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Japanese Monetary Policy During 1970-1990: Rules or Discretion ?

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1, Introduction

Both the Japanese economy and the Bank of Japan's monetary policy have exhibited large swings over the last two decades. This paper summarizes some of the key features of the experience and attempts from it to draw lessons for the conduct of monetary policy, especially for the rules vs discretion debate.

The last two decades may be divided into three periods, each of which includes interesting episodes concerning the relationship between monetary policy and the macroeconomic performance of the economy. The first half of the 1970s--1971 to 1975--contains a clear example of excessively loose montary policy generating inflation. A more interesting question, however, is why the BOJ adopted such a policy stance and what lessons can we draw from it. The inflation generated by the loose monetary policy was intensified by the first round increases in oil prices and led to severe monetary tightening in 1973 and 1974.

The period from the mid 1970s to the mid 1980s is marked by extreme stability of output and prices by international standards. This was so despite the second round increases in oil prices. In addition, the variance of the growth rate of the money supply declined sharply relative to the 1960s and the early 1970s. The association of monetary and macroeconomic stability generates a question of the existence of any causal relationship between the two.

The Japanese economy continued its superb performance in terms of output and inflation stability into the late 1980s and early 1990s. This period, however, was one of extreme

instability of money supply growth and asset prices. The contrast--monetary instability and price & output stability--invites a macroeconomic analysis concerning the relationship between the two.

In the next three sections we study the experience of each period and summarize the findings in section 5.

2, The 1971-74 experience

Major macroeconomic features of this period is well known. Therefore, only a brief outline is provided below. (See, for example, Komiya [1990] chapter 1.)

The period starts with a mild recession generated by the tight monetary policy in 1969 and the revaluation of the yen from 360 yen/dollar to 308 yen/dollar. In 1971 the growth rate of real GNP was only 4.3 % with private investment falling at 0.4%.

The BOJ quickly responded by decreasing its discount rate by six consecutive times from October 1970 to June 1972.[1] The growth rate of M2 exceeded 20% in the second half of 1971 as a result of monetary expansion, with nominal GNP increasing only at about 10%. The economy had already recovered from the previous recession in the first half of 1972. Real GNP growth was 8.4% and the inflation rate was accelerating at 6.2% (in

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[1]Theoretically, changes in the discount rate will have no effect on the economy because lendings at the BOJ's discount window are rationed. However, for the period of study at least part of interest rates have been regulated and tied to the discount rate. Also, other means of monetary policy, the control of interbank rates and window guidance, usually are exercised simultaneously with the discount rate. For these reasons, it is customary in Japan to identify the timing of shifts in monetary policy with a change in the discount rate.

terms of the GNP deflator.) In the first quarter of 1973 real GNP was growing at about 16%, CPI 8.4%, and WPI 11.1%. This was before the first oil shock. The BOJ finally changed its stance by incresing the discount rate by 0.75% in April 1973.

Clearly, some of the six consecutive decreases in the discount rate between 1970 to 1972 were unnecessary and the switch to monetary tightening too late. The BOJ is certainly to be blamed for this mistake. But a more important question is the cause of the mal-management of monetary policy.

The purpose of the monetary expansion in 1971 to 1972 was to counteract the deflationay pressure of the revaluation of the yen. Hence, at least part of the reason for the over expansion must have been the misjudgement of the effect of the revaluation of the yen on the economy. This is evidenced in Figure 1 where innovations in the estimate of business outlook from the BOJ's Short-term Economic Survey of Enterprises are plotted. In this survey some of the major firms are asked to report their judgement of the business outlook for the current quarter. They are also asked to estimate the business outlook in the next quarter. The figure shows the difference between the judgement of the outlook for the current quarter (favorable minus unfavourable in terms of percentages relative to total answers) and the expectation thereof in one quarter before. The numbers can be roughly interpreted as the degree of misforecast of the level of aggregate demand. They are important because the result of this survey has long been an important determinant of the stance of the BOJ's monetary policy.

The figure reveals that there were large underestimates of the state of the economy in 1972 and 1973. Moreover, these came immediately after large overestimates in 1971. To the extent the survey was a determinant of monetary policy during the period, we may conclude that the misjudgement of the state of the economy was a possible cause of the mistake in monetary policy. The misjudgement must have come from the overestimate of the deflationary impact of the rise in the value of the yen. Estimates were overly pessimistic perhaps because people did not realize that part of the reason for the revaluation of the yen was the increased competitiveness of the Japanese export industries.

Such an experience seems to be a typical example of a monetary authority attempting to stabilize output by discretionary monetary poicy, but resulting in destabilizing output and prices because the policy decision was based on misjudgement of the state of the economy--an episode favoring a rules based monetary policy.

A piece of anecdotal evidence supporting such a view is provided in Nakagawa [1981] , who reviews the process of policy formation during this period[2]. He points out that in retrospect the BOJ's perception of the state of the economy was too pessimistic and that this was a result of an overestimate of the deflationary impact of the revaluation of the yen.

In addition, he points out that the move to monetary tightening was too late partly because of pressure from the

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[2]See pages 64-70.

then prime minister Tanaka. Tanaka led the extremely expansionary monetary and fiscal policies in the early 1970s and he was against raising the discount rate even in early 1973. This period then seems to have also been a good example of a policymaker exploiting the short-run tradeoff of inflation and output to achieve a too high level of output from the viewpoint of the dynamic consistency argument.

