Discussion Paper Series A No.395
**Did Korekiyo Takahashi Rescue Japan
from the Great Depression?**
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August 2000

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September 30, 2000

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Abstract

Korekiyo Takahashi is remembered as a wise finance minister saving Japan from the Great Depression, but the role of his policy remains to be rigorously measured, with proper control for other forces also driving the recovery. Vector autoregression analysis of previously unexploited monthly data indicates that while Takahashi's fiscal expansion was critical in reversing the downswing, the subsequent upswing was sustained by industrial policy promoted by "new bureaucrats" as well as by world recovery. The rise of fascism also aided the rebound by creating a political setting, which generated downward wage shocks.

After half a century of rapid growth and industrialization following the Meiji restoration, Japan entered a decade of stagnation with the end of the First World War. A series of supply and demand shocks contributed to the recession of the 1920s, including among others a devastating earthquake in 1923, the interwar agricultural depression, financial crisis of 1927, and deflationary expectations resulting from the anticipated return to the gold standard.[1] Finally came the Great Depression, to which Japan responded by returning to the gold standard from January 1930, a policy response likened by a contemporary industrialist to "opening a window in the middle of a typhoon." The depression however proved relatively mild and short: Japan's economy stopped contracting in 1931 and subsequently resumed to grow at an unusually rapid pace.

Given that Japan left the gold standard relatively early (December 1931), its superior macroeconomic performance after 1929 can be seen as an additional piece of evidence corroborating the gold standard theory of the Great Depression as proposed by Barry Eichengreen and Peter Temin.[2] I start in the following section by showing that the early departure from the gold standard accounts for only a part of the Japanese recovery: not only was Japan's depression shorter, but also the following recovery was

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[1] See Nakamura, "Keiki Hendo to Keizai Seisaku." Faini and Toniolo, "Reconsidering Japan's Deflation" stressed the impact of deflation expectation. For a detailed account of 1927 financial crisis, see Takahashi and Morigaki, *Showa Kinyu Kyokoshi*.

[2] Eichengreen, *Golden Fetters*, Temin, *Lessons from the Great Depression*, Eichengreen and Temin, "The Gold Standard and the Great Depression."

considerably more rapid than in other countries leaving gold in the same year as Japan.

A majority of previous studies, briefly reviewed in the following section, attributes the early and rapid recovery to the policies implemented by Korekiyo Takahashi, the Finance Minister of Japan from December 1931 to February 1936. While much of the literature is narrative accounts, quantitative studies are not entirely successful in making their case in a convincing way. Most importantly, in highlighting Takahashi's role, they failed to properly take into consideration and control for other influences that might also have driven the Japanese recovery. And different studies put emphasis upon different element(s) of Takahashi's three measures: depreciation, fiscal expansion, and easy money. Finally, there is a minority view that the recovery forces really came from the private sector.

Therefore, the causes of Japan's recovery are an unsettled issue, and the impact of the policy measures taken by "Japan's Keynes" remains to be rigorously measured, with proper control for other shocks also leading to the recovery. As the literature review reveals, these other factors included the world recovery and the rise of an authoritarian control. The rise of fascism and the military in the wake of the Manchurian invasion of 1931 may have aided recovery significantly in Japan by exerting downward pressure upon wages, as in Nazi Germany. [3] "New bureaucrats (*shinkanryo*)," the other pillar of the new regime, expanded administrative control over the economy and launched industrial policy in the form of "heavy and chemical industrialization" drive, generating

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[3] Temin, "Socialism and Wages in the Recovery from the Great Depression in the United States and Germany."

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substantial investment demand stimuli. As compared with the influence of the world recovery and the economic consequences of the political regime shift, how important was Takahashi's policy intervention for Japan's recovery from the Great Depression? Which of Takahashi's policy measures mattered most? Such are the questions I ask in this paper.

I address these questions by applying vector autoregression analysis to previously unexploited monthly data, as described in the second section. Vector autoregression allows decomposing the Japanese output growth in the 1930s into different parts attributable to different shocks, which included Takahashi's policy measures, as well as world recovery and the anti-labor and industrial policy. Figures plotting the movement of these components provide a convenient means to show which shock mattered when and how much. These graphs, presented in the third section, indicate that behind the façade of single event of the Japanese recovery lay the operation of diverse shocks occurring in succession with differing intensity. Takahashi's fiscal expansion was uniquely important in reversing the downswing, and the depreciating yen after going off gold also helped. Downward wage shocks occurred to boost the economy significantly in the early 1930s, which was followed by an investment boom in the mid-1930s. The world recovery consistently sustained the Japanese growth from mid-1932.

Final section summarizes and concludes.

The Great Depression and Recovery in Japan

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According to the gold standard theory of the Great Depression, both the severity of the depression and the vigor of the subsequent recovery depended upon how early a country abandoned the gold standard. As long as the gold convertibility of currency remained the predominant policy goal, the room for bold reflationary measures was severely limited, as these policies would create large balance of payments deficits and lead to rapid depletion of gold stock. Removal of the external constraint being a necessary precondition for implementing expansionary policies, the earlier the departure from the gold standard, the faster was the recovery likely to be, and vice versa.

Figure 1 bears out this story: the ranking in the level of industrial production index in 1937 matches the sequence of going off gold in the wake of the Depression: Britain, Germany and Japan in 1931, the U.S. in 1933, and finally France in 1936. Figure 1 also shows Japan revived earlier to grow faster than the two European countries, although Japan abandoned the gold standard several months after both Germany and Britain. Using a richer panel data set, Ben Bernanke and Harold James showed the rate of the Japanese contraction in 1930-31 (8%) was smaller than average rate of contraction for those countries leaving the gold standard in 1931 (16%). And while most of those countries leaving the gold standard in 1931 had to wait until 1933 to see industrial production rebound, Japan's industrial production index resumed growth in 1932. Finally, Japan's growth rate from 1932-36 (62%) was substantially above not only the world average, but also the average for those countries leaving gold in the same

year as Japan (45%).[4]

Japan's early and rapid recovery has repeatedly been attributed in different studies to 1) the yen depreciation, 2) fiscal expansion, and 3) easy money following the decision by the Finance Minister Takahashi to take Japan off gold. Each of these studies highlighted different element(s) of Takahashi's policy regime as the prime mover in the recovery process. The relative importance of each of Takahashi's three policy measures in bringing about the growth however has never been properly evaluated. More importantly, it has been neither unanimously agreed upon nor rigorously established that Takahashi's policy measures were indeed crucial in generating the vigorous upswing of the 1930s, controlling for the influence of other shocks also driving the recovery.

