need to be examined to explain differences in the effects of exchange rate development on exports to each destination.

If there were differences in exchange rate pass-through ratios for each item, these various ratios may have led to the differences in the effect of exchange rate developments on each export item. Table 3 indicates developments in export unit prices of raw silk and cotton fabrics in the early 1930s. In the 1932 figures, while the yen-denominated export prices for cotton fabrics leveled off or declined slightly, the yen-denominated export prices for raw silk increased; that is, the degree of decline in foreign-currency-denominated export prices was different.[55] In the case of the raw silk industry during the 1930s, the degree of decline in sales

[55] While the export quantity of cotton fabrics in 1932 exceeded the previous year's level by 44%, that of raw silk dipped 2% below the previous year's level.

prices of export goods in local currencies was less than the degree of depreciation in exchange rates due to the increase in yen-denominated price.

If the exchange rate pass-through to export price is too low, changes in exchange rates may not affect export quantities. Ogawa [1992] refers to the phenomenon of limited effects of exchange rate fluctuations on sales prices in a local currency as the "imperfect pass-through effect," citing two causes for this phenomenon. The first cause is changes in marginal costs derived from price development of imported raw materials. Exchange rate developments affect not only export prices, but import prices. When exchange rates decline, marginal costs may increase due to appreciation of imported raw material prices. In this case, the extent of the decline in sales prices denominated in a local currency is less than the extent of the exchange rate decline. Second, the imperfect pass-through effect may arise from the pricing behavior of export firms. If firms apply price-discrimination across export destinations, they may not pass-through exchange rate changes to export prices perfectly in some markets, but change markups, sales price over marginal cost, and set prices to absorb part of the exchange rate fluctuations.[56]

When imperfect pass-through effects appear, the extent of change in relative prices of tradable goods will be less than the extent of change in exchange rates. As a result, the effects of exchange rate fluctuations on the economy differ from those in the case of exchange rate fluctuations passed through perfectly to sales prices denominated in foreign currencies.

As observed earlier, it appears that exchange rate pass-through was almost perfect in the cotton industry in 1932. The backgrounds of these circumstances require further examination. Specifically, potential areas of research include the effects of increasing prices of imported raw materials (e.g., raw cotton) caused by the depreciation of the yen,[57] declining wage levels,

[56] After the Plaza Accord in 1985, a sharp appreciation of the yen took place in the latter half of the 1980s, although it did take certain period of time for the changes in exchange rates to affect export quantities. A series of analyses conducted in the late 1980s and the early 1990s reveal that the pricing behavior of export firms can have a significant impact on the effects of exchange rate fluctuations on exports. Pricing behaviors that may hamper the effects of exchange rate declines on exports are known as "PTM: pricing to market." For an overview of PTM, see Ogawa [1992]. Baba [1995] examines the causes of price differences between domestic and overseas markets through empirical analyses of markup pricing of contemporary Japanese companies, while Otani [2001] introduces new open macroeconomics that integrate the concept of PTM.

[57] Previous studies analyzing the effects of exchange rate declines on exports regard the effects of increasing prices of import items as an important issue to be examined. Sato [1981] discusses the effect of increases in imported raw material prices. Cotton products, which became major export items in and after the 1920s, required imports of raw cotton, the price for which increased due to exchange rate declines, which in turn led to increases in yen-denominated export prices. Sato [1981] therefore concludes that the relative price reduction effects of the export products due to exchange rate declines were partly counterbalanced. Okura and Teranishi [1994] conduct empirical analyses on the effects of changes in relative import prices on manufacturing prices and export prices, concluding that a "one percent increase in relative import prices will

improved labor productivity based on technological innovations and capital investments, and production increases partly caused by enhanced exports (Figure 17). Furthermore, significant increases can be observed in domestic cotton prices during the same period (Table 3), presenting significant divergence between domestic prices and export prices. This point also requires further study.

increase relative export prices by 0.83%."

Iwami, Okazaki, and Yoshikawa [1998], point out that the effects of increasing raw material prices caused by exchange rate decline on export prices were insignificant at that time as raw material prices internationally decreased in the midst of the Great Depression.

Actual yen-denominated import prices peaked in 1928, fell by around 40% until 1931, and then rose in 1932, when the prices of all products increased by about 20% and those of textile raw materials rose by nearly 25% (Figure 16). At the same time, even though the international commodity market for textile materials shrank, the degree of reduction in cotton prices was less severe in 1931–32 than in 1929–31, and this seems insufficient to counter the effects of the declining exchange rates on import cotton prices (Table 4). In fact, yen-denominated import prices of ginned cotton increased by about 30% in 1932.

Appendix 1: Differences in colonies and semi-colonies in terms of legal status and economic systems

As Japan's colonies and semi-colonies expanded from the 1890s through the 1940s, the diversity of their legal positions and their changes over time became significant. Their economic systems also differed in terms of time and place. These differences should be carefully noted when conducting economic analyses. Based on Yamazawa and Yamamoto [1978] and Yamamoto [1989], this section reviews differences in colonies and semi-colonies in terms of legal status and economic systems, pointing out noteworthy issues when analyzing trades with these regions.

According to Yamamoto [1989], the Japanese Empire as of 1937 was composed of a "mainland" and "overseas territories" when the Japan-China War erupted. Legally speaking, the "mainland" was an area in which the same legal system applied, comprised of Honshu, Shikoku, Kyushu, Hokkaido, Chishima islands, Okinawa islands, Ogasawara islands, and the small nearby islands. The "overseas territories" were those in which Japanese sovereignty was exclusively applied, and had unique legal systems specific to each region. These territories comprised Korea, Taiwan, South Karafuto (the southern part of Sakhalin), Kwantung Province, and the South Sea Islands. Of these, Korea, Taiwan, and South Karafuto were Japanese-dependent territories; Kwantung Province was a leased territory from China; and the South Sea Islands were trust territories from the League of Nations. In addition, the Japanese Empire had "'Manchukuo' on its periphery as a satellite nation under its own power" (Yamamoto [1989]).[58] In an analysis of trade between Japan and these regions, determining the scope of imports and exports can be controversial. In prewar trade statistics, South Karafuto was regarded as part of the mainland. Korea and Taiwan were not included in trade statistics; however, data on trade between these regions and the mainland were available as "transfers" in different sets of statistics.[59] Kwantung Province and the South Sea Islands, meanwhile, were consistently treated as foreign locations, and trade statistics with these regions are available. In trade statistics estimated after the Second World War, all trade with regions other than the mainland

[58] In addition to Manchuria, Japan expanded its military and economic influence over other northern areas of China in the latter half of the 1930s.

[59] Trade statistics estimated after the Second World War utilize the figures of these transfers to calculate trade figures with Korea and Taiwan.

has been treated as external trade.[60] Considering these characteristics, Yamazawa and Yamamoto [1978] comment that "Colonial trade was positioned as intermediary, between transactions within the mainland and external transactions. It will thus be preferable to analyze trades separately by trade destination."

In an analysis of trade with colonies and semi-colonies, it will be necessary to pay attention to currencies and tariff systems. First of all, the Japanese yen was treated as legal tender in South Karafuto and the South Sea Islands. In Korea and Taiwan, local currencies issued by the Bank of Chosen (Korea) and the Bank of Taiwan, respectively, were treated as legal tender (both currencies were referred to as "yen"). As these currencies were guaranteed to have equal exchange rates with the Japanese yen, the economic effects of their use can be regarded as almost identical to use of the Japanese yen. On the other hand, in "Manchukuo," the local currency of yuan was issued and circulated by the Manchurian Central Bank. This currency, from its inception, was linked to silver, while the Japanese yen was pegged to gold. Thus, relative price movements between gold and silver led to corresponding fluctuations between the Manchurian yuan and Japanese yen. Then, in 1935 the Manchurian currency was pegged to the Japanese yen. Given this linkage, it is common to include "Manchukuo" when referring to the "yen bloc." In Kwantung Province, although the Bank of Chosen notes were treated as legal tender, currencies belonging to Manchuria and China also circulated, making the region in effect a multi-currency area.

As for tariffs, trade between the mainland, South Karafuto, Taiwan, Korea, and the South Sea Islands was tariff-exempted. However, being a colony of Japan did not necessarily mean tariff-exemption. In the case of Taiwan, which was colonized in 1895, tariff exemption was not established until 1911; in the case of Korea, which was colonized in 1910, the exemption was established in 1920. As for "Manchukuo," tax exemption measures were established shortly after the creation of the Japan-Manchuria currency link.[61]

As noted above, in order to conduct economic analyses of Japanese colonies and the like from the 1890s through the 1940s, it will be necessary to note the differences among respective regions in legal and economic systems. Complex transitions in systems at different time periods also need to be considered. It is common to treat "colonies" and "semi-colonies" inclusively in the previous literature.

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[60] However, South Karafuto, for which the figures of transfers with Japan are not available, is frequently treated as part of the mainland. For more on this point, see Yamamoto [1989].