3, The 1976-1985 Period

(a) Output and Price Stability

The stability of output and prices during this period (and, that of the late 1980s) is remarkable relative to that of other industrialized countries. This point is well documented in Taylor [1989]. Figure 2 extends a diagram from Taylor to include the late 1980s. Apparently, Japanese output is much more stable than U.S. output. The inflation rates in the two countries are shown in Figure 3. Since 1972 the rate of inflation has been consistently lower in Japan than in the U.S. The same point can be made more technically or in comparison to Europe, though not reported here.

Such good macroeconomic performance of Japan has been a subject of several studies. Among them, Suzuki [1985] emphasizes the stability of money supply as an important cause of macroeconomic stability. Taylor [1989] (and to some extent Suzuki as well) regards the flexibility of Japanese wages as a crucial element. Let us therefore turn to the examination of these assertions.

(b) Monetary Stability and Macroeconomic Performance

The relationship between money supply and macroeconomic performance is a long topic in macroeoconomics. Suzuki's assertion can be succinctly summarized in Figure 4 in which the growth rates of M2, real GNP and nominal GNP are presented for the last 40 years. In the first half of the sample all three varaibles exhibit higher variability than in the second half. Suzuki interprets this as indicating causality from the stability of the money supply to that of output and prices.

Unfortunately, Granger type causality tests give very ambiguous results concerning money-output causality. This ambiguity is especially serious for Japan as shown in Ueda [1991]. Test results depend critically on the choice of the method of data prefiltering.

Below I restrict myself to pointing out some informal warnings against interpreting Figure 4 as indicating causality from money to output.

First, broader monetary aggregates like M2 are not policy instruments of the BOJ. The BOJ controlls interbank interest rates and occasionally uses window guidance to hit what they regard as ultimate targets. Table 1 shows the stability of daily interest rates for U.S. and Japan. The call rate has clearly been much more stable than the federal funds rate even in periods when the Fed was targetting the federal funds rate. Thus, there is more attention to interest rate stability in Japan;this implies that monetary aggregates must have been responding to fluctuations in the demand for money at least to a larger extent than in the U.S. Consequently, there is a sense in which one Figure 4 is showing causality from GNP

stability to money supply stability.

In fact, despite frequent assertions that the BOJ has been using M2(+CD) as an intermediate target of monetary policy[3], I have never heard of any systematic attempts by the BOJ to change interbank rates in order to achieve a predetermined path of M2[4].

Table 2 shows "forecasts" of M2+CD growth published by the BOJ;at the beginning of each quarter the BOJ announces its forecast of the average level of M2+CD in the current quarter relative to a year before. Some have interpreted this series as a target set by the BOJ.

The comparison of the "forecasts" with actuals and with the behavior of the discount rate makes clear that the "forecasts" are in no way an indicator or a target of monetary policy. Thus, there are four major turning points of the stance of monetary policy in the period covered in the table as judged by a change in the discount rate; April 1979 (tightening), August 1980 (loosening), January 1986 (further loosening), May 1989 (tightening). To the extent M2+CD is a target of monetary policy and the "forecasts" are a good indicator of the target levels for M2+CD growth, one would expect that the "forecasted" growth rate to decline relative to the actual in the previous quarter with the start of tightening and increase with expansion. This is true only in

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[3]See,for example,Friedman[1985], who states that the BOJ has aimed for "highly stable and highly dependable" money growth, putting relatively little weight on the state of the economy in its policy decision. West [1991] presents a similar view.

[4]See Bryant [1990].

the 1989 case. In the other three cases the policy change exerted no effects on the "forecasts". Even for the 1989 case, the money supply growth and the forecasts went up in 1990--one year after the start of tightening.

This result shows that the BOJ does not have a clear target level for M2+CD. Certainly, the growth rate of M2+CD contains many pieces of important information for the BOJ, but its behavior reflects the state of the economy including past changes in monetary policy rather than the current stance of monetary policy.[5]

A second problem with relating the money supply stability to output and price stability is that the Japanese money supply was not necessarily more stable than that in other countries during this period. Table 3 compares the variance of M2 between Japan and the U.S. For the period in question, the variance of the money supply is higher in Japan than in the U.S. (This point has already been made in Fischer [1987].)

(c) Wage Flexibility and Macroeconomic Performance

Taylor [1989] and others (for example, Komiya & Yasui [1984]) consider wage flexibility in Japan as one of the key reasons for its good macroeconomic performance. The argument can be placed in the simple aggregate demand and supply framework. A steeper aggregate supply curve as would occur under higher wage flexibility implies smaller fluctuations of output in response to aggregate demand shocks and to price

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[5]For a more careful discussion of the role of M2+CD in the BOJ's monetary policy, see Shigehara [1991].

shocks.

Taylor presents evidence of higher price flexibility in Japan than in the U.S. in the sense of larger response of prices to output shocks using a bivariate time series analysis of output and prices. However, the shape of response functions from such an exercise contains a number of macroeconomic mechanisms such as the response function of the monetary authority on top of the direct effects of prices on output. Thus, it is not clear whether the large response of prices to output found by Taylor is a result of a steep aggregate supply curve. Moreover, a simple regression analysis of prices on ouput gap presented in Table 4 shows higher price flexibility in the U.S. than in Japan.

The effect of output on wages is larger in Japan than in other countries as reported by a number of authors. (For example, Taylor [1989].) However, even this is not clear for the late 1980s as discussed in Section 4.

The behavior of wages exerted a critical influence on the macroeconomic performance of the Japanese economy in a slightly different way.

