The Great Depression and Modern Capitalism

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Abstract

The most crucial factor of the Great Depression was the institutional instability and fragility of the American financial system in the 1920s. Secondly, the instability of the reconstructed international gold standard was also a crucial factor of the Great Depression. Thirdly, the inelasticity of oligopolistic prices was the factor that accelerated the Great Depression. Fourthly, the unequal distribution of income was not a direct cause of the Great Depression but a fundamental background of the Great Depression.

While the economic structure had changed, adherence to the old conventions and institutions was stubborn. The contradiction between the new economic structure and the old conventions was a main cause of the Great Depression.

1. Introduction

In the 1990s we live in a historical transition period. First, Pax Russo-Americana was over because of the breakdown of the Soviet Union. Second, the "Golden Age" of modern capitalism in Pax Americana was also over in the 1970s. We don't have a stable political and economical system any more. From the viewpoint of the present transition period, how can we formulate a historical transformation of modern capitalism in the twentieth century?

In Japan we have the influential stage theory of capitalism, which was advanced by Kozo Uno. In his stage theory, there were three stages of capitalism before World War I : mercantile capitalism (infant stage), industrial capitalism (adult stage), and financial capitalism (mature stage). He thought that the capitalism after World War I was not in any stage of capitalism but in a transition period to socialism (falling period of capitalism). First, the socialist state was born in the world. Second, capitalism changed drastically and was much more organized by state than before World War I (Uno[1962],Uno[1971]). This theory had some reality in the 1950s and 1960s. Since the 1970s, and, in particular, since the end of the 1980s, it has lost reality and has been a methodological obstacle to the study of modern capitalism.

First, the probability that our society will be transformed into a socialist society in the near future has been reduced, because of the break-down of most socialist states at the end of the 1980s. Second, his theory included a residuum of historical determinism of the traditional Marxian economist and he thought that the coming of the socialist society was historically determined. In this type of historical materialism neither the liberty of human beings nor the factor of chance have appropriate positions in social history.[1] Third, if we

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[1] Commons criticized the Hegelian=Marxian scheme, which was directed towards a predetermined goal (Commons[1934]:657). He inherited the critique of the Hegelian scheme from Peirce. Peirce characterized the Hegelian philosophy as anancaticism (evolution by necessity). He criticized it as follows. "Yet, after all, living freedom is practically omitted from its method"(Peirce[1983]:363). Opposed to evolution by necessity, he classified the Darwinian theory as a tychasticism (evolution by chance). He proposed a third method, which superseded the strife between anancaticism and tychasticism. He called it an agapasticism (evolution by the force of habit). In this method the growth due to exercise is a very important factor.

think that the capitalism after World War I is in a transition period to socialist society, it will not be the object of the stage theory of capitalism. Consequently this theory could hardly explain the transformation of capitalism since World War I, and, in particular, what supported the "Golden Age" of capitalism after World War II and why it ended in the 1970s. In contrast to the Uno school, two types of stage approach to capitalism, the regulation approach and the social structure of accumulation approach, can advance new theories to explain these important problems (Aglietta [1976], Bowles,Gordon,Weisskopf[1983]).

Accordingly, we should reform the stage theory of capitalism which Uno formulated about forty years ago. First, three stages of capitalism should be reinterpreted as those in Pax Britanica. Second, capitalism after World War I should be divided into three periods, the interwar period, the "Golden Age" of modern capitalism in Pax Americana, and a new transition period since the 1970s. In this schema capitalism during the interwar days is characterized not as that in the transition era from capitalism to socialism but as that in the transition period from classical capitalism in Pax Britanica to modern capitalism in Pax Americana. The interwar period can be also divided into two parts, the 1920s and the 1930s. In the 1920s the old economic system in Pax Britanica, such as the international gold standard, was reconstructed with some modifications, but it was unstable. It broke down during the Great Depression, but an alternative system was not established in the 1930s.

In order to create a new stage theory of capitalism, it is indispensable for us to consider why the old economic system collapsed during the interwar period, what caused the Great Depression, and why the new economic system was not created in the 1930s. The main purpose of this paper is to investigate what caused the Great Depression in the United States. The reason why I concentrate on the United States is that it played a major role in the world-wide Great Depression and the US is the center country in Pax Americana.

I suppose that Commons inherited this agapasticism from Peirce. Commons wrote, "but Darwin had two kinds of 'selection' among the variabilities: Natural Selection and Artificial Selection. Our is a theory of artificial selection. Veblen's is natural selection" (Commons[1934]:657). Evolution by artificial selection is similar to that by exercise. Of course agapasticism means evolution not only by exercise but by necessity and chance.

Accordingly, the stage theory of modern capitalism in the US is a major part of the stage theory of modern capitalism in the world. Some parts of the stage theory of modern capitalism in the US can be adapted indirectly to other developed countries such as Japan.

Although the Great Depression has been an object of study for a long time, there is little agreement as to the causes of the Great Depression. First, I will examine some possible causes such as inelasticity of the wage rate, inelasticity of oligopoly prices, and unequal distribution of income. Second, I will consider the monetary and financial causes. Third, I will examine the international causes. Fourth, I will explain what caused the Great Depression, and will sketch out the stage theory of capitalism in the twentieth century.

2. Inelasticity of Oligopolistic Prices and Increase in Income Inequality

2.1 Inelasticity of Wage Rate

The first problem is whether the inelasticity of wage cost prevented production and employment from recovering. In the period between 1929 and 1933 the reduction of wage cost was less than that of product values, which was less than that of materials costs (Table 1). The share of wage cost in product value in the manufacturing industries increased by 0.9 percent from 1929 to 1931. In the same period, the share of value added also increased by 1.8 percent because the share of materials cost declined by 1.8 percent. As a result, the share of wage cost in the value added changed little (Table 2).[2]

Let us devote a little more space to compare competitive industries with oligopolistic ones. The share of wage cost in the value added in competitive industries, most of which are nondurable goods producing industries, increased from 1929 to 1931. In contrast, the same share in oligopolistic industries, most of which are durable and capital goods producing industries, changed little or declined in the same period except that in iron & steel industry and coal & petroleum industry (Table 3). Firms in durable goods producing

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[2] In contrast, the same share increased by 2.7 percentage point during the crisis period between 1919 and 1921.

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industries reduced production and employment much more drastically than those in nondurable goods industries (Table 1). Consequently, the oligopolistic firms that faced a decline in demand could keep the price level of their products by cutting production and escape a profit squeeze. The competitive firms that faced a decline in demand could not preserve the price level of their products and faced a profit squeeze. As the industries that did not face a profit squeeze cut production and employment much more drastically than those that faced a profit squeeze, it seems reasonable to conclude that the inelasticity of wage cost did not prevent production and employment from recovering.

In short, we see that the inelasticity of the wage rate is not a main cause of the Great Depression. We must draw attention to the inelasticity of oligopolistic prices rather than that of wage rates. So, let us turn to the problem of oligopolistic prices.

2.2 Inelasticity of Oligopolistic Prices

The second problem is whether the inelasticity of oligopolistic prices affected the depression. As mentioned above, the oligopolistic firms that faced a decline in demand kept the price level of their products by cutting production and employment. It seems reasonable to suppose that a rise in the relative prices of capital goods and consumer durable goods discouraged investment and consumptin. The production of durable goods shrank by nearly 70% from 1929 to 1932 (Table 1). The degree of utilization in durable goods producing industries also steeply declined and minus investment in inventories increased from 1930 to 1932. Fixed investment also declined by 70% from 1929 to 1932. As a result, real private investment shrank by nearly 90% from 1929 to 1932 (Table 4). In short, the contraction spiral of capital accumulation occurred as follows. A decline in demand led not to a fall in the price level but to a reduction of production and utilization, which led to a decline in the fixed investment and consumptin. Accordingly, we may say that the behavior of oligopolistic firms was one of the important factors that accelerated the depression.

2.3 Increase in Income Inequality

The third problem is whether the increase in income inequality caused the Great Depression. The argument that the increase in income inequality was the main cause of the Great Depression is as follows. In the 1920s the unequal distribution of income developed in the United States because the increase in labor productivity did not have enough effects on the decline in products prices or the rise in the real wages in the oligopolistic firms. The increase in income inequality restrained consumption and encouraged savings. These reduced effective demand. The decline in effective demand reduced investment (Nource[1934], Leven[1934], Moulton[1935a], Moulton [1935]). Can this argument explain the cause of the Great Depression?

It was true that income inequality increased in the 1920s. According to Holt's estimate, while per capita real disposable income in all population increased by 13.1% and that in non-farm population increased by 9.4%, that in the bottom (poorest) 93% of non-farm population decreased by 3.9% from 1923 to 1929. Those in the top (richest) 1% and top 7% of non-farm population increased by 63.1% and 55.6% respectively in the same period (Holt[1977] : 283). It was also true that the growth rate of real consumption of durable goods decreased drastically and that of real residential construction declined to minus in the late 1920s (Table 5). The degree of utilization in the mining and manufacturing industries declined from 91% in 1925 to 82% in 1928, because the growth rate of capacity exceeded that of productions (Streever[1960]:64). Consequently, this approach seems to make sense in the interpretation of the Great Depression.

In addition, it was also true that increase in income inequality changed the business cycle pattern in the 1920s. The recession of 1923-24 was caused by a decline in investment. The factors that reduced investment were the rise in labor and construction cost and the tight monetary policy which the FRB adopted to restrain the inflation to which the imported gold might lead. In contrast, a decline in residential construction and consumer durable

expenditures led to the recessions of 1926-7 and 1929 (Table 6, 7, Chawner [1941]:10, *SCB* [1932]:11, Beney[1936]:44).

Accordingly, we may say that the business cycle pattern changed in the second half of the 1920s. The deterioration of supply side conditions led to the recession of 1923-24. In contrast, the decline in effective demand led to the recessions of 1926-7 and 1929 before the supply side conditions deteriorated. In other words, the business cycle with a ceiling transformed into that without a ceiling. The factors that transformed the pattern of the business cycle were not only the exhaustion of pent-up demand but also the increase in income inequality that depressed the increase in consumption.

However, we should notice that the business cycle without a ceiling doesn't necessarily lead to a severe depression. In fact, the business cycle without a ceiling did not lead to severe depression, but led to only a mild recession in 1926-7. After the recession, the growth rate of real GNP rose at the end of the 1920s (Table 8). Whether the business cycle without a ceiling leads to severe depression depends upon other conditions. There are two other main conditions that can be considered. The first one is the financial condition including the situation of the stock market. The second one is the international factor. We will consider the monetary and financial factors in the next section.

3. Monetary and Financial Factors

3.1 Effect of Stock Market Crash

The factors that depressed the economy before the stock market crash were the decline in residential construction and exports and the stagnation in consumer durables expenditure. However, we cannot overestimate the decline in production before the stock market crash, because it was very mild. For example, the index of production in the manufacturing and mining industries declined by only 4 points (3.2%) from June to September in 1929. This decline was very mild in comparison with that during the period between September and December in 1929 when it was 18 points (14.9 %).

In the third quarter of 1929, consumption and investment kept at a high level, although residential construction and exports began to decline. However, almost all the economic indicators began to worsen in the fourth quarter. Not only residential construction but also consumption and investment dropped steeply. As a result, the growth rate of real GNP dropped to -4.7% (-17.5% as annual rate to that of the previous quarter) in the fourth quarter of 1929 (Table 7). Then, why did the economy worsen suddenly at the same time as the stock market crash? This problem will lead us further into a consideration of the relation between the stock market crash and the onset of the Great Depression.

