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THE GREAT DEPRESSION IN JAPAN: WHY SO SHORT AND "MILD"?

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The Great Depression in Japan: Why so Short and "Mild"?[1]

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Abstract

Compared with other major economies, the Great Depression in Japan was shorter and milder, thanks to the growing export, public deficit-spending and expansionary monetary policy. Most important for these favorable factors was the suspension of the gold standard. Export growth and declining real interest rate stimulated investment, and the robustness of the banking sector contributed to moderate the depression. The expansionary policy in the 1930s facilitated the process of major industrial transformation characterized by the growth of the heavy-chemical industries, which had been hindered under the constraint of the orthodox policy in the 1920s.

1. Introduction

The Great Depression in the 1930s was a global phenomenon, but individual countries experienced differences in depth and width of the slump. Compared internationally, the depression in Japan was undoubtedly short and mild. The present study attempts to identify those factors which made the depression less severe than elsewhere, and inquires how economic policies contributed to recovery from the depression in Japan.

The Japanese literature on the economic situation in the 1930s has traditionally tended to emphasize difficulties in Japan comparable to those in other countries. This tradition is still alive in the more frequent use of the term, *Kyokoh* (economic crisis) than *Fukyoh* (depression), which partly reflects the strong influence of Marxist economics on economic historians. Economic historians in Japan prefer such a word as *Showa Kyokoh*, with an implication that the economic downturn was so severe that the resulted political instability constituted the background of military elites' overtaking the power, leading to the war with China and subsequently the World War II.

The *Estimates of Long-Term Economic Statistics of Japan since 1868 (LTES)*, edited by K.Ohkawa *et al* and published from 1966 to 1988 now provide the basis for more objective macroeconomic analysis of the Japanese economy than was previously possible. The present study depends largely on this series. However, some of the limitation of this series is discussed in the Data Appendix.

Section 2 begins with reviewing whether or not the above traditional assessment of the depression in Japan is actually supported by statistical data. Section 3 then considers causes of the economic recovery, examining each demand factors. The role of the economic policy in the recovery is a next topic discussed in section 4.

2. Stylized Facts and Arising Questions

1) International Comparison of Growth Performance

Table 1 presents an international comparison of growth performance among major countries. The growth rate in Japan belongs to the lower group, actually the third lowest after Britain and Italy, in the 1920s. But in the 1930s, it was by far the highest. Germany recorded the second highest growth in the 1930s, but her economic situation was not so good as the average growth rate might imply; as Figure 1 illustrates, Germany experienced sharp decline from 1930 through 1932, while Japan showed only a slight fall in GDP (without any decline in terms of GNP).

Table 1, Figure 1

Prices in Japan, on the other hand, remarkably fell within a short period. But at present we simply note that prices declined to a less extent in the heavy-chemical industries than in textile and food industries, and agriculture (Table 2). This contrast is related to the emerging "dual structure of the economy" which we will discuss below.

Table 2

A popular explanation for Japan's good performance in the 1930s is the "Keynesian policies as early as 1932 without a Keynes" (Kindleberger, 1973, p.17)[2]. These "Keynesian policies" were, however, not unique to Japan, but, in fact, shared by other developed countries where the depression was severer. As is well known, Nazis Germany adopted public deficit-spending, mainly military spending, through a series of fiscal and monetary "manipulations".

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[2]Nakamura (1971, Ch.8) stressed the recovering effect of deficit-spending, before the *LTES* was fully available, while Yamamura (1972, p.202-03) also argued the "Keynesian" character of the military expenditures without the data of this series. Nanto and Takagi (1985) is another recent study discussing the macroeconomic impact of the Japanese policy in the 1930s.

Currency depreciation and easy monetary policy were pursued in Britain[3]. Therefore, it is a question why the seemingly similar policies brought about different outcomes in Britain, Germany and Japan.

On the other hand, Japan and Britain illustrate a similar contrast between the two decades: the growth rate was low in the 1920s and high in the 1930s. It suggests the importance of the foreign exchange and monetary policies; the currency overvaluation in the 1920s might have depressed the economy, whereas the suspension of the gold standard relieved it of deflationary pressures. Similarly, why the German slump was so severe, and the depression in the United States and France lasted so long, is often explained by the traditional policy stance under the gold standard[4].

Although we discuss below how economic policy contributed to recovery in Japan, the growth performance seems to depend more largely on other factors, such as the economic structure, than economic policy. The contrasting trend of industrial output between the United States and Japan (Figure 2) support this impression. The manufacturing production in the United States shows a rather stagnated tendency as early as from the mid-1910s, while the growth of manufacturing in Japan presents an ever accelerated trend from 1900 on.

Figure 2

2) Industrial Structure

There was a widening gap between "modern" sector represented by large firms and the traditional sector as well as agriculture. Nakamura (1971) and others stressed the emergence of the "dual structure of the economy". Within the

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[3]For the economic policies in the 1930s, see Arndt (1944) and Temin (1989) among others.

[4]The orthodox macroeconomic policy in Germany was mainly pursued by the governments in the Weimar Republic, notably Brüning's cabinet. Hitler left this tendency as soon as he took power and made a success in economic recovery through "a new policy regime", as Temin (1989, p.103) named it.

modern sector, the industrial structure drastically changed from textile industry towards the heavy- and chemical industries.

Table 2

Particularly noteworthy is the contrast between the stagnating agriculture and growing manufacturing on the one hand, and between the light (textile and food) industry and heavy-chemical industries on the other (see Table 2). While employment in every sector showed decline from the peak of 1929 to the trough of 1931, the heavy-chemical alone recorded slight *increase* in real output during the slump, and rapid increase in both output and employment thereafter. The significant contrast is observed for price as well as for output. In the heavy-chemical, the price fell only slightly between 1929 and 1931 and its level actually stood 50% higher in 1936 than in 1929. In both the light industry and agriculture, on the other hand, the prices had not recovered the 1929 level by 1936. How is this difference among sectors to be explained? How did it affect the growth performance of the Japanese economy during the 1930s[5]?

Secondly, why did not the growth potentials of heavy- and chemical industries materialize in the 1920s, but had to await the 1930s?[6] Japan seems to have had technological potentials even in the 1920s, and yet the development of heavy-chemical industries actually took place only in the 1930s, when the import of necessary technology was more difficult than in the 1920s; realization of these potentials must have been somehow hindered in the 1920s.

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[5] Sato (1976) stressed that large scale firms in modern sector showed a decline not only in prices, but also in output and employment, whereas in the traditional sector appeared the typical phenomena implied by classical economics; decline mainly in prices not so much in output and employment. But his argument is not supported by the specific data, in particular the changes in output are not reported.

[6] The share of heavy-chemical industries in the overall manufacturing production expanded during the World War I, but stagnated in the 1920s. It increased again in the 1930s, from a third to nearly 60%. Nakamura (1978, Table 12).

We will take up this issue, discussing the relationship between investment and economic policy.

Thirdly, why did textile and other traditional sectors stagnate? As we discuss below, the textile industry had been suffering from a fall in export prior to the general downturn beginning in 1929. But it still remained as the most important export item through the late 1930s. It is, therefore, a remaining issue why textile industry declined, despite the growth in export and the rising real income in the modern sectors.

Finally, as Table 3 illustrates, Japan maintained the share of agriculture in GDP and in total employment at the highest level, next only to Italy, among the major countries. Did this large share of agriculture help economic recovery or worsen the depression? Although agriculture was hit most severely in the depression, the round-about effect is not self-evident.

Table 3

More specifically, notable income transfer took place from the depressed agricultural sector to the urban modern sector in the interwar years. The relative productivity (and income) of agriculture decreased substantially throughout the 1920s and 1930s, after a long-run stability since the 1880s onwards[7]. The terms of trade between the agriculture and other industrial sector turned in favor of the latter. As Table 2 demonstrates, the agricultural prices declined substantially, due to various reasons such as good harvest in 1930, increasing import of rice at the time of bad crops, and a sudden fall in export of silk products to the United States. The agricultural area, heavily dependent on rice and silk, suffered seriously from the decreasing income, imprinting gloomy episodes of the depression, such as the tenant

[7]Nakamura (1978, p.118).

farmers' riot and their daughters sold to brothel[8].

Did the income transfer from agricultural sector to other part of the economy affect positively or negatively for the recovery? How did the private consumption actually behave during the 1930s?

Given stylized facts and arising questions, the following analysis focuses on the period from the beginning of the slump in 1929 to the outbreak of Chino-Japanese War in 1937; thereafter, the government introduced general control of the economy, and the market mechanism of the economy was fundamentally impeded.

3. Explanations

1) Growth Accounting by Demand Factors

Tables 4 and 5 show the relative contribution of each demand component to the growth in real GNP for the United States and Japan, respectively. In the United States, both private consumption and investment declined substantially from 1930 to 1933. In Japan, on the other hand, both items declined only slightly and recovered as early as by 1933. In addition, Japan recorded large increase in both export and government expenditure.