The macroeconomic effects of the two oil shocks on the Japanese economy were remarkably different. Table 5 shows price-wage behavior around the two oil shocks. The major difference between the two cases is the lower inflation rates in the second period. As noted by a number of authors, the behavior of wages was a key element behind this price stability in the second period. The table shows that the growth rate of real wages was higher than that of productivity

in 1974 and 75, while real wages did not catch up with productivity growth in 1978-1980. Yoshitomi [1981] argues that labor unions abstained from asking large nominal wage increases for fear of worsening labor market conditions.

Thus, the stability of wages was an important cause of price stability in the late 1970s and early 1980s. The stability of wages, however, is not the same as wage flexibility.

(d) A Closer Look at the Monetary Policy During 1976-1985.

Let us now present a more descriptive survey of the stance of the monetary authority and the behavior of aggregate demand between 1976 and 1985 in an attempt to clarify the role of monetary policy for stabilizing output and prices during the period.

Years between 1976 and 1985 can be divided into three subperiods in terms of the stance of monetary policy. The tight monetary policy adopted in 1973 began to be relaxed in early 1975;the discount rate was cut by eight consecutive times from 9.00% to 3.50% in March 1978. The intention of the BOJ was to stimulate domestic demand in the face of a sharp reduction in the growth rate of GNP and worsening labor market conditions.

The second subperiod corresponds to monetary tightening in response to the secound round increases in oil prices. The discount rate was increased by five times between March 1979 and March 1980.

The third subperiod starts with a decrease in the discount rate in August 1980. During this period monetary

policy was gradually relaxed as inflationay pressures from the second oil shock abated.

To summarize, the BOJ had adopted a fairly discretionary monetary policy during the period. At the same time, real GNP was remarkably stable by international standards. Let us now examine more carefully the reason for the real GNP stability.

Table 6 presents growth rates of real GNP and domestic demand during the period. It also presents information on the contribution of government expenditures and exports to the growth of GNP. For example, in 1976 the growth of government expenditures increased real GNP by 0.7% relative to 1975.

A most noteworthy feature of the table is the low growth rates of domestic demand. Thus, except for 1978 and 1979 the growth rate of domestic demand was lower than that of GNP. Moreover, the growth rate of domestic demand is much more unstable than that of GNP.

It is also interesting to observe that for 1976-78, about one third of the increase in domestic demand is explained by government expenditures[6]. For 1980-85, about 40% of the increase in GNP came from export growth. On the other hand, the contribution of domestic fixed investment (not shown in the table) exceeded those of government expenditures and exports only in 1979 and 1985. Part of the surge in investment in these years must have been a result of monetary expansion of the late 1970s and early 1980s, suggesting the role played by discretionary monetary policy. The table shows, however,

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[6]Moreover, in 1975 the contribution of government expenditures was 1.2% with domestic demand and real GNP increasing at 0.7% and 2.7%,respectively.

that fiscal policy and exports played a much more important role.

The following conclusion seems inescapable from the reading of the table. What created a stable path of GNP was expansionary fiscal policy in the late 1970s and then strong performance of exports in the early 1980s. Without these the Japanese macroeconomic performance would have been much worse.[7] In this sense discretionary monetary policy or domestic price-wage flexibility does not seem to have been the most important factor behind output stability.

What are the implications for the rules vs discretion debate? First, it is incorrect to argue that the 1975-85 period is a good example of a stable (rules based) monetary policy resulting in good macroeconomic performance. The BOJ exercised a substantial amount of discretion. The stability of the growth rate of the money supply seems to be a result of output stability.

On the other hand, it was not the discretionary monetary policy that stabilized output. To an important degree output stability was a result of countercyclical fiscal policy in the late 1970s and exports growth in the early 1980s in the face of stagnant investment.

The price stability after the second oil shock came mainly from wage stability with the latter not necessarily a

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[7]One could argue, however, that the BOJ might have adopted a more expansionary monetary policy in the early 1980s in the absence of U.S. fiscal expansion, thus creating a stable GNP path even without sharp export growth.During the early 1980s, especially in 1982, weak yen had prevented the BOJ from decreasing interest rates by large amounts.

result of monetary stability, though the effects of monetary tightening were nonnegligible.[8]

Anything nice about the monetary policy during this period? Perhaps the decision to decrease interest rates in the late 1970s in the midst of the most severe recession in the post war period and the decision to tighten in the face of the second oil shock were correct, even though the policy changes were not the major reason for price-output stability. That is, discretion was exercised without serious mistakes.

4, Monetary Instability in the 1986-91 Period

(a) Monetary Policy in the 1986-91 Period

Years since 1986 are characterized by very volatile changes in monetary policy. As in previous years, the stance of the BOJ's monetary policy can best be judged by movements in the discount rate. A strong monetary expansion started in January 1986 in the face of the deflationary impact of the sharp appreciation of the yen. The discount rate was cut by five times from 5.0% to a postwar low of 2.5% in February 1987.

Figure 5 shows the behavior of Marshall's k and its trend since the early 1970s. The gap between the actual value of Marshall's k and its trend in the late 1980s is unmatched with the exception of the early 1970s--the period with more than 20% inflation.

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[8]Of course, a more technical analysis that determines the quantitative importance of monetary policy in stabilizing wages is desirable.

Monetary contraction started in May 1989 without a major rise in general price levels. The CPI inflation rate was a mere 2.3% in calendar 1989. The strong expansion of the 1986-87 period was completely reversed when the discount rate was raised for five consecutive times in August 1990 to 6.0%. The monetary contraction finally ended in June 1991 with a reduction in the discount rate. The severity of monetary contraction is shown in Figure 5. The actual level has quickly come down to the trend level. As of June 1991 M2+CD was growing at only 3.4% with nominal GNP growing at about 8%.

