Monetary Policy Rules and the Japanese Deflation

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1. Introduction

During recent years, Japanese monetary policy has been the topic of a great deal of discussion, commentary, and debate. Accordingly, this paper considers issues relating to recent and prospective policy measures of the Bank of Japan (BOJ).

It is hard to avoid the impression that BOJ policy has been overly restrictive for approximately a decade. This statement does not imply that Japan's poor economic performance during the 1990s was entirely or even primarily attributable to monetary policy, for structural flaws have also been very important.[1] It does suggest, however, that Japanese economic performance would have been better if BOJ policy had been less restrictive. In the pages that follow, I will attempt to support the foregoing claim, describe some alternative strategies that the BOJ could have used, and develop some (highly uncertain) estimates of how large the macroeconomic effects of a more stimulative policy would have been. The most promising policy would entail rapid monetary base growth effected largely through purchases of foreign exchange. Consequently, the paper considers two objections to such a strategy, one based on legal provisions of the Bank of Japan Law and the second on the concern that this would constitute a "beggar-thy-neighbor" policy that would reduce Japanese demand for imports. It is argued that neither of these objections is appropriate. In addition, the intimate connection between monetary and exchange-rate policies is emphasized.

2. Has Bank of Japan Policy been Tight?

That BOJ policy has been quite tight—low interest rates notwithstanding—is suggested by the most prominent and highly-regarded guideline for the conduct of monetary policy, i.e., the policy rule developed by John Taylor (1993). The Taylor rule can be expressed as

$$(1) \qquad R_t = 3 + \Delta p^a_t + 0.5(\Delta p^a_t - 2) + 0.5(y_t - \bar{y}_t),$$

where R is the call rate, Δp^a_t is the average inflation rate (GDP deflator) over the previous 4 quarters, y is real GDP and $\bar{y}$ is its potential value.[2] A chart contrasting Taylor-rule prescriptions for the overnight call rate[3] with actual values of this rate over the years 1972-1998 appeared in a recent paper of mine (McCallum, 2000b). That comparison is reproduced in the top half of Figure 1. There it is clear that the actual value exceeded the setting prescribed by Taylor's rule during almost every quarter beginning with 1993.1. Of course, the negative values called for by the rule are not feasible, but that does not alter the fact that Taylor's policy guideline has called for greater monetary ease throughout this period.

An alternative rule involving management of the monetary base has been promoted in several of my own papers. It can be written as

$$(2) \qquad \Delta b_t = 5 - \Delta v^a_t + 0.5(5 - \Delta x_{t-1}),$$

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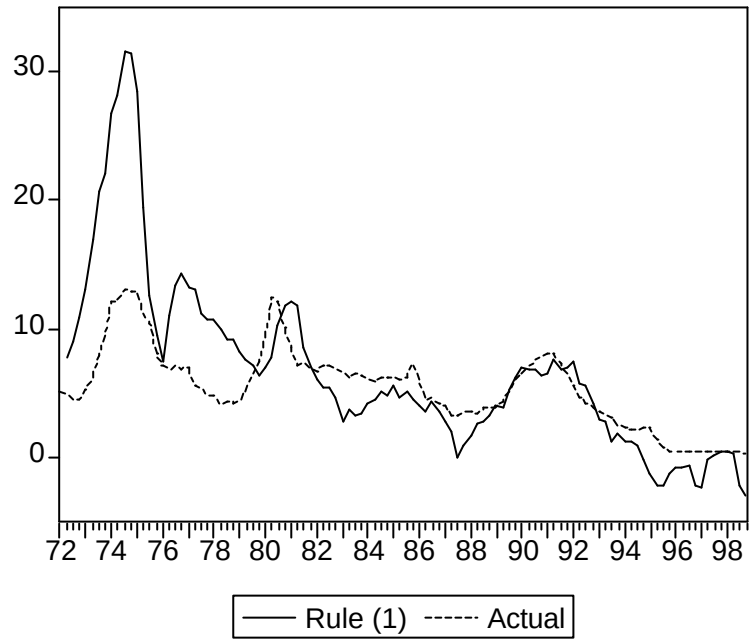
[1] Major banking-system difficulties are widely recognized and in addition it is likely that the growth rate of "potential" or "natural-rate" output has fallen from the level of the 1970s and 1980s. But the severity of the bank-solvency problem has been increased by the deflation of the past several years and it is almost certainly the case that actual output has fallen far below potential.