Few have examined this relation carefully. Although Romer[1990] emphasized the effect of the Great Crash, he explained only the uncertainty that the Great Crash generated. Let us examine the real effect of the Great Crash. The index of stock prices in the New York Stock Exchange dropped by 78.2 points (32.8%) from September to November (monthly average, BMS[1943]:481). The total market value of the stocks transacted in the New York Stock Exchange decreased by $26.1b. (29.1%) from August to November (monthly average, SCB[1932]:105). Let us try to estimate the investors capital losses in the Crash. According to the reported income data, net capital losses from sales of capital assets such as stocks, bonds, real estates, and so on steeply increased from $360m. in 1928 to $1,880m. in 1929. Among these net losses, short term net capital losses increased from $316m. in 1928 to $1,830m. in 1929 (Figure 1).

Assuming that 80% of the total capital losses[3] were those from sales of securities,[4] we can estimate net capital losses from sales of securities at $1,500m. As price fluctuations were much larger in stocks than in bonds,[5] we may assume that 85% ($1,280m.) of net

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[3] Short term includes assets held 2 years or less plus assets held longer than 2 years if not segregated for special tax treatment (Seltzer[1951]:378).

[4] 79% of the reported capital gain and 68% of capital loss were realized by the liquidation of stocks and bonds in 1936. As 15% of capital gain and loss were unclassified, we may estimate that the real share was higher (Seltzer[1951]:145,495). In addition, we may think that the share was higher in 1929 than that in 1936 because the stock market boom in the end of the 1920s was much bigger than that in 1936.

[5] The average price of bonds transacted in the New York Stock Exchange declined by 5.2 % during the tight money period from March 1928 to September 1929 (SCB [1932]:97,99).

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capital losses from sales of securities were those from liquidation of stocks. While a decline in stock prices occurred in February (2.2 points), June (7.2 points), and July (0.9 points) in 1928, the biggest declines occurred in October (24.8 points) and November (53.4 points) in 1928 with a small drop in April (2.7 points). We can estimate net capital losses from liquidation of stocks in the fourth quarter of 1929 at around $1,200m. If we assume that net capital losses from sales of other assets than securities, which were about $400m., occurred equally in four quarters of 1929 respectively, we can estimate the total net capital losses at around $1,300m.[6] As a result, we may guess that net capital losses increased by $1,100m. from the third quarter to the fourth quarter of 1929. This amount was equivalent to 5.2 % of personal income in the fourth quarter of 1929.[7]

Which income groups suffered from this sudden increase of capital losses? Let us examine net capital gains and losses by net income groups in 1929. As was expected, net capital gains were concentrated in the high income groups. The groups in which every person's net annual income was fifty thousand dollars and over received 62 % of net capital gains. In contrast, net capital losses were concentrated in the low net income groups (Figure 2). As the group of net deficits accounted for 44.7% and the group of under 5,000 dollars accounted for 19.3%, these two groups combined accounted for 64% of total net capital losses.[8]

Why did capital losses concentrate in low income groups? There are three possible factors that can be considered. First, investors in low income groups had to sell their assets because they could not pay additional margins during the crash. Second, investors in high income groups had more experiences and could get more and better information of assets

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[6] We assume that net capital losses from sales of bonds occurred in the first three quarters when the prices of bonds declined mildly and did not occur in the fourth quarter of 1929.

[7] On one hand, net capital gains might have decreased in the fourth quarter of 1929 because of the stock market crash. On the other hand, however, they might have increased because investors might have sold stocks to realize capital gains in the fourth quarter of 1929.. Then, we assume that net capital gains did not change from the third quarter to the fourth quarter of 1929.

[8] The group of under 5,000 dollars accounted for 94% and the group of under 10,000 dollars accounted for 99% of total households 1n 1929.

market than those in low income groups. Third, net capital losses, to the extent they were deductible, shifted investors into lower income groups. Thus, with capital gains concentrated in the high income groups and capital losses concentrated in the low income groups, we may say that the negative effect of capital losses on the consumption was stronger than the positive effect of capital gains on consumption spending.

Then, how many people invested in stocks in those days? According to a report of the Banking and Currency Committee which was organized later in the Senate, the total number of the customers which brokerage houses had in the stock exchanges was 1.55 million. (*Stock Exchange Practice*[1934]:9). As the total population was about 120 million and the total number of households was around 29.6 million in the United States in those days (*HS*[1975]:8,43), the stock investors' share of the total households was about 5.2%.

In short, we may estimate that 5% of the total households invested in stocks and that net capital losses increased by 5% of the total personal income from the third quarter to the fourth quarter of 1929. As was not expected, 64% of net capital losses occurred in the group with under 5,000 dollars annual net income in 1929.[9] In addition, brokers' loan shrank by 51.8% from $8.5b. on October 4 to $4.1b. on December 31 (*BMS*[1943]: 494). This rapid decrease means that investors had to pay additional margins or had to sell assets to repay loans to brokers during the short period. Consequently, we may say that the steep increase in capital losses with the sharp decrease in brokers' loan depressed investors' consumption spending.

Let us examine the ratio of expenditure to personal income. It dropped in the fourth quarter of 1929 (Figure 3). While the personal income that did not include realized capital gains and losses decreased by $575m.(2.66%) from the third quarter to the fourth quarter of 1929, consumption decreased by $916m. (4.63%) in the same period. As a result, the ratio of consumption to personal income declined by 1.85% to 89.6% (Estimate A). As every ratio during the period from 1929 to 1931 was higher than 91% except in the fourth quarter of

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[9] Some investors might have dropped from the high income group to the low income group because of capital losses.

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1929 and the second quarter of 1931,[10] we may guess that the reason this ratio dropped sharply in the fourth quarter of 1929 was the sharp increase of capital losses in the same period.[11]

Thus, the rapid rise in net capital losses due to the stock market crash reduced consumption spending. In addition, it accelerated the decline in residential construction. Despite the reduction in FRB discount rates and short term market interest rates, mortgage rates did not fall (SCB[1932]:77), because foreclosures of real estate increased and the risk premium on mortgage loan went up.[12] The mortgage market was very tight and personal income began to decline with the rapid rise in capital losses. Thus, the decline in residential construction was accelerated in the fourth quarter of 1929 (Table 7).

Furthermore, the stock market crash affected investment. On one hand, the sudden decline in stock prices deteriorated fund raising conditions.[13] On the other hand, the decline in consumption with the rapid rise in capital losses created a pessimistic expectation of future demand. As a result, firms cut production and employment, and began to curtail investment in plant and equipment. As mentioned above, the index of production in the manufacturing and mining industries dropped by 18 points (14.9%), and that in iron & steel industry dropped by 41 points (30.1%) from September to December. The automobile industry index dropped by 58 points (47.2%) from October to December (SCB [1932] :11).

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[10] According to Barger's estimate of personal income, the ratio of expenditure to personal income declined by 2.1% to 91.6% in the fourth quarter of 1929, while it declined by 0.8% to 94.3% in the second quarter of 1931 (Estimate B).

[11] According to the annual statistics, net capital losses increased until 1931 (Chart 1). Those in 1930 and 1931 also concentrated on low income groups. Therefore, we may say that capital losses depressed consumption in 1930 and 1931, too. However, we can guess several reasons why the drop of the consumption income ratio was most outstanding in the fourth quarter of 1929. (1) As the drop in stock prices was steepest in this quarter, we may guess that net capital losses were largest in this quarter. (2) We may guess that net capital gains decreased in this quarter. (3) The decrease of brokers loan was distinguished in this quarter (BMS[1943]:494). (4) We can guess that net capital losses after 1930 repressed the increase of consumption income ratio that was caused by the continued depression.

[12] Though we can use only annual data, foreclosures of non-farm real estate increased from 116,000 in 1928 to 134,900 in 1929 and 150,000 in 1930 (HS[1975]:651).

[13] The amount of common stock issues declined from $1,975m. in the third quarter to $602m. in the fourth quarter of 1929. That of preferred stocks' issues also declined from $608m. to $197m. in this period (BMS [1943]:489).

The index of factory employment also shrank by 5.5 points (5.4%) from September to October (*Ibid.*:54-5). While the wage rates hardly changed in the manufacturing industries (Beney [1936]:46), weekly earnings decreased by about $ 2 (6.5%) because working hours were cut by about three hours per a month (6.3%) from October to November. As a result of the cut in employment and working hours, aggregate payrolls in the manufacturing industries decreased by 12.5 % from October to December (Ibid.:46). Labor income in the manufacturing, mining and construction industries also decreased by $220m. (4.2%) from the third quarter to the fourth quarter of 1929 (Moore[1961]vol.2:140). This amount of decline was equivalent to 38% of the amount of decline in personal income ($570m., 2.6%) in this period. If we add the decline in other industries, the share of labor income decline in the personal income decline will be much higher than 38%. Accordingly, we can say that the reduction in employment and working hours caused the decline in personal income, which led to the reduction in consumption and residential construction. This reduction led to the reduction in production and employment. These processes were vicious spirals.

The reduction in production led to the decline in capacity utilization, which led to the decline in investment in plant and equipment. According to the data estimated by Balke & Gordon, the investment in equipment declined by 9.9% in nominal terms (10.8% real) from the third quarter to the fourth quarter of 1929 (Balke & Gordon[1986]:811). The investment in nonresidential structures also declined by 6.2% in nominal terms (5.6% real) in this period. On the other hand, according to the data developed by Chawner, the investment in plant and equipment in the manufacturing industries began to decline in the first quarter of 1930.

The stock market crash had another negative effect on the market of primary products. The investors who speculated in the commodity market as well as the stock market had to sell primary products to repay their debts after the stock market crash (Wigmore [1985]:10). As a result, the price of grain that was the object of speculation declined by 10%

from September to November of 1929.[14] The price decline of agricultural products reduced farm income. The decline in farm income was another factor which reduced consumption and residential construction.[15]

The stock market crash and the decline in grain prices extended to imported primary products. The prices of imported primary products traded in the New York market dropped sharply from September to December (Kindleberger[1973]:124-5).[16] The price decline of imported primary products and the decline in the volume of imports reduced values of imports, which decreased by $630m. (16.8%) during the period between October and December in 1929 (HS[1949]:339-40). The decline in the value of imports in the US led to a shortage of international liquidity that the primary products producing countries had to face after the US began to reduce capital exports. This international liquidity crisis accelerated the decline in US exports.

In sum, (1) the stock market crash with a heavy debt burden increased heavy capital losses in low income households, which depressed consumption and residential construction. The decline in effective demand led to a decline in production, employment, working hours, and investment, which accelerated the decline in effective demand. In this way, the process of the accumulated curtailment spiral went on. (2) The stock market crash induced the decline in the prices of agricultural products and imported primary products, which brought about the decline in farm income and the onset of the world agricultural depression, which also reduced effective demand in the US and abroad. Consequently, it seems reasonable to conclude that the stock market crash in 1929 not only generated the uncertainty but also exerted a real negative effect on the US economy.

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[14] While the prices of wheat and cotton declined little from September to November of 1929 because Federal Agricultural Committee supported these prices, the price of corn went down by 15% in the same period (SCB [1932]:23, 153, 157, 261).

[15] The farm income declined by $ 730m. (3.65%) from the third quarter to the fourth quarter of 1929. This amount of decline was equivalent to 12.8% of the decline in personal income in the same period. However, much larger decline in the farm income began in the first quarter of 1930 (Barger[1942]:168-70).

[16] The decline rates of prices during the period between September and December were 37% as to coffee, 21% as to crude rubber, 18% as to hide and skin, 15% as to cocoa, 12% as to tin, and 11% as to raw silk (SCB [1932]:167, 183, 227, 249, 267).

3.2. Four Approaches to the Monetary and Financial Factors

There are four main approaches to the monetary and financial factors of the Great Depression. First is the money hypothesis. Monetarists attribute the long and severe depression to the decline in the stock of money (Friedman & Schwartz[1963]). Second is the Keynesian approach. Keynesians criticize monetarists by attributing the decline in the stock of money to the decline in demand for money (Temin[1976]). Third is the new Keynesian approach. They attribute the long and severe depression to the decline in the financial intermediary function of the banking system from the viewpoint of asymmetrical information (Bernanke[1983], Mishkin[1990]). The last is the post Keynesian approach. Post Keynesians emphasize debt deflation and financial instability as the chief factor of the Great Depression (Minsky[1977]). In this section, we will consider the validity of these approaches.