Clearly, these medium term swings in the stance of the BOJ's monetary policy were very discretionary in nature.

(b) Output and Price Stability

A surprising feature of the period is the stability of output and prices despite the instability of monetary policy as explained above. The stability has already been documented in Figures 2 and 3. Before concluding that the discretionary monetary policy of the period was very successful, we must examine whether monetary policy was the major cause of the price-output stability and whether it did not create some other problems.

The BOJ [1990] had admitted that very volatile movements of asset prices, mainly land and stock prices, during the period as a most serious result of monetary policy during the period. Theoretically, it is not clear whether volatile asset prices are a bad thing unless they lead to instability of the real sector of the economy. Here, we just point out two

problems with the asset price volatility. First, it has generated very large, unexpected redistribution of wealth within the economy. Second, it may give rise in the near future to a serious instability of the financial system, as increasing amounts of lendings by financial institutions which financed speculative purchases of land and stocks are becoming bad debts in 1990 and 1991.

It is not very difficult to explain asset price volatility in the face of monetary instability[9]. The explanation of output and price stability, however, is harder. We now turn to a brief review of the analysis on this point.

It would be difficult to deny the role played by the discretionary monetary policy of the period for stabilizing output and prices. For example, the monetary expansion in 1986 to offset exports contraction was perhaps correct. The move to tighter monetary policy in early 1989, if came a little later than desirable, has prevented general prices from rising. We, however, emphasize some other aspects of the Japanese economy that helped to stabilize output and prices during the period.

Supply Shocks

Starting with easier ones to identify, we may point out the role of favorable supply shocks, oil price decreases and the appreciation of the yen, for stabilizing goods prices.

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[9]But see Ueda[1990b] for the difficulty of explaining Japanese stock prices during the period by interest rate movements alone.

A potentially more important factor seems to have been the moderation of wage demands. Table 7 shows the results of an estimation of a simple wage equation in which the rate of increase in wages is explained by a measure of labor market tightness (effective job offer/applicant ratio) and the expected rate of inflation. The estimation is for the period of 1967-1986. The table also shows out-of-sample simulation results. It is at once apparent that the estimated equation overpredicts wage inflation for 1987-1990. That is, there were unexplained moderation of wages in the late 1980s. This result is not sensitive to changes in the specification to include more variables.

The result shows that 1986-90 was again a period in which the behavior of wages was a key element in determining macro performance of the economy.

The Instability of Money Demand

Another key equation that does not perform well during the period is money demand equation. Ueda [1990a] shows that a conventional money demand equation fails to track the surge in the demand for money in the late 1980s. The nominal interest rate declined and GNP grew at fairly high rates, but these are not sufficient to explain money demand growth.

One possible answer is wealth effects on money demand. Toward the end of 1989 stock and land prices skyrocketted. The resulting surge in the stock of wealth, and the decline in the share of money in wealth had forced people to cash in some of the capital gains and increase money holdings. Table 8 shows

the share of money in gross wealth for households and non-financial corporations. Despite the sharp rise in Marshall's k as shown in Fihure 5, money-wealth ratio had declined, especially for households, in the late 1980s.

Another cause of the increase in the damand for money is the relaxation of interest rate control on large time deposits. Starting in late 1985, interest rates on large time deposits have been successively liberalized. Other things equal this increases the demand for money. Ueda [1990a]'s calculation shows that some 2% of the outstanding amount of M2+CD is explained by the decontrol of deposit interest rates.

Whatever the weights of wealth and interest rate effects in the explanation of the increase in money demand, a clear conclusion is that there were large shifts in the demand for money.

To summarize, the expansionary monetary policy of the late 1980s did not cause inflation because of these favorable shocks.

(c) Considerations Behind Monetary Expansion

The BOJ's policy committee formally makes decisions on changes in the discount rate. Every time a new discount rate is announced, the chairman of the committee explains reasons for the change in the discount rate. Table 9 lists items that were emphasized by the chairman during the monetary expansion of the late 1980s.

For all the five cuts in the discount rate between 1986-87, the BOJ was worried about the deflationary impact of the appreciation of the yen. Thus, the emphasis on effective

demand. In addition, for the first three, the balance of payments were regarded as important. More specifically, this meant that monetary expansion was considered as a means to decrease the large current account surpluses in the late 1980s, even though the economics behind it is unclear.

The table also shows that the consideration of the bahavior of the exchange rate was important for all but the first of the five cuts in the discount rate. Put simply, the BOJ decreased interest rates in order to stop or slow the pace of the appreciation of the yen.

What seems to have been an excessively expansionary monetary policy was then an attempt to offset the deflationary impact of the yen and to stop the appreciation of the yen itself. Why was the expansion excessive in the sense of creating too volatile movements in stock prices?

Let us go back to Figure 1 where errors in the forecast of the state of the economy from the short-term survey of major corporations are shown. Large errors exist for 1987-89. That is, despite the sharp appreciation of the yen, the Japanese economy recovered from the mild recession in 1986 fairly quickly; respondents to the survey underestimated the strength and the speed of the recovery. Given the apparent importance of the survey in the BOJ's policy decision process, the forecast errors may have affected the stance of policy making.

Interestingly, the figure shows that large underestimates of the state of the economy occurred three times in the last two decades with all three taking place in years of a sharp

appreciation of the yen.