Introducing Korekiyo Takahashi to English-speaking economists, Dick Nanto and Shinji Takagi used Granger-causality tests to show that both yen/dollar exchange rate and real central government spending had significant impacts upon the level of activity, while real private investment had little causal effect. And Yasukichi Yasuba also drew attention to the role of increased spending for poor relief and militarization in the recovery, a conclusion based upon a larger coefficient estimate for public consumption in his ordinary least squares estimation of a simplified form of national income identity. Toru Iwami, Tetsuji Okazaki and Hiroshi Yoshikawa concluded that Takahashi's three policy measures were equally important, a judgment derived from inspection of graphs

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[4] See Bernanke and James, "The Gold Standard, Deflation, and Financial Crisis in the Great Depression: An International Comparison," p. 45, Table 2.4.

charting aggregate time series data and ordinary least squares estimation of a few structural equations. Finally, Masanori Okura and Juro Teranishi stressed the impact of devaluation and deficit financing, indicating the relative ineffectiveness of monetary expansion. To reach this conclusion, they carried out simulations using a system of structural equations estimated using ordinary least squares method.[5]

While a majority of existing studies place emphasis upon effective policy response to deflationary shocks transmitted from abroad, there are others who believe that the recovery was initiated by the private sector. Using an input-output table of Japan for 1935, Norio Tominaga found that the impact of public consumption upon output was significantly weaker than exports and investment demand. Showing evidence of reviving private investment in the early 1930s, Kinzo Shima argued Japan's recovery was led by the private sector.[6] Finally, the mildness of Japan's depression was attributed by various scholars to wage flexibility, which was in turn related to the presence of a sizable traditional sector in a "dual structured" labor market.[7]

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[5] Nanto and Takagi, "Korekiyo Takahashi and Japanese Recovery from the Great Depression," p. 373, Yasuba, "The Japanese Economy and Economic Policy in the 1930s," Iwami, Okazaki and Yoshikawa, "The Great Depression in Japan: Why Was It So Short?" Okura and Teranishi, "Exchange Rate and Economic Recovery of Japan in the 1930s."

[6] Tominaga, "1932-36 nenkan no Nihon Keizai," Shima, "Iwayuru 'Takahashi Zaisei' ni tsuite,"

[7] Sato, "Senganki Nihon no Makuro Keizai to Mikuro Keizai," Yasuba, "The Japanese Economy and Economic Policy," p. 142, Okazaki, "Senzenki Nihon no Keiki Junkan to Kakaku Suryo Chosei."   Drawing attention to Japan's price volatility and output

Even if the crucial role of Takahashi's policies in reversing the downturn is admitted, it seems unlikely that his expansionary measures alone drove the rapid output growth up to the outbreak of the Sino-Japanese war in July 1937. For one thing, most of the devaluation occurred in 1932 and 1933, and then the value of yen began to stabilize. Also the conventional story has it that when the worst seemed over, Takahashi began to be concerned about inflation and tried to revert to stabilization. Reducing expenditure, he attempted to put an end to debt financing, at the same time urging the Bank of Japan to absorb money supplied in the course of debt monetization. In the standard historical account, the policy reversal eventually prompted the military to decide to kill him in February 1936.[8] While these strongly suggest that the economic growth after the early 1930s was likely to have been propelled largely by causes other than the Keynesian policy measures, the non-Takahashi factors could have been important in reversing the downswing in the early 1930s as well.

There were at least three important non-Takahashi shocks, which are mentioned but not adequately taken into account and controlled for in the previous studies. One was the recovery in the rest of the world, providing Japan export demand stimuli on the

stability in the pre-WWI Japanese business cycles, Takafusa Nakamura hinted at the classical nature of the Japanese economy during the Meiji period. Nakamura, "Meijiki no Keiki Hendo" and "Keiki Hendo to Keizai Seisaku," pp. 304-5. More recently, however, Hiroshi Yoshikawa found evidence for nominal wage rigidity in interwar Japan. See Yoshikawa, "Senzen Nihon Keizai no Makuro Bunseki." On dualistic structure of the interwar Japanese labor market, see Odaka, "Nijukozo."

[8] Nakamura, "Keiki Hendo," p. 307.

top of the effect of the yen depreciation. Second, as in many other countries, a consequence of the Great Depression was that the liberal policy regime of the 1920s became discredited and state interventionism gained force in Japan. The shift in policy regime was pioneered by "new bureaucrats (*shinkanryo*)." Disillusioned with corrupt party politics and the instability of market economy as witnessed during the 1920s, these reform-minded technocrats wanted to establish a system of control to replace market system.[9] The transition found one expression in the legislation of the Major Industries Control Law (*Juyo Sangyo Toseiho*) in 1931. While the law was not intended to impose direct state control over, but to encourage "cooperation" among, firms in designated "important industries" by forming depression cartels, the Ministry of Commerce and Industry remained in a position to influence investment decisions and output- and price-fixing agreements. More importantly, during the 1930s various laws were introduced to promote specific (mostly "heavy and chemical") industries, notably the Petroleum Industry Law of 1934 and the Automobile Manufacturing Law of 1936. The "heavy and chemical industrialization" drive not only stimulated investment activity and thus contributed to the recovery, but also was welcomed by the military, which has been demanding persistently to get prepared for a war to consolidate control over China since the Manchurian invasion.[10]

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[9] See Berger, *Parties out of Power in Japan, 1931-1941*. Chalmers Johnson termed this shift in policy regime as the "rise of industrial policy." See his *MITI and the Japanese Miracle*, chapter 3.

[10] Nakamura, *Senzenki Nihon Keizai Seicho no Bunseki*, p. 208, Suzuku, *Showa Kyokoshi*, p. 186.

The third and final factor concerns the labor market. Peter Temin explained the difference in the speed of recovery between the U.S. and Germany in the 1930s in terms of contrasting policies towards the labor market. In the U.S., labor unions were encouraged under the New Deal, and other labor protection laws were introduced, raising real wages. Exogenous wage rises shifted the aggregate supply curve to the left, reducing employment and output. In Germany, the opposite occurred. The Nazis destroyed labor unions quickly after taking power, and the government intervened in the process of wage bargaining, exerting downward pressures upon the level of wages.[11]

Japan in the 1930s resembled Germany more than the U.S. The Great Depression killed not only the classical liberalism in the sphere of economic policy, but also Japan's nascent democracy (known as the "Taisho democracy"). As the unemployment rate rose, the demand to put an end to Prime Minister Hamaguchi's deflation to keep Japan on gold at the expense of internal equilibrium turned into the rejection of bipartisan politics. A right-wing terrorist shot Hamaguchi in November 1930, causing his eventual death in August 1931. In September, the Manchurian Incident made it clear that the military was getting out of civilian control. With the collapse of the rule of Hamaguchi's Minseito party in December election, Korekiyo Takahashi was appointed as the Finance Minister of the new Seiyukai party cabinet.