3.2.1 Money Hypothesis

As a beginning, we will examine the validity of the money hypothesis. The main points of this hypothesis are as follows. (1) The decline in the stock of money was not the inescapable consequence of other forces, but rather a largely independent factor that exerted a powerful influence on the course of events (Friedman & Schwartz[1963]:300). (2) "All the time throughout the 1929-33 contraction, alternative policies were available to the (Federal Reserve) System by which it could have kept the stock of money from falling, and indeed could have increased it at almost any desired rate"(Ibid.:693). For example, in three periods between January and October 1930, between January and August, and between September 1931 and January 1931, if $1 billion in government securities had been purchased, the stock of money as well as high-powered money, instead of declining, would have risen, and the likelihood of a banking crisis would have been reduced (Ibid.:391-406). We will now examine this hypothesis in these three periods.

(1) January 1930 to end of October

The stock of money and high-powered money declined in this period. M1 and M2 declined by 5.5% and by 1.8% respectively from the end of December 1929 to the end of October 1930. The monetary base declined by 2.3% in this period (Ibid.:712-3,739). Then, what caused the decline in the stock of money and monetary base? There are three possible factors that can be considered: (i) insufficient easy money policy, (ii) the decline in the demand for money, and (iii) the rise in the risk premium of bank loans. We will begin by considering the Federal Reserve Policy.

Although the Federal Reserve Bank of New York reduced the discount rate six times from 6% to 2.5%[17] and reduced BA buying rates seventeen times from 5% to 2% during the period between November 1929 and June 1930, the Federal Reserve credit decreased by $585m. (30.6%) during the period between the end of December 1929 and the end of October 1930 (BMS[1943]:375-6,441,445). While the US Government securities held by Reserve Banks increased by $91m., the bills discounted and the bills bought by the Reserve Banks declined by $430m. and $230m. respectively in this period. Although the currency held by the public decreased by $210m. and gold was imported by $250m., the bank reserves increased by only $45m. because of the large decline in the Federal Reserve credit. Despite this small increase in the bank reserves, the bank credit decreased.[18]

Why was the Reserve Bank credit reduced? As for the BA, the market rates were below the FRB buying rates and the differentials were stable.[19] In contrast, the customer loan rate was above the FRB discount rate and the differential increased in this period.[20] As the long term interest rates fell very slowly, the differentials between the long term rates and the short term rates increased. In addition, as yields of lower-grade bonds stopped falling and

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[17] The Federal Reserve Bank of Boston also reduced the discount rate from 5% to 3% and other Reserve Banks reduced their discount rates from 5% to 3.5% during the period between October 1929 and July 1930 (BMS[1943]:441).

[18] While all member banks increased investment by $950m., they reduced loan by $1,530m. during the period between the end of 1929 and September 24 in 1930 (BMS[1943]:76-7).

[19] The difference was 0.12% both in December,1929, and in October,1930(Ibid.:445, 450-1).

[20] The interest-rate differentials increased from 1.04% in December 1929 to 1.42% in October 1930 (Ibid.:441).

began to rise in May 1930, the yield differentials between high-grade bonds and lower-grade bonds were increasing in this period (Figure 4). This increase in interest-rate differentials means that banks and investors increased the propensity for liquidity and security.

The stock of money and monetary base decreased because the member banks reduced loans and rediscounts with the Federal Reserve System. As the differential between the customer loan rate and the FRB discount rate increased, we can not attribute the decline in discounted bills to the FRB's failure to lower the discount rate more rapidly.[21] Furthermore, even if the FRB had purchased $1b. of US government securities in this period, the stock of money and monetary base would not have increased significantly, because the member banks would have reduced discounts with the System or purchased BA or accumulated excess reserves. Accordingly, (i) an insufficient easy money policy, was not a factor of the decline in the stock of money and the monetary base.

The second possible factor, which is "the decline in the demand for money", played an important role. As the brokers loan rates were much above the customer loan rates during the period between the middle of 1928 and October 1929, investors borrowed money to invest in the brokers loan (Beckhart [1932] vol.IV : 121, 131, Clark [1935] : 357, Brown[1940]vol.I:576). After the stock market crash, this kind of demand for money for the purpose of speculation shrank because the brokers loan rates dropped and the interest-rate differentials reversed (*BMS*[1943]:441). In addition, the decline in production reduced the demand for money.[22]

However, we can not attribute the decline in the stock of money only to the demand for money. If the demand for money had been the only factor, the private interest rates would have fallen with the reduction in the FRB discounts rates. As mentioned above, customer loan rates and yields of bonds did not fall in accordance with the decline in the FRB

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[21] This kind of criticism is very popular. For example, see Eichengreen[1992]:253.
[22] 186 large industrial companies reduced short term debts to banks from $310m. in 1929 to $220m. in 1930 (Moulton[1940]:136).

discount rates. The rise in the propensity for liquidity and security meant the deterioration of fund raising conditions for some debtors. The reason why banks and investors increased the propensity for liquidity and security was that the creditworthiness of some debtors had deteriorated.

In short, the reason the stock of money and the monetary base decreased in this period was not (i) insufficient easy money policy,[23] but (ii) the decline in the demand for credit including credit for speculation, and (iii) the rise in the risk premium of bank loans and investment. Consequently, the money hypothesis is not valid for this first period.

(2) January 1931 to August 1931

The stock of money shrank also in this period. M1 and M2 decreased by 6.0% and 5.6% between the end of December 1930 and the end of August 1931. The monetary base increased by 3.5% ($250m.), because currency held by public increased by 9.7% ($370m.) and bank reserves increased by 3.6% ($120m.) in this period (Friedman & Schwartz[1963]:712-3,739). The bank reserves reduction effect of the rise in the currency held by public was offset by gold imports ($400m.). The factors in the decline of bank reserves were the rise in foreign bank deposits at Federal Reserve Banks ($160m.) and the decline in the Federal Reserve credit ($120m., *BMS* [1943]:371,375-6).

Member banks reduced loans and investments with the decline of their reserves. All member banks increased investments by $1,120m. but reduced loans by $2,050m. with a net reduction of loans and investments of $937m. during the first half of 1931. The main factors in the decline were the reduction in "other loans"($910m.) and the reduction of loans against securities ($1,110m., *Ibid.,*:76-7). Accordingly, the reduction in bank loans was the main cause of the decline in the stock of money. Then, what reduced bank loans?

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[23] Governor Harrison of the Federal Reserve Bank of New York, who claimed bold open market purchase of US Government securities to raise commodity prices and to improve bonds market in May 1930, became skeptical about the effect of open market purchase after the middle of July 1930, because the discounts with the Federal Reserve System almost disappeared in the central reserve city banks (Wicker[1966]:148-58).

There are three possible factors that can be considered. (i) The shortage of bank reserves due to the insufficient easy money policy, (ii) the decline in the demand for money, and (iii) the prudent credit policy of private banks.

First, let us examine the Federal Reserve policy. After decreasing by $390m. in January, 1931, the Federal Reserve credit hardly changed during the period between February and July, 1931. However, it began to increase by $280m. in August. Most of the decline in the Federal Reserve credit in January was caused by the seasonal factor.[24] As the seasonal decline in currency in circulation ($280m.) and gold imports ($50m.) increased member banks reserves, they reduced discounts with the FRS by $20m. and the FRS reduced its credit. Currency in circulation increased by $440m. during the period between April and August, most of which was not caused by the seasonal factor[25] but by an increase in withdrawal of deposits owing to the rise in uncertainty. The negative effect of deposit withdrawal was offset by gold imports. The stock of gold in the US increased by $300m. due to the financial crisis in Europe during the period between April and August, 1931 (*Ibid.*:375-6).

In July and August, however, as this gold imports stopped and the withdrawal of deposits increased, the downward pressure to bank reserves was offset by an increase in the Federal Reserve credit. The Federal Reserve Banks reduced discount rates in May and reduced BA buying rates six times in April and May (*Ibid.*:441,445,450-1). As the Federal Reserve credit increased by $280m. in August, member banks could preserve reserves as large as those at the end of August 1930. Furthermore, the excess reserves of member banks were twice as large as those in August (*Ibid.*:371,375-6). Accordingly, we cannot say member banks as a whole faced a shortage of reserves owing to insufficient easy money policy.

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[24] Average decline in the Federal Reserve credit in January was $295 in the 1920s (*BMS* [1943]:374-5).
[25] Currencies held by public seasonally adjusted increase by $320m. during the period between April and August in 1931 (Friedman & Schwartz[1963]:712-3,739).

Second, we will consider the demand for money. As mentioned above, the main factor for the decline in the bank credit was the decline in loans against securities and "other loans." In particular, all member banks reduced loans against securities by $2b., $1.5b. of which were loans to brokers and dealers (*Ibid.*:76). The cause of this decline was the decline in the demand for money to invest in the stock market, because the time loan rate to the New York Stock Exchange was frequently below the discount rate of the Federal Reserve Bank of New York (*Ibid.*:441).

Third, let us examine the prudent credit policy of private banks. The differences between customer loan rate and the FRB discount rate, between long term rates and short term rates, and between the yields of lower-grade bonds and those of high-grade bonds continued to increase in this period as in the first period. The difference between customer loan rate and the FRB discount rate increased to over 2% in June 1931, and those between the yields of Baa bonds and those of Aaa bonds increased to over 3% in August. The difference between the long term yield and the short term yield of US securities approached 3% in July and August, 1931 (*Ibid.*:441, Figure 4). This increase in the interest-rate differentials means that banks and investors increased their propensity for liquidity and security. The increase in the propensity for liquidity and security showed the rise in uncertainty about creditworthiness of debtors and about the liquidity and security of bank assets.

In sum, we may conclude that the main causes for the decline in the stock of money in the first eight months of 1931 were (ii) the decline in demand for money, and (iii) the prudent credit policy of private banks, rather than (i) the shortage of bank reserves owing to the insufficient easy money policy. Accordingly, the money hypothesis is not valid for this second period, either.

(3) September 1931 to January 1932

The stock of money shrank in this third period, too. M1 and M2 decreased by 8.2% and 12.0% respectively. The monetary base increased by 4.5% ($330m.) in this period, as the currencies held by public rose by 17.2% ($720m.) and bank reserves decreased by 12.2% ($390m., Friedman & Schwartz[1963]:712-3,739). As the currencies held by the public increased due to the deposit withdrawals and the gold stock decreased by $580m. owing to gold exports, bank reserves declined despite the increase in Reserve credit ($600m.). Private bank credit also declined with the decline in bank reserves. All member banks reduced loans and investments by 7.7% ($1,610m.) and 7.3% ($890m.) in the fourth quarter of 1931. This reduction in investments was the first one since the end of 1929.[26]

What reduced the stock of money and private bank credit in this period? Let us consider the relation between the decline in the stock of money and the monetary policy. The Federal Reserve Bank of New York raised its discount rate twice to 3.5% in October 1931, which was 2% higher than that during the period between May 5 and October 8 in 1931, and preserved this rate until February 25, 1932 (*Ibid.*:441). The FRB BA buying rate was also raised four times in September and October to 3.125%, which was preserved until January 11, 1932 (*Ibid.*:445,450-1). The Open Market Policy Committee decided to purchase the $120m. of US Government securities on August 11, but the Federal Reserve System did not buy them until December, 1931 (Wicker[1966]:162-3, Chandler [1971]:157-8). Though gold exports and the withdrawal of deposits reduced bank reserves, the Federal Reserve did not purchase enough US securities to offset. Furthermore, the discount rate and the BA buying rate were raised.