[2] Here the long-run average real rate of interest is taken to be 3 % p.a. and the inflation target rate to be 2%. Some versions of the rule use other values for the coefficients attached to the target variables.

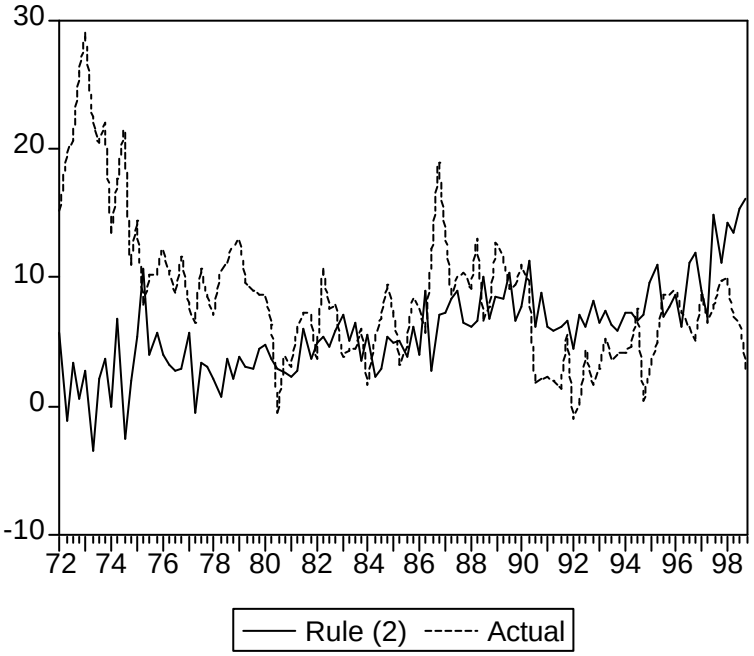
[3] The (uncollateralized) overnight call rate was the BOJ's operating target or instrument variable through the period of the 1990's. The procedure was changed in March 2001.

Figure 1

Japan Interest Rate, Actual and Rule (1)



Japan Base Growth, Actual and Rule (2)



where b and x are logs of the monetary base and nominal GDP, while Δv^a_t is the average rate of base velocity growth over the previous four years. Here 5 is the target value for nominal GDP growth, obtained from a 2 % inflation target and a 3% assumed long-run average growth rate for real GDP. This rule is much less prominent than Taylor's, primarily because actual central banks focus upon interest rates, not monetary base growth rates, in designing their policy actions. Especially in an environment with near-zero call rates, however, its prescriptions may be of interest. In any event, the actual and McCallum-rule settings for base growth rates are shown in the lower panel of Figure 1.[4] There the indication is that actual BOJ policy has been too tight virtually all of the time ever since the middle of 1990![5]

Increased base money growth rates have been recommended for over three years by Mr. Nobuyuki Nakahara, a member of the BOJ's Monetary Policy Board (MPB). But until the change that was announced at the MPB meeting of March 19, 2001, the BOJ's position was that additional base growth would have no stimulative effect since short-term nominal interest rates were close to zero. With such low rates, base money and short-term securities become almost perfect substitutes so the purchase of the latter by the BOJ would have no effect on asset markets and consequently none on the economy, according to the BOJ view. That position will be discussed in Section 5.

3. Policy Proposals

Several prominent monetary economists have taken up the crucial issue—i.e., how to conduct monetary policy with interest rates near zero—including Marvin Goodfriend (1997, 2000), Paul Krugman (1998, 2000), Allan Meltzer (1998, 1999, 2000), Athanasios Orphanides and Volker Wieland (2000), Lars Svensson (2000), and myself (McCallum 2000a, 2002). Goodfriend proposes a tax on base money that would keep it from being a perfect substitute for short-term securities and thereby open the way for an effective monetary policy even when a zero-lower-bound situation is in effect. This scheme's logic is evidently impeccable, but the probable unpopularity of the explicit tax would seem to present a formidable practical barrier (even though it would make possible a reduced average level of the implicit tax on money). Accordingly, the other proposals involve the central bank purchase, with base money, of assets other than the traditional short-term yen securities. Meltzer (2000), for example, suggests that purchase of long-term Japanese government bonds would be stimulative. McCallum and Svensson suggest instead the purchase of foreign exchange (i.e., short-term securities that are claims to dollars or other non-yen currencies). They suggest implicitly that (e.g.) dollars are less close substitutes for short-term yen securities than are long-term yen securities. But the general ideas behind these various asset-purchase proposals are basically similar.