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[11] Temin, "Socialism and Wages." Weinstein argued that the rise in nominal wages under New Deal impeded the recovery of the U.S. economy from the depression. See Weinstein, "Some Macroeconomic Impacts of the National Industrial Recovery Act, 1933-1935."

Two fatal attacks were carried out in 1932, killing Junnosuke Inoue (the Finance Minister in Hamaguchi's cabinet) in February and Tsuyoshi Inukai (the Prime Minister of Seiyukai cabinet) in May. Thus ended Japan's brief experiment with parliamentary politics, and the military began to take over the cabinet.[12]

In the new political environment created by the Manchurian invasion and the rightwing terrorist attacks, both independent unions and proletarian parties suffered a serious setback. Unionization rate declined from a peak in 1931, and the number of workers in labor disputes as a proportion of total also fell.[13] The Home Ministry abandoned its liberal labor policy of the 1920s and (together with the military) began to promote rightwing ("Japanist") forces surfacing at the grass roots from the mid-1920s. Destroying mainstream unions, the Japanist groups expanded to the point of organizing the National Defense Fund Labor Association in early 1933. "At factories throughout the nation in the winter of 1933, an estimated 80,000 union workers and 20,000 non-union employees agreed to work on a Sunday or holiday and donate that day's wages to the army's National Defense Fund Drive."[14] Under such circumstances, the real wages declined, a phenomenon not observed either in Nazi Germany and or in

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[12] For details see Berger, "Politics and Mobilization in Japan, 1931-45," pp.105-17. The coup in 1936 (known as the February 26 Incident), during which Takahashi was murdered, finalized the transition to military rule

[13] Unionization rate fell from the peak of 8% in 1931 to zero in 1940. Flath, *The Japanese Economy*, p.78. For declining incidence of labor disputes, see Nakamura and Odaka, "Gaiaisetsu," p. 35, figure 108.

[14] Gordon, *Labor Union and Imperial Democracy*, chapters 9 and 10. The quote is

fascist Italy.[15]   Those who identified downward wage flexibility may in fact have been observing the operation of the wage shocks.

To summarize, at least six different types of structural shocks need to be reckoned with to establish the causes of Japan's early and rapid recovery from the Great Depression in a convincing way. One comes from the supply side, while the other five are demand shocks. The supply shock refers to wage shocks compressing wages during the 1930s, which occurred in the transition from democracy to fascism. In parallel with this transition, the Japanese economy was being transformed from market to command system, controlled by bureaucrats. They launched industrial policy in the form of "heavy and chemical industrialization" drive, generating domestic investment demand shocks. Three of the remaining four demand shocks were related to Korekiyo Takahashi's well-known policies: public spending and money supply shocks, and exchange rate shocks after the shift to floating exchange regime. Finally, there were world output shocks, affecting Japan's export demand.

A Vector Autoregression Analysis with Monthly Data

To measure the role of these factors in the Japanese recovery from the Great Depression, I apply vector autoregression (VAR) analysis to previously unexploited

from page 277.

[15] Eichengreen & Hatton, "Introduction," p.15, Table 1.3; Mattesini and Quintieri, "Italy and the Great Depression," p. 281.

monthly macroeconomic time series data. The VAR system has six variables, which include 1) world output, 2) exports volume from Japan, 3) real deficits of the Japanese government, 4) high-powered money supplied by the Bank of Japan, 5) Japanese industrial production, and 6) the real wage in Japan.[16] All series are de-seasonalized and then log-transformed before estimation. Sample period runs from January 1930 to September 1936, which is dictated by data availability: industrial production index began to be compiled by the Ministry of Commerce and Industry from January 1930, and Mattesini and Quintieri's world production index ends in September 1936. Given that unit root test results indicate only real government deficits series is stationary (see appendix), the remaining five variables are first-differenced. Lag length tests showed four lags are optimal.

Residuals obtained from the estimation of the six-variable VAR are surprises not explained by past changes in the variables included. These are known as reduced form shocks, as they are functions of structural shocks, therefore their economic meaning is difficult to decipher. Hence the second stage of analysis is required, where structural shocks are recovered from the reduced form shocks by imposing assumptions on how the reduced form and structural shocks are related. The assumptions I introduce can be expressed by the following set of six equations, which say in short that the six variables differ in the degree of exogeneity.

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[16] For sources of data, see data appendix.

$$e_f \quad = \qquad\qquad\qquad\qquad\qquad\qquad \varepsilon_f \qquad\qquad (1)$$

$$e_x \quad = a_1\, e_f \qquad + \qquad\qquad\qquad\qquad \varepsilon_e \qquad\qquad (2)$$

$$e_g \quad = a_2\, e_f \; + a_3\, e_x \; + \qquad\qquad\qquad \varepsilon_g \qquad\qquad (3)$$

$$e_m \quad = a_4\, e_f \; + a_5\, e_x \; + \; a_6\, e_g \; + \qquad\qquad \varepsilon_m \qquad\qquad (4)$$

$$e_y \quad = a_7\, e_f \; + a_8\, e_x \; + \; a_9\, e_g + a_{10}\, e_m \quad + \qquad \varepsilon_d \qquad\qquad (5)$$

$$e_w \quad = a_{11}\, e_f \; + a_{12}\, e_x + a_{13}\, e_g + a_{14}\, e_m + a_{15}\, e_y + \quad \varepsilon_w \qquad\qquad (6).$$

Here reduced form shocks are represented by vector $\mathbf{e} = (e_f,\ e_x,\ e_g,\ e_m,\ e_y,\ e_w)$, and $\mathbf{e} = (\varepsilon_f,\ \varepsilon_e,\ \varepsilon_g,\ \varepsilon_m,\ \varepsilon_d,\ \varepsilon_w)$ is a vector of the six structural shocks identified in the preceding section: foreign output shock, exchange rate shock, fiscal shock, money supply shock, domestic demand shock (other than money supply and public spending shocks), and wage shock.