Political pressures existed that have exerted important impacts on policy making during the period. First, the Ministry of Finance was against fiscal expansion and putting pressure on the monetary authority to expand. This was in a sense a legacy of the strong fiscal expansion of the late 1970s. Second, international policy coordination and the decision by the Fed to lower interest rates were reportedly pressuring the BOJ to lower interest rates as well[10]. Documenting these is not easy. But, for example, Funabashi [1988] states that

"..(There was a) pressure on the BOJ by the Fed and the Japan ministry of finance to lower interest rates. Specifically, responding to Washington's pressure on the BOJ to lower interest rates jointly with the Fed, the ministry of finance did not give to the BOJ the funds necessary to intervene in the foreign exchange market, thus letting yen appreciation to continue and pressuring the BOJ to lower rates...(transalation by the author)"

To summarize, this was again a period of discretionary monetary policy. Discretion was exercised to counteract the deflationary impact of the appreciation of the yen. Perhaps, the last one or two of the five cuts in the discount rate were

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[10]In addition, we may point out the impact of the "October crash" in stock markets worldwide on monetary policy. In fact, the quarterly economic outlook published by the research and statistics division of the BOJ was warning against the danger of inflation until the crash, but emphasized the need to carefully watch the behavior of stock prices in January 1988.

unnecessary. The mistake was again based on the overestimate of the effects of exchange rate changes. In addition, political pressures from the ministry of finance and foreign governments made it difficult to reverse the stance of the policy.

This period, then, is as good an example of a danger of discretionary monetary policy as is the early 1970s. However, the mistake did not lead to serious price instability because of fortunate supply shocks, wage moderation and shifts in money demand. On the other hand, shifts in money demand observed in the late 1980s are an important case against rules based monetary policy.

5, Concluding Remarks

The BOJ has been publishing statics on M2+CD and looking carefully at its behavior since the mid 1970s. But it has never tried to set target ranges for the growth rate of M2+CD or for other monetary aggregates and hit them within a short time period. Instead, interbank interest rates have been the short-run (day-to-day, or month to month) operating targets and these were occasionaly changed in order to hit final targets of monetary policy. Final targets included exchange rates and the balance of payments in addition to output and prices. Clearly, Japanese monetary policy has been operated in a discretionary manner.

The results of discretion has been mixed. The monetary policy of the early 1970s was a disaster in the sense of creating the most serious inflation in the post war period. Monetary policy was also too expansionary in the late 1980s, but it only led to asset price inflation without causing instability of the real sector of the economy. The discretionary monetary policy between the mid 1970s and mid 1980s was associated with output and price stability. But the stability was not necessarily a result of good monetary policy.

The two mistakes, one in the early 1970s and the other in the late 1980s, were mainly created by overestimates of the deflationary impact of the appreciation of the yen and political pressures that made it difficult for the BOJ to reverse the stance of monetary policy.

In this connection we should note that the strong fiscal

expansion helped to stabilize output in the late 1970s, but it forced fiscal contraction for most of the 1980s, becoming an important cause of the current account surplus in the mid 1980s. It also became a cause of monetary expansion in the late 1980s because of strong foreign pressure to increase domestic demand.

We should also note that the Japanese experience in the last two decades makes an obvious but important point that the effects of monetary policy on the economy depend critically on the behavior of wages. Thus, the inflation of the early 1970s was intensified by a strong growth in wages that outpaced CPI inflation. The second round increases in oil prices in the late 1970s and the strong monetary expansion in the late 1980s did not lead to serious inflation at least partly by moderate behavior of wages. An important point is that some of these movements in wages had been exogenous to monetary policy.

Finally, what can we say about the rules vs discretion debate? It is difficult to make a case for one against the other because the BOJ has not used a rules based policy. But we might say that the last two decades have seen various new shocks-- supply shocks, exchange rate fluctuations, financial liberalization and the resulting shifts in money demand-- that were unforeseen at the beginning of the early 1970s. This is certainly a case for discretion. At the same time, the experience suggests the importance of more political independence of the BOJ. It also suggests a specific, but important point of the need to understand more fully the impact of exchange rate changes on the Japanese economy.

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Table 1

The Volatility of Daily Interest Rates

	period	interbank rate	3-month rate	long-term rate
	77-91	.523	.221	.143
U.S.	77-79	.211	.180	.0581
	79-82	.841	.402	.239
	82-91	.437	.111	.112
	78-91	.139	.0725	.121
Japan	78-79	.125	.047	
	79-88	.147	.0801	.136
	88-91	.102	.0254	.0877

Notes: 1, Entries are the variance of deviations of each rate from its centered moving average with 10 observations on each side.
2, Interest rates are:the federal funds rate, TB rate, and 7-year bonds rate for the U.S. and the call rate, CD rate, and 10-year bonds rate.
3, Precise dates are:77/1/1-79/10/7,79/10/8-82/10/22, 82/10/24-91/2/11 for the U.S.;78/1/1-79/4/30,79/5/1-88/10/31,88/11/1-91/2/14 for Japan.

4, adopted from Ueda[1991].