A few critics of the foreign-exchange strategy have contended that a central bank cannot reliably influence its currency's exchange rate. In that regard it is of course true that raising a currency's real foreign-exchange value by monetary policy is not possible, and that keeping its nominal value high requires extreme measures that are unlikely to be tolerated for long in a nation with democratic political processes. But to depreciate a fiat

[4] The plot is reproduced from the same source as before.

[5] Some early indication that BOJ policy was too tight during 1990-92 appears in McCallum (1993, pp. 35-36). Also see McCallum and Hargraves (1995).

currency in nominal terms is not difficult; all that is required is the creation of an excess quantity of the currency. And a reduction in value is what is needed in the case of Japan.[6]

Proceeding under the presumption that a central bank can exert adequate control over its currency's nominal exchange rate, McCallum(2000a, 2002) has considered a policy rule for use in a zero-lower-bound situation of the following form:

(3) $\Delta s_t = \mu_0 + \mu_1 (2 - \Delta p_t) + \mu_2 (\bar{y}_t - y_t)$, $\mu_1, \mu_2 > 0$.

Here the rate of depreciation of the exchange rate is increased when inflation and/or output are below their target values. Such a rule would be implemented in a manner similar to that typically used with an interest rate instrument. Thus the central bank observes the relevant asset price almost continuously and makes open-market purchases (sales) when it wishes to depreciate (appreciate) the currency's value.[7] It is important to note that rule (3) does not represent a fixed exchange rate. Instead, it represents a regime that subordinates the exchange rate entirely to macroeconomic conditions.

4. Some Quantitative Results

A natural question to ask is, "how would macroeconomic conditions in Japan have evolved if monetary policy had been conducted as suggested by one of the proposed policy rules discussed above?" A well-developed and authoritative answer to this question would require a major research undertaking, but it is possible to provide here a preliminary and partial answer for the case of the monetary base rule specified in equation (2). This case is much easier to attack than those based on the Taylor rule or equation (3), because they require models that reflect dependence of macroeconomic variables upon interest rates and exchange rates. Such models are very common in the theoretical literature, but their empirical estimation is fraught with difficulties and most existing attempts have been highly unsuccessful.

What will be done here is to consider an up-dated and modified version of the simplest model of macroeconomic conditions utilized in McCallum (1993). It is a single-equation dynamic relationship of nominal income growth and its dependence on money base growth. Let x_t and b_t denote logarithms of nominal GDP and the adjusted monetary base, respectively, so that Δx_t and Δb_t are quarterly growth rates. The data series extend from 1970.1 through 2000.4 and are seasonally adjusted.[8] Least-squares estimation over 1970.3-2000.4 yields the following relationship:

(4) $\Delta x_t = -0.0003 + 0.246\ \Delta x_{t-1} + 0.351\ \Delta x_{t-2} + 0.281\ \Delta b_{t-1}$

(.0018) (.0876) (.0831) (.0846)

$R^2 = 0.513$ SE = 0.0111 DW = 2.14 Pval = 0.12[9]

The numbers in parentheses are standard errors, so Δb_{t-1} evidently has a highly significant effect on Δx_t and its subsequent values. A similar relationship was utilized in McCallum (1993), where it provided results quite comparable to those of small but somewhat more

[6] Even a depreciation could not be effected if the currency were literally a perfect substitute for foreign currencies, but such is not the case. Interesting new evidence of a market-microstructure type has recently been developed by Evans and Lyons (2000, 2002).

[7] As with current practice, market participants may to some extent move rates as desired by the central bank, even without actual open-market operations, if the central bank's intentions are made clear.

[8] These series were obtained from the web pages of the BOJ (base) and the Japanese government's Economic and Social Research Institute.

[9] This statistic is the p-value for a test of no residual serial correlation based on a Q(4) statistic.

complex models intended to be structural.