Tables 4,5

Focusing on the critical years from 1931 to 1932 (Table 5), we find a remarkable contribution of the increased public expenditures (fixed capital formation and consumption, including military ones) in 1931 and of export in 1932. The share of public expenditure, however, declined after 1932. Private consumption and export, on the other hand, continued to grow in the following years. Although the contribution of private fixed investment was smaller than

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[8]Since the difficulties in the agricultural area has been one of the most investigated theme among Japanese economic historians, there is a number of literature, including Shimizu and Nishida (1987).

that of export, it stayed at a high level in 1934 and 1935, which was naturally reflected in the early recovery of capital goods (heavy and chemical) industries.

In sum, the pump priming effect of public expenditure worked well in the initial stage of recovery, while the export constituted the next engine of growth with much longer effect behind, followed by fixed capital formation. We suppose that private consumption was sustained by the higher income enjoyed in the more stable modern sector (in particular, heavy and chemical industries), not by the depressed traditional sector. But why did such large fluctuations in private consumption occur, in particular remarkable growth in 1933 and 1934? We will discuss below on the behavior of private consumption.

Keeping these findings in mind, we examine what determines output. The standard neoclassical theory tells us that given capital stock, the level of output is determined by real prices of labor and other production factors such as raw materials and energy. Higher real wages, for example, would lower output. On the other hand, the Keynesian theory takes output as basically determined by demand.

The assumption that goods market are imperfectly competitive, however, leads us to the conclusion that the firm's output simultaneously responds to the changes in *both* real input prices *and* demand constraints, as Yoshikawa (1984) presents a model. Under the assumption of nonlinear net marginal return on inventory, the relative importance of the two constraints depends crucially on the level of inventory stock. This model justifies a regression of output on real input prices and demand variables.

Table 6 presents simple regressions of output by industry on unit labor cost (real wages deflated by average product of labor) of each industry, and macroeconomic demand variables such as exports, government expenditures, and investment:

$$\log Q_{it} = C_i + \alpha \log Q_{it-1} + \beta \log UL_{it} + \gamma \log X_i + \delta \log G_i + \zeta \log I_i + \epsilon$$

The sample period is 1901-1936; in order to keep the degrees of freedom large enough, we take sample period longer than the depression period we actually investigate. We also experimented on regressions using real wages rather than unit labor cost. The results are broadly similar to those shown in Table 6, but in some cases, the coefficients for real wages exhibit the wrong positive sign. This wrong sign may be due to a positive correlation between output and real wages which might be generated by productivity shocks. For this reason, we use unit labor cost rather than real wages. We could not include raw material cost, because the price index separating raw material from finished goods is not available.

Table 6

Table 6 demonstrates that export is a much more important factor than real labor costs. It also suggests that the Japanese economy was demand constrained and its macroeconomic growth and fluctuations were basically determined by aggregate real demand. Given this finding, we next inquire more closely how each demand component was determined.

2) Fixed Investment

To examine factors which affect investment, we begin with the interest rate. Figure 3 illustrates loan rate in both nominal and real terms. The real rate is calculated from the inflation rate (GNP deflator) of the same year. Although nominal rate declined only gradually throughout the 1920s and 1930s, the real rate shows large fluctuations due to changing inflation rates. In the 1920s, the real rate stood between 10 and 20% on average, while it showed downward trend in the 1930s, reaching negative level at the end of the decade. The declining real rate from the peak in 1930 most likely promoted investment.

Figure 3

The Figure 4 shows an investment cycle with a peak in 1920, followed by a stagnation until 1932, and subsequently the accelerated growth. The contrast in the average growth rate between the stagnant 1920s and the booming 1930s, corresponds well to the level of real interest rate in Figure 3.

Figure 4

We estimated private investment function with a lagged private fixed capital formation, government expenditures, export and loan rate, all in real terms, as independent variables. The estimation procedures, such as sample period and taking logarithm of real variables (except for interest rate) are the same as Table 6.

$$\log I_{pt} = C + \alpha \log I_{pt-1} + \beta \log G_t + \gamma \log EX_t + \delta r_t + \epsilon$$

Table 7 shows that export was the most important demand component that determined private investment, just as Table 6 does for the manufacturing production. Surprisingly small t-statistics (and minus signs) for public expenditures as a whole and the military fixed investment in particular imply that these factors had very limited impact on private investment. Another finding to note is that the coefficients for real interest rate reveal minus signs as expected, with enough statistical significance.

Table 7

3) Private Consumption

While private consumption grew, on average, less faster than GNP in the interwar years, it fluctuated more largely than the GNP. This surprising fact is, however, due mainly to the estimation procedures.

The major items of private consumption are food (50%), clothing (13%), and

housing (12%) for the period 1931-1940: the Engel coefficient (the share of food in private consumption) was quite high. Moreover, rice and other cereals occupied about a third of the food consumption[9].

The estimated consumption of rice is basically equal to domestic supply (mainly domestic production supplemented by net import and changes in stock). The supply of agricultural products naturally fluctuates with the state of crops, leading to volatility in consumption. The decreased consumption in 1932 and 1935, for example, corresponds to bad crops; and large increase in consumption in 1933 and 1934, on the contrary, corresponds to good crops in the previous years, respectively[10]. Thus, the estimated private consumption is almost an exogenous variable, dependent on the natural condition.

The private consumption is likely to reflect the emergence of the "dual structure of the economy". Farmers were not better off even with good crops when the price movements accelerated downward trend, partly reflecting the world prices. The rice market encountered oversupply from the mid-1920s, due to increased import from the colonies. The government introduced protective measures such as restrictions on cultivation and price controls[11]. The large share of agriculture in the national economy did not contribute to the economic recovery, rather hindering it.

Most of the discussions on the "dual structure" focuses on the gap in wages and income. Despite increasing employment during the recovery, the money wages declined as a whole, because the new employment consisted largely of younger workers and part-timers[12]. Real wages in manufacturing, on the other hand,

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[9] *LTES*, 6, Table 1-2 and Table 5, 9, and 10.

[10] In Japan, the harvest of rice is usually in autumn.

[11] Shimizu and Nishida (1987).

[12] Hashimoto (1984, p.245ff) gives detailed discussion on the (nominal) wage movements.

rose during the economic downturn, due to declining consumer prices. Whereas the real wage rate subsequently declined in every sector as the economic recovered, those in heavy- chemical industries kept almost the same level in 1936 as in 1929 (Table 2).

The negative effect of unemployment on consumption was not so large, because the number of unemployed was actually lower than the contemporary impressions might suggest. The unemployed workers were absorbed in traditional urban sectors (retail trade and service)[13]. Moreover, the employed workers could have increased consumption, because the real income did not decrease substantially, particularly in the manufacturing sector. According to composition of private consumption, however, the increase in real income would not have brought about so much increase in demand for superior goods other than food. Assuming a reverse correlation of propensity to consume with the income level, the income transfer from the depressed agriculture might have hindered rather than helped recovery.

4) Exchange Rates and Export

As the regressions for both output and private investment demonstrate, growth and fluctuations of the prewar Japanese economy were basically export-led. The analysis of exports is, therefore, very important. We begin with considering the relationship between the exchange rate and export. Since product differentiation was not so important for the prewar export goods, such as textiles, exchange rate seems to have had larger impact on export than today.

Figure 5 shows the nominal and real effective exchange rates, and the real export growth not only for the rest of the world, but also for those less colonies. ("Colonies" in this case include Taiwan, Korea, Manchuria and Rhea Province.)

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[13]Sato (1976) and Hashimoto (1984, p.246 ff).

Figure 5

The nominal effective exchange rate changed remarkably within a short period: an appreciation from 1929 to 1931, followed by a sharp depreciation until 1933. It thereafter stabilized with an exception of the slight appreciation in 1934 (see Figure 6 as well). The real exchange rate in Figure 5 illustrates a downward trend until around 1934, longer than the nominal effective exchange rate. Corresponding to this decline, the export growth accelerated from 1933 to 1935. These facts suggest that the price competitiveness explains the remarkable growth in real export[14].

The effects of depreciation, however, did not uniformly appeared, depending on trade partners. Yen depreciated from its peak of 1931 when the sterling began floating in September. The fact that yen depreciated to a larger extent than the sterling generated complaints on the part of British and Indian cotton industry and intensified pressure for a protective measures in British Empire countries. After April 1933, when the United States allowed the dollar to depreciate, Japanese export goods slightly lost their price competitiveness not only against British, but also against American products.