[61] The introduction of the tariff exemption was delayed in order to secure governmental revenues for "Manchukuo" (Yamamoto [1989]).

Appendix 2: Trade restrictions from the 1920s through the 1930s

From the 1920s through the 1930s, trade restrictions had spread internationally in the forms of tariffs and import quotas. Tariff enhancements were widely implemented to protect domestic businesses in the 1920s. Against these protectionist moves, international efforts were made to modify them, including efforts such as those at the international conference held in 1927 by the League of Nations. In the late 1920s, the European economy recovered from the postwar turmoil, and prices of major products remained relatively stable. Under these economic circumstances, "the process of the abolishment of trade restrictions indicated a certain degree of progress " (Bank for International Settlements [1980]).

However, after the emergence of the Great Depression in 1929, trade restrictions spread again globally. First, in the United States, in response to pressure from agricultural and certain light industrial sectors, Congress passed the Smoot-Hawley Act in 1930, primarily designed to raise tariffs for products in both sectors.[62] Similar policies were also applied in other major countries.

For example, in the United Kingdom, the principle of free trade was maintained in the 1920s and tariff rates were kept lower than in other industrialized countries. However, the United Kingdom adopted the General Tariff in 1932. As a result, tariff levels of major countries rose relative to prewar levels in the 1930s.[63] [64] (Appendix Table 1)

The depreciation of the yen and the drastic export expansion of Japan took place under this unfavorable trade environment, and trade restrictions against Japanese products, especially cotton fabrics, by the United Kingdom and its colonies increased after 1932.

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[62] For details of the circumstances under which the Smoot-Hawley Act was established and its economic impact, see Eichengreen [1986].

[63] According to Crafts [2000], prior to the First World War, there had been no import items on which a non-tariff barrier had been imposed by major industrialized countries. However, in the 1930s, the proportion of items imposed non-tariff barriers by Germany and Italy was 100%, that by the United Kingdom was 8%, and that by the United States was 5% (Appendix Table 1).

[64] In Japan, major tariff reform was implemented in 1926 to raise tariffs on heavy industrial and chemical products. Furthermore, in 1927, 1929, 1931, 1932, and 1936, tariffs on sugar/starch, wood, rayon, pigiron, and other heavy industrial products were raised, respectively.

Appendix 3: The data for estimating export functions

(1) Real effective exchange rate

The real effective exchange rates used in this paper for estimating export functions are compiled from Japanese exchange rates against nine regions. These regions are the United States, Canada, the United Kingdom, France, Italy, the Netherlands, India, Taiwan, and Korea for which nominal exchange rates and price index data are continuously available, and which were among Japan's top 20 export destinations in the 1910s, 1920s, and 1930s.[65] For both Taiwan and Korea, the nominal exchange rate against the Japanese yen is set at a constant one to one.

Weights are calculated by a kind of chain weight method with export values for the base year set every ten years, in accordance with the calculation method for export price indexes in the *LTES 14*. More specifically, for the 1910s, the average export value from 1912–1913 is used for weighing; for the 1920s, the average from 1924–1926, and for the 1930s, the average from 1934–1936 are used, respectively.

Since the number of countries and regions in which exchange rate figures are available is limited, the weights for Taiwan and Korea (in which the nominal exchange rate against the Japanese yen was constant) are higher than the actual export weights for these regions. It is thus necessary to note the possibility that the effects of nominal exchange rate fluctuations may be underestimated in the figures adopted here.

(2) Real GDP for the World

World Real GDP figures are compiled by aggregating the GDP data for regions from which real GDP data is continuously available and which were among Japan's top 20 export destinations in the 1910s, 1920s, and 1930s. As in the case of real effective exchange rates, weights are calculated by a kind of chain weight method with the annual export value for the base year established every 10 years. For the 1910s, the regions of the United States, Canada, the United Kingdom, France, Germany, Italy, the Netherlands, India, Dutch Indies (Indonesia), Taiwan, and Korea are selected; for the 1920s, 11 regions comprising those selected for the 1910s, but excluding the Netherlands and including Australia are selected; and for the 1930s, 13 regions comprising those selected for the 1910s, but excluding Canada and Italy and

[65] The coverage of the exports to these nine regions in terms of the export value against the entire export (excluding China and Manchuria) is 66%, as an average for the period 1934-1936.

including Belgium, Sweden, Norway, and Australia are selected.[66] [67]

(3) Export price index for each destination

Export price indexes for different countries or regions are compiled from the "Export Price Indexes Classified by Industry" available in Table 5 in the *LTES* 14 for all sectors except textiles. For textiles, the export price index is compiled from the export unit value or export price index of major items. These classified indexes for each industrial sector are assigned weights based on export values available in Yukizawa/Maeda statistics for each destination, and are then integrated as an export price index for each destination. They are compiled by a kind of chain weight method as in the case of export price indexes in the *LTES*. Weights for each decade are the export value of a certain year for each export destination; 1912 for the 1910s, 1925 for the 1920s, and 1935 for the 1930s. As the number of sectors in the *LTES* is larger than that of the Yukizawa/Maeda statistics, the following adjustments have been made. For "wooden products," "miscellaneous products," "ceramics," and "forest products" in the LTES, the weight for "other light industry items" in the Yukizawa/Maeda statistics is quartered. For "process foods," "agricultural products," and "marine products" in the *LTES*, the weight for "foodstuffs" in the Yukizawa/Maeda statistics is divided into thirds.

As mentioned above, in estimates of the export price index for each export destination, an adjusted index is used for textiles to reflect differences in export item structures for each destination. If there are significant differences in the export item structures for different export destinations, an estimate of export prices using classified export prices designed for overall global exports, such as those in the *LTES*, may cause significant divergence between the actual export prices and the estimates.

As noted previously, in the interwar period, specific export items were exported to specific destinations, and the export prices of major items fluctuated by different patterns. Under these conditions, it may not be appropriate to estimate export prices for different destinations using the classified export prices designed for overall exports.

During the interwar period, textiles accounted for the major part of export to any country or region.[68] However, detailed export item structures for each destination were significantly

[66] As for Sweden and Norway, only a sum of export figure is available in the *Reference Book of Financial Matters*. The weights of both countries are thus assumed to be the same.

[67] The coverage of exports to these regions against the total export (excluding China and Manchuria) in terms of export value is 86% for the 1910s, 87% for the 1920s, and 76% for the 1930s.

[68] According to the Yukizawa/Maeda statistics, the proportion of textiles to total export values in 1925 was

different. The major export items for the regions that are the subjects of empirical analysis in this paper are as follows; raw silk for the United States; cotton yarns and fabrics for India; and cotton yarns and fabrics, and in the 1930s, textile materials such as whipped and ginned cotton, for Korea. As the export price trends of raw silk and cotton products were different from the 1910s through the 1930s, the export prices of textile products might have moved differently for different countries and regions. Against this background, export price indexes for the textile industry for each destination are estimated in this paper.

First, export price indexes for major textile export items, such as raw silk, cotton yarns, cotton fabrics, and whipped and ginned cotton for Korea, are compiled from either the export price index available in the *LTES* or the export unit value derived from trade statistics. Export unit value for raw silk, cotton yarn, and whipped and ginned cotton have been calculated by dividing export values by export quantities.[69] [70] As for cotton and silk fabrics, export price indexes for each item are compiled from data in the *LTES 8*. For cotton fabrics, indexes of gray cloths, bleached cloths, drill, jean, and satin are integrated into a cotton fabric export price index with the weights given in the *LTES 14*.[71] For silk fabrics, data for *habutae* silk and crape are used to compile the silk fabric export price index. Then, export price indexes for raw silk, cotton yarns, whipped cotton, ginned cotton, cotton fabrics, silk fabrics, and textile export price indexes from the *LTES 14* for other items are aggregated as a textile export price index for each region. The weights used here are export values for each item in 1912, 1925, and 1935, acquired from the Yukizawa/Maeda statistics. [72]

Based on trends in textile export prices for different destinations, as estimated in the above method (Appendix Figure 1), trends for India and Korea seem similar, but textile export prices for the United States behave differently. This is because the export price trends for the United

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92% for the United States, 74% for "other Southeast Asian" countries including India, and 41% for Korea.

[69] The export values and quantities of total raw silk and cotton yarns as listed in the *Historical Statistics of Japan,* Volume 3 are used here. The export values and quantities of whipped and ginned cotton exported from the mainland Japan to Korea are obtained from the *Statistical Yearbook of the Government General of Korea*.

[70] Figures for whipped and ginned cotton for Korea are only available from 1926. According to the Yukizawa/Maeda statistics, the exports of textile materials to Korea were small in scale until the middle of the 1920s. Price fluctuations for whipped and ginned cotton, therefore, are only incorporated into the export price index for 1930 and thereafter.