Equation (1), making the world output the most exogenous of the six variables by relating the surprise component in world output (e_f) solely to world output shocks (ε_f), models interwar Japan as a small open economy. Next comes the export volume, whose surprise component (e_e) is contemporaneously related to the world output shocks as well as to exchange rate shocks (ε_e) in equation (2).[17] The real government deficits

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[17] Exchange rate is not explicitly included as a variable in the VAR system, because sufficient data were not available to calculate monthly real effective exchange rates for Japan. While the real exchange rate between the dollar (or the pound sterling) and yen can readily be derived, this cannot be considered as an adequate index for the true real effective exchange rate for yen. For Japan's overseas trade was well diversified in terms of geography. Japan's trade with the U.S. or Britain accounted for only a small

is treated as the third most exogenous variable, given that Takahashi's fiscal expansion in the early 1930s can be seen as responding to shocks transmitted from the world economy via the trade channel. Also the two shocks can have contemporaneous impact upon the real deficit by affecting the level of output, hence tax revenue. The fiscal expansion was financed largely by public debt issued and taken over by the Bank of Japan, an observation leading me to put money supply in the fourth place in the ordering of variables.[18] In a standard Keynesian model with sticky nominal wages, the output and real wage are endogenously and simultaneously determined, which makes it nonsensical to try to differentiate the two variables in terms of level of exogeneity. I tried two different systems, i.e. one where output comes before wage and the other with the opposite ordering, and obtained similar results, as reported below.

Now the coefficient matrix relating the reduced form to structural shocks can be readily obtained by Choleski decomposition of the variance-covariance matrix of reduced form shocks. Structural shocks can be obtained by pre-multiplying the reduced form shocks with the inverse of the coefficient matrix. Pre-multiplying the coefficient matrix with reduced form vector moving average (VMA) expression (obtained by the inverting VAR expression) gives structural form VMA expression, which relates the six variables to present and past structural shocks. Now *first*

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part of the total volume of trade, and far more important for Japan's overseas trade was Asia, which included not only China and India, but also the "yen bloc," comprising Japan's formal colonies and sphere of influence. See Nakamura, "Keiki Hendo," p.310, Table 6-13.

[18] Shima, "Iwagyuru 'Takahashi Zaisei' ni tsuite," pp. 102-7.

difference of the Japanese output can be decomposed into six components attributable to each of the six distinct structural shocks. For instance, one can recover the part in monthly change in output due solely to the money supply shock by setting the present and past values of other structural shocks than money supply shock equal to zero in structural VMA expression for output. Accumulation of this money supply component shows how the *level* of output would have fluctuated had only money supply shocks been generated.

Impulse Response and Output Decomposition

Estimated coefficients are presented in Table 1.

Table 1   Estimated Coefficients

Coefficients	Estimated Values
a_1	0.50 (0.04)
a_2	0.64 (0.16)
a_3	-0.94 (0.05)
a_4	0.16 (0.01)
a_5	-0.02 (0.00)
a_{6s}	0.01 (0.00)
a_7	0.22 (0.01)
a_8	0.22 (0.00)
a_9	0.03 (0.00)
a_{10}	0.11 (0.01)
a_{11}	-0.17 (0.01)

a_{12}	-0.05 (0.01)
a_{13}	-0.00 (0.00)
a_{14}	-0.26 (0.01)
a_{15}	-0.03 (0.01)

Note: Parenthetically shown are standard errors, calculated using maximum likelihood estimation procedure.

The estimated coefficients are all significant at 5% level, and their signs are consistent with a Keynesian model with nominal wage rigidity. The two coefficients in equation (3) have opposite signs, but positive a_2 is outweighed by negative a_3, indicating that the Japanese fiscal policy in the 1930s was countercyclical. Not only is a_3 larger than a_2 in absolute value, but also the variance of surprise component of export volume series (e_e) is about ten times as large as the variance of world output surprise (e_f).[19] In equation (4), the monetization of deficit financing is confirmed by a positive a_6. The positive coefficients in equation (5) indicate different types of positive aggregate demand shocks led to output expansion. Aggregate demand shifters influence real wages in a negative way in equation (6), indicating the presence of nominal wage rigidity.

In Figure 2 are shown the responses of the more endogenous half of the six variables -- money, output, and real wages -- to one standard deviation structural shocks over three years (thirty six months). Reading the first column across rows, one finds

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[19] Also the restriction that a_2 equals zero passes over-identification test (chi-square(1) = 0.22), while the restriction of zero a_3 is rejected (chi-square(1) = 4.81) .

indications of accommodating monetary policy in the responses of the money supply to six structural shocks. Not only did money supply finance expansionary fiscal policy, but also it adapted to variations in money demand, reflecting the fluctuations in the level of activity due to other types of demand shocks and wage shocks. The patterns of output responses (shown as the second column) are consistent with the predictions of a standard Keynesian model with sticky nominal wages: positive aggregate demand shocks raises output, while shocks pushing up wage lowers it. The pattern of output response to money shock is less clear, which seems to be attributable to the fact that money supply shock begins to take effect with a considerable lag.[20] Finally, in the Keynesian model rightward shifts in the aggregate demand schedule reduce the real wages by raising price level, which is confirmed by response of real wages to world output, real deficits, and money shocks in Figure 2. This again shows that the interwar Japanese economy was not characterized by perfect wage flexibility.

Having retrieved structural shocks and estimated impulse responses, I now proceed to the decomposition of output growth in the 1930s into six parts due to the six structural shocks. Figure 3 shows the fluctuations of the six components from the base of December 1931, when the Japanese industrial production index fell to its lowest level (900) since it had hit a bottom (823) in March 1931. Panel A shows two hypothetical paths of output fluctuations, which would have occurred only if either world output shocks (solid line) or exchange rate shocks (broken line) had been present. The world

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[20] Gali, "How well does the IS-LM model fit postwar U.S. data?" p. 714.

output shock component shows that deflationary shocks continued to be transmitted to Japan from the rest of the world until mid-1932, when the world as a whole entered upon a recovery path, starting to support Japan's recovery until the end of the sample period. On the other hand, the beneficial impact of the yen depreciation following the departure from the gold standard in December 1931 was largely exhausted during 1932. Adding up the two graphs vertically in mind, one can visualize the net effect of the external demand and exchange rate shocks, which would indicate that using depreciation Japan could insulate itself only partially from the world downswing until the mid-1932. Measured either in terms of the contribution to the output growth from December 1931 to September 1936 or in terms of the volatility, exchange rate shocks appear as a substantially weaker force than world output shocks.

Panel B shows the two hypothetical courses of output fluctuations, which are attributable to deficit spending and monetary policy shocks, respectively. The fiscal shock component rises rapidly until the early 1934 and then falls, both indicating the important role played by Takahashi's fiscal expansion in reversing the downturn, and confirming the subsequent shift to a conservative fiscal policy. On the other hand, the money shock component fluctuates around a weakly downward trend: once the changes in money supply due to the debt monetization are controlled for, monetary policy of the Bank of Japan turns out to be contractionary. As Eigo Fukai, the then governor of the Bank of Japan, recollects, taking over increasing amount of government bonds and becoming increasingly concerned about its inflationary consequences, the Bank of

Japan set upon soaking up liquidity via open market operations.[21]

Turning to Panel C, one finds positive impact of wage shocks upon output in late 1932 and 1933, which however was not sustained in the following years. This is consistent with Andrew Gordon's account of the fluctuating fortunes of the Japanese labor union movement in the wake of the Great Depression. After suffering a significant setback in the few years following the Manchurian invasion, the labor movement revived in the mid-1930s as the labor market became tighter with the progress of the upswing, and also as the political impact of the invasion faded, only to be crushed again by the outbreak of the Sino-Japanese war in 1937.[22]

Panel C also shows that an autonomous surge of domestic demand occurred to support recovery in the mid-1930s, when both the wage and Takahashi's policy shocks were losing momentum. The broad comovement of the domestic demand component and the two indices of investment activity as seen in Figure 4 indicates that domestic demand shocks largely reflected investment demand fluctuations. The mid-1930s was the years when key laws were enacted to foster heavy industries, including petroleum and automobile, as seen above. This suggests that behind the investment upswing was the introduction of industrial policy.