The relation of yen with silver standard currencies is more complicated. India stabilized rupee in 1926, and returned to gold-exchange standard in April 1927. Silver sale from India as well as Thailand (1928) and Indochina (1929) pressed the silver price down, and accordingly, yen appreciated against the silver standard currencies, most importantly against Chinese tael (see Figure 6). However, from April 1934, when the United States enacted Silver Purchase Bill, silver price rose again, thereby depreciating yen against silver standard currencies. This tendency continued until Chinese government

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[14]Shinohara (1961, Ch.10) stressed that the declining terms of trade (in other words, the relative prices) promoted export, which worked as an engine for the economic growth in prewar Japan.

introduced currency reform in November 1935[15].

Figure 6

The effect of depreciation was different, depending on the export goods. The silk yarn and products, Japan's main export goods to the United States, had large income-elasticity. The depression (accompanied by the shift of consumption towards synthetic fibers) in the U. S. market reduced silk export, deepening agricultural depression in Japan. The depreciation of yen did not help silk export to recover, because of its low price elasticity[16]. Cotton exports to East Asian countries, on the other hand, had larger price elasticity than silk, and the yen exchange rates had naturally larger impacts. The sharp appreciation of yen against tael from 1929 to 1931 reduced cotton export to China, while the yen depreciation from 1931 to 1933 stimulated export growth.

Breaking down Japan's real export by area, we find that the growth of total export is more remarkable than that of export less colonies (in other words, export to foreign countries). In this sense, the trade with colonies played an important role in the economic recovery. The Japanese direct investment promoted import of heavy- chemical products from the home country. Since the trade with colonies was transacted in yen, its remarkable growth after 1933 is not inconsistent with the stability in the effective exchange rate.

But it is as well worth stressing that the real export less colonies showed a substantial growth from 1933 to 1935, the highest growth rate during the interwar years. From 1934 to 1937, the export to the foreign market shifted gradually from the East-Asian countries to developed countries, such as North America and Britain[17]. The economic recovery in the developed countries,

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[15]Hashimoto (1984, pp.169-170).

[16]Sato (1981, p.24).

[17]Itoh (1989, pp.286-89).

however weak it may have been, increased import from Japan.

The growing export was sustained by textile products: by cotton goods from 1931 to 1934, and subsequently silk and synthetic fiber products. These textile products were exported mainly to the Asian market, except for the silk which was dependent on the U.S. market. The Japanese cotton export stagnated from the mid-1930s, because it encountered strict protective measures in the British Empire countries and at the same time competition from the Chinese firms including *Zaikabo*, Japanese subsidiaries operating in China[18].

The export composition gradually shifted from textiles towards the heavy-chemical products during the 1930s, due to increased export of the latter products to colonial market. The textiles, however, still remained to be the main export industry, occupying nearly a half of the total export in the mid-1930s. The export share of metal and products, machinery and chemicals increased from 13.0 % in 1929 to 24.1% in 1935 while those of textiles decreased from 61.2 % to 48.7%[19]. As Tables 6 and 7 suggest, the transformation of industrial structure was brought about not only directly by the export growth itself, but also indirectly in the sense that the growing exports promoted fixed capital formation, which in turn increased demand for capital goods manufactured in the heavy industries.

4. The Role of Economic Policy

1) Government Expenditures and Monetary Policy

With the aim of re-establishing gold standard at the prewar parity, the government in the 1920s pursued, generally speaking, tight macroeconomic policy: see, for example, Patrick (1971). Although the Bank of Japan provided

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[18]Hashimoto (1984, pp.214-225), Itoh (1989, pp.283-294).

[19]Calculated from the trade statistics in *LTES*, 14.

special credit to financial institutions in difficulties after the earthquake in 1923, and in particular during the financial crisis in 1927, and as Itoh (1989, pp.205-07) added, the specie reserves held abroad (*Zaigai Seika*)[20] worked as a cushion to counteract deflationary pressures caused by current account deficits, the relatively high level of real interest rate (Figure 3) suggests a tendency towards tight monetary policy.

In particular at the end of the 1920s, the government stuck to deflationary stance in order to prepare for the liberalization of gold export (the gold bullion standard), which finally came into force in January 1930. In short, the macroeconomic situation in the 1920s failed to facilitate the new industrial structure to set in motion. The suspension of the gold standard, on the other hand, constituted the basis for expansionary public expenditures and for the depreciation of the yen which accelerated export in the earlier stage of the recovery.

The expansionary fiscal policy undertaken by Korekiyo Takahashi, *Takahashi Zaisei*, commenced in December 1931, when Takeshi Inukai formed a Seiyu-kai cabinet and the gold export was prohibited again (31st December). Indeed later in 1933 and 1934, the fiscal policy shifted to a more tightening stance towards military expenditures, but the growth trend did not show a downward shift, possibly because the pump priming already took effect.

The Keynesian characteristic of the Takahashi Zaisei is relatively well known[21]. The political circumstances under the warfare in Manchuria promoted military expenditures. The finance minister, Takahashi, was assassinated in the attempted military *Coup d'Etat* of February 1936, because he tried to

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[20]This reserve was initially built up with the Chino-Japanese War Indemnity and later accumulated by the large scale current account surplus during the World War I. Despite its naming, it included foreign exchange reserves.

[21]See the footnote 2.

restrain ever increasing requirement for military expenditures. His death finally broke the moral support for the government to restrain continued military expansion, which stimulated continuous fixed capital formation and growth in heavy- and chemical industries. In this sense, the economic recovery in Japan had common features with Nazis Germany.

Government deficits were monetized by the Bank of Japan. Most of the literature on the Japanese macroeconomic policy in the 1930s, Nakamura (1971, 1978) among others, stresses the role of the central bank in financing the government deficits[22]. The gradual decline of nominal loan rate in Figure 3 implies that the Bank of Japan made a success in avoiding the crowding-out which otherwise would have been brought about by large issues of deficit-bonds. But more interesting to note is the movement of the M2 and behavior of the money multiplier.

The contraction of M2 in Japan was substantially shorter and smaller than in the United States. The decrease in Japan recorded 8.2% from 1929 to 1931, while it amounted to 33.5% from 1929 to 1933 in the United States (see Figure 7). As Friedman and Schwarz discussed (1963, p.332ff), monetary contraction (M2) in the United States was caused by changes in the money multiplier, which in turn resulted from the decrease in ratios of commercial bank deposit to both bank reserves and to the currency held by the public. In contrast, the money multiplier was quite stable during the Depression in Japan (Figure 8), because the public did not change their portfolio from deposits away toward currency as in the United States. This public behavior most likely reflected the stabile state of the banking system.

Figures 7 and 8

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[22] The experience of the subsequent inflation, in particular during the war, constituted the basis of the public opinions against the deficit-bond issues, which was excluded by Article 4 of the Public Finance Act enacted in 1947.

Before the World War I, most of the depression in Japan was accompanied by financial panics, in which the ratio of bank deposits to currency held by the public sharply fell. After the War, however, this ratio became stable. The primary reason for this stability was the concentration in banking sector; a number of small banks had either gone bankrupt or been acquired by a few big banks. As a result, the largest Big Five banks came to enjoy great confidence by the public. In case of bank runs, deposits merely shifted from smaller banks to the Big Five. The second reason was the banking regulation introduced by the Banking Act of 1927. Prior to this law, the Japanese financial system had been close to free banking. The Banking Act facilitated concentration by imposing the minimum level of paid-in capital. It also legalized the banking inspection by the Ministry of Finance[23].

3) The Effects of the Devaluation

The depreciation of yen strengthened the price competitiveness of Japanese exports, on the one hand, and enabled the government to pursue expansionary macroeconomic policy, on the other hand. It is a controversial issue which of two was more important in alleviating the depression in Japan?[24]

Sato (1981, pp.25-26) claims that the depreciation of yen did not necessarily contribute to recovery in the trade balance, and that expansionary public expenditures was more important[25]. Indeed, the depreciation could have led to higher import price of raw materials, such as raw cotton, thereby canceling out the favorable effects on export. But this disadvantage turned out to be actually not so serious, because the price of raw materials declined

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[23]For more details, see Okazaki (1993).

[24]For a more general discussion and an international comparison of the devaluation effect, see Eichengreen and Sachs (1985).

[25]Takagi (1989) similarly does not fully assess the contribution of the depreciation.

considerably, reflecting the world depression[26]. Contrary to Sato's assertion, Table 5 shows the contribution of net exports to the growth of real GNP was substantial for the 1932 - 1935 period.

As discussed in Section 3-(4), the devaluation undoubtedly contributed to increase real export in the initial phase of the recovery, and at the same time, it set a basis for the government to introduce expansionary fiscal policy. In this sense, the devaluation was certainly a major factor for economic recovery in Japan.

However, the continued growth in export was also promoted by the demand in the colonial market, on the one hand, and in foreign countries, for example the United States and Britain, on the other hand. In the later phase of the recovery, the rising demand itself was important for the Japanese export.