Table 2 Forecasted and Actual Growth Rates of M2+CD

	forecast	actual
1979	12.5	12.3
	12.5	12.1
	12	11.7
	11	11.2
1980	10	10.6
	10.5	10.1
	9.8	8.4
	8	7.8
1981	7	7.6
	7.5	7.9
	9.5	9.6
	10.5	10.6
1982	11	10.6
	10	9.2
	9	9
	8	8.1
1983	7.5	7.6
	7.5	7.6
	7	7.1
	7	7.2
1984	7.5	7.9
	8	7.6
	8	7.8
	8	7.9
1985	8	7.9
	8	8.3
	8	8.3
	8.5	9

	forecast	actual
1986	9	9
	8.5	8.5
	8.5	8.8
	8.5	8.3
1987	8	8.8
	9	10
	10	10.8
	11.5	11.8
1988	12	12.1
	12	11.3
	10.5	10.9
	10.5	10.6
1989	10.5	10.3
	10.5	9.7
	9.5	9.7
	9.5	10
1990	9.5	11.7
	11.5	13
	12.5	12
	11	10
1991	8	6
	4	3.7
	3	

Footnotes: 1, Forecasts are phrased like around 11%, between 11 and 12%, slightly below 11%. In the table these have been translated into 11%,11.5%, and 10.8%, respectively.

Table 3 Variability of Money Supply

	Japan	U.S.
1972:1-1991:1	4.95	2.82
	(.41)	(.32)
1976:1-1985:12	2.40	2.02
	(.24)	(.20)
1976:1-1991:5	2.25	2.86
	(.22)	(.34)

Footnotes:1, The numbers are sample variances of the growth rates of M2.

2, The numbers in parentheses are the coefficients of variation.

Table 4 Price Response to Output Fluctuations

	GNP gap	IMP	INF(-1)	x
Japan	.198	.010	.708	-.124
	(.818)	(1.29)	(3.30)	
U.S.	.249	.028	.826	-.558
	(3.21)	(4.36)	(9.56)	

Footnotes:1, The sample period of estimation is 1967-89 using annual data. Inflation is measured by the rate of change in the GNP deflator.

2, The equations included a constant term.

3, IMP is the rate of increase in import prices.

4, x is the coefficient of the first order serial correlation.

Table 5 Prices and Productivity in the 1970s

	a	b	c	b-a-c
1973	16.1	21.9	17.6	-11.8
74	21.8	29.1	-0.6	7.9
75	10.4	12.4	-3.9	5.9
1978	3.4	5.9	8.6	-6.1
79	4.8	6.5	10.9	-9.2
80	7.8	6.6	6.3	-7.5

a:cpi inflation rate
b:growth rate of wages
c:productivity growth in manufacturing

Table 6 GNP Growth and the Contribution of Components of Demand

	y	d	g	x	
1976	4.2	3.5	0.7	0.7	
77	4.8	4	1.3	0.7	
78	5	5.8	1.9	-0.9	
79	5.6	6.8	0.5	-1.2	
80	3.5	0.7	-0.4	2.8	
81	3.4	2.1	0.8	1.3	
82	3.4	2.7	0	0.7	
83	2.8	1.7	0.1	1.1	
84	4.3	3.5	0.2	0.8	
85	5.2	4	-0.3	1.2	

y: growth rate of real GNP
d:growth rate of real domestic demand
g:growth of GNP due to government expenditures
x:growth of GNP due to exports

Table 7 Simulating for Wages in 1987-1990

estimated equation

$$dw/w = -.0354 + 0.412\ P^* + 0.128\ EJOR$$
$$(-2.80) \quad (7.55) \quad (9.35)$$

P*:expected cpi inflation from a univariate time series analysis of P,

EJOR: effective job offer/applicant ratio

simulation for 1987-90

	87	88	89	90
simulated	.054	.097	.136	.159
actual	.022	.043	.051	.048

Table 8 Share of Money in Wealth

	Households		Non-Financial Corp.	
	M/F	M/W	M/F	M/W
1981	66.9	23.2	27.8	11.2
1982	67.2	23.7	28.9	11.4
1983	65.6	24.1	28.1	11.5
1984	63.7	24.4	27.3	11.6
1985	62.7	24.4	27.6	12.0
1986	59.2	22.4	28.6	12.5
1987	56.4	19.9	28.8	12.5
1988	53.2	19.4	27.6	12.5
1989	50.4	18.7	25.7	11.7

Notes: 1, Calculated from disaggregated balance sheet accounts in Annual Report on National Accounts(EPA).

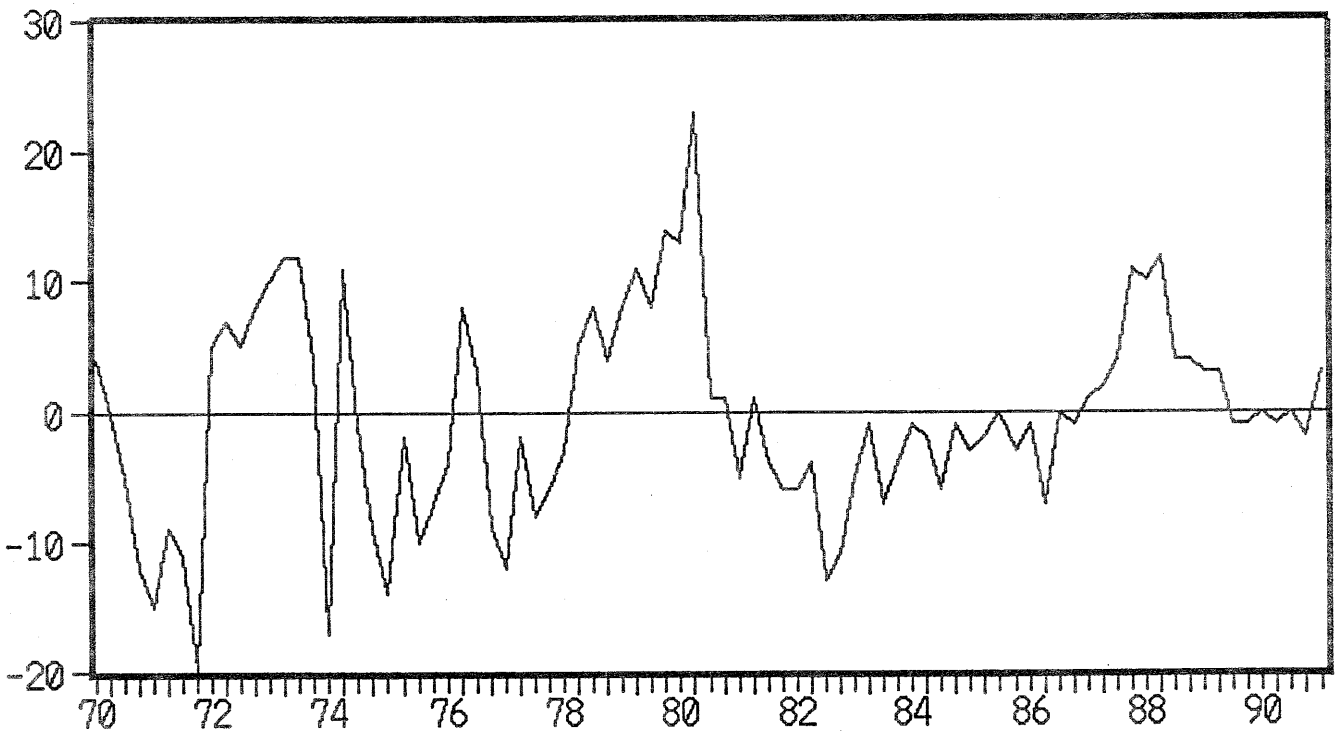
2, M is M3 by types of investors. F is gross financial assets. W is gross total assets.