While the output decomposition results shown as Figure 3 are obtained by estimating a VAR system putting output before real wage, reversing the ordering does not affect the outcome significantly. The opposite ordering delivered output

[21] Fukai, *Kaiko Nana Junen*, p.307.

[22] Gordon, *Labor and Imperial Democracy*, chapter 11.

decomposition, where the impact of wage shocks is a bit larger and that of domestic demand shocks correspondingly smaller. Using real, rather than nominal, money supply gave broadly similar results.

Comparing the three panels (minding that they are somewhat differently scaled), one cannot but be impressed by the prominent role of Takahashi's fiscal expansion in ending the Great Depression in Japan. The depreciating yen provided some stimuli as well, but they were not sufficiently strong to outweigh the contractionary influences from the rest of the world. Offsetting the crowding out effects (resulting from deficit financing) by taking over a significant portion of public debt, the Bank of Japan was prompted by its inflation scare to monetary contraction via open market operations. Nevertheless, all in all, Takahashi's three policy measures were sufficiently powerful to counter the deflationary shock transmitted from the rest of the world.

The downward wage shocks associated with the rise of fascism contributed significantly to the turnaround as well, which appears to have been misinterpreted as wage flexibility in some earlier studies. And an autonomous investment upswing – most likely a consequence of "heavy and chemical industrialization" drive – played an important part in sustaining the upswing in 1934 and 1935. Finally, world recovery sustained the Japanese growth in a consistent and robust way after mid-1932.

Conclusions

The conventional tale about the early and rapid recovery of the Japanese economy

from the Great Depression praises the Keynesian remedies -- depreciation and fiscal and monetary expansion -- applied by the Finance Minister Korekiyo Takahashi several years before John Maynard Keynes' *General Theory of Employment, Interest, and Money* was published. Applying vector autoregression analysis to previously unexploited monthly data, this paper confirmed that Takahashi saved Japan from the Great Depression. In particular, his deficit spending was found to have been crucial in ending the depression quickly. Financing a major portion of the deficits by printing money, the Bank of Japan was at the same time absorbing liquidity to prevent inflation from getting out of control. Devaluation did help during 1932, but its contribution to output growth was modest.

The Japanese escape led by fiscal expansion is both interesting and unique. The fiscal tool was never relied upon seriously for recovery from the Great Depression in other countries. While the rebound in both Nazi Germany and Sweden owed to some extent to expansionary fiscal policy,[23] in both British and U.S. recovery policymakers' contribution (if non-sterilization of gold inflows could be called as such) was to be found in the sphere of monetary policy.[24] Even during the heyday of the Keynesian

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[23] While both Germany and Sweden tried fiscal expansion in the 1930s, its importance in reversing the downturn remains uncertain. See Cohn, "Fiscal Policy in Germany," p. 340, James, "What is Keynesian About Deficit Financing?" and Pikkanrinen , "Keynesianism and the Scandinavian Model of EconomicPolicy."

[24] Brown, "Fiscal Policy in the Thirties." Eichengreen, *Golden Fetters*, pp. 342-47. Romer, "What Ended the Great Depression." della Paolera and Taylor, "Economic Recovery from the Argentine Great Depression."

economics after the Second World War, fiscal expansion has rarely been implemented successfully to pull an economy out of slump.[25]

Why could fiscal expansion be readily and usefully mobilized in interwar Japan? This is perhaps an issue for a separate research, but two tentative answers may be offered. First, the Japanese government has never been seriously bound by the ideology of classical liberalism and has almost always believed in mercantilism since the Meiji Revolution, as expressed by the slogan *Fukoku Kyohei* (a rich country, a strong army). This activist policy stance was advocated and exploited primarily for the pork barrel politics practiced by Seiyukai, Takahashi's party. [26] Although Hamaguchi's party, Minseito (formerly Kenseikai), attempted to take Japan back on gold, the required fiscal and monetary restraint backfired when a devastating earthquake occurred in 1923, followed by a widespread banking panic in 1927. The tradition of state interventionism in Japan is reflected in the higher share of public spending in national income than in other industrialized countries, as well as in the important role played by the government in domestic capital formation.[27]

The other important factor may be Takahashi's reputation as a capable

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[25] The tax reduction by Reagan administration in the early 1980s may be one of the rare cases, where deficit spending generated substantial demand stimuli for an economy in recession. Also Tamim Bayoumi showed that fiscal policy provided a significant boost to the Japanese economy driven into a slump with the collapse of asset prices from 1989. "The Morning After: Explaining the Slowdown in Japanese Growth," p. 33.

[26] Ramseyer and Rosenbluth, *The Politics of Oligarchy*, chapters 4, 9 and 10.

troubleshooter. As a vice chancellor of the Bank of Japan, he made himself first famous by successful bond sales in London and New York at the time of Russo-Japanese war. Already being Finance Minister for three times and Prime Minister once before taking office in December 1931, Takahashi played a pivotal role in tiding over two severe financial crises, one from 1920-21 and the other in 1927.[28] His personal popularity built upon such track records probably allowed him to stand above political bickering and facilitated the implementation of his life-long belief in interventionism.

Takahashi's fiscal expansion however is only a part of Japan's successful recovery story. Both world recovery and the shift to a system of bureaucratic and military control played important parts not only in ending the depression, but also in sustaining the recovery. Downward wage shocks were generated to assist the rebound in the early 1930s, when the military emerged to dominate Japan's political scene, setting off the shift to a fascist regime. When the finance minister started to reduce deficit spending from 1934, both world recovery and an investment boom took over to sustain the growth. The investment boom most likely was created by industrial policy to promote heavy industries, launched by technocrats trusting the superiority of bureaucratic over market rationality.

All in all, it is true that Takahashi's capable policy response was critical in ending

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[27] See Emi, *Zaisei Shishutsu*, chapters 1 and 2.