As for the second effect of devaluation, Table 5 shows that the effect of increased public expenditures did not last longer than a few years. The military expenditures stayed at a lower level after the initial rise in 1932, until the outbreak of the Chino-Japanese war in 1937. But we would like to stress that the government after the warfare in Manchuria was more or less controlled by the military elites and that this regime would have raised the expectation for the continued growth in military expenditures, thereby promoting investment in the heavy- chemical industries. In addition, the declining real interest rate which stimulated private investment was sustained by the easy monetary policy. In this sense, the suspension of the gold standard contributed to economic recovery through monetary channel as well.

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[26]The price of raw cotton, for example, declined sharply until the autumn of 1931, see Takamura (1987, p.179).

5. Concluding Remarks

Compared with other major economies, the Depression in Japan was relatively mild and short. Real GDP hardly declined and recorded the highest growth rate in the 1930s. This paper attempted to explain such characteristics of the Great Depression in Japan from various angles.

With a bit of exaggeration, we can summarize our findings by concluding that growth and fluctuations of the prewar Japanese economy were dominated by export. A sudden decline in the silk export to the United States directly hit agricultural area, generating gloomy episodes in the Depression. The most important factor for the economic recovery was the export which substantially affected both the manufacturing output and fixed investment. The depreciation of the yen stimulated Japanese export, but the growing demand for Japanese goods in the colonies and the developed countries also sustained its growth.

Most fundamental for the "Keynesian policy without a Keynes" in Japan was the suspension of the gold standard at the end of 1931. The Japanese policy makers had attempted to stabilize the yen exchange rate at the pre-World War I parity. As soon as this policy goal was given up, yen began to depreciate considerably and at the same time, it allowed the government to pursue expansionary fiscal and monetary policies. As already explained, export growth led the economic recovery and the significant decline in real interest rate stimulated fixed investment. Needless to say, the active fiscal policy by the finance minister Takahashi would not have been possible under the constraint of the gold standard.

In addition to the vigorous demand, both private and public, we can add the robustness of the banking sector as a factor to mitigate the Depression in Japan. In contrast to the United States, Japan did not suffer from bank runs and financial panics in the 1930s, thereby stabilizing the money supply

through banks.

Finally, the Japanese economy in the 1930s was in the process of major structural transformation characterized by the growth of the heavy-chemical industries. The impact of the Great Depression was hardly seen in these sectors. Japanese agriculture, on the other hand, experienced long-run stagnation from the mid-1920s through the 1930s, standing against the recovery in manufacturing sectors. The expansionary policy in the 1930s finally broke through the potentials of new industrial development which had been hindered under the constraint of the orthodox policy. It is worth recalling that this policy stance was associated with the "new regime". It raised the expectation on the part of the business leaders for increased military expenditures and subsequent demand for the heavy industries, similarly as Temin (1989, p.102-03) argued for the German recovery under Hitler's government[27].

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[27]Arndt (1944, p.175) also emphasized the psychological effect of the political change, stating that "one of the main reasons for the revival of business confidence in 1933 was that German business men had no doubt whatever that, as soon as internal and international conditions permitted, the Nazis would embark on a vast rearmament programme. In the eyes of the German capitalists who helped Hitler to power, his rearmament programme, together with his anti-socialist policy, provided the *raison d'être* of his régime".

6. Data Appendix

We relied on following volumes in the *Estimates of Long-Term Economic Statistics of Japan since 1868 (LTES).*

1. National Income, ed. by K. Ohkawa *et al.*
2. Manpower, ed. by M. Umemura *et al.*
3. Capital Stock, ed. by K. Emi.
6. Personal Consumption Expenditures, ed. by M. Shinohara.
8. Prices, ed. by K. Ohkawa *et al.*
9. Agriculture and Forestry, ed. by M. Umemura *et al.*
10. Mining and Manufacturing, ed. by M. Shinohara.
14. Foreign Trade and Balance of Payments, ed. by I. Yamazawa and Y. Yamamoto.

To note is that important variables in macroeconomic movements, such as private consumption and investment have limitation due to estimating methods.

Private consumption is estimated from commodity-flow analysis (in this case production minus export plus import, thereby including inventory stocks). Except for rice from 1914 to 1940, which is adjusted with changes in stocks, these data tend to overestimate fluctuations in private consumption.

Investment data exclude changes in inventory stocks of consumption goods, which are included in the estimation of private consumption. Fixed investment is estimated from both commodity-flow analysis and public statistics. Commodity-flow analysis is applied for private equipment and partly for public equipment; the latter is supplemented by governmental statement of accounts. Private construction is calculated from the stock data reported in the municipal annual statistics, while public construction is estimated from governmental statement of accounts. To the extent that the estimated fixed investment is not adjusted for inventory stocks, the data have the similar shortcomings to the private consumption.

Table 1. Average GDP Growth Rate of the Major Countries (%)

period	Britain	Germany	France	Italy	U.S.	Japan	Japan(GNP)
1919-1929	1.03	5.16	5.79	1.66	3.42	2.39	1.80
1929-1939	1.79	4.11	0.34	2.10	0.12	4.64	4.69

Note: Average growth rate is calculated as $(\ln Y_t - \ln Y_0)/10*100$, data from Maddison (1991).

Table 2. Growth Performance in Each Industrial Sector

	Heavy-chemical				Textile and Food				Agriculture			
Year	O	E	P	RW	O	E	P	RW	O	E	P	RW
1929	100	100	100	100	100	100	100	100	100	100	100	100
1931	102.6	92.8	77.7	111.7	100.0	91.7	63.9	114.3	94.9	99.7	60.6	82.6
1936	236.5	213.2	151.3	99.3	135.2	91.7	86.4	92.8	108.8	98.3	93.5	76.0

Annual Rate of Change (%)

	Heavy-chemical				Textile and Food				Agriculture			
Period	O	E	P	RW	O	E	P	RW	O	E	P	Rw
1929-1931	1.3	-3.7	-12.6	5.5	0.0	-4.3	-22.4	6.7	-2.6	-0.1	-25.0	-9.6
1931-1936	16.7	16.6	4.7	-2.4	6.0	0.0	3.9	-4.2	2.7	-0.3	8.7	-1.7

Source: *LTES*, 2, 8, 9, 10.

Note: O:real output, E:employment, P:price, RW: real wage rate, deflated by CPI. Heavy-chemical is an arithmetic means of metal, machine and chemical.

Table 3. Industrial Structure of the Major Countries

GDP share by sector (%)

Japan

year	A	I	TCC
1925	28	27	45
1935	18	37	45

United States

year	A	I	TCC
1920-23	13	29	40
1929-37	9	26	40

Germany

year	A	I	TCC
1925-29	16	48	17
1930-34	20	41	16

Britain

year	A	I	TCC
1925-29	4	37	24
1930-34	4	34	23

France

year	A	I	TCC
1925-29	n.a.	n.a.	n.a.
1935-39	22	36	21

Italy

year	A	I	TCC
1925-29	37	30	23
1930-34	30	28	28

Employment share (%)

Japan

year	A	I	TCC
1925	51	22	28
1935	47	21	31

United States

year	A	I	TCC
1929	20	27	40
1929-37	21	30	40

Germany

year	A	I	TCC
1925	31	41	28
1933	29	40	31

Britain

year	A	I	TCC
1921	7	48	49
1931	6	46	48

France				Italy			
year	A	I	TCC	year	A	I	TCC
1926	42	29	29	1921	56	25	19
1936	35	30	38	1936	48	28	24

Note: A; agriculture, I; manufacturing, mining, and construction, TCC; others.

Source: Mitchell, B.R., *International Historical Statistics, Europe 1750-1988*, 1992, Macmillan, U.S. Department of Commerce, *Historical Statistics of the United States*, *LTES*, 1, 2.

Table 4. Growth Accounting by Demand Factors: the United States (%)

year	Y	C_p	G	I_p	CA	EX	M
1930	-9.9	-4.5	1.1	-4.4	-0.0	-0.7	-0.6
1931	-7.7	-2.3	0.6	-4.8	-0.3	-0.8	-0.6
1932	-14.8	-6.7	-0.7	-4.9	-0.2	-1.1	-0.8
1933	-1.9	-1.4	-0.6	-0.8	-0.4	0.0	0.3
1934	9.0	3.7	2.3	1.7	0.2	0.1	0.0
1935	9.9	4.8	0.3	2.3	-0.8	0.3	1.0
1936	13.9	7.6	2.8	3.1	-0.1	0.3	0.4
1937	5.3	2.4	-0.5	1.9	0.3	0.8	0.6
1938	-5.1	-1.4	1.5	-2.5	1.3	0.0	-1.2

Source: U.S. Department of Commerce, *Historical Statistics of the United States.*

Note: Y:gross national expenditure, C_p:private consumption, G:public expenditures, sam of C_g and I_g, C_g:government consumption, I_g:government fixed capital formation, I_p:private fixed capital formation, I:fixed investment = $I_g + I_p$, EX:export, M:import, CA:current account of the balance of payments.