[71] Prior to 1921, the price indexes of cotton fabrics are available only for gray cloth, bleached cloths, and drill, and the indexes compiled from these three items are linked to those from the five items after 1921.

[72] The weights of raw silk, cotton yarns, whipped cotton, ginned cotton, cotton fabrics, and silk fabrics in textile exports for different destinations fluctuate over time, but can be averaged as follows: above 90% for the United States; from 60% to slightly over 80% for India; and from about 50% to about 70% for Korea.

States were primarily affected by the price fluctuations of raw silk, while those for India and Korea were chiefly influenced by the price fluctuations of cotton products. The fluctuations of export price indexes for textiles in the *LTES* may be regarded as a composite of the price fluctuations of raw silk and cotton products, indicating divergence from the indexes for all three regions.

The effect of the adjustment mentioned above is obvious when comparing trends in export price indexes of overall export for each destination before and after adjustment. Prior to adjustment, export price indexes for the United States and India move in a quite similar manner (Appendix Figure 2). Specifically, in the 1930s, their trends appear quite similar, as does that of Korea. By contrast, after the adjustment, price indexes for the United States behave differently from the other two regions, while the fluctuations in India and Korea appear similar (Appendix Figure 3).

Based on the above considerations, this paper utilizes export price indexes for different destinations that have been derived from adjustments of textile products with export prices of major product items.

The following issues must be taken into consideration. First, although adjustments have been targeted only for textile products with the heaviest weights in this analysis, the other classified indexes can be further refined by itemized export prices. Second, except for whipped and ginned cotton for Korea, itemized export prices for global export have been utilized. However, if the same products had different export prices for different countries or regions, such differences cannot be reflected in this estimation method.

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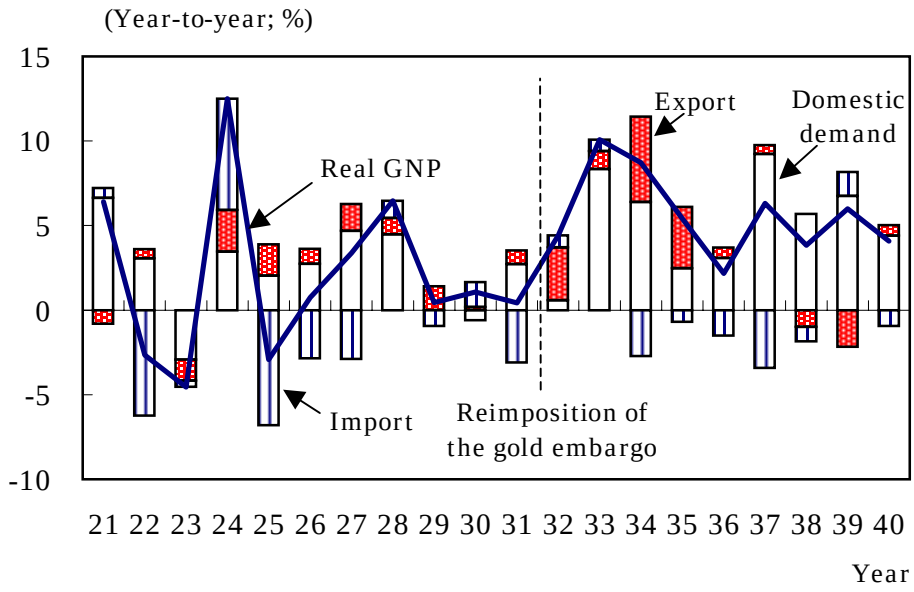
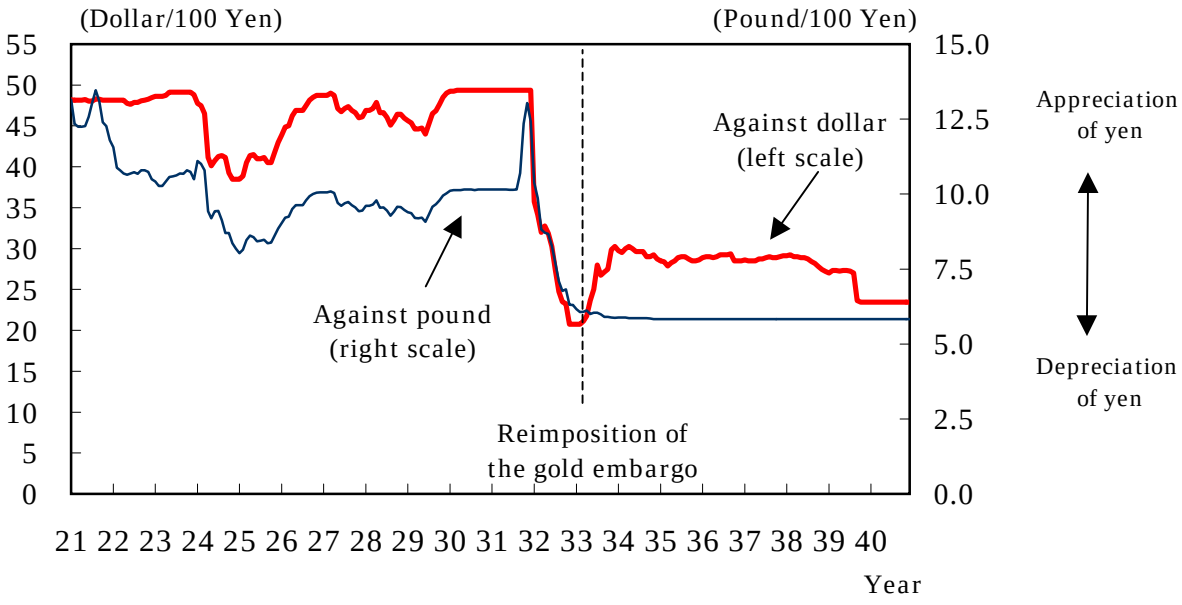
Figure 1 Year-to-Year Contribution Ratio of Real GNP



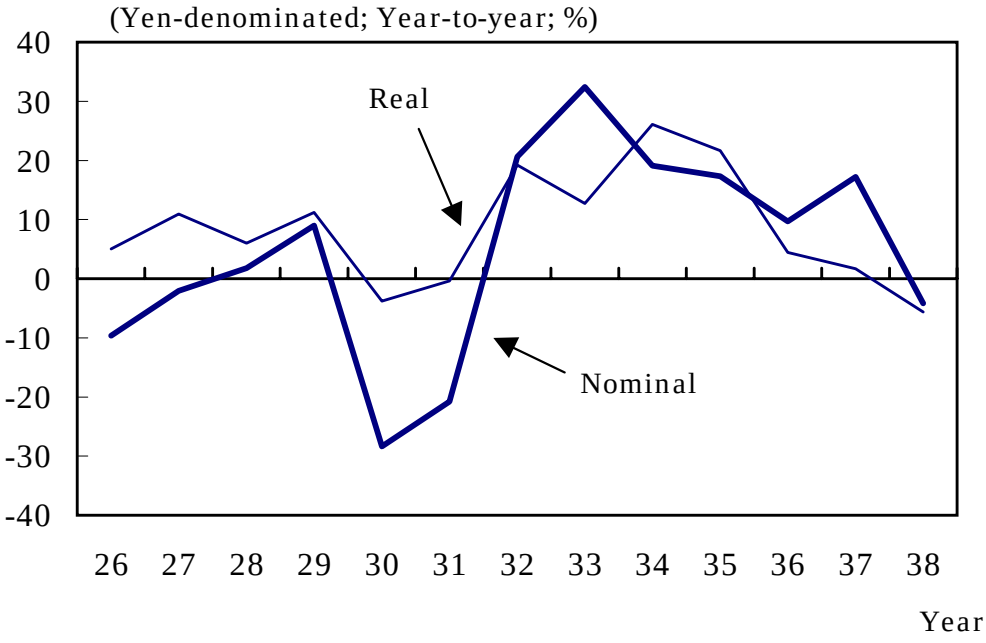
Source: Ohkawa,Takamatsu and Yamamoto [1974]