Table 9 Policy Targets Emphasized at Times of Discount Rate Changes

	effective demand	prices	BOP	yen
1986.1	*		*	
.3	*		*	*
.4	*		*	*
.11	*			*
1987.2	*			*
1989.5	*	*		*

BOP: the balance of payments

Figure 1 Innovations in
Business Outlook



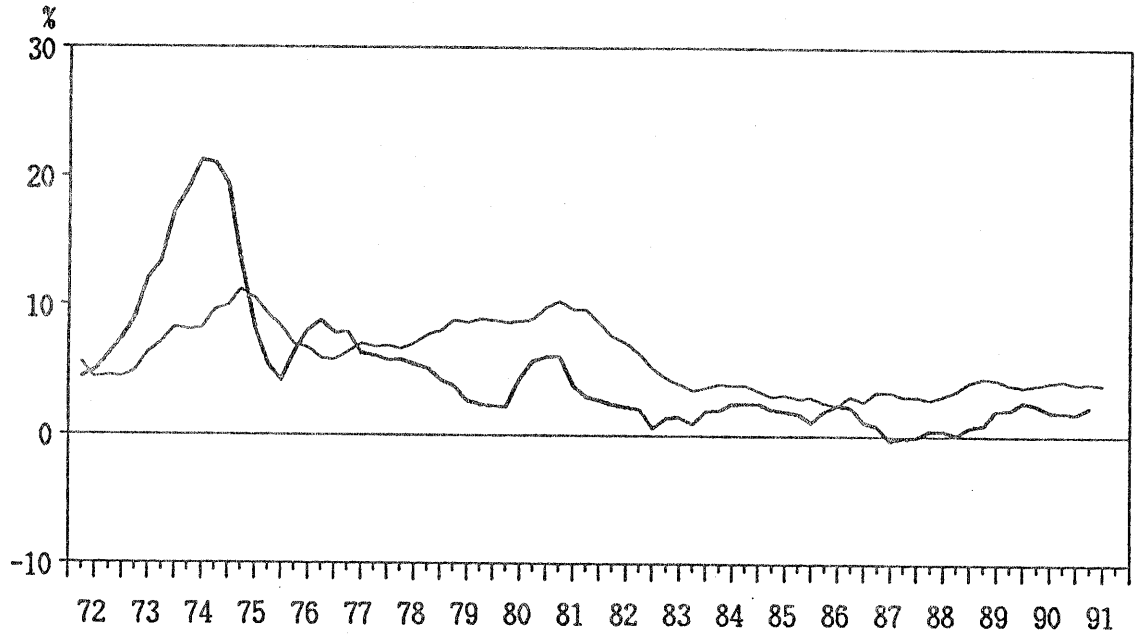


Fig.3 左軸 —— JDEFLRT —— USDEFLRT
Japan U.S.