Table 5. Growth Accounting by Demand Factors: Japan (%)

year	Y	C_p	G	C_g	I_g	military	non-military	I_p	I	CA
1920	-0.46	-1.14	1.71	0.28	1.43	0.63	0.80	0.21	1.64	
1921	6.40	4.96	5.00	0.11	4.89	4.03	0.86	-3.33	1.56	-0.23
1922	-2.65	4.66	-0.25	0.61	-0.86	-1.33	0.47	-1.34	-2.21	-5.71
1923	-4.56	1.43	-1.67	-0.14	-1.53	-1.83	0.30	-2.68	-4.21	-1.64
1924	3.23	1.82	-0.64	0.14	-0.78	-0.89	0.11	2.28	1.50	9.04
1925	5.79	1.70	0.18	-0.97	1.15	0.68	0.47	0.33	1.48	-4.96
1926	0.75	1.18	1.02	0.64	0.38	-0.49	0.88	0.54	0.92	-1.99
1927	3.37	2.42	2.03	1.80	0.23	-0.01	0.24	0.23	0.46	-1.31
1928	6.46	2.43	2.59	2.27	0.32	0.12	0.19	-0.53	-0.21	1.98
1929	0.45	-0.54	-0.44	-0.45	0.01	-0.12	0.14	0.98	0.99	0.45
1930	1.07	0.36	-0.82	-0.41	-0.41	-0.09	-0.32	-0.13	-0.54	1.66
1931	0.43	1.74	2.82	2.64	0.18	0.20	-0.02	-1.86	-1.68	-2.28
1932	4.42	-1.16	2.77	1.00	1.77	1.26	0.51	-1.02	0.75	3.83
1933	10.08	5.20	1.47	1.33	0.14	0.11	0.03	1.66	1.81	1.75
1934	8.72	4.66	-0.93	-0.71	-0.22	0.07	-0.30	2.66	2.43	2.33
1935	5.42	-0.05	0.75	0.26	0.49	0.01	0.48	1.81	2.30	2.91
1936	2.16	1.80	0.39	0.15	0.24	0.14	0.10	0.87	1.11	-0.89
1937	6.32	3.50	4.13	1.64	2.49	3.35	-0.85	1.60	4.09	-2.91
1938	3.83	-2.56	7.02	2.94	4.08	4.52	-0.45	1.23	5.31	-1.86
1939	5.99	1.82	-1.26	-2.41	1.15	1.24	-0.08	6.19	7.34	-0.76
1940	4.07	0.20	5.28	3.86	1.42	1.13	0.29	-0.68	0.74	-0.33

year	EX	M
1920	-1.61	-0.37
1921	-0.82	-0.60
1922	0.55	6.26
1923	-1.26	0.38
1924	2.44	2.67
1925	2.02	-1.55
1926	0.88	2.87
1927	1.59	2.91
1928	0.96	-1.02
1929	1.41	0.96
1930	0.19	-1.47
1931	0.82	3.10
1932	3.12	-0.71
1933	1.07	-0.68
1934	5.06	2.73
1935	3.62	0.70
1936	0.62	1.52
1937	0.53	3.44
1938	-0.99	0.87
1939	-2.18	-1.42
1940	0.62	0.96

Source: *LTES*, 1, 3. Note: Y:gross national expenditure, C_p:private consumption, G:public expenditures, sum of C_g and I_g, C_g:government consumption, I_g:government fixed capital formation, I_p:private fixed capital formation, I:fixed investment = $I_g + I_p$, EX:export, M:import, CA:current account of the balance of payments.

Table 6. An Analysis of Factors Determining Output (Annual Data, 1901-36)

$LogQ_{it}$	Constant	$LogQ_{it-1}$	$LogUL_{it}$	$LogX_t$	$LogG_t$	$LogI_t$	Adj.R^2
							D.W.
							S.E.R.
Manufacturing	0.88	0.66	0.04	0.26	0.04	-0.00	1.00
Overall	(2.77)	(8.86)	(0.88)	(5.74)	(1.14)	(-0.25)	1.88
							0.04
Food	-0.41	0.94	-0.08	0.03	0.06	0.04	0.98
	(-0.46)	(9.67)	(-1.20)	(0.89)	(0.94)	(1.82)	2.31
							0.06
Textile	0.10	0.55	0.14	0.35	0.09	-0.01	0.99
	(0.45)	(4.74)	(2.10)	(3.91)	(1.67)	(-0.38)	2.49
							0.07
Wood	-0.88	0.30	-0.12	0.43	0.31	-0.10	0.97
	(-2.71)	(1.94)	(-2.26)	(4.58)	(3.55)	(-2.32)	2.71
							0.09
Chemistry	-0.73	0.77	-0.04	0.26	0.11	-0.06	0.99
	(-1.99)	(7.52)	(-0.98)	(3.13)	(1.68)	(-2.15)	2.34
							0.06
Ceramics	-0.86	0.78	-0.07	0.18	0.11	0.00	0.98
	(-1.77)	(7.19)	(-0.49)	(2.01)	(1.36)	(0.11)	2.11
							0.11
Iron and Steel	-2.27	0.79	-0.16	0.24	0.29	-0.01	0.99
	(-1.77)	(8.91)	(-2.03)	(1.54)	(2.40)	(-0.21)	2.35
							0.14

Non-ferrous	-1.49	0.78	-0.24	0.38	0.11	-0.05	0.97
Metal	(-1.57)	(9.53)	(-2.55)	(3.44)	(0.63)	(-0.61)	2.20
							0.17
Machine	-2.50	0.34	0.03	0.59	0.06	0.33	0.99
	(-5.32)	(3.34)	(0.29)	(7.32)	(0.72)	(4.00)	1.69
							0.09
Printing	0.09	0.94	-0.10	0.05	0.05	-0.04	0.98
	(0.19)	(8.96)	(-1.04)	(0.45)	(0.58)	(-0.78)	2.03
							0.11

Source: Yoshikawa and Shioji (1990, Table 3), original data are from *LTES*, 2, 8, 10.

Note: ordinary least-square estimates, t-statistics in parentheses.

Table 7. An Analysis of Factors Determining Private Fixed Investment

(Annual Data, 1901-1936)

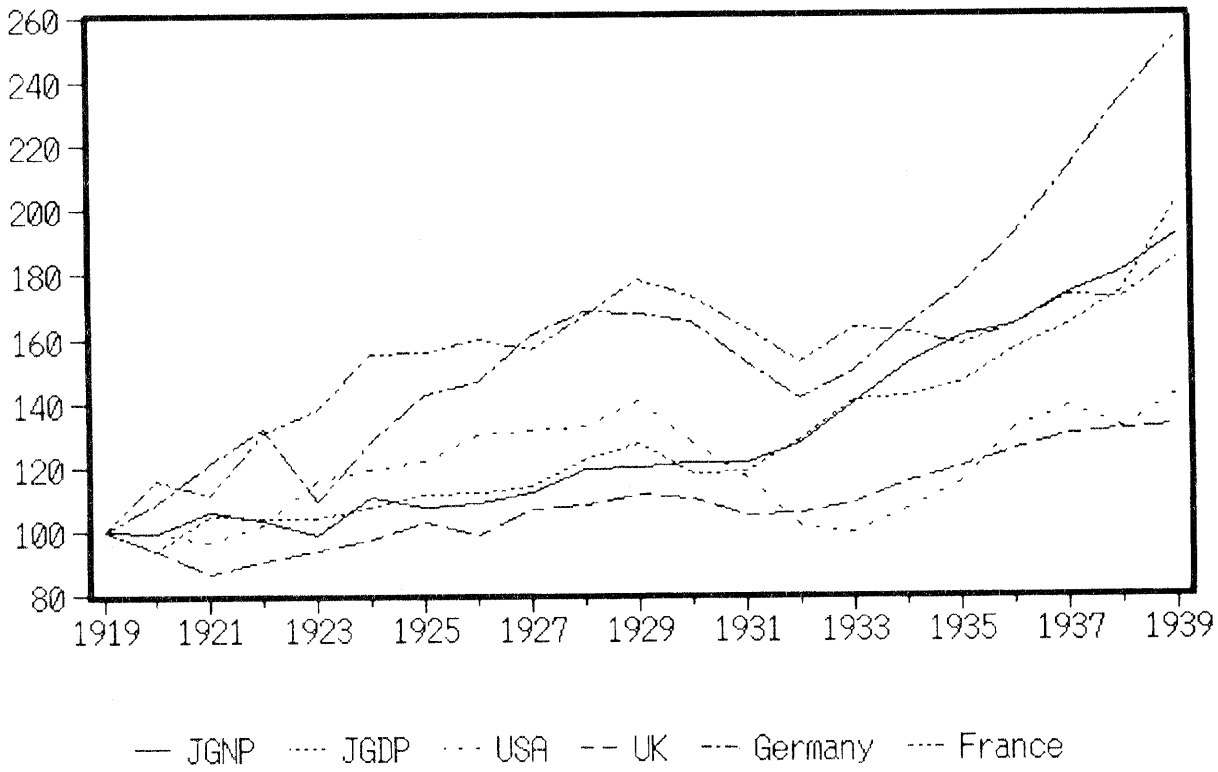
Dependent Variable I_p , Sample 36

Constant	$I_{p(-1)}$	G	EX	r	Adj.R^2	D.W.	S.E.R.
0.82	0.71	-0.00	0.18	-0.01	0.94	2.17	0.12
(1.65)	(8.87)	(-0.03)	(2.84)	(-2.96)			