Figure 2 Exchange Rate



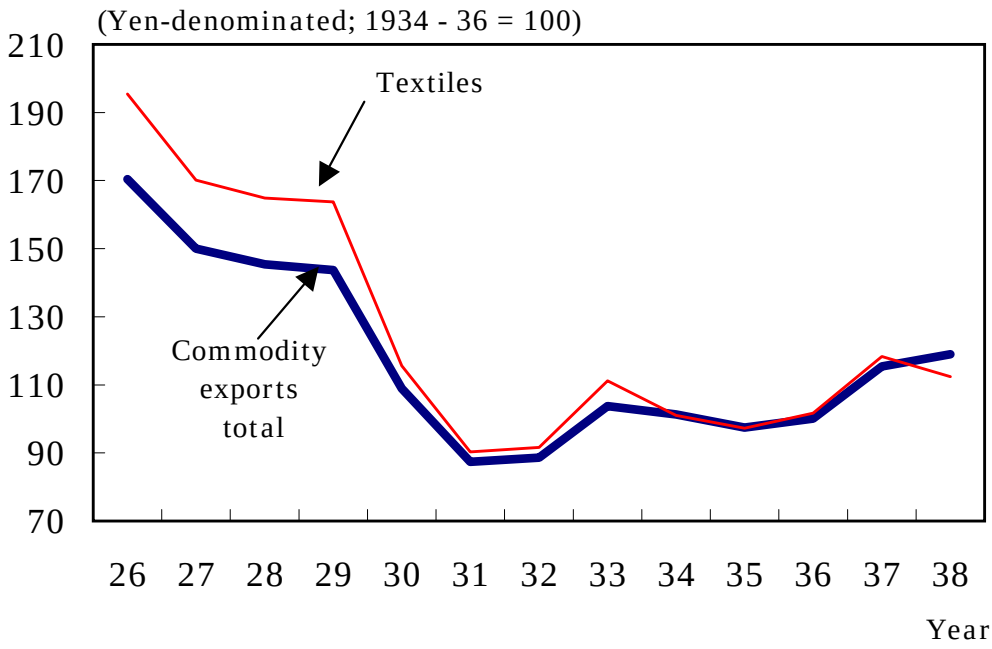
Source: *Reference Book of Financial Matters*

Figure 3 Nominal and Real Export



Source: Yamazawa and Yamamoto [1978]

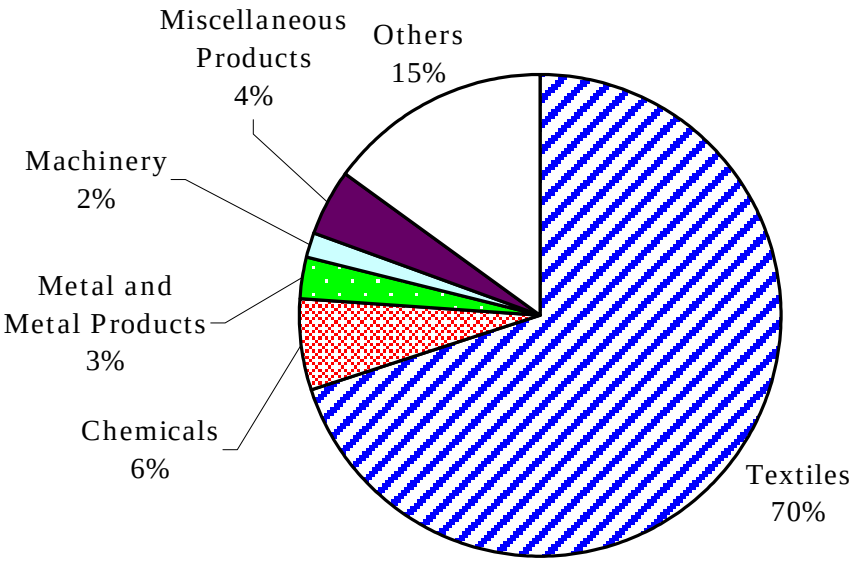
Figure 4 Export Prices



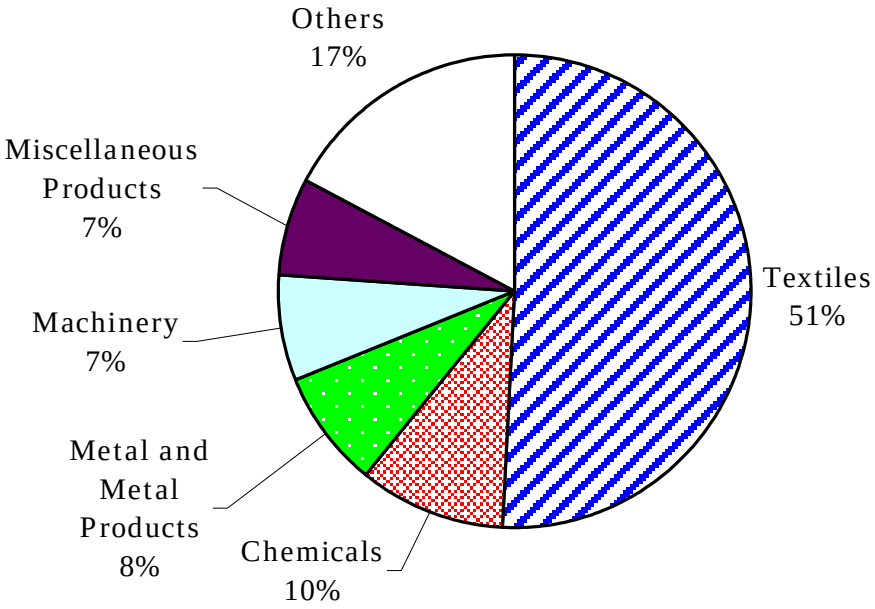
Source: Yamazawa and Yamamoto [1978]

Figure 5　Classified Structure of Export Value

<1925>

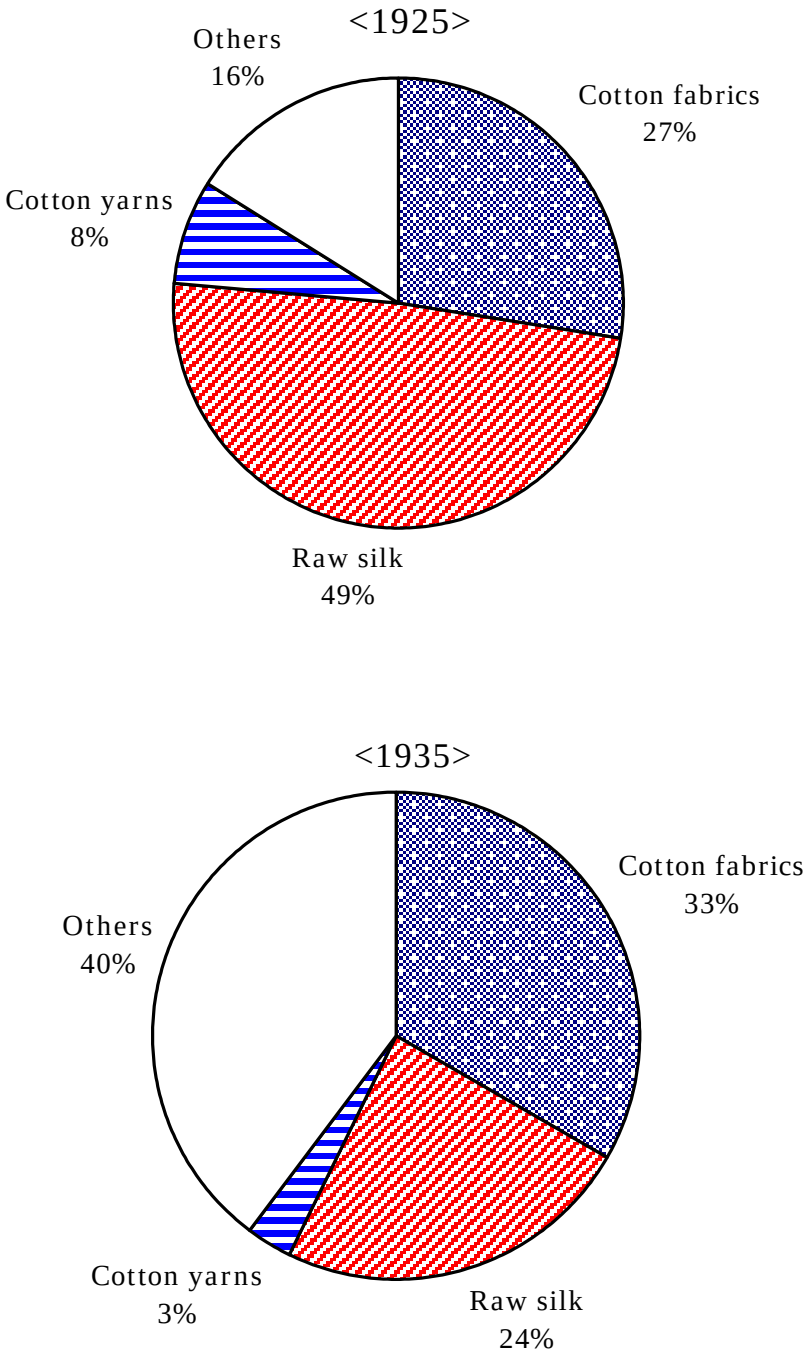


<1935>



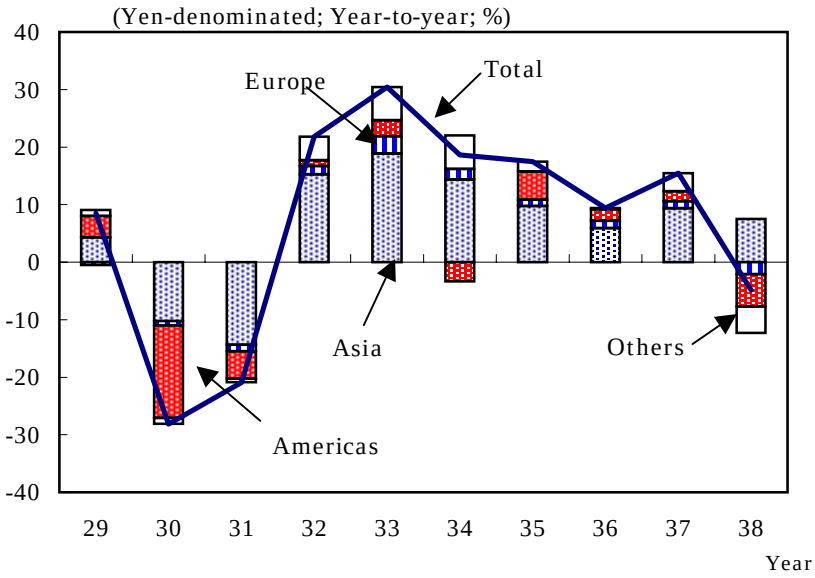
Source: Yamazawa and Yamamoto [1978]