Accordingly, we can attribute the decline in private bank credit to the tight monetary policy that the Reserve System adopted despite gold exports and deposit withdrawals. First, member bank reserves decline abruptly by $400m. and member bank excess reserves almost

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[26] All member banks also reduced investment in the US Government securities by $245m. (4.4%) in the fourth quarter of 1931. This reduction was also first time since the end of 1931 (*BMS* [1943]:76-7).

disappeared in the fourth quarter of 1931 (*BMS* [1943]:371,375-6). Consequently, we may say that banks faced a shortage of liquidity. Second, as the banks faced a shortage of liquidity, they had to liquidate securities and yields of high-grade bonds including the US securities rose sharply (Figure 4). The sharp rise in the bond yields (and decline in the bond prices) depreciated bank assets and accelerated the banking crisis. Third, many banks called their loans, even from prime customers (Anderson[1949]:266).

We may, therefore, reasonably conclude that the Federal Reserve System could have mitigated the shortage of liquidity in private banks and prevented the banking crisis from growing more serious through a larger scale of open market purchases and by maintaining an easy money policy.

So far, we have seen that the money hypothesis is not valid for the first and second period but it is valid for the third period. This conclusion suggests several questions. Why did the Federal Reserve System adopt a tight monetary policy in the third period? Did the international factors affect the monetary policy? These questions will be considered later.

3.2.2 Keynesian Approach

Next, we turn to the main points of the Keynesian approach. There is no effective evidence to show that the depressing influence came from the banking system during the period between October 1929 and September 1931. First, the short term interest rates declined in this period. Although the interest-rate differences increased, these differentials were results of the increase in the propensity of investors for liquidity owing to the recession. Second, real money supply did not decrease but increased in this period. Consequently, the monetary forces did not matter in the first half of the Great Depression (Temin[1976]).

The main question as to this argument is as follows. While there can be no doubt that the monetary forces did not matter in the first half of the Depression, it is possible that financial forces did matter in this period. In other words, even if the central bank did not

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contribute to the depression, can we say the same about the influence of the private banks? For example, Temin argues that there might be credit rationing in bank loans. But, even if credit had been rationed, corporations could have issued stocks, bonds, CPs, and BAs and individuals could have sold financial assets. Accordingly, if there had been sufficient demand for money, the money supply would have increased despite credit rationing. Therefore, it is clear that the reason why the money supply decreased was the decline in the demand for money (Ibid.:127-36).

In this argument, Temin overlooked the variety of borrowers. For example, most of the "other loans" were loans to smaller firms. If banks hesitated to lend money to them, they could not easily issue stocks, bonds, CPs, or BAs, because they did not have the creditworthiness to issue securities in the open market. Although he attributes the increase in the interest-rate differentials to the rise in the propensity for liquidity, he explains that this rise was the result of the recession. As mentioned above, however, the increase in the interest-rate differentials means a deterioration of fund raising conditions for lower-grade debtors. If lower-grade debtors had to abandon investment, we can not attribute the decline in the stock of money only to the decline in the demand for money. Assuming that banks hesitated to lend money due to the rise in the propensity for liquidity and security, we can say that the depressing influence came from the banking system, even in the first half of the Depression. We may, therefore, reasonably conclude that the Keynesian approach overlooks financial forces other than monetary forces.

3.2.3 New Keynesian Approach

Third, let us examine the New Keynesian approach. The main point of their argument is as follows. There exists an asymmetry of information in the financial markets. As creditors do not have perfect information on debtors, it is very difficult for creditors to distinguish between good debtors and bad debtors. Thus, the problem of reverse selection that high interest rates exclude good debtors occurs. Financial intermediaries such as banks can

mitigate the seriousness of this problem, because they can collect much more information on debtors at lower cost than individual investors.[27]

However, this function of banks deteriorates when a banking crisis occurs. As depositors cannot distinguish between the banks that have bad assets and the sound banks, they begin to withdraw their deposits even from sound banks. As banks also cannot distinguish bad debtors from good debtors, they begin to exclude good debtors by raising interest rates. Mishkin argues that this problem of reverse selection became more acute during the Great Depression because long term interest-rate differentials increased in this period. The rise in the yields of low-grade bonds excluded good potential debtors with good investment projects from financial markets (Mishkin[1990]).

Most of us would accept this argument which explains why the deterioration of the financial intermediaries function produced bad effects on the real economy during the Great Depression. However, there are two points of doubt in this argument. First, although we may accept that potential debtors have more information on their own projects than creditors and banks, potential debtors don't have perfect information on the future of their projects. Banks might have much more objective information on the general conditions in which debtors exist. Naturally, information is always changing. Our decision making as to the investment and lending depends upon spontaneous optimism rather than mathematical expectations (Keynes [1936]:ch.12). We live in the world where there is no sure knowledge of time to come (Shackle[1992]:xi). Accordingly, we may say that the reason why banks become much more circumspect as to lending is the rise in long term pessimistic expectation rather than imperfect information on potential debtors.

Second, although we may accept that the approach of asymmetric information can explain why the banking crisis occurred in the Great Depression, some measures can mitigate the problem of omnipresent information. They are internal organization and inter-

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[27] Marxian economics have almost same point of view as follows. Financial agent can concentrate the function of collecting information on debtors and can save the collecting cost.

firm organization (Williamson[1975]:ch.2). For example, if the concentration of banking organizations is developed as in Britain and Germany, the banking system is a strong bulwark against runs on banks. Accordingly, we should analyze the American banking system and financial institutions in the 1920s to explain why the banking crisis occurred at the beginning of the 1930s.

In short, the success of the New Keynesian approach in explaining the financial cause of the Great Depression is limited.

3.2.3 Post Keynesian Approach

Last, we will examine the Post Keynesian approach. The main points of their hypothesis are the following. (i) In the capitalistic economy where money is mainly composed of bank debts (deposits), a fall in the price level leads to the increase in the real debt burden of debtors and a decline in investment with a decrease in expected profits and an increase in borrower's risk and lender's risk (hypothesis of debt deflation). As a result, the decrease in private debts leads to a decline in the volume of money. (ii) As the money supply is not an exogenous variable but an endogenous variable, the supply of high powered money by financial authorities frequently does not increase the volume of money but only increases excess reserve. Accordingly, the open market purchase of assets that are sold by debtors to repay their debts is more effective for a central bank as the lender of last resort (Minsky[1977]).

Let us examine the validity of the debt deflation hypothesis in the Great Depression.[28] The debt equity ratio of main industries in the US fell in the 1920s.[29] As mentioned above, oligopolistic prices were inelastic after 1929. Accordingly, the hypothesis of debt deflation did not apply to the main industries in the US during the Great Depression period. This was the reason why the depression did not become serious until the fall of 1931 and why the

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[28] Although few have examined the validity of the debt deflation hypothesis in the Great Depression precisely, Isenberg[1988] showed that Minsky's financial fragility hypothesis does not apply to non-financial business sector in the 1920s (Isenberg[1988]).
[29] The debt equity ratio in the consumer durables sector fell in the 1920s (Ibid.: 1057-65).

main industries could preserve excess capital stocks and why the depression was prolonged so long.

In the agricultural sector and non-farm households, however, debt equity ratio rose in the 1920s.[30] The debt deflation hypothesis applied to these sectors. This hypothesis, in particular, applied to high leverage debtors such as real estate mortgage debtors and stock investors. This hypothesis also applied to other high leverage debtors such as holding and finance companies, the railroad industry, municipal governments, and foreign debtors.[31] The debt deflation in these sectors led to the rise of borrower's risk and the deterioration of fund raising conditions, which reduced the demand for investment and consumption in these sectors.[32] The debt deflation also led to an increase in bad assets of banks and the banking crisis, which raised the banks propensity for liquidity and security. This increase in lender's risk deteriorated the banks function of credit creation and led to the decline in the stock of money. Consequently, it seems reasonable to conclude that the debt deflation hypothesis or the financial instability hypothesis does not apply to the main industries but does apply to the peripheral sectors that increased debts in the 1920s. Furthermore, we may say that the Post Keynesian approach is superior to the New Keynesian approach, because the former approach regards the instability of long term expectations as important.

We may, therefore, reasonably conclude that the Post Keynesian approach is the best of these four approaches to explain the financial cause of the Great Depression. However, in a

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[30] Although the debt equity ratio of farm households in the US decreased slowly during the period between 1922 and 1929, that in 1929 was high in comparison with that in 1912 (Ibid,:1049).

[31] According to the research of the Twentieth Century Fund, while the long term debts of the Federal Government declined in the 1920s, those of private sector and municipal governments grew over three times faster than National Income and over four times faster than Wealth of Nations in the same period. Among them, urban real estate mortgage debts grew fastest (by 208%). This growth rate was much higher than that of permitted contract values of residential construction (increase by 100%) and that of permitted contract values of commercial construction (increase by 140%). The growth rate of long term debts of finance companies including investment trusts, life insurance companies, and installment finance companies was also very high (increase by 200%) in the 1920s (Clark[1933], HS[1975]). As for foreign debts, investment in foreign securities outstanding in the US grew from $2.6b. in the end of 1919 to $7.2b. in the end of 1930 (Lary[1943]).

[32] The deterioration of households' balance sheet owing to the debt deflation reduced effective demand. See, in particular, Mishkin[1978].

world of uncertainty where we live, conventions are a "substitute of knowledge"(Keynes[1973]:124). And, " a world of uncertainty is characterized by conditional order and conditional stability much of time"(Crotty[1994]:130). Then, "to explain the seemingly paradoxical coexistence of uncertainty and conditional stability requires the integration of a theory of conventional decision making with an understanding of the institutional structure of the economy and the way in which it bounds and constrains agent choice"(Ibid.:132). Accordingly, in order to explain why severe debt deflation and bank crisis occurred at the end of the 1920s in the US, we should consider the institutional instability of American financial system in the 1920s.

3.3 Institutional Instability of American Financial System

3.3.1 Correspondent Banking System

Before World War I, most of country bank reserves moved to the money-center banks as interbank deposit through a correspondent banking system and were invested in call loans at the New York Stock Exchange (Meyers [1931]:ch.6, Sprague[1910]:15-24, James[1978]:ch.4). When the demand for money rose in the country and country banks abruptly began to withdraw their deposits from money center banks, New York City banks confronted the shortage of liquidity and had to withdraw call loans from the New York Stock Exchange. As a result, stock prices plunged and the drop in stock prices accelerated the withdrawal of call loans. There did not exist the lender of last resort that relieved the liquidity shortage of the New York City banks and dealers and brokers at the New York Stock Exchange. Consequently, a severe stock price crisis and bank crisis occurred cyclically.

In order to reform this unstable and inelastic financial system, the Federal Reserve System was established and two plans were adopted. First, in order to prevent the concentration of bank reserves in New York, member bank reserves were deposited with each Reserve Bank and the check collecting and settlement system through the Federal Reserve

System was created (Beckhart [1972]:69). Second, a Bankers' Acceptance discount market was created instead of a call loan market.

However, these two reform plans were not completed. First, the legal reserves of member banks flowed to each Reserve Bank and the ratio of interbank deposits to gross deposits declined. At the same time, the volume of interbank deposits grew (*BMS* [1943]:19,73, *ABS* [1959]:36). The legal reserves and secondary reserves of non-member state banks and the secondary reserves of member banks were deposited with the city correspondent banks. The amount of both were increasing. The volume of the latter was about same as that of the former, that is, a little less than member banks legal reserves deposited with the Reserve Banks. Moreover, these interbank deposits continued to move to money center banks. Over a third of them gathered to New York City member banks and a little less than a tenth of them went to Chicago City member banks.[33] Furthermore, 88% of interbank deposits in New York City banks were concentrated in eleven large banks at the end of 1929 (Beckhart[1932]vol.2:212).