Constant	$I_{p(-1)}$	Mi	EX	r	Adj.R^2	D.W.	S.E.R.
0.79	0.72	-0.01	0.18	-0.01	0.94	2.17	0.12
(2.26)	(7.68)	(-0.09)	(3.52)	(-3.00)			

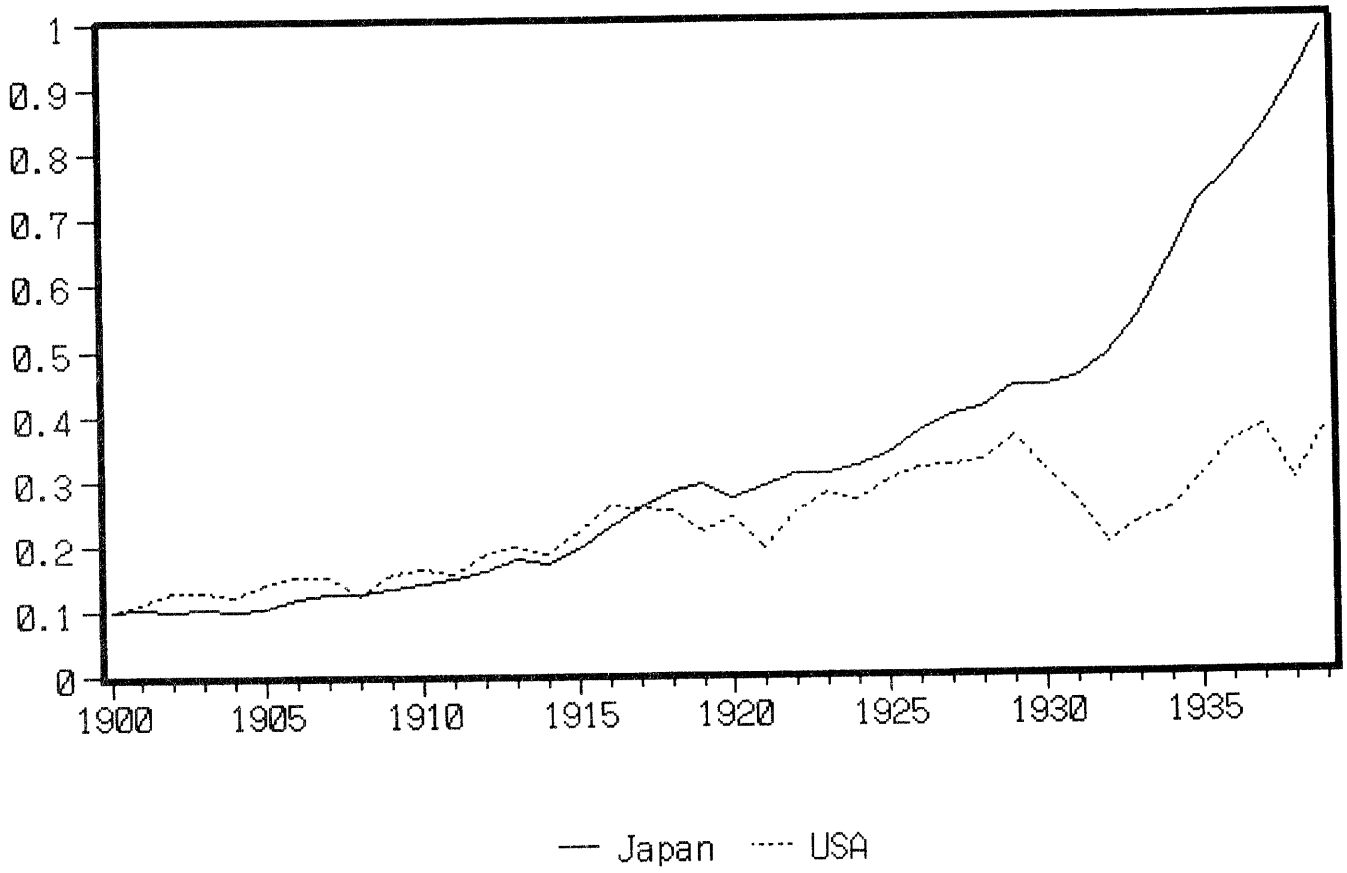
Note: ordinary least-square estimates, t-statistics in parentheses. I_p:private fixed investment, G:public expenditures (sum of consumption and fixed investment), Mi:military fixed investment, EX:export, All in real terms and expressed in natural logarithm, r:real loan rate, deflated by GNP deflator. Source: *LTES*, 1, 3, 8. The loan rate is from, Toyo Keizai, *Keizai Nenkan*, various issues.

Figure 1. GDP (GNP) Movements of the Major Countries (1919=100)



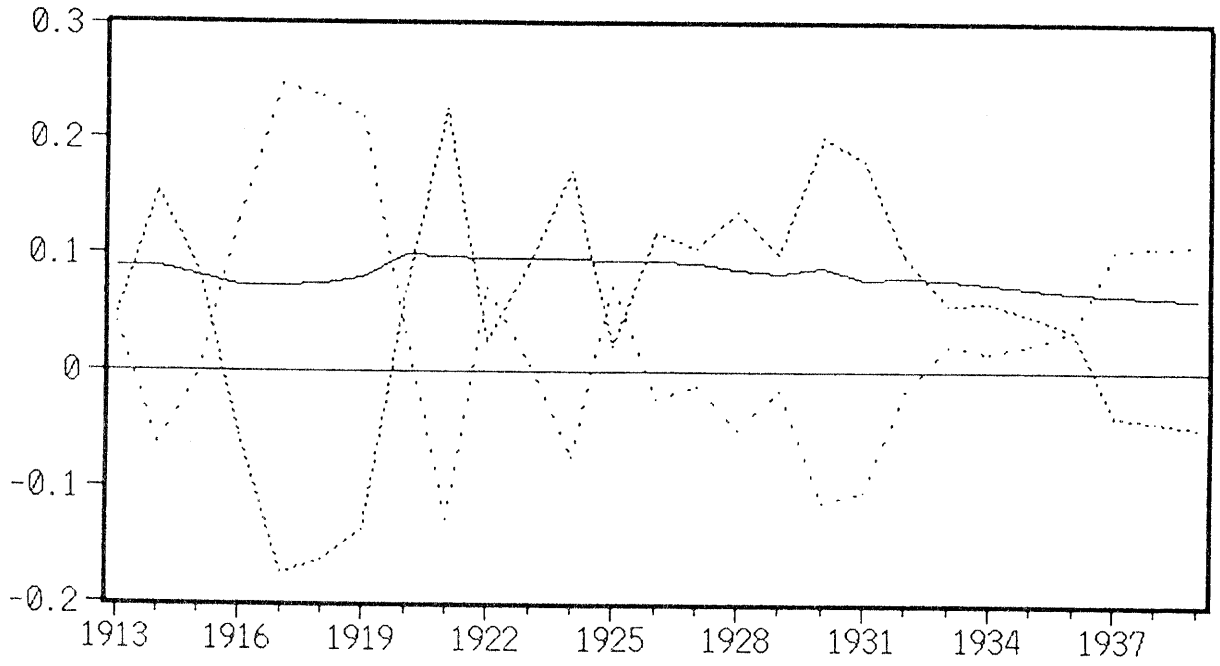
Source: the same as Table 1.

Figure 2. Index of Manufacturing Production: the United States and Japan (benchmark year 1900)



Source: *LTES*, 10, B. R. Mitchell, *International Historical Statistics, The Americas and Australasia*, Macmillan 1983, Table E1.