Figure 6 Itemized Structure of Export Values of Textile Products



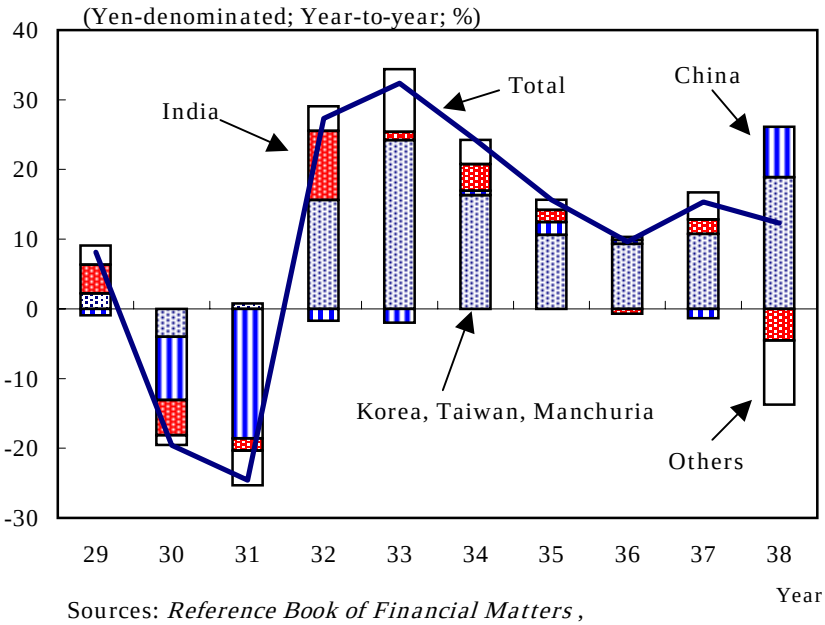
Source: Yukizawa and Maeda [1978]

Figure 7 Nominal Export Growth and Contribution Ratio of Destination



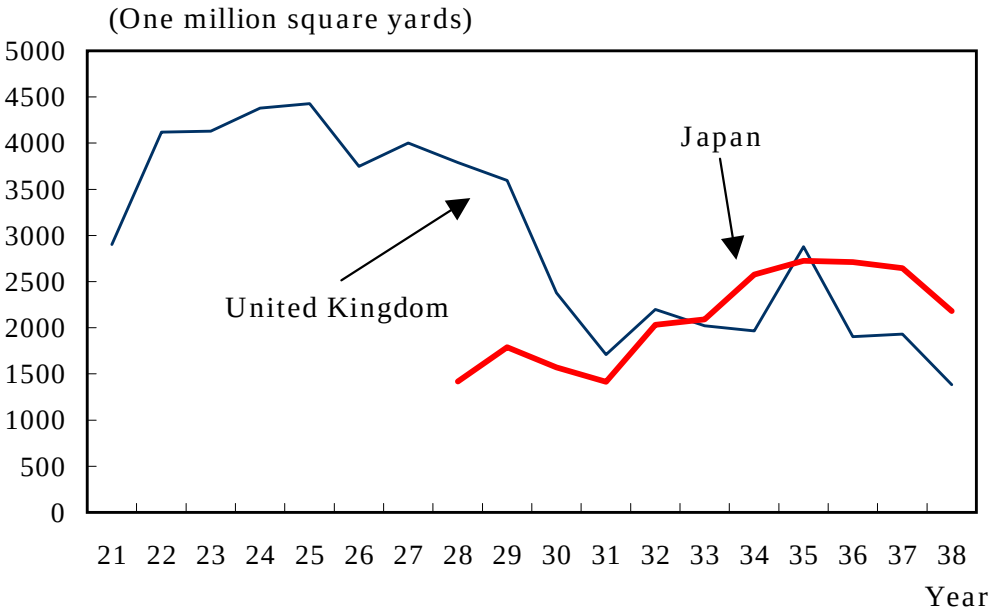
Sources: *Reference Book of Financial Matters,* Yamazawa and Yamamoto [1978]

Figure 8 Asia-destined Export Growth and Contribution Ratio of Destination



Sources: *Reference Book of Financial Matters* , Yamazawa and Yamamoto [1978]

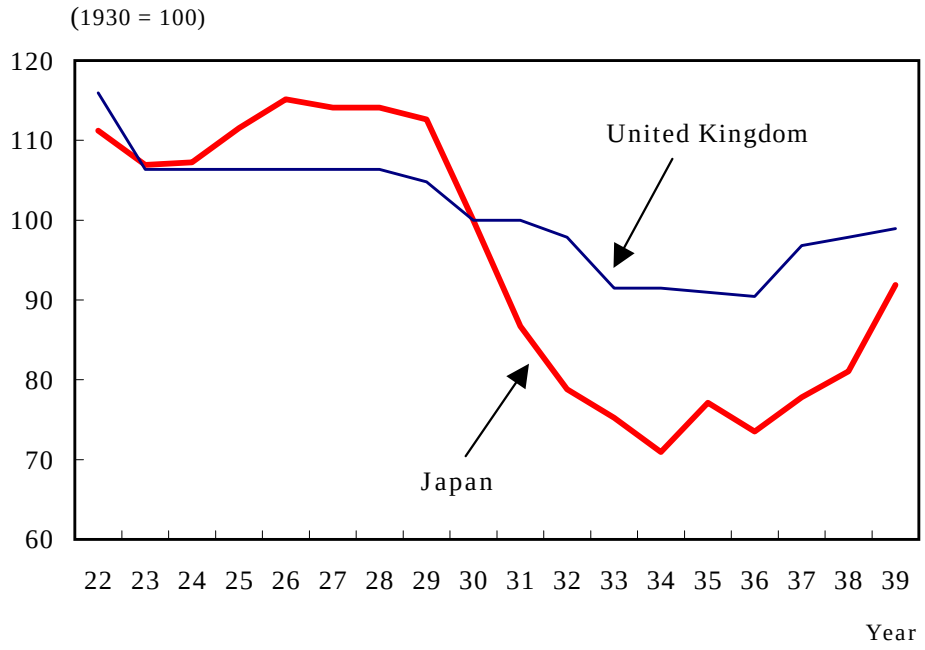
Figure 9 Export Quantity of Cotton Fabrics from Japan and the United Kingdom



Note: The British figures are converted from yards into square yards with a conversion ratio obtained from the export quantity in 1920 (4,643 million yards = 4,435 million square yards).

Sources: *Reference Book of Financial Matters*, Mitchell

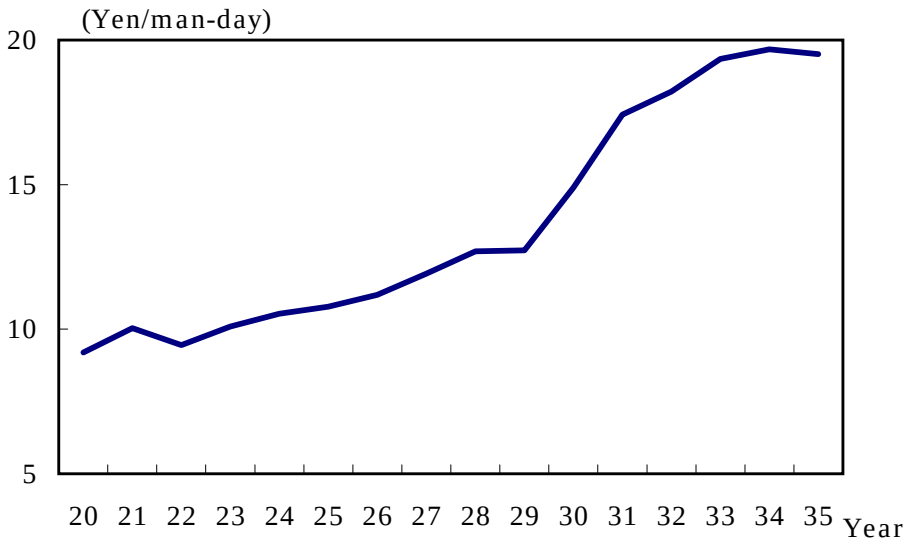
Figure 10 Nominal Wages Denominated in Domestic Currencies in Japanese and British Cotton Industries



Note: For the United Kingdom, wages in the cotton industry.
For Japan, wages of female cotton spinner and female cotton weaver are aggregated with weights obtained from production values of cotton yarns and fabrics in 1935.