There exists, however, considerable opinion to the effect that the relationship between base growth and nominal income has "broken down" in recent years. Indeed, such an impression is supported by visual inspection of a simple plot of these two variables against time. To consider the matter more formally, accordingly, I have re-estimated relationship (4) permitting crucial parameters to change in 1995.1.[10] Inclusion of a 0-1 dummy variable, that changes from 0 to 1 in 1995.1, indicates a downward shift in the equation's constant term, with a highly significant t-statistic of −2.89. If instead the slope coefficient on the base growth variable is permitted to change at that time, again a significant decrease is detected, with the t-statistic being −2.51. Inclusion of both effects seems most appropriate (since the two variables are highly collinear) and leads to the following estimates:

$$\Delta x_t = 0.0027 + 0.148\Delta x_{t-1} + 0.250\ \Delta x_{t-2} + 0.371\ \Delta b_{t-1} - 0.147\ D95\cdot\Delta b_{t-1} - 0.0065\ D95 \quad (5)$$

(.0022) (.091) (.091) (.099) (.192) (.0041)

$R^2 = 0.548$ SE = 0.0108 DW = 2.09 Pval = 0.37

The latter will be used in what follows as a model of nominal income determination.

To estimate how nominal income would have evolved in Japan if the base rule had been followed beginning with 1991.1, we solve the pair of equations provided by (5) and the base growth policy rule. The latter is the same as reported in equation (2), except that a coefficient of 1.0 is attached to the final term. The simulation is conducted while feeding in estimates of the shocks that hit the economy during those years, these being estimated by the residuals from equation (5). The resulting time path for the log of nominal GDP is given by the dotted curve in Figure 2. The average growth rate of nominal GDP for the years in question is about 3.1 percent per annum. This figure falls short of the 5 percent target value built into the rule, because it is a growth rate rule that permits drift in the level of nominal income. But the actual performance of nominal GDP was as shown by the solid curve, which represents an average growth rate of only 0.7 percent. My tiny model does not specify how nominal GDP growth would have been split between inflation and real output growth, but it seems very likely that a substantial increase in real growth would have occurred.

In addition, it should be kept in mind that a higher inflation rate—or a reduced deflation rate—would also have been helpful in the case at hand, for it might have kept Japan away from the near-zero nominal interest rates that tended to immobilize monetary policy during the years 1995-2000. Indeed, it could be argued that the shift effects, represented in our model (5) by the D95 dummy variable, would not have occurred if the policy rule had been in place. In that case, nominal GDP growth would have been more rapid than indicated by the dotted curve of Figure 2.

How much base money growth would have been necessary, according to the simulation underlying Figure 2? The answer is shown in Figure 3. There we see that the amount would have been substantial but not extreme, with growth rates averaging about 11.9 (rather than the actual 5.4) percent p.a. over the 10-year span.

The foregoing exercise falls well short of what should be done in principle. In particular, a much more satisfactory macroeconomic model is needed, one that not only includes interest rate, exchange rate, and real output variables, but in addition is based

[10] This break date, or one close to it, is suggested by the extensive recent empirical study by Miao (2000).