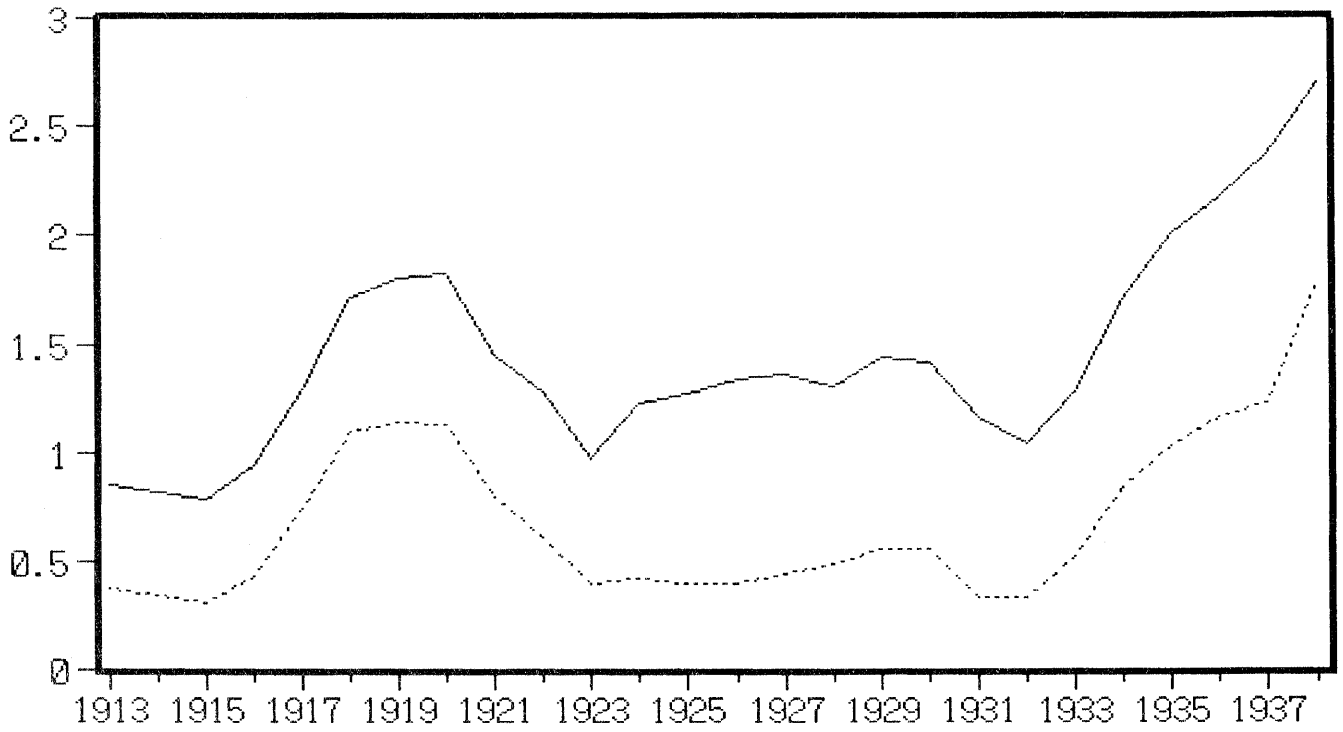
Figure 3. Movements of Loan Rate (1913-39:)



——— nominal loan rate ------- real loan rate ····· inflation rate

Source: Toyo Keizai Shimpo, *Keizai Nenkan*, *LTES*, 1.

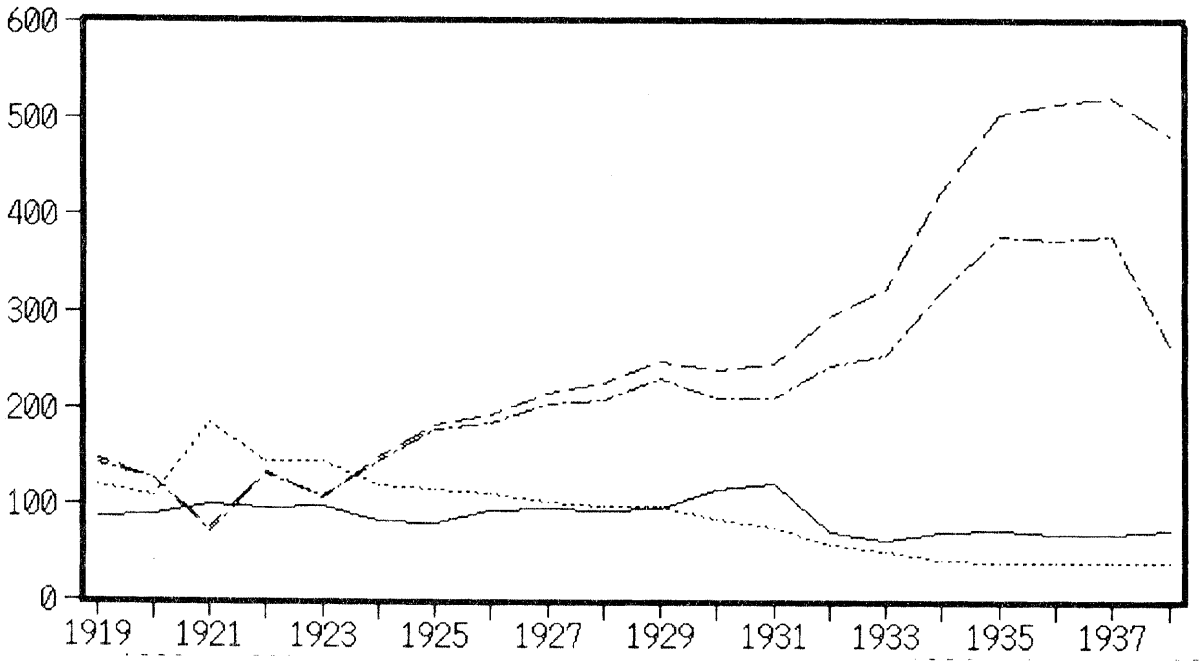
Figure 4. Private Fixed Capital Formation (1934-1936 prices, million yen)



——— fixed investment ---------- producers' durable equipment

Source: *LTES*, 1, Table 21.

Figure 5. Effective Exchange Rate and Real Export (1913=100)



___ nominal exchange rate ····· real exchange rate

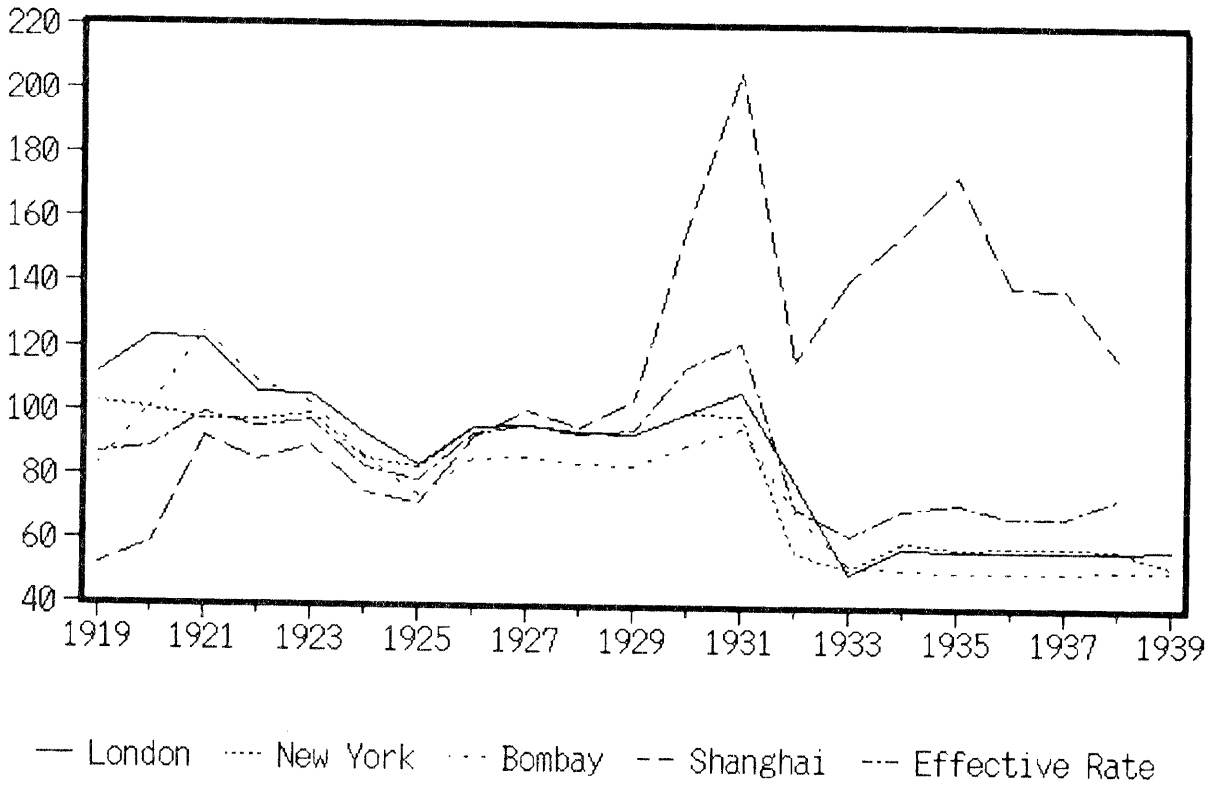
_ _ real export -·- less colonies

Source: Bank of Japan, *Hompo Keizai Tokei*; *LTES*, 14.