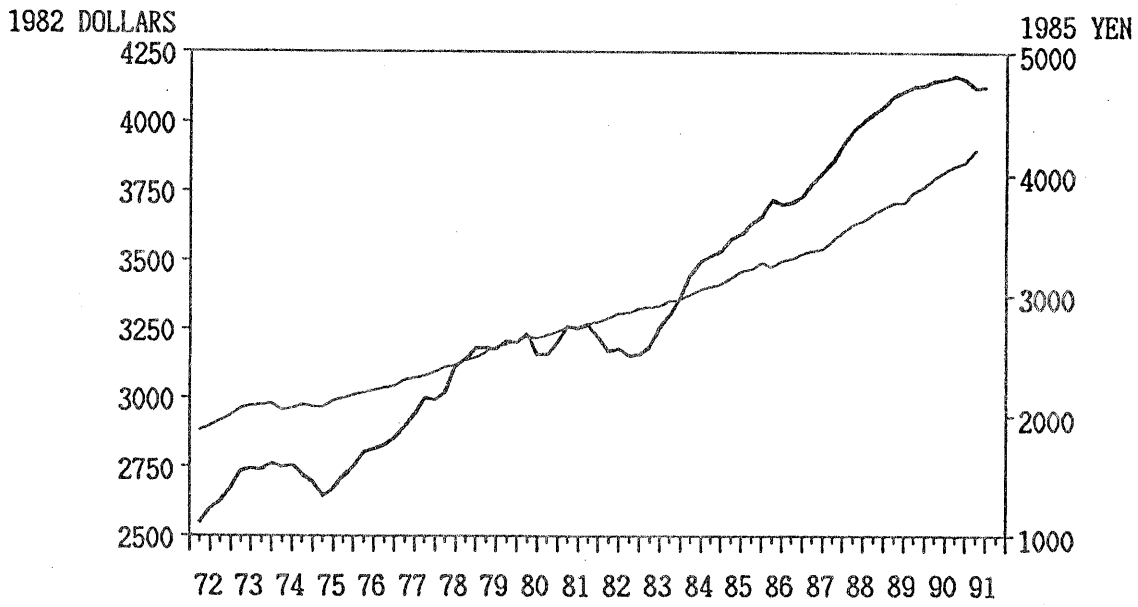
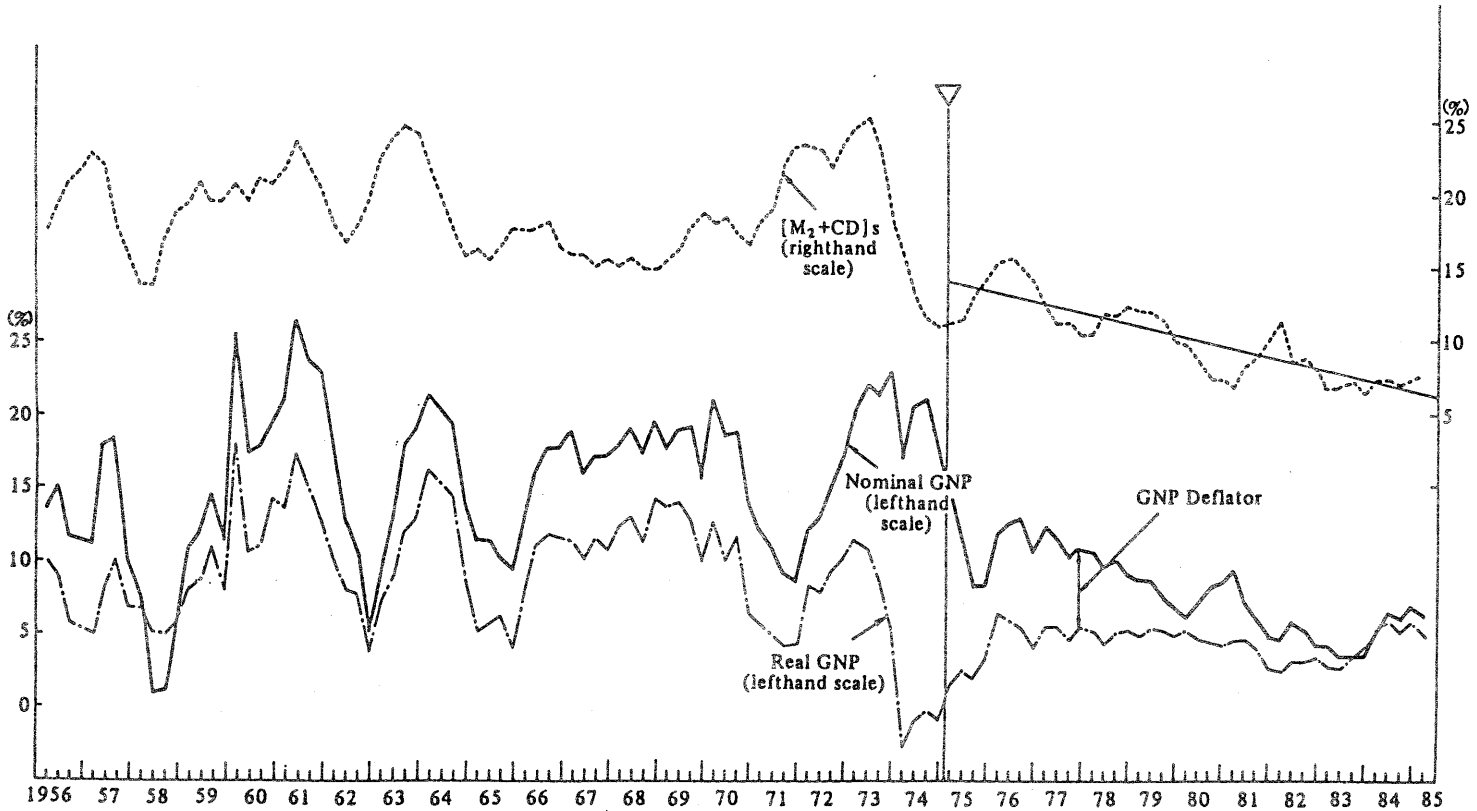


Fig 2. 左軸 —— USGNP
右軸 —— JGNP
J

Figure4 Money Stock and GNP (Nominal and Real) in Japan



Notes: 1. Growth rates of money stock and GNP are calculated not against the previous quarter, but against the same quarter in the previous year.

2. "M_2+CDs" data (before 1979/I, "M_2" data) are an average of end-of-month observations. For example, the first quarter is an average of the data at the end of January, February and March.

3. adopted from Suzuki (1985).

Figure 4 Marshall's k for M2+CD