Sources: Mitchell [1988], Ohkawa et al. [1967], Ono, Shiro Fujino and Shozaburo Fujino [1979]

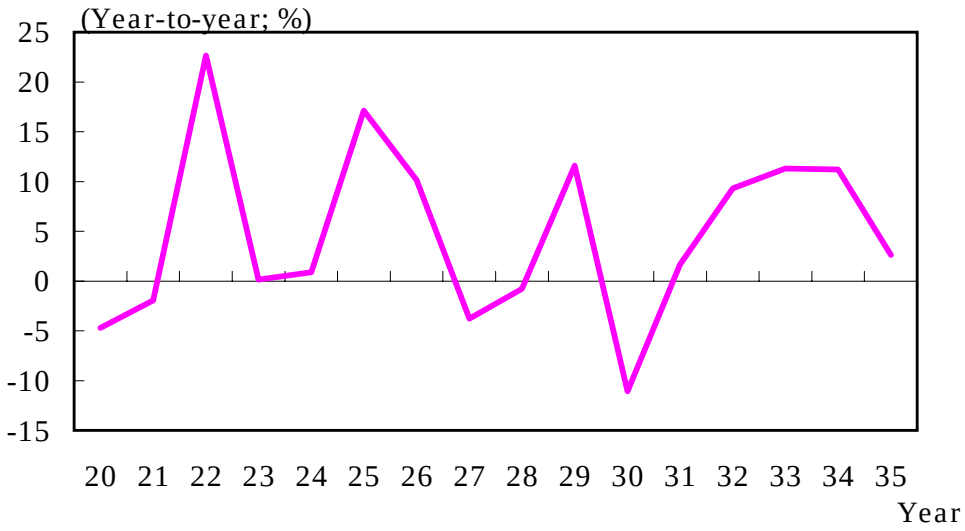
Figure 11 Labor Productivity in Cotton Industry



Note: Labor Productivity is real production values divided by total labor input

Source: Ono. Shiro Fuiino and Shozaburo Fuiino [1979]

Figure 17 Real Production Value in Cotton Yarn Spinning Industry

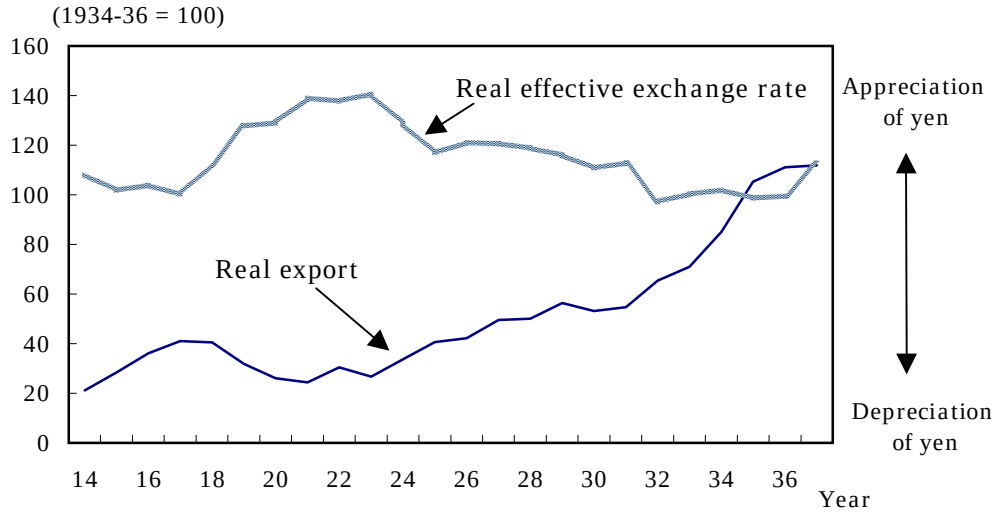


Sources: Ohkawa et al. [1967],
Ono, Shiro Fujino and Shozaburo Fujino [1979]

Table 1 Major Export Recovery Factors Presented in Previous Literature

Price factors			Non-price factors
Exchange rate depreciation	Wage reduction	Improved labor productivity due to streamlining and technological innovation	Increased exports to colonies and semi-colonies
Nakamura[1983] Patrick[1971] Okura and Teranishi[1994] (From 1932 to 1933)	Hashimoto [1984] Lewis[1949]	Napier [1981] Ito [1982] Hashimoto [1984] Sharkey [2001]	Okura and Teranishi[1994] (After the middle of the 1930s) Iwami, Okazaki and Yoshikawa [1998]

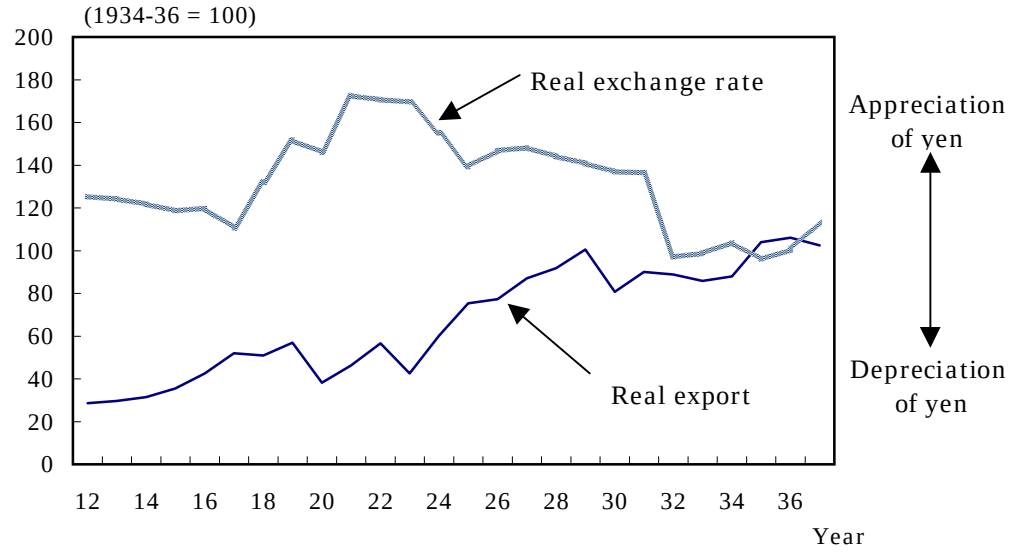
Figure12 Real Export to the World (excluding China and Manchuria) and Real Effective Exchange Rate



Note: For the calculation methods of the real effective exchange rates and real exports, see footnotes 34 and 35, and Appendix 3.

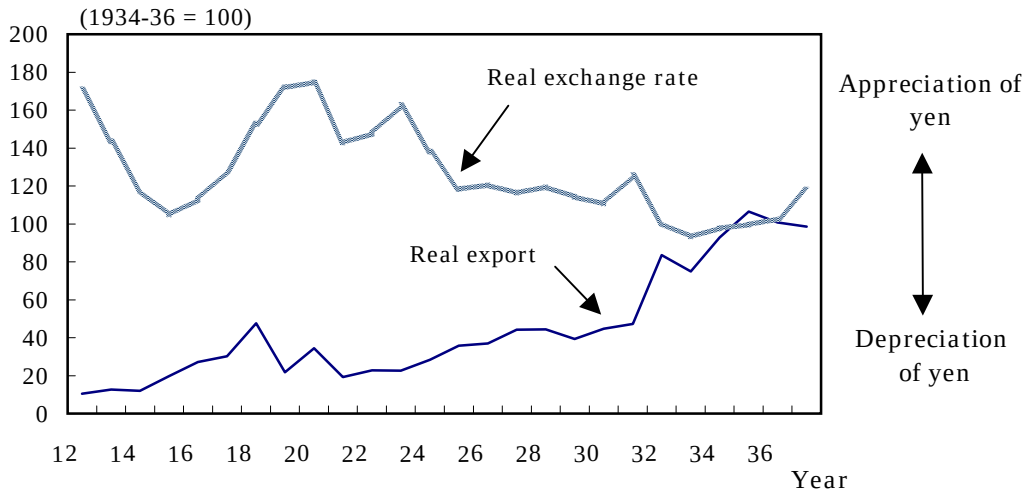
Sources: *Reference Book of Financial Matters* , Ohkawa et al. [1967], Yamazawa and Yamamoto [1978], Japan Statistical Association [1988], Madison [2000], Board of the Governors of the Federal Reserve System, *Banking and Monetary Statistics* , 1943.