Note: The nominal effective exchange rate is defined as the weighted average of the sterling, the U.S. dollar, rupee, and tael per yen. The weight is the export share to Britain, the United States, British India and China of each year. The real effective exchange rate is defined as Japanese export price divided by import price of Japan's major trade partners. The latter is computed as $P=(P_{\$}/E)*(\$_{35}/\$_{t})$.

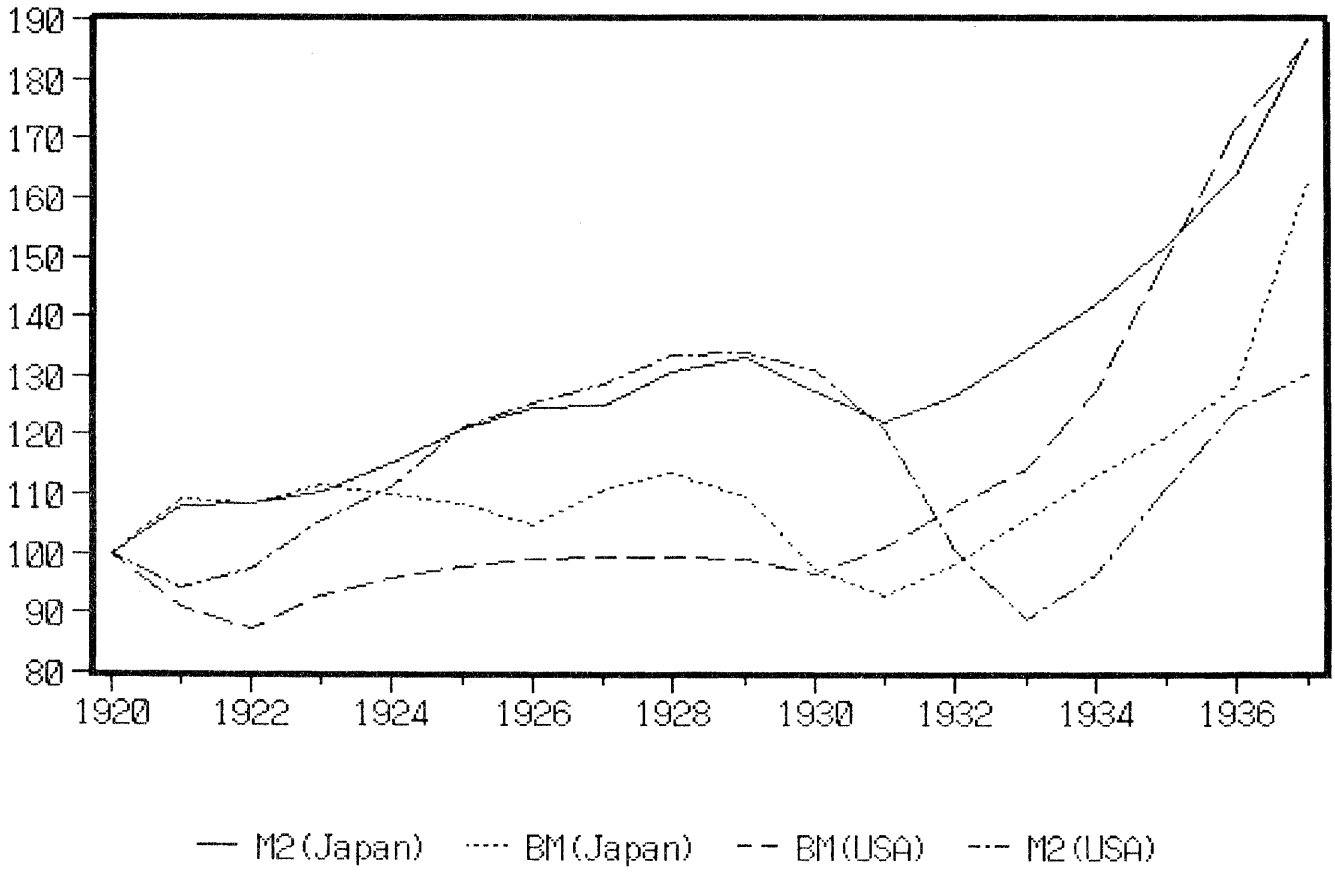
P: import price in yen, $P_{\$}$: import price in U.S. dollar as of 1935, taken from *LTES*, 14, Table 24, E: exchange rate expressed as U.S. dollar per yen, $\$_{35}$: U.S. dollar (in terms of gold) in 1935, $\$_{t}$: U.S. dollar (in terms of gold) of the year concerned.

Figure 6. Yen Exchange Rate in terms of Major Currencies (1913=100)



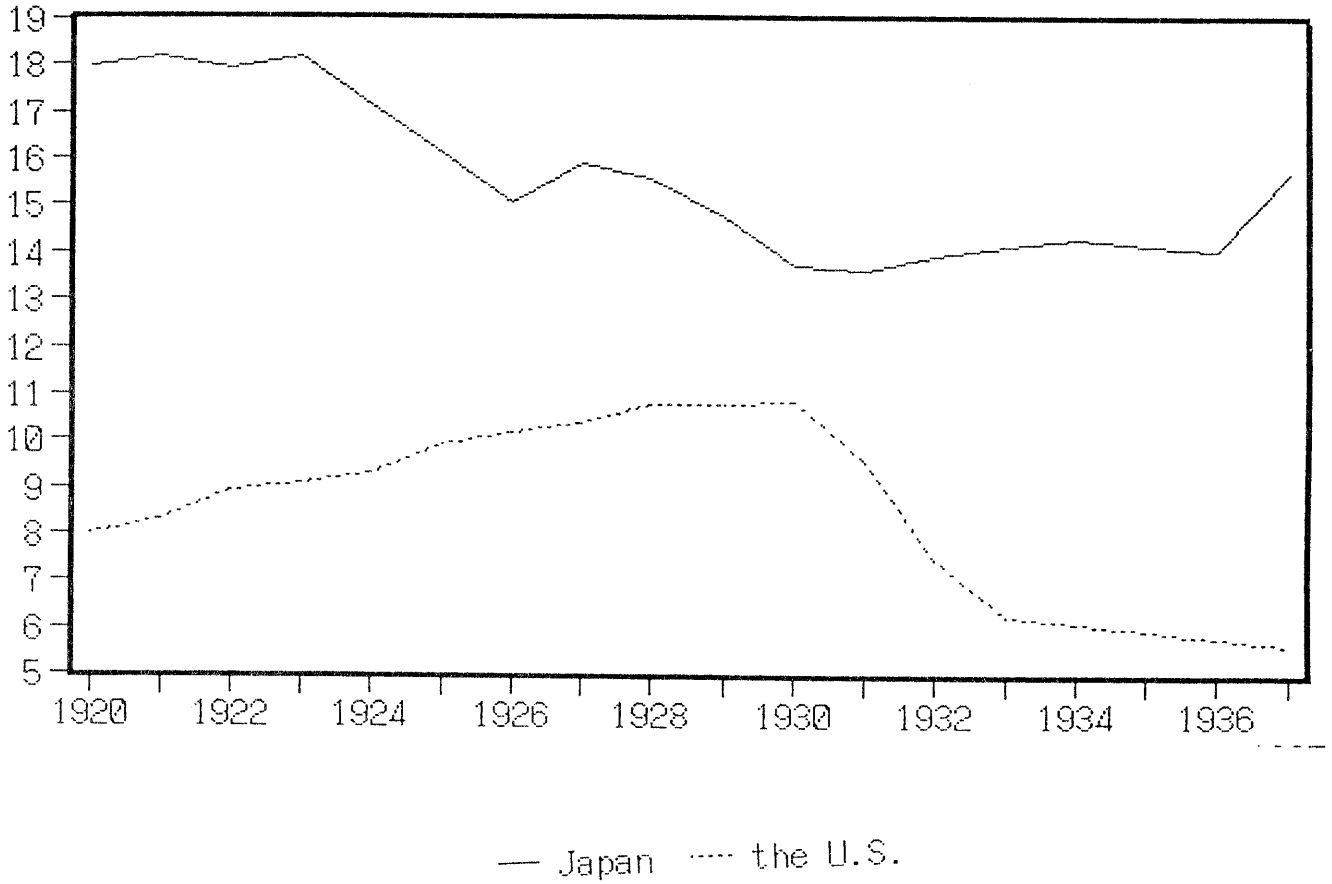
Source: Bank of Japan, *Hompo Keizai Tokei*.

Figure 7. The Money Supply (Base Money and M_2): the United States and Japan (1920=100)



Source: Gordon (1986, Appendix B), Asakura and Nishiyama (1974).

Figure 8. The Money Multiplier (M_2/Base Money): the United States and Japan



Source: the same as Figure 7.

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