[28] It should however be noted that Takahashi was blamed for creating the asset inflation preceding the financial crisis of 1920/21 by expansionary fiscal and monetary policy.

the downswing quickly, but without the intervention of world recovery and political regime shift, Japan's hypothetical growth performance in the 1930s would have been far less impressive than actual.

Appendix: Data Sources

World output: Mattesini and Quintieri, "Italy and the Great Depression: An Analysis of the Italian Economy, 1929-1936," pp. 290-1.

Export volume: Fujino and Igarashi, *Keiki Shisu*, pp. 394-5.

Real government deficits: nominal deficits on the "general account (*ippan kaigi*)" of the central government deflated by wholesale price index. Nominal deficits are derived by deducting monthly revenue from spending (available from *Okurasho Nempo*) and then adding net monthly public debt accumulation (available from *Kokusaki Tokei Nempo*) .

High-powered money: Fujino and Igarashi, *Keiki Shisu*, p. 400-1

Industrial production: Ministry of Commerce and Industry, *Juyo Seisan Keppo*.

Real wages: calculated simply by dividing nominal wages (from the Bank of Japan, *Rodo Tokei Gaisetsu*) by wholesale price index for want of a better cost of living index.

Wholesale Price Index: Bank of Japan, *Oroshiuri Bukka Shisu*.

Appendix: Unit Root Tests

Augmented Dickey-Fuller Tests

	Level	first difference
World output	-1.00	-5.25**
Export volume	-0.84	-11.37**
Real government deficits	-5.82**	-9.96**
Money supply	0.43	-9.01**
Output	0.21	-11.90**
Real wage	-0.66	-5.79**

Notes: Tests were undertaken after de-seasonalization and log-transformation; * and ** indicate significance at 5% and 1% level respectively.

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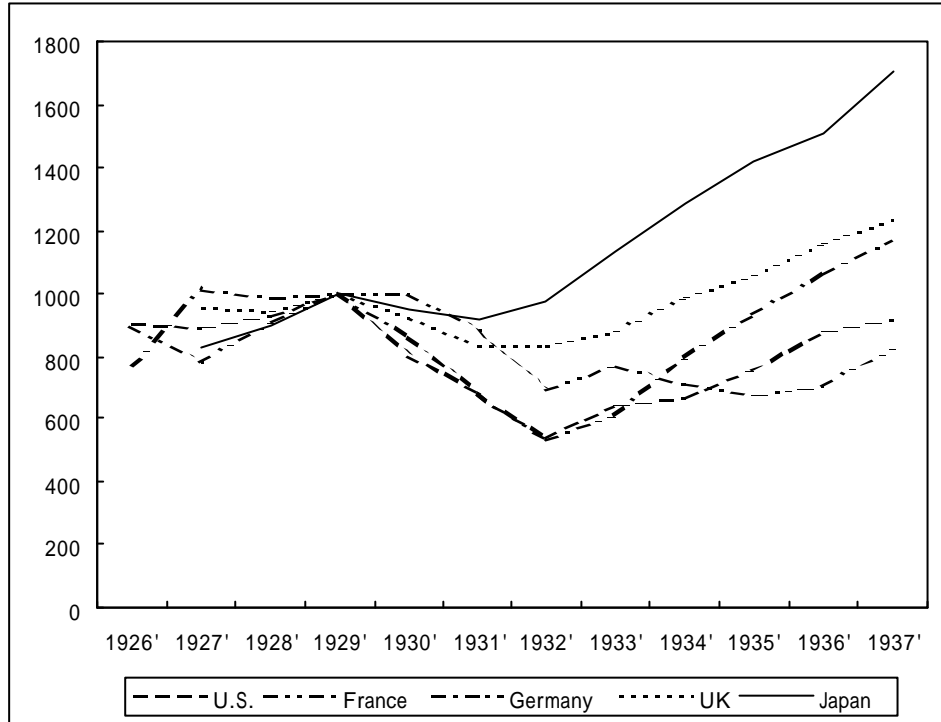
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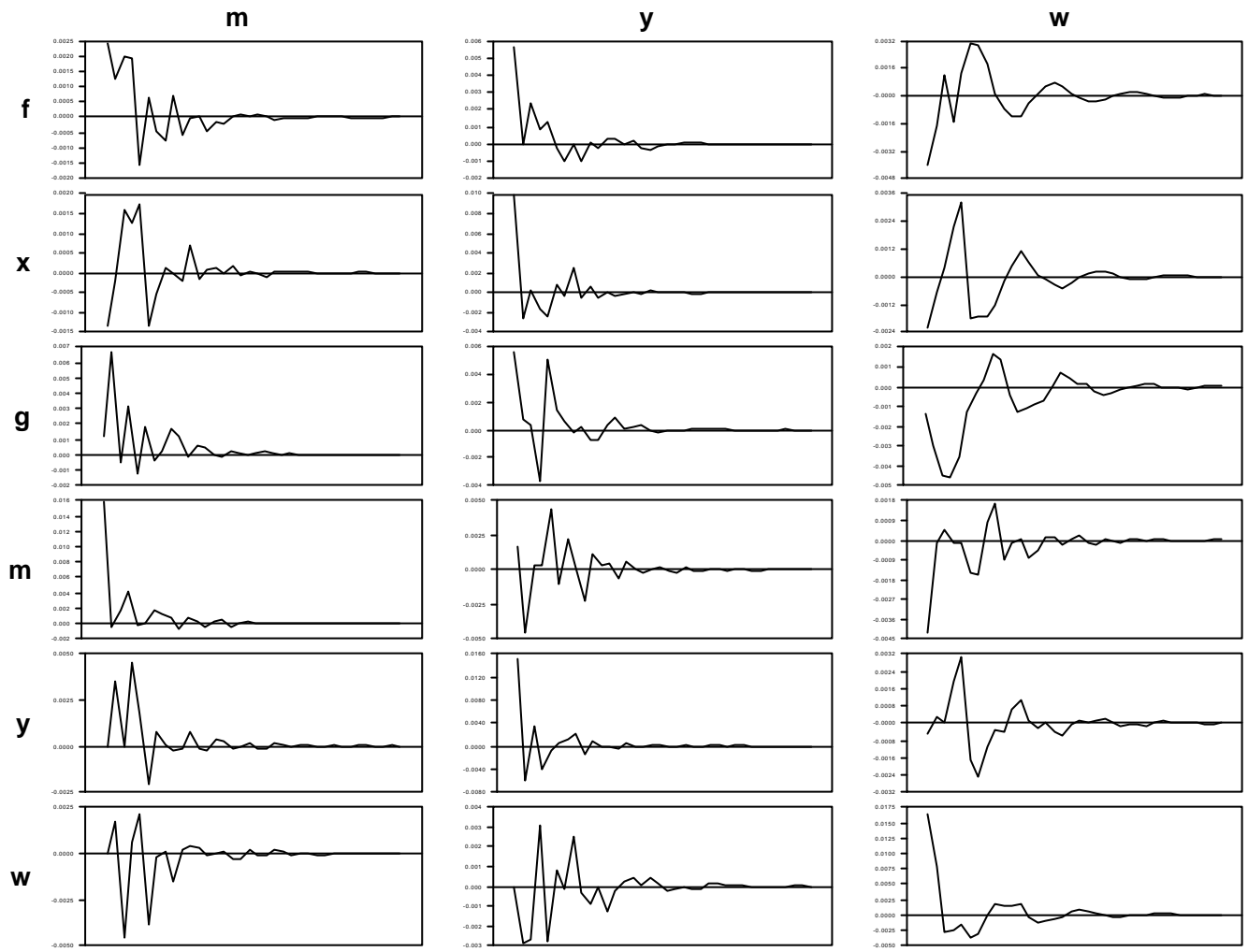
Figure 1 Industrial Production of Major Countries