Figure 13 Real Export to the United States and Real Exchange Rate against Dollar



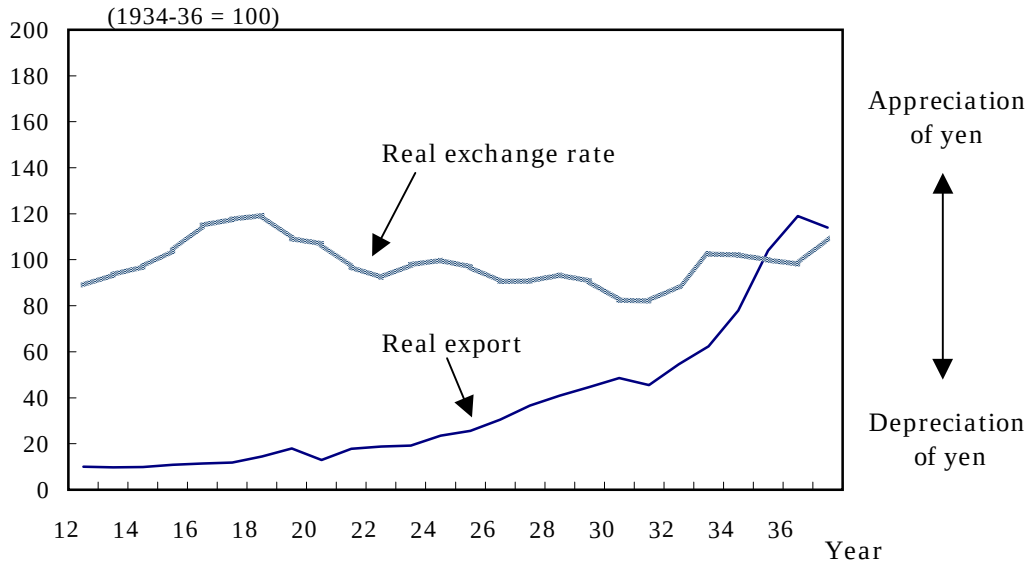
Sources: *Reference Book of Financial Matters* , Ohkawa et al. [1967], U.S. Department of Commerce, *Historical Statistics of the United States* , 1989

Figure 14 Real Export to India and Real Exchange Rate against Rupee



Sources: *Reference Book of Financial Matters* , Ohkawa et al. [1967], Mitchell [1998]

Figure 15 Real Export to Korea and Real Exchange Rate



Sources: *Reference Book of Financial Matters* , Ohkawa et al. [1967] , *Statistical Yearbook of the Government General of Korea* , Mizoguchi, Toshiyuki, and Mataji Umemura, *Kyuu-Nihon Shokuminchi Keizai Toukei*: *Suikei to Bunseki (Basic Economic Statistics of Former Japanese Colonies 1895-1938 Estimates and Findings)* , 1988.

Table 2 Estimated Results of Export Functions for Different Destinations

(Figures in parentheses are *t*-Statistic.)

	Constant term	Real exchange rate [2), 3)]	Real exchange rate of the previous term	Real GDP [4)]	Direct investment from Japan [5)]	First World War dummy variable [6)]	Lagged dependent variable (real export)	Adjusted R2	DW statistic or Durbin's *h* statistic (#)
World [1)]	2.22	-0.80 *	-1.09 **	2.39 **	——	——	——	0.95	1.52
	(1.65)	(-2.24)	(-3.04)	(15.79)					
US	-1.87	-0.97 *	0.16	2.20 **	——	——	——	0.72	1.03
	(-1.08)	(-2.08)	(0.34)	(7.80)					
India	34.23	-0.08	-3.24 **	-3.17 *	——	-0.77 **	——	0.76	1.56
	(3.35)	(-0.12)	(-5.48)	(-1.77)		(-4.37)			
Korea (1)	2.36	-0.92	-1.85 **	3.19 **	——	——	——	0.93	1.01
	(1.12)	(-1.31)	(-2.66)	(18.13)					
Korea (2)	-8.25	——	——	2.52 **	0.21 **	——	——	0.87	1.15
	(-6.99)			(8.12)	(2.93)				
Korea (3)	-2.05	——	——	0.60 *	——	——	0.87 **	0.98	0.82(#)
	(-2.29)			(2.34)			(11.68)		

Notes: 1) Excluding China and Manchuria.

2) World figures are calculated using exchange rates for the United States, Canada, the United Kingdom, France, Italy, the Netherlands, India, Taiwan, and Korea, for which nominal exchange rates are continuously available and which were among Japan's top 20 export destinations from the 1910s through the 1930s. (For details, see Appendix 3.)

3) To change nominal figures into real terms, wholesale price indexes are used for the United States and Japan, and retail price indexes are used for India and Korea. As the figures for 1912-13 and 1915-20 are unavailable, linear interpolations are made for the retail price index for India.

4) For the world, the figures are aggregated with export value based weights for the United States, Canada, the United Kingdom, France, Germany, Italy, the Netherlands, Belgium, Sweden, Norway, Australia, India, Dutch Indies (Indonesia), Taiwan, and Korea, for which real GDP figures are continuously available, and which were among Japan's top 20 export destinations from the 1910s through the 1930s. (For details, see Appendix 3.)

5) Securities and business investments. On the gross basis. Changed into real terms with wholesale price index of Japan.

6) "One" for 1914-18; and "zero" for the other years.

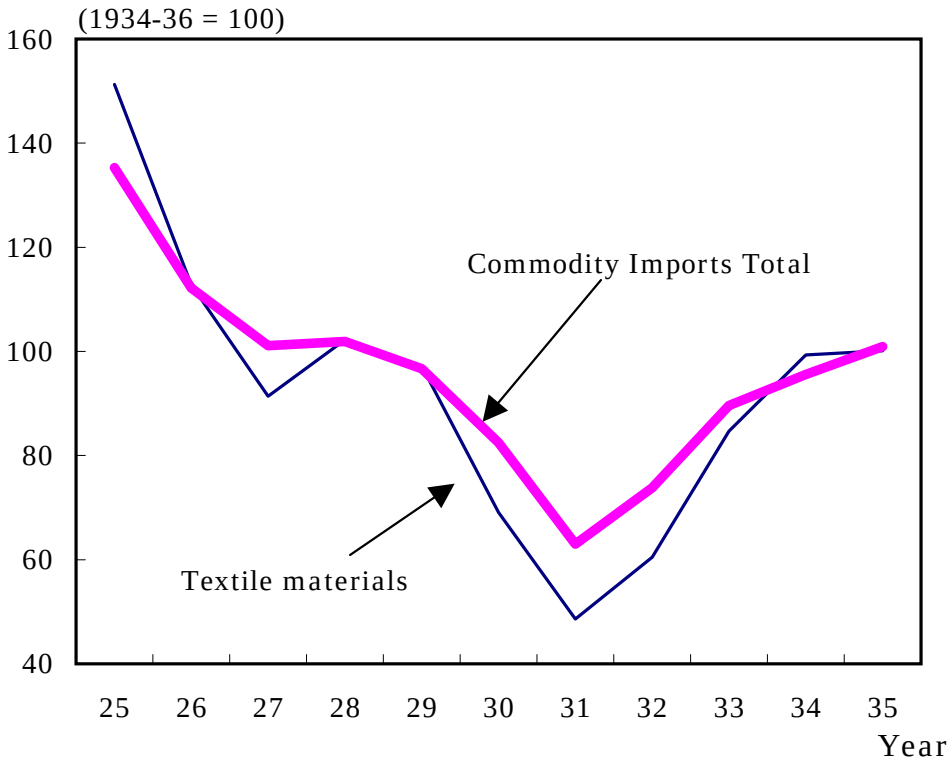
7) "*" of *t*-statistic means significant at 5% level of significance ; "**" means significant at 1% level of significance.

8) The number of samples is 24 for the world, 26 for the United States, India, and Korea (1) (2), and 25 for Korea (3).

9) For the method for calculating real export figures, see Appendix 3.

Sources: *Reference Book of Financial Matters, Statistical Yearbook of the Government-General of Korea,* Ohkawa et al. [1967], Yamazawa and Yamamoto [1978], Japan Statistical Association [1988], Yukizawa and Maeda [1978], Mizoguchi, Toshiyuki, and Mataji Umemura, *Kyuu-Nihon Shokuminchi Keizai Toukei: Suikei to Bunseki (Basic Economic Statistics of Former Japanese Colonies 1895-1938 Estimates and Findings)*, 1988., Madison [2000], Mitchell [2001a, b], Mitchell [1998], U.S. Department of Commerce, *Historical Statistics of the United States*, 1990, Board of the Governors of the Federal Reserve System, *Banking and Monetary Statistics*, 1943.