Why did bank reserves continue to move to moneycenter banks despite the establishment of the Federal Reserve System? First, the Federal Reserve System did not include most state banks. Over 90% of the state banks did not join in the Federal Reserve System. Non-member banks had a little less than a half of the assets that all state banks had at the middle of 1929 (*BMS* [1943]:22-3). Furthermore, most of the non-member banks did not join in the collecting and settlement system through the Federal Reserve System but continued to use the collecting and settlement services of the correspondent banking system, which was simpler, faster, and lower-cost than that of the Federal Reserve System (Clark[1935]:368).

Second, the correspondent banking system offered indispensable services not only to non-member banks but also to member banks. In the 1920s, commercial banks in the US increased their financial banking business. Namely, they increased security loans and

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[33] Real concentration was much higher, because some intermediate interbank deposits were double counted.

investment in securities. Country banks depended upon the facilities that money center correspondent banks offered to increase this business. Moreover, member banks also borrowed from money center correspondent banks on corporate securities. Such loans were not allowed at the Reserve Banks when they needed reserve funds (Clark[1935]: 364-6). Thus, even member banks had a large amount of deposits as secondary reserves with city correspondent banks in order to receive the services that the Federal Reserve System could not offer.

The second reform plan, or the establishment of a BA discount market, was not accomplished either. While total volume of dollar BAs outstanding grew rapidly after 1927 owing to frequent deregulation, the demand for investment in BAs and call loans to BA dealers did not grow, because the Federal Reserve System kept the BA market rate very low to increase the supply of BAs. As a result, the Reserve System had to have over half of the BAs outstanding (Beckhart[1932]vol.3:384,389,407). Thus, the BA discount market could not replace the Stock Exchange call loan market.

In short, these two plans to reform the traditional American financial system were not accomplished despite the establishment of the Federal Reserve System. Accordingly, idle money moved from all over the county to money-center banks such as the New York City banks through a correspondent banking system and it was invested directly or indirectly in securities markets and supported the stock market boom in the late 1920s.

3.3.2 Weak Point of Federal Reserve Credit Policy

Next, let us examine the role of the Federal Reserve Banks in the 1920s. They extended their credit through three routes. The first route was by rediscounts and advances to member banks that they influenced by a discount rate policy. While this was a classic credit policy, its real character was far from the real bill doctrine that was adopted when the FRS was established. Namely, as bills eligible for rediscount were scarce owing to stagnation of commercial loans (Harris[1933]vol.1:303), most of the rediscounts and

advances were advances on the US government securities (*BMS* [1943]:340). In other words, member banks borrowing from Reserve Banks had little relation to commercial lending and was substantially borrowing on the US government securities. Furthermore, the rediscount rate was not a penalty rate. It was lower than customers loan rate and the CP market rate throughout the 1920s (*BMS* [1943]:440-1,452-7). Consequently, member banks that faced a shortage of reserves could supplement their reserves easily by borrowing on the US government securities from the Reserve Banks. Since member banks could take the initiative in adjusting their borrowing from the Reserve Banks, the discount rate policy was not effective and not important in the 1920s.

The second route was buying BAs by the Federal Reserve. The buying rate was usually lower than the Federal Reserve rediscount rate. In particular, as it bought a large volume of BAs in the fall to support the transport of agricultural products, the tight money policy to control stock market speculation was sometimes hindered. The third route was the open market operation. This operation was very important in the 1920s, because the Federal Reserve could take the initiative in this operation. However, member banks could adjust their borrowing from the Reserve Banks against this operation. Namely, they could reduce their borrowing during the period of open market purchases, and could increase their borrowing during the period of open market sales. This was a weak point in the open market operation.

Thus, as the Federal Reserve could not control the Federal Reserve credit effectively, it had no power to control the inflow of funds outside of the Federal Reserve System to the New York Stock Exchange. Consequently, we may say that the Federal Reserve was not a lender of last resort but a kind of continuous lender and it supported the credit expansion to the stock market by member banks. Furthermore, while the Federal Reserve could prevent the liquidity crisis of banks from expanding to a serious banking crisis as the lender of last

resort in October, 1929 and in December, 1930,[34] it could not prevent the debt deflation and the increase in bad assets held by private banks.

The stock market crash did not lead immediately to a banking crisis as before the World War I owing to the establishment of the Federal Reserve System. However, the Federal Reserve System supported a speculation in the stock market and it could not prevent the debt deflation and the bank crisis. We may therefore conclude that the institutional instability of the American financial system was a crucial factor of the Great Depression.

4. International Factors

In this section, we will examine whether the world depression and the breakdown of the reconstructed international gold standard affected the Great Depression. The effect from abroad had two routes. First one was the decline in exports. Second one was the gold outflow. In the beginning, let us consider the effect of the decline in exports.

4.1 Effect of the Decline in Exports

As the decline in exports of commodities was more than the decline in imports of commodities, the surplus of trade balance decreased during the Great Depression period. In particular, the trade surplus declined by 54.7% from 1930 to 1931. However, as the ratio of trade surplus to GNP was only 1% in 1928, the contribution of the decline in the trade surplus to the growth rate of nominal GNP was only -0.5% in 1931 (*HS*[1975]:224, 230,864).

Next, let us examine the effect of the decline in exports of goods and services on a quarterly basis. Exports and net exports began to decline in 1929. The effect of the decline

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[34] The Federal Reserve Bank of New York bought US securities by $165m. in the last week of October, 1929 (Kindleberger[1978]:179, Friedman & Schwartz[1963]:334-9, Chandler [1973] : 79). The Open Market Investment Committee of the Federal Reserve System bought the US securities by $133m. in the last week of 1930 (Wicker[1966]:160). As Friedman & Schwartz criticized, the Federal Reserve Bank of New York had to stop open market purchase owing to the objection of the Federal Reserve Board in November 1929. This interruption seemed to be one of the factors of the decline in stock prices in November. However, stock prices reached the bottom in the middle of November, and the bank crisis did not occur in November and December. Accordingly, we may say that the interruption of open market purchases was not a crucial factor of the Great Depression.

in nominal exports was relatively large in the second quarter of 1930 and the first quarter of 1931 when the decline rate of domestic demand decreased (Table 9).

It should be concluded, from what has been said above, that the main factor of the depression was not a decline in foreign demand but a decline in domestic demand. However, it should not be denied that the decline in foreign demand checked the recovery when the rate of decline in domestic demand decreased.

4.2 Effect of Gold Outflows

The second possible international factor was the effect of gold outflows. The decline in monetary gold stock due to gold outflows occurred three times during the Great Depression; in September and October 1931, during the period between January and June 1932, and in February and March 1933. As a beginning, let us examine the effect of the first gold outflow.

4.2.1 September to October 1931

As mentioned above, the Federal Reserve adopted a tight monetary policy against the gold outflow in this period. As a result, the depression and banking crisis got worse. This leads to a question. Did the Federal Reserve have to adopt the tight monetary policy to protect the gold standard? Or, was this tight monetary policy an over-reaction to the gold outflow and a mistake? In order to consider this question, we will examine the excess reserves and the rate of reserves of the Federal Reserve. The excess reserves and the reserve rate in October, 1931, were higher than those in June, 1932, when the Federal Reserve was adopting an easy money policy.[35] So, the tight monetary policy in October, 1931, seems to be an over-reaction and a mistake.

However, we can not compare the excess reserves in October, 1931, with those in June, 1932, because the Glass-Steagall Act amended the Gold Reserve Act on February 27, 1932.

[35] The excess reserves and reserve rate were $1,214m. and 62.6% in October 1931, and those in June 1932 were $989 and 58.4% (*BMS* [1943]: 348, 537, 574-5).

Before this amendment, the Federal Reserve had to hold additional gold reserves as collateral for the issue of Federal Reserve notes when it did not have eligible securities in amounts equal to 60% of the notes in circulation and 100% of notes not in circulation. Although the Federal Reserve held $1,214m. of excess reserves, about half of these reserves were bound as collateral because it did not have enough eligible securities. As a result, free gold that is considered excess reserves was only about $600m. in October (*Ibid.*:348,537,574-5). In this legal restriction, the Federal Reserve could not purchase the US government securities that were not included in eligible securities to offset the effect of the gold outflow, because its open market purchases would reduce the free gold. After the amendment, in contrast, the Federal Reserve could purchase the US securities that could be used as collateral as well as eligible securities, because its open market purchases would not reduce free gold.

The level of free gold in October, 1931, was less than half of the US short term liabilities to foreigners. If gold outflow had continued, free gold would have disappeared. The Federal Reserve had two possible policies to select. First policy was to adopt a tight monetary policy to protect the gold standard. A second choice was to suspend the gold standard and to shift to a floating exchange system or to control the exchange transactions. From the viewpoint of the present floating exchange period, the second choice seems to be reasonable. However, from the viewpoint of conventional decision making in the 1920s, the first choice was natural. A majority of agents, in particular, bankers, in those days were confident that the gold standard was the most stable and normal system they could have and this system would continue indefinitely.

In order to stem the gold outflow, the Federal Reserve had to show its intention of preserving the gold standard. Accordingly, it raised discount rates and BA buying rates and refrained from open market purchases. While this policy could stem the gold outflow, it made the banking crisis and the depression worse.

We come to the conclusion that the reason the Federal Reserve adopted a tight monetary policy was not a failure of monetary policy but a choice of preserving the gold standard. Consequently, the gold outflow in September and October, 1931, seriously affected the US economy.

4.2.2 January to June 1932

After the gold outflow stopped in November and December, 1931, it resumed in January, 1932. The reasons why the gold outflow resumed were the resumption of an easy money policy and the establishment of the Reconstruction Finance Corporation, which foreigners regarded as inflationary measures (Chandler[1971]:171). This resumption of the gold outflow delayed the easy money policy. The FRB of New York had to postpone the reduction of its discount rate until February 26, 1932, when the gold outflow ceased. Although the Open Market Policy Committee authorized the FRB to purchase $250m. of US securities on February 24. and the Federal Reserve Act was amended by the Glass-Steagall Act on February 27, the FRB increased the holdings of US securities by only $140m. for the six weeks between February 24 and April 6 (*BMS* [1943]:371,375-6).

After April 6, however, the FRB began to purchase large amounts of US securities because a social movement supporting a reflationary policy arose and a reflationary bill was under consideration in the Congress. The FRB increased the holding of US securities by $500m. during the five weeks between April 6 and May 11. This increase in open market purchases and a rise in the budget deficit of the Federal government as well as the appearance of a social movement demanding reflationary measures raised a fear of dollar depreciation and the gold outflow increased again. In May and June, gold flowed abroad by $450m., which was the largest amount since the fall of 1931. Currencies in circulation increased by more than $200m. in June owing to runs on banks in the Chicago area. Although the gold outflow and runs on banks depressed bank reserves, this pressure was moderated by open market purchases of the FRB. While the monetary gold stock decreased

by $450m. and currencies in circulation increased by $230m. in May and June, member banks decreased borrowing from the Reserve Banks by $120m. and the decline in the excess reserves of member banks was only $100m., because the Federal Reserve increased its holding of the US securities by $560m. during these two months (*Ibid.*:371,375-6).

Thus, the deflationary effect of gold outflow in May and June, 1932, was offset by the Federal Reserve's open market purchases. As a result, runs on banks in the Chicago district did not extend to other parts of the country. However, this does not mean that the gold outflow in May and June, 1932, did not affect the US economy at all. The reason why the gold outflow stopped and gold began to flow into the US in July despite large amounts of open market purchases was that a tax increase bill and a spending cut bill passed Congress (Nadler & Bogen[1933]:100). Now, let us examine the trend of the Federal budget.