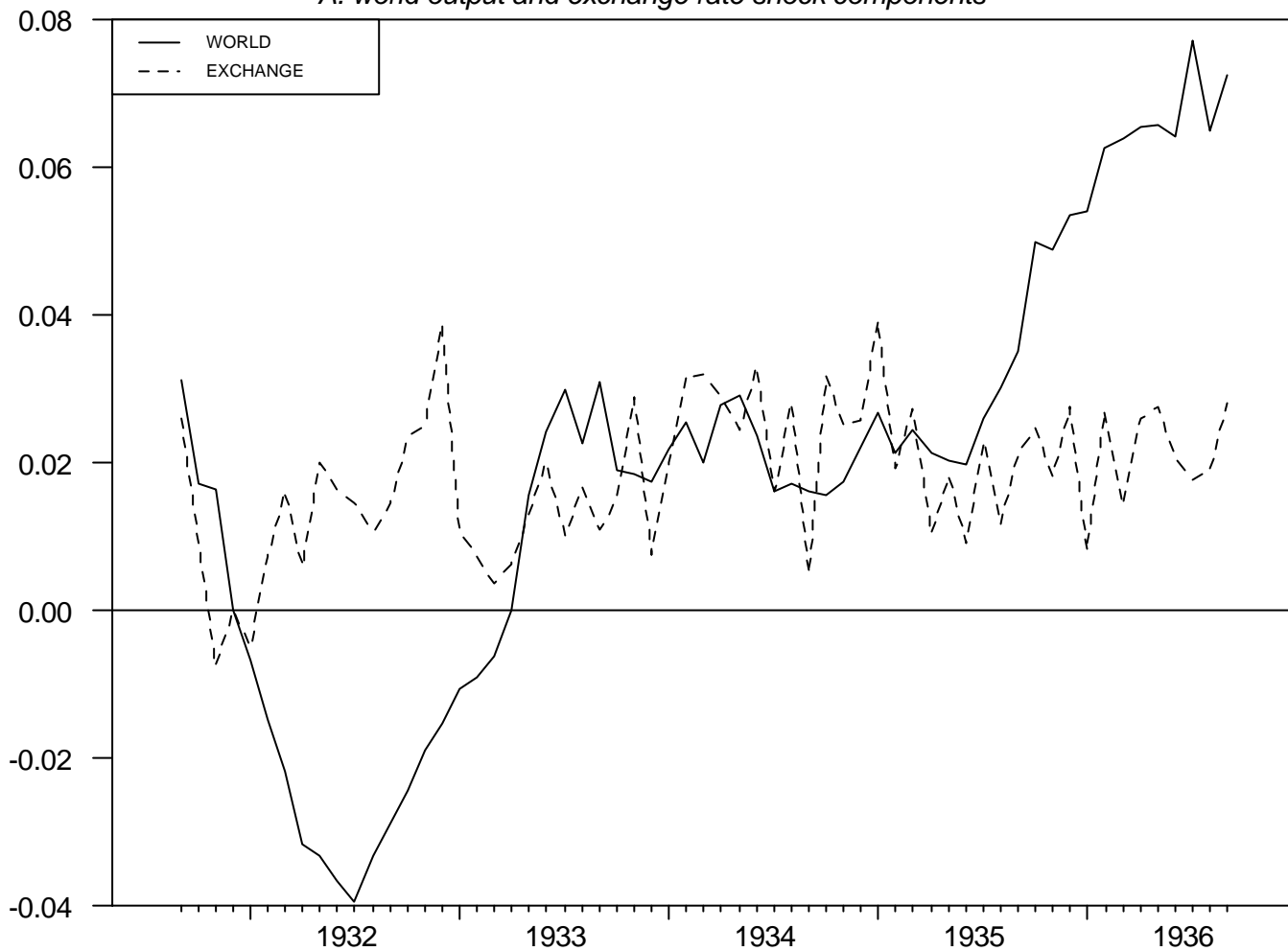Sources: League of Nations, *International Statistical Yearbook.*
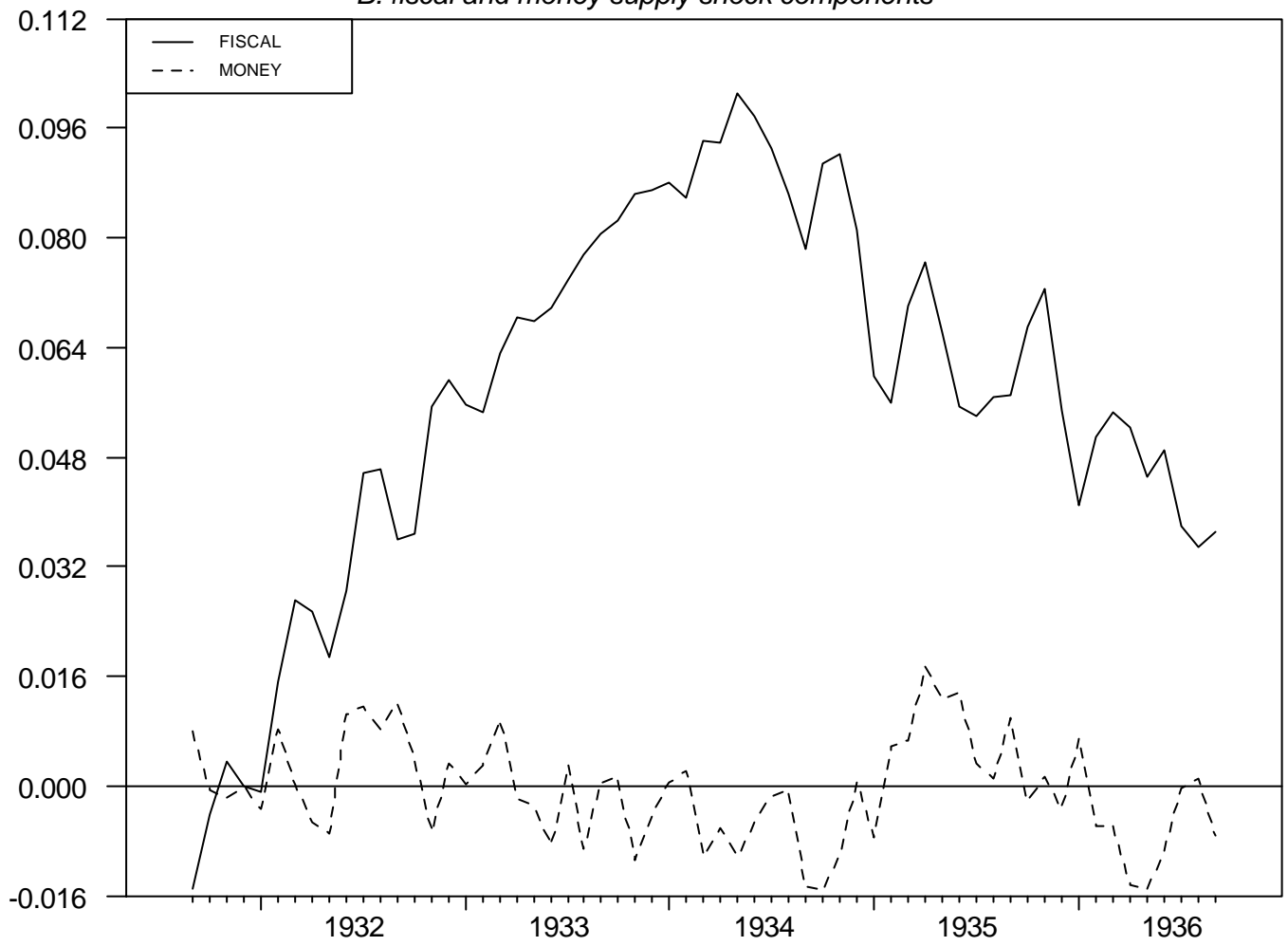
Figure 2 Impulse Response Functions