Figure 16 Yen-Denominated Import Price



Source: Yamazawa and Yamamoto [1978]

Appendix Table 1

Barriers to Trade: Average Tariff on Manufactures and Import Coverage of Non-Tariff Barriers

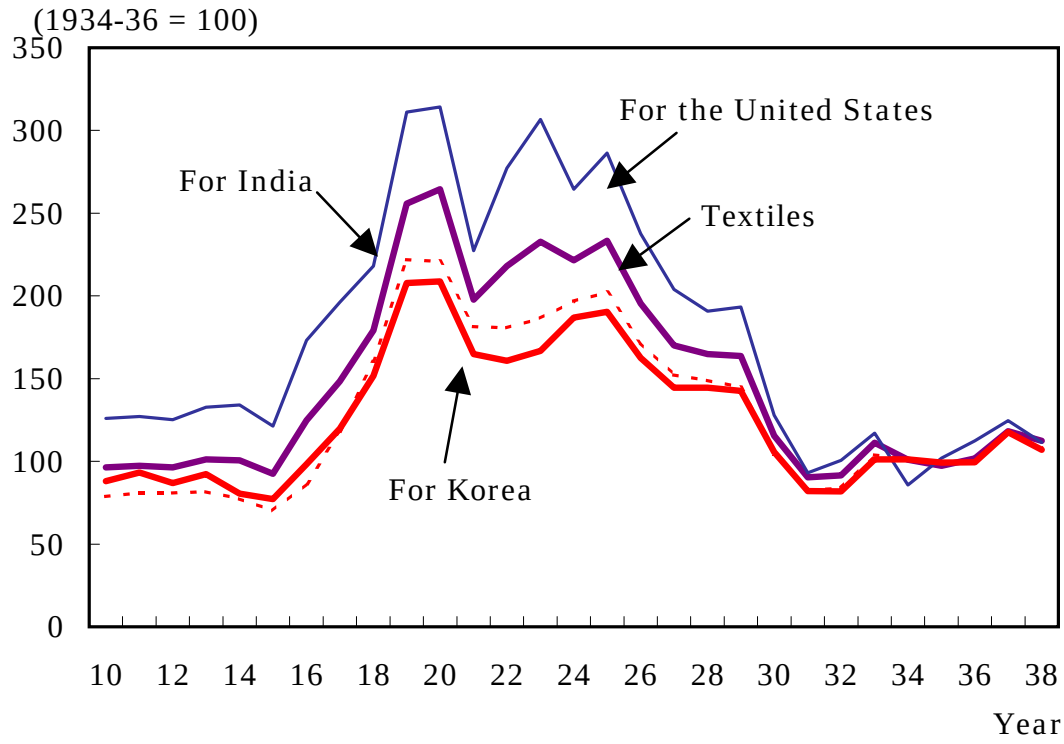
(%)

	1875	1913	1930s	1950
Tariffs				
France	12-15	20	30	18
Germany	4-6	17	21	26
Italy	8-10	18	46	25
Spain	15-20	41	63	
United States	0	0	17	23
United Kingdom	40-50	44	48	14
Non-tariff barriers				
France		0	58	
Germany		0	100	
Italy		0	100	
Spain		0		
United States		0	8	
United Kingdom		0	5	

Source: Crafts [2000]

Appendix Figure 1

Export Price of Textile Products for Different Destinations

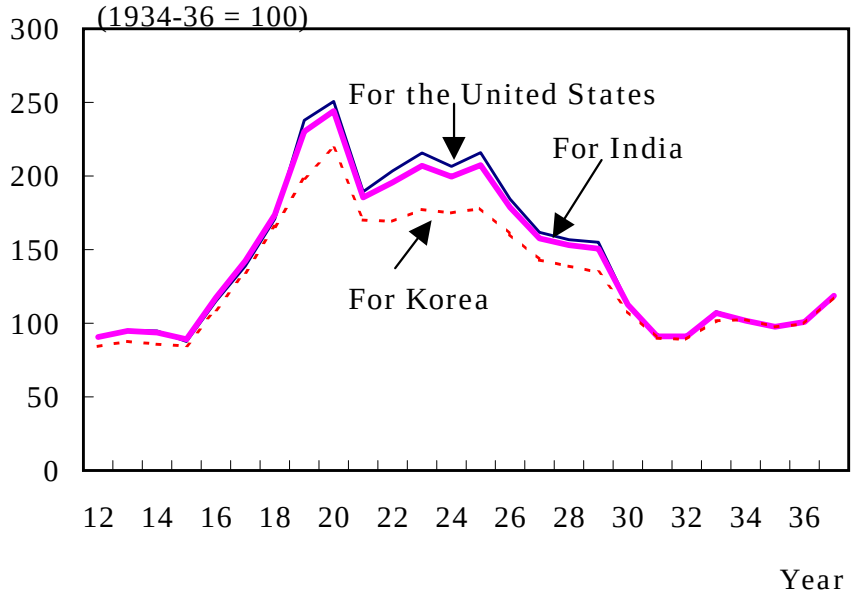


Note: Chain weights adjusted every 10 years

Sources: Ohkawa et al. [1967], Yamazawa and Yamamoto [1978], Japan Statistical Association[1988], *Statistical Yearbook of the Government General of Korea*, Yukizawa and Maeda [1978]

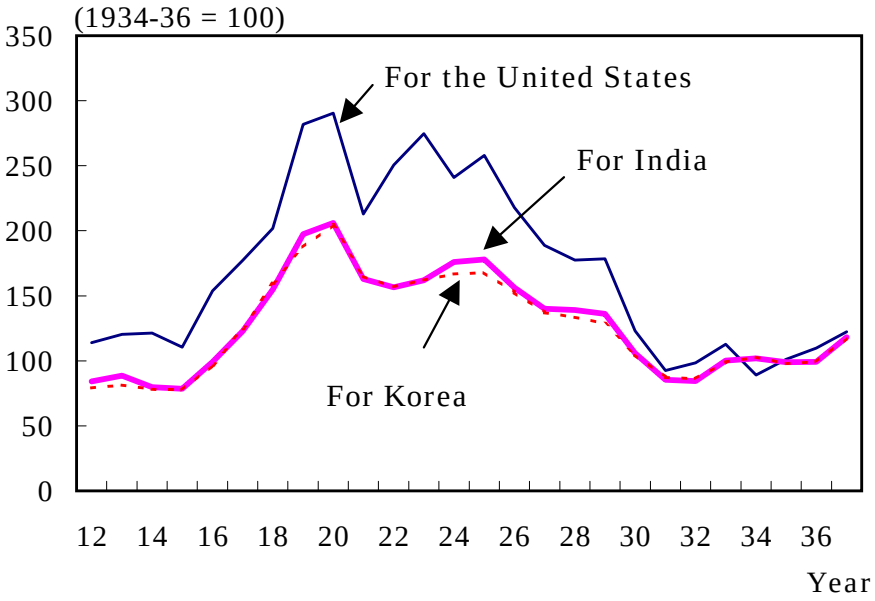
Appendix Figure 2

Export Price Indexes for Different Destinations before Adjustment in Textile Products



Appendix Figure 3

Export Price Indexes for Different Destinations after Adjustment in Textile Products



Note: Fixed weights calculated with average export values from 1934 to 1936

Sources: Ohkawa et al. [1967], Yamazawa and Yamamoto [1978], Japan Statistical Association [1988], *Statistical Yearbook of the Government General of Korea* , Yukizawa and Maeda [1978]

Table 3 Export Prices of Major Textile Products

	Raw silk (17denier, white cocoon yarn)		Cotton cloth (cotton sheeting)		Bleached cotton cloth (cotton shirting: wider than 34)		*Domestic product price*	
	Yen/100 kin	%	Yen/ 1,000 sq. yards	%	Yen/ 1,000 sq. yards	%	Cotton fabric cotton sheeting	Cotton fabric cotton shirting
	Unit price	yr/yr	Unit price	yr/yr	Unit price	yr/yr	yr/yr,%	yr/yr,%
1931	655.32	-28.0	129.13	-29.9	134.00	n.a.	n.a.	-14.4
1932	708.70	8.1	121.58	-5.8	134.16	0.1	33.5	13.8
1933	813.55	14.8	160.73	32.2	166.65	24.2	16.0	23.3

Note: Domestic product prices are based on the Price Indexes of Manufacture Goods in *LTES 8.*

Sources: *Annual Returns of Foreign Trade of Japan*, Ohkawa et al. [1967].

Table 4 Cotton Prices in the International Market

	Cotton price
	(Per quintal; franc)
	New Orleans (Year-end figure)
1927	228
1928	221
1929	195
1930	110
1931	70
1932	67
1933	72

Source: League of Nations, *Statistical Yearbook of the League of Nations 1931/32* ,1932.