The Federal budget went into deficit in the 1931 fiscal year owing to a decline in tax revenue and an increase in spending. This deficit increased markedly from $462m. in the 1931 fiscal year to $2,735m. in the 1932 fiscal year. However, the deficit decreased to $2,602m. in the 1933 fiscal year owing to an increase in tax revenue and a decrease in spending (*HS* [1973]:1104). Therefore, it seems that the increase in the Federal budget deficit supported domestic demand during the period between the middle of 1930 and the middle of 1932 and a decrease in the Federal budget deficit depressed domestic demand during the period between the middle of 1932 and the middle of 1933.[36]

Furthermore, after the Federal Reserve Bank of NY reduced its discount rate from 3.5% to 3% at the end of February, it preserved the discount rate at 3% until late June when the gold outflow stopped. This level of its discount rate was two times as that during the period between May and September, 1931 (*BMS* [1943]:441).

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[36] The contributions of real goods and services purchases of all the governments that include Federal, states, and municipal governments to the growth rate of real GNP were positive until the third quarter of 1931 and negative after the fourth quarter of 1931. In particular, the negative contributions were very strong in the first quarter of 1932 and that of 1933 (Table 5).

It should be concluded, from what has been said above, that the deflationary effect of the gold outflows in the first half of 1932 was less than that in the fall of 1931, because the Federal Reserve could offset the deflationary effect of the gold outflows by open market purchases owing to the amendment of the Federal Reserve Act. However, it is not to be denied that the gold outflows affected the US economy indirectly in the first half of 1932, as the reduction of the discount rate was delayed and the Federal budget deficit was reduced to stem the gold outflows.

4.2.3 February to May 1933

The gold outflow resumed at the beginning of 1933, because Roosevelt, who won the presidential election of 1932, refused to promise to balance the Federal budget and not depreciate the dollar (Chandler[1971]:211-3). The US short term liabilities to foreigners decreased by $170m. and monetary gold stock decreased by $320m. during the seven weeks between January 18 and March 8 (*BMS* [1943]:387,575). As domestic runs on banks extended to all over the country, NY City banks faced not only foreign withdrawals but also domestic withdrawals and lost all excess reserves. The gold reserve rate of Federal Reserve Bank of NY fell to 24% by March 3. The reserve rate of all the Federal Reserve Banks also was approaching the legal low limit. As a result, the Federal Reserve had to announce a banking holiday all over the county and the virtual suspension of the gold standard.

In sum, the gold outflow in the beginning of 1933 accelerated the banking crisis and the depression. This gold outflow also ended the gold standard that fettered the fiscal and monetary policy.

5. Conclusion

5.1 What Caused the Great Depression?

We arrived at the conclusion. First, the most crucial factor of the Great Depression was the institutional instability and fragility of the American financial system in the 1920s.

The concentration of excess funds on the New York Stock Exchange through the correspondent banking system was not changed fundamentally despite the establishment of the Federal Reserve System. The Federal Reserve could not control the inflow of funds to the stock market. The establishment of a lender of last resort did not restrain the speculation but supported the speculation.

There was an increase in debts. While non-financial firms reduced the debt equity ratio in the 1920s, real estate mortgage debtors, finance companies such as the investment trust and holding companies, stock investors, and foreigners increased their debts enormously in the 1920s. On one hand, the credit expansion and the stock market boom promoted consumption and investment and supported the last boom of the 1920s. On the other hand, the stock market crash led to debt deflation. While the Federal Reserve could prevent the stock market crash from extending to the banking crisis, it could not prevent the crash from extending to the debt deflation. Debt deflation caused the decline in consumption which led to a reduction in investment. Debt deflation also led to the banking crisis, which obstructed recovery from the depression.

Second, the instability of the reconstructed international gold standard was also a crucial factor of the Great Depression. While the Britain lost its place as the strongest financial power after World War I, the US did not replace Britain as the international financial center though the US was the strongest financial power. As the US had an unstable financial system inside the country, she could not continue foreign investment that was indispensable to preserving the international gold standard in the 1920s. The stock market boom, the stock market crash, and the onset of the Great Depression in the US led to world depression and the breakdown of the international gold standard. Then, the onset of world depression and the breakdown of the international gold standard deteriorated the depression in the United States. In particular, the gold outflow from the US in the fall of 1931 prevented the US economy from recovery, because the Federal Reserve adopted a tight

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monetary policy to protect the gold standard. We may say that the adherence to the old institutions deteriorated the depression.

Third, the inelasticity of oligopolistic prices was the factor that accelerated the Great Depression. The decline in the effective demand in the fall of 1929 led not to a fall in the price level but to a reduction in production and capacity utilization, which led to a decline in investment and consumption. Thus, the inelasticity of oligopolistic prices was the obstacle to the market mechanism.

Fourth, the unequal distribution of income was not a direct cause of the Great Depression but a fundamental background of the Great Depression. On one hand, the increase in profit margins was a cause of the stock market boom. On the other hand, the unequal distribution of income depressed the demand for consumption. As a result, unstable speculation in the stock market supported the last boom of the 1920s. The superiority of the capitalist class over the labor class was an important cause of the unequal distribution of income.

5.2 Sketch of the Stage Theory of Modern Capitalism in the US.

5.2.1 New Deal Reforms

Next, let us sketch the stage theory of modern capitalism. In our short study, this theory can be mentioned only in summary.

First, we will consider the reforms in the New Deal period. First, the financial reform succeeded in the creation of a new financial system. The Federal Reserve System got the power to control and regulate speculation in the stock market. The FDIC was established to prevent runs on banks. This new financial system of "regulation and relief" was one of the factors that supported "the golden age of capitalism" after World War II.

Second, the new international monetary and financial system was not created in the New Deal era. This was one of the reasons why the US economy did not recover sufficiently from the Great Depression. For example, the Federal Reserve adopted a gold sterilization

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policy and raised the reserve rate of member banks to restrain the inflation that was expected with the imported short term foreign funds in 1936. This tight monetary policy was the obstacle to an increase in the Federal budget deficit. The tight monetary and fiscal policy was one of the causes of the severe recession of 1936-37.

Third, the counter-cyclical function of the Federal budget began to work in the second half of the 1930s, because the scale of the Federal budget was increased in the New Deal period. In particular, the effect of the rapid decline in effective demand was mitigated by an increase in the Federal budget deficit in 1938. However, this function was not matured in comparison with that after World War II.

Fourth, the class relation was transformed drastically owing to the rise in class struggles, social movements, and the support of the Federal government in this period. The superiority of the capitalist class over the labor class was over. The share of labor income recovered in this period. In addition, social welfare and the protection of smaller firms and the agricultural sector were developed. However, the cooperation and compromise among the labor unions, big management, and the Federal government were not realized. For example, firms faced a profit squeeze and a decline in the effective demand, as the wage rate steeply rose and the Federal budget deficit sharply declined in 1937. As a result, firms decreased investment and a severe recession occurred in 1937-38.

In sum, the New Deal reforms succeeded in making some parts of new stable system that was the basis of "the golden age of capitalism." On the other hand, these reforms could not create a sufficient recovery from the Great Depression, because these reforms were not conpleted and social cooperation and coordination was not realized in the New Deal period.

5.2.2 Golden Age of Modern Capitalism

After World War II, new social and institutional stability was created. First, the large scale issues of US securities during World War II led to the decrease in the debt asset ratio of the private sector, which increased the stability of the American financial system that

the New Deal reforms created (Minsky[1986]). Second, the international managed monetary system was created. In addition, the US began to supply public funds to foreign countries as military spending and foreign assistance which resulted from the beginning of the cold war. In other words, Pax Americana was established. Third, the counter-cyclical function of the Federal budget grew, because the scale of the Federal budget increased enormously during World War II.

Fourth, the Federal government succeeded in forcing the cooperation and coordination of the labor unions and big business as the US economy was organized for the war during World War II (Kawamura[1995]). After the World War II, the system of compromise between the labor unions and the big business was established (Gordon, Edwards & Reich[1982]). Firms could absorb the rise in labor cost by the growth of the productivity or by a rise in products prices. The rise in the labor income increased the effective demand. In addition, the development of social welfare also increased effective demand.

In short, these four institutional structures supported "the golden age of modern capitalism."

5.2.3 New Transition Era

However, these four institutional structures came to an end at the beginning of the 1970s. Since then, the institutional structures have been unstable. First, accelerated inflation created the problem of financial disintermediation. This development made the New Deal financial system unstable. As a result, the financial system of "regulation and relief" was transformed to that of "deregulation and relief" through the financial reforms. This system of "deregulation and relief" made the problems of moral hazard and increased the financial instability and fragility in the 1980s both in the US and in the world.

Second, Pax Americana has been declining. The fixed exchange rate system collapsed at the beginning of the 1970s. Since then, the floating exchange rate system has been one of the factors of the international financial instability. Another unstable factor is that the US has

become a debtor country. For example, the Japanese easy money policy to support the dollar exchange rate accelerated speculation in Japan after 1987.

Third, the increase in the Federal budget deficit did not promote economic growth but made the stagflation of the 1970s. It made the US a debtor country. As a result, the counter-cyclical function of the Federal budget has been declining since the end of 1970s. Fourth, the system of compromise between the labor unions and the big business came to an end in the 1980s. Firms had not been able to absorb the rise in the labor cost by the increase in productivity or by raising the products prices since the end of the 1960s, because of the increase in international competition. As a result, the compromise system was transformed to the superiority of management over labor in the 1980s.

In sum, the new transition era began in the 1970s. In this era, old institutional structures do not exist, but new institutional structures have not been created yet.

5.2.4 Factors of the Stage Theory

Last, let us consider the factors of the stage theory. There are several important factors in the stage theory of capitalism. These factors are: (1) Industrial structure, (2) industrial organization and the market mechanism, (3) class relations, (4) financial structure and institutions, (5) relation between state, economy and society, (6) international industrial and financial structure and institutions, and (7) influential convention. Then, we will try to explain the cause of the Great Depression by using these factors.

After World War I, the world economic structure had changed drastically. First, the industrial and financial center of the world economy had shifted from Britain to the US (6). Second, the industrial structure was transforming into the new industries such as the consumer durables industry and the public utility industry (1). Third, the oligopoly had developed (2). Thus, while the world economy had changed, adherence to the old conventions and institutions was stubborn. First, the international gold standard was reconstructed with some modifications (6 and 7). Second, a British style financial institution was introduced

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into the US (4 and 7). Third, the scale of the Federal budget was reduced and the superiority of the capitalist class over the labor class was established (3,5, and 7).

Thus we see the contradiction between the new economic structure and the old conventions was a main cause of the Great Depression.

In my next paper, I will consider the new transition era, especially the Japanese financial crisis in the 1990s.