Figure 3 Decomposition of Output

A. world output and exchange rate shock components

Figure 3 Decomposition of Output

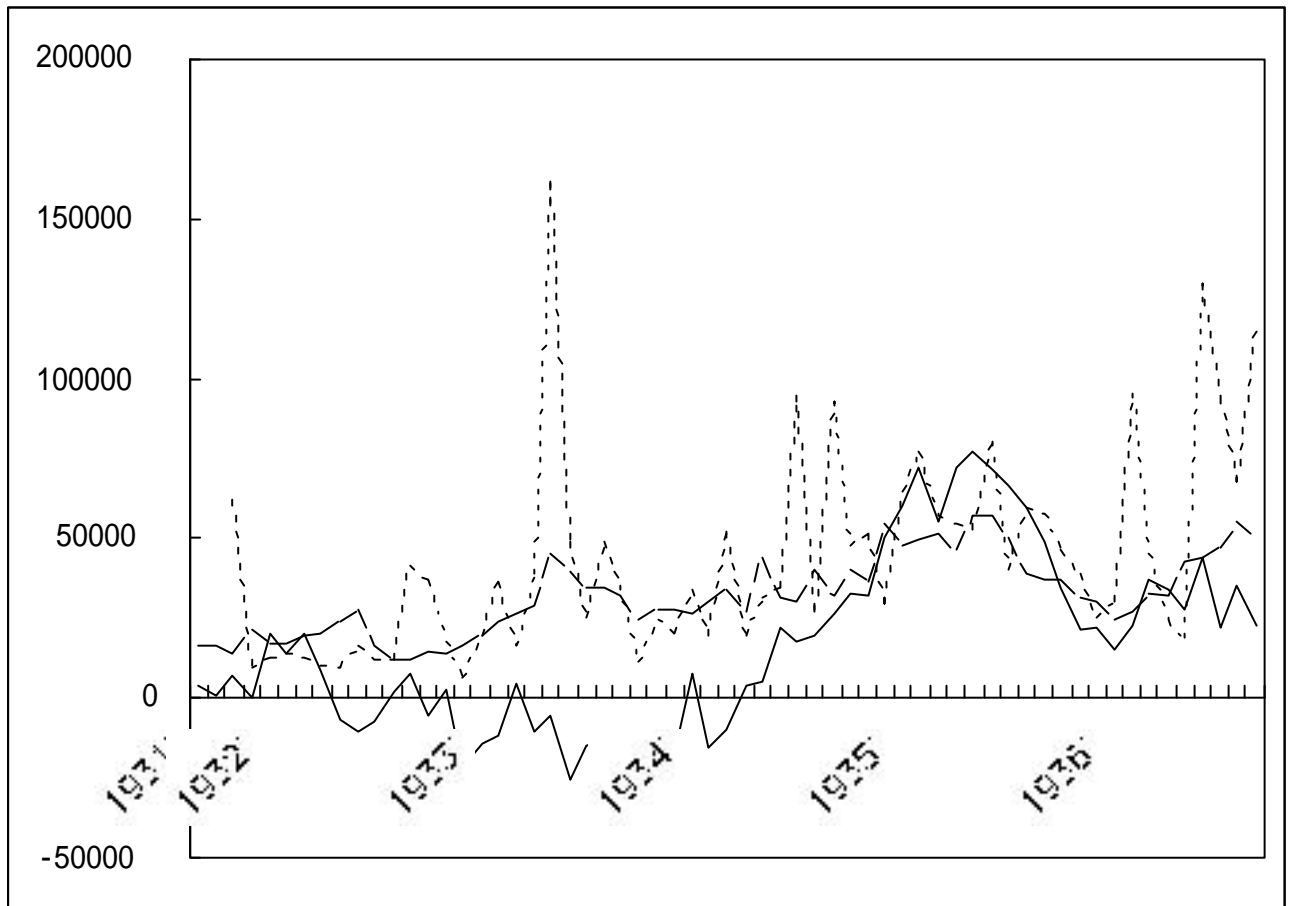*B. fiscal and money supply shock components*

Figure 3 Decomposition of Output

C. wage and home demand shock components

Figure 4 Domestic Demand Component, Iron imports Volume, and Volume of Planned

Investment

Sources: Fujino and Igarashi, *Keiki Shisu.*

Notes: Volume of planned investment (dotted line) was obtained by deflating the value of planned investment with wholesale price index and then lagging by two months. Demand component and iron import volume are shown by solid and broken lines, respectively.