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Table 1   Labor productivity, labor cost, index of production (manufacturing industry), wholesale price index (1929=100)

	1929	1930	1931	1932	1933
labor productivity1)	100.0	102.5	106.9	99.6	104.8
labor cost2)	100.0	98.4	90.2	80.3	73.8
raw material price2)	100.0	78.6	58.1	43.9	57.0
wholesale price3)					
raw materials	100.0	86.5	67.3	56.5	58.0
semi-products	100.0	87.1	73.5	63.2	69.7
products	100.0	93.1	81.5	74.4	74.6
agricultural products	100.0	84.2	61.8	46.0	49.0
foods	100.0	90.6	74.7	61.1	60.6
textile products	100.0	88.8	73.3	60.7	71.7
leather	100.0	91.7	78.9	66.8	74.2
miscellaneous goods	100.0	94.1	84.5	78.0	75.7
fuel and lighting	100.0	94.6	81.3	84.7	79.9
chemical and medicine	100.0	94.6	84.2	78.0	77.1
furniture	100.0	91.7	90.0	79.6	80.4
construction materials	100.0	94.2	83.0	74.8	80.7
metal products	100.0	91.6	84.1	79.8	79.4
(iron and steal)	100.0	93.9	87.8	83.7	82.8
price of products4)	100.0	93.8	81.3	73.8	75.5
capital goods6)	100.0	92.7	85.7	81.4	79.9
construction materials7)	100.0	95.0	85.9	79.4	82.5
agricultural machines	100.0	98.4	95.4	91.6	89.5
electronic equipments	100.0	94.3	88.4	80.9	87.7
railway equipments	100.0	92.2	86.9	81.2	81.2
railway vehicles	100.0	103.2	97.9	89.4	88.3
moter vehicles	100.0	94.0	89.5	87.1	83.1
manufacturing production					
durable goods5)	100.0	74.4	51.0	31.1	40.5
iron and steal3)	100.0	72.3	46.1	23.9	40.8
nondurable goods5)	100.0	90.8	85.6	75.2	85.4
textile3)	100.0	79.1	81.7	72.2	84.4

Sources : 1) HS [1975] : 950.
        2) Moore[1961]Vol.2 : 112,148.
        3) SCB[1936] : 7,12-14.
        4) Reynolds[1939]
        5) HS [1949] : 331.
Notes : 6) Goods for use in capital equipment procossed
        7) Building materials processed

Table 2 The sharre of wages and salaries in the value added (manufacturing industries)

	1919	1921	1923	1925	1927	1929	1931	1933
							billion dollars(%)	
cost of materials*	37.04(59.9)	25.15(57.9)	34.48(57.2)	35.94(57.3)	34.80(55.9)	38.18(54.6)	21.68(52.8)	16.82(53.6)
value of products	61.89(100.0)	42.33(100.0)	60.26(100.0)	62.71(100.0)	62.28(100.0)	69.96(100.0)	41.04(100.0)	31.36(100.0)
value added (1)	24.84(40.1)	18.27(42.1)	25.78(42.8)	26.78(42.7)	27.48(44.1)	31.78(45.4)	19.36(47.2)	14.54(46.4)
wages (2)	10.45(16.9)	8.19(18.9)	11.00(18.3)	10.73(17.1)	10.84(17.4)	11.61(16.6)	7.17(17.5)	5.26(16.8)
salaries (3)	2.86(4.6)	2.55(5.9)	3.00(5.0)	2.92(4.7)	3.22(5.2)	3.58(5.1)		1.36(4.3)
gross profits	11.53(28.6)	7.53(17.3)	11.78(19.5)	13.13(20.9)	13.42(21.5)	16.60(22.3)		7.92(25.3)
(2)/(1)	(42.1)	(44.8)	(42.7)	(40.1)	(39.4)	(36.5)	(37.1)	(36.2)
(2)+(3)/(1)	(53.6)	(58.8)	(54.3)	(51.0)	(51.2)	(47.8)		(45.5)

note: *cost od materials, containers, fuel, and purchased electric energy

sources:SAUS[1928] : 749, SAUS[1935] : 715

Table 3 The share of wages in value added in various manufacturing industries

(%)

	1919	1921	1923	1925	1927	1929	1931	1933
competitive industries								
food	31.4	35.4	31.8	29.6	28.9	26.9	27.5	25.9
textile	38.7	46.7	42.9	43.8	43.7	41.9	43.8	44.7
timber	49.5	53.2	49.1	50.0	51.3	47.0	49.8	46.8
leather	40.5	51.6	48.8	47.3	46.7	46.4	50.1	49.2
semi-oligopolistic industries								
paper1	33.1	35.1	43.3	42.0	38.7	35.9	35.7	33.4
machinery	44.4	44.4	44.1	40.4	39.0	37.6	36.3	39.2
petrol & coal			26.7	24.0	27.3	20.8	25.6	24.7
oligopolistic industries								
iron & steel	50.5	55.6	49.5	47.1	47.6	42.2	47.9	47.1
rubber	35.6	37.8	39.8	35.5	35.1	38.5	31.2	37.9
chemical	25.2	27.3	23.7	21.7	20.6	19.9	18.9	19.2
stone,clay and glass	48.3	50.8	45.8	45.0	45.6	41.8	40.9	35.8
non-ferrous metals	46.0	49.2	45.4	47.1	42.9	39.2	40.9	39.0
tobacco	23.4	27.5						
transportation equipment	51.9	48.7	49.7	44.0	45.0	39.9	40.3	41.7
mixed industries								
printing & publishing1)	33.1	35.1	29.9	28.5	27.8	26.5	28.1	26.2

Sources : SAUS[1928] : 752-3, SAUS[1935] : 718-9

Note : 1) total of paper,printing and publishing in 1919 and 1921

Table 4 Degree of utilization of production capacity (%),real private investment (1958$, $b.)

	1929	1930	1931	1932	1933 (%)
Degree of utilization					
Manufacture & mining1)	83	66	53	42	52
Automobile2)	90	63	56	49	49
Steel ingot3)	89	63	38	20	34
Cotton spindle3)	105	82	86	80	101
Real private investment4)	40.4(100.0)	27.4(67.8)	16.8(41.6)	4.7(11.6)	5.3(13.1)
Fixed investment	36.9(100.0)	28.0(75.9)	19.2(52.0)	10.9(29.5)	9.7(26.3)
Non-residence	26.5(100.0)	21.7(81.9)	14.1(53.2)	8.2(30.9)	7.6(28.7)
Structure	13.9(100.0)	11.8(84.9)	7.5(54.0)	4.4(31.7)	3.3(23.7)
Equipment	12.6(100.0)	9.9(78.6)	6.6(52.4)	3.8(30.2)	4.3(34.1)
Residence	10.4(100.0)	6.3(60.6)	5.1(49.0)	2.7(26.0)	2.1(20.2)
Non-farm	9.9(100.0)	6.0(60.6)	4.9(49.4)	2.5(25.3)	1.9(19.2)
Farm	0.4(100.0)	0.3(75.0)	0.2(50.0)	0.1(25.0)	0.2(50.0)
Stock investment	3.5	-0.6	-2.4	-6.2	-4.3
Non-farm	3.6	-0.4	-3.9	-7.0	-3.8
Farm	0.2	-0.2	1.5	0.8	-0.5

Sources : 1) Streever [1960] : .64
    2) Mercer & Morgan [1972] : 1,223.
    3) SCB[1938b] : 133,155
    4) HS [1975] : .229.

Table 5 Growth rate of real G N P (average annual rate %)

	1921-1923	1924-1926	1927-1929
G N P	5.3	3.9	3.0
consumption	6.1	4.0	3.7
non-durable	3.8	3.8	2.1
semi-durable	14.7	0.7	5.7
durable	10.4	9.2	0.8
service	4.1	4.1	5.8
gross capital formation	2.8	3.8	0.3
constraction	21.6	9.7	-4.4
residence	61.3	8.7	-14.3
non-residence	7.7	10.4	1.8
producers' durable eq.	3.1	3.9	4.9
change in stock	-12.6	-24.6	12.3
foreign investment	-40.0	-7.2	26.0

Source : Gordon[(1952)1961] : 407.

Table 6 The growth rate of real GNP and the contributions of the components, 1923-27

(annual rate : %)

	real GNP growth rate	consumption		investment				exports	net exports	government purchases
		durables	non-durables	res. const.	equipment	structure	inventories			
1923 : I	16.15	3.09	4.16	2.16	2.20	1.31	1.34	-1.98	-0.86	-1.00
II	10.30	0.93	3.68	0.53	2.36	3.15	7.65	1.55	1.34	0.30
III	-6.60	-0.34	-3.93	-0.88	-1.08	-1.93	6.71	0.64	1.77	0.61
IV	0.51	0.84	9.20	0.87	-2.01	2.89	-11.25	2.44	2.10	0.74
1924 : I	11.40	1.76	11.57	1.51	0.85	1.22	-4.95	-2.48	-1.89	0.92
II	-11.99	-2.84	0.38	-0.66	-2.67	1.09	-5.23	1.05	0.97	0.74
III	-4.09	-1.40	-2.96	-1.70	-0.35	0.76	1.21	1.19	0.46	0.70
IV	22.05	0.10	-2.32	-0.48	3.55	-0.29	5.62	3.24	2.70	0.66
1925 : I	9.59	2.37	-7.10	-0.09	0.63	0.00	10.60	-0.65	-0.40	0.44
II	4.87	1.83	-7.44	2.75	-1.86	2.49	1.50	-2.24	-2.13	0.58
III	10.66	0.21	-0.84	2.84	1.06	1.70	-5.91	1.45	0.46	0.49
IV	8.64	3.63	5.61	-0.39	1.81	-1.70	9.95	-1.89	-2.43	0.00
1926 : I	3.75	-0.53	7.26	0.34	0.55	1.41	-4.90	2.68	1.64	-1.84
II	1.23	-1.45	7.19	0.80	-0.72	-0.46	2.27	-1.07	0.07	0.03
III	9.78	-0.35	6.95	0.35	0.40	-0.65	-0.72	1.62	1.58	0.53
IV	2.33	-0.19	1.25	-0.43	-0.01	-1.44	3.96	0.04	-0.28	0.80
1927 : I	-1.45	0.34	-3.16	-0.52	-0.58	-1.90	3.52	-0.27	0.51	1.56
II	2.44	0.31	1.59	1.70	-1.01	2.38	-10.52	3.02	1.25	0.84
III	-6.10	-1.42	0.12	-0.47	-0.72	-0.78	4.48	-2.03	-1.63	0.61
IV	-7.41	-0.91	0.60	0.41	-0.67	0.56	-5.09	0.15	0.85	0.45

Source : Balke & Gordon[1986] :794-834

Notes : Non-durables include services. Investment in the structure includes farm housing.

Exports include service transactions.

Table 7   The growth rate of real GNP and the contributions of the components   (annual rate : %)

	real GNP growth rate	consumption		investment				exports	net exports	government purchases
		durables	non-durables	res. const.	equipment	structure	inventories			
1928 : I	3.10	1.33	6.49	0.13	1.12	-3.76	-2.39	-0.43	-0.81	-0.10
II	5.04	0.21	-2.60	0.35	0.68	1.46	-1.48	1.60	1.57	0.46
III	9.51	1.04	7.15	-1.84	0.95	-0.82	6.17	-0.83	-1.20	0.57
IV	4.19	1.53	3.69	-1.01	1.44	1.02	-2.54	2.08	2.17	0.67
1929 : I	8.36	0.52	-1.17	0.33	0.21	3.71	5.06	-0.12	-1.52	0.87
II	17.50	-0.54	-1.49	-0.40	0.41	0.05	5.44	-0.68	-1.62	0.67
III	2.56	0.24	3.53	-2.35	0.76	-2.72	6.23	-0.50	-0.38	0.67
IV	-17.54	-2.19	-4.82	-4.04	-2.30	-1.43	-1.30	0.23	0.68	0.98
1930 : I	-13.73	-2.06	-6.70	-1.38	-1.10	0.56	-4.00	-1.70	-0.97	2.39
II	-2.25	-1.41	-1.47	0.54	-0.82	1.20	-8.27	-0.38	-0.01	1.07
III	-18.17	-1.57	-6.30	-2.56	-1.65	-4.95	-1.13	-1.32	0.20	0.71
IV	-17.29	0.00	-4.24	-0.77	-2.76	-3.41	2.46	-1.64	-1.46	0.64
1931 : I	0.84	-0.82	1.47	1.14	-1.78	-1.68	-0.80	-0.77	0.10	0.51
II	7.17	-0.48	2.95	0.39	-0.25	-0.86	-0.67	0.48	0.43	0.58
III	-14.80	-0.92	-6.05	-1.85	-1.56	-3.91	-1.79	-1.79	-2.08	0.41
IV	-19.00	-1.94	-5.82	-1.30	-2.24	-2.13	-0.94	-1.08	0.17	-0.27
1932 : I	-13.66	-1.53	-6.28	-2.72	-1.36	-3.24	3.88	-0.83	-0.08	-3.33
II	-18.15	-1.64	-9.07	-0.15	-2.90	0.15	-6.34	-0.83	-0.02	-0.35
III	-13.24	-1.45	-6.02	-0.35	0.39	-0.54	-9.69	-1.24	0.39	0.28
IV	-2.41	0.18	0.73	-0.54	0.76	-1.39	4.01	-0.58	-0.35	0.39
1933 : I	-21.31	-1.22	-12.18	-1.70	-2.39	-2.08	-3.19	0.97	0.75	-0.24
II	32.11	1.01	23.88	0.58	4.01	0.56	6.12	-0.41	-1.41	-3.10
III	35.80	2.59	4.43	0.04	2.74	-0.51	21.48	0.58	-0.72	0.89
IV	-25.30	-0.33	-17.22	1.65	-2.59	1.69	-13.09	-0.08	1.11	1.85

Source : Balke & Gordon[1986] :794-834

Notes : Non-durables include services. Investment in the structure includes farm housing.

Exports include service transactions.

Table 8 Growth rate of real GNP in the three booms in the 1920s

(average annual rate, %)

	21 II ～23 II	24 IV ～26 IV	27 I ～29 III
G N P	14.5	9.0	7.1
consumption			
durable	21.6	11.3	9.6
non-durable & service	5.3	1.9	3.4
investment			
construction			
residence	19.3	16.2	-13.6
non-residence	47.3	3.8	-2.5
producers' durable eq.	28.7	13.5	16.8
exports	-7.5	7.4	2.8
imports	19.0	5.4	11.1

Source : Balke & Gordon[1986] : 793-828.

Notes : 1)non -durables include semi-durables.

2)non-residence includes residence in farm.

Table 9   Growth of nominal GNP and contribution of exports   (%)

	Growth rate of GNP (a)	Contribution of exports(b)	(b)/(a)	Contribution of net exports(c)	(c)/(a)
1928: I	1.84	0.73	39.53	0.60	32.56
II	8.17	1.54	19.25	1.75	21.93
III	12.30	-0.50	-4.24	-0.99	-8.48
IV	0.61	2.49	406.67	2.69	440.00
1929 : I	7.76	0.48	6.42	-1.32	-17.65
II	16.76	-1.81	-11.53	-2.43	-15.54
III	6.63	-0.61	-9.41	-0.08	-1.18
IV	-20.03	-0.67	3.10	0.68	-3.10
1930: I	-16.30	-2.16	12.53	0.00	0.00
II	-5.20	-1.52	28.91	-0.25	4.69
III	-25.98	-2.33	8.12	0.21	-0.72
IV	-22.97	-2.38	9.50	-1.31	5.20
1931: I	-9.81	-3.39	33.65	-1.49	14.69
II	-4.48	-0.40	8.70	1.05	-22.83
III	-21.78	-2.78	11.79	-2.48	10.53
IV	-27.95	-0.59	1.86	1.29	-4.07
1932: I	-27.10	-3.43	11.43	-1.55	5.14
II	-27.89	-0.50	1.60	1.32	-4.19
III	-17.43	-1.76	9.45	0.20	-1.09
IV	-10.34	0.36	-3.31	0.07	-0.66
1933: I	-30.75	-2.83	8.14	-1.09	3.13
II	39.81	1.62	4.60	0.64	1.84
III	67.17	3.75	6.74	-0.96	-1.75
IV	-20.55	1.11	-4.94	1.57	-6.98

Source : Balke & Gordon[1986] : 794,828-9.

Note : The growth rate and contrigution is the ratio to
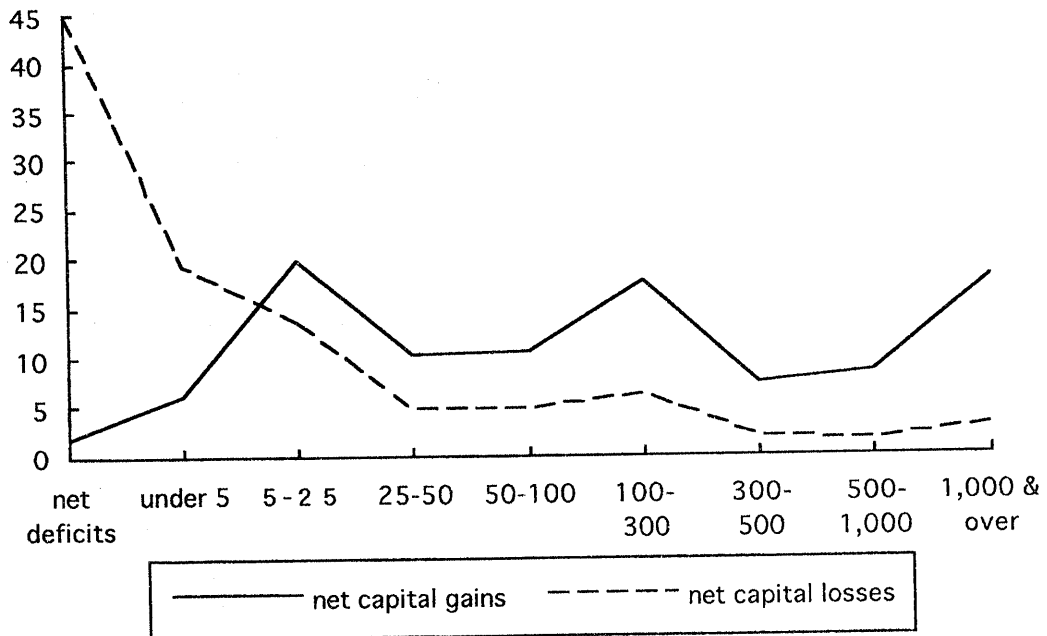
the previous quarter.

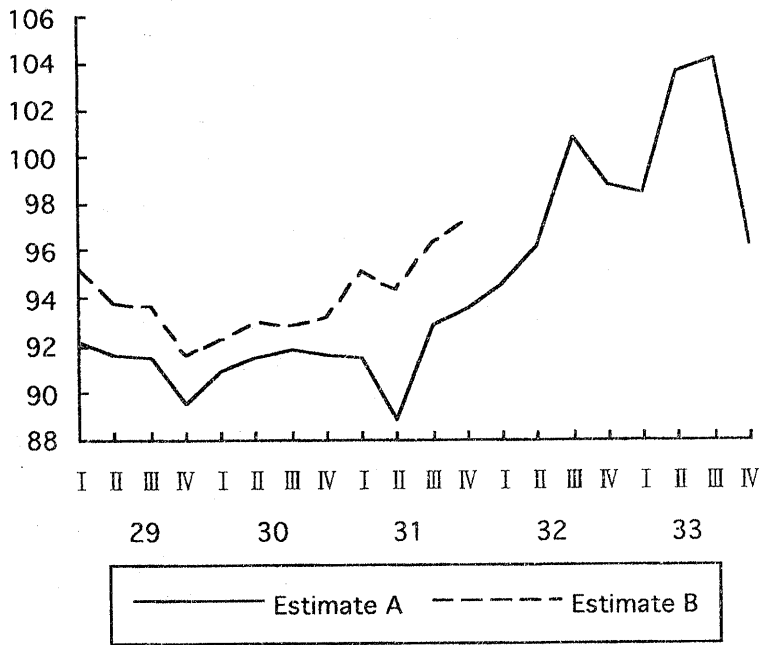## Figure 1 Net capital losses (1928-33) (billion dollars)
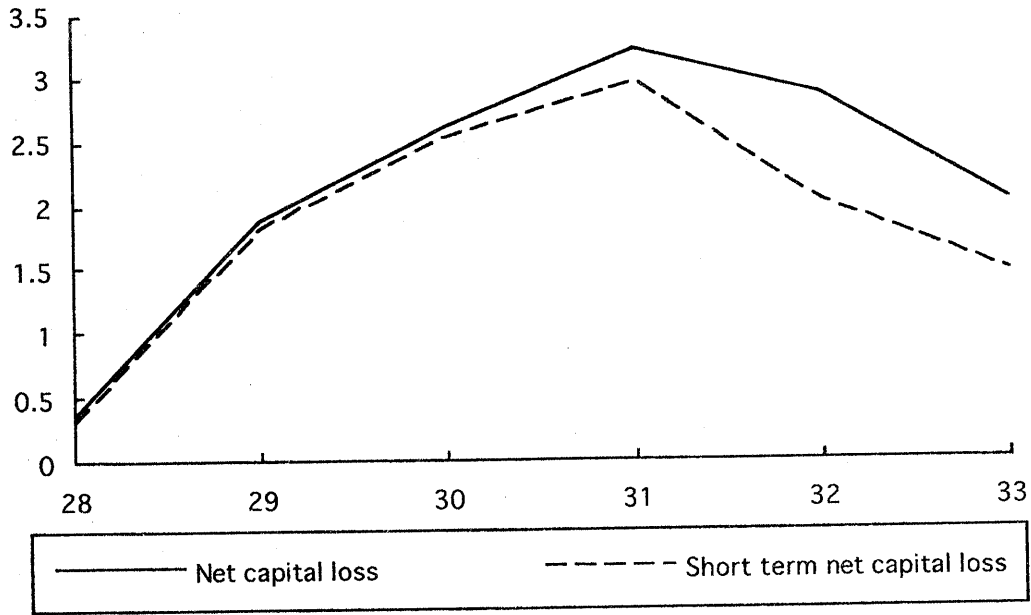
Source : Seltzer[1951]:367,378.

Figure 2 Net capital gains and losses by statutory net income groups 1929 (%, thousand dollars)

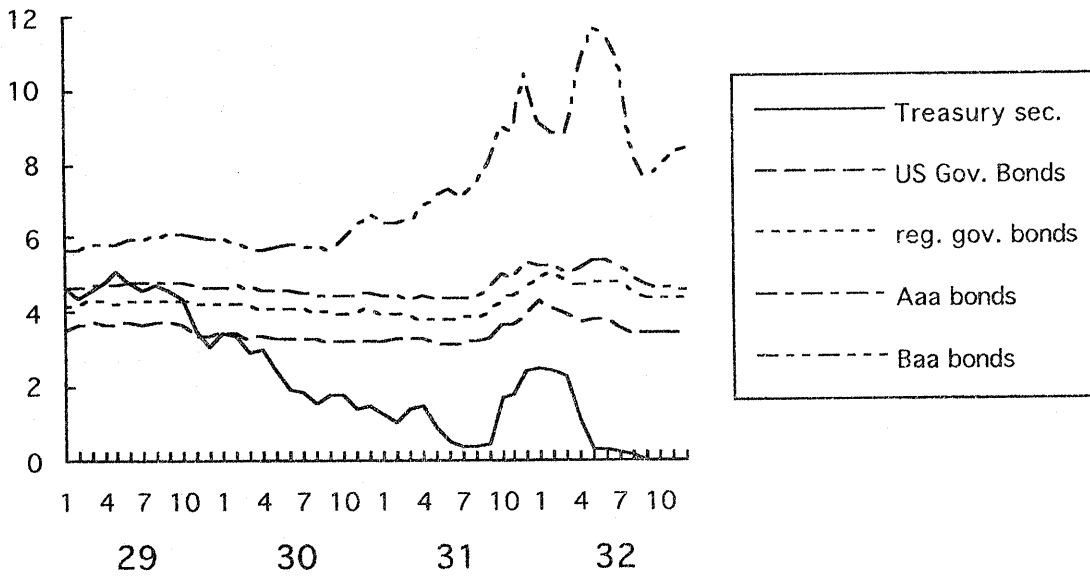Source: Seltzer[1951]:367-9.

Figure 3 The ratio of expenditure to personal income (1929-33, %)

Sources: HS[1949]:328, Barger[1942]:94.
Notes: Expenditure and personal income are after seasonal adjustment.

Figure 4 Yields of Treasury securities and Bonds (1929-32, monthly average, %)

Source: BMS[1943]:460,469-70.
Note: Treasury securities means 3-6 months Treasury notes and certificates.