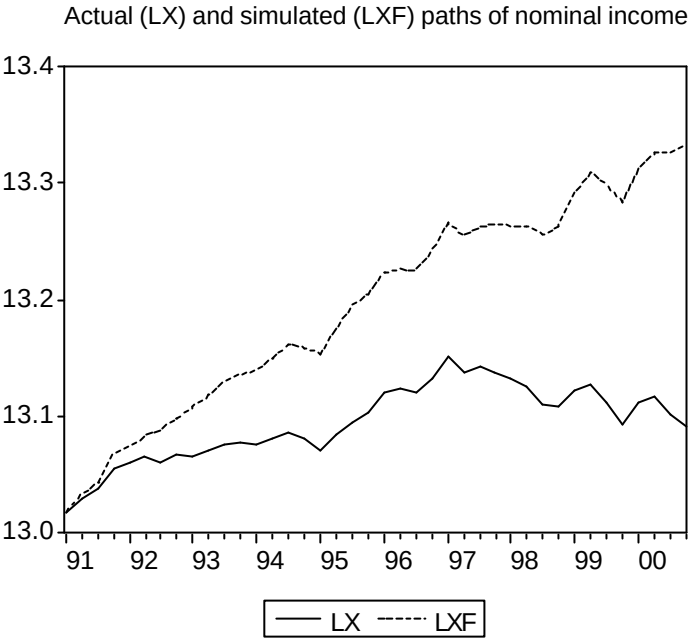


Figure 2

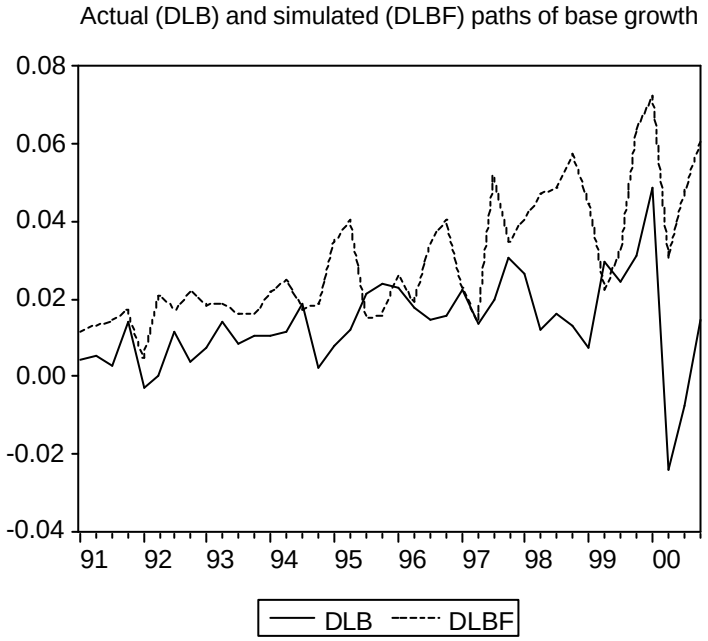


Figure 3

on optimizing analysis.[11] Use of such a model would provide more protection against Lucas-critique objections and would permit study of policy rules based on interest rate or exchange rate instruments. I consider the results presented above to be of a stop-gap nature, useful only in the absence of more adequate—but much more difficult—analysis.

5. The Bank of Japan's Difficulty

Recent commentary in publications including the Economist, the Financial Times, and the Wall Street Journal has been increasingly critical of the BOJ for not providing more monetary stimulus to aggregate demand in Japan. My argument given above also contends that more stimulus is needed and has been needed for years, but nevertheless I believe that much of the press commentary fails to recognize the difficulty of the problem that has faced the BOJ. It is not just stubbornness that has prevented the BOJ from providing such stimulus, for the nature of monetary policy actions is sharply different when short-term interest rates are effectively equal to zero. It is not the case that there has been "nothing more that the BOJ can do," but what needs to be done is different than in normal conditions and the policy actions are more difficult to design.

For some years, the BOJ took the position that nothing more could be done, beyond lowering its overnight call rate below one percent and finally almost to zero. These statements were incorrect and perhaps reflected a fundamentally misguided tendency to think of levels of nominal interest rates as direct indicators of monetary conditions, with low rates representing loose money. In fact, nominal rates will be low (for given real rates) when expected inflation is low; thus low rates are in large part an indication that monetary policy has been tight in the past, not that it is loose in the present. Recognizing this last point, several critics have argued that the BOJ should gauge its actions in terms of monetary base growth rates, rather than interest rates, and should provide stimulus by increasing the growth rate of the monetary base. As was shown above, my own base-growth-oriented policy rule would have called for about 12 percent (per annum) growth rates recently, rather than the values of about half that magnitude that have actually been observed.

But just expanding the base growth rate will not be effective, in the face of zero interest rates, unless non-traditional assets are purchased. Normally, open market operations are conducted by exchanging base money for short-term government bills. But when short-term interest rates are near zero, such purchases will have virtually no effect. One way to understand this is to recall that both base money and bills are nominally-denominated assets that are virtually free from default risk. What then is the difference between them as assets; why do people and firms hold money when bills normally provide the holder with a higher rate of interest? The answer, from basic monetary theory, is that money is a generally accepted medium of exchange that provides transaction-facilitating services to its holders—services not provided by bills.[12] Rational economic agents then adjust their holdings of these two assets so as to equalize their net benefits at the margin. The sum of pecuniary interest earnings plus transaction-facilitating services is equated at the margin, for the two assets, with interest earnings

[11] More along the lines of McCallum (2000a, pp. 888-897) but estimated with appropriate econometric procedures.
[12] Or provided to a lesser extent by bills.

being lower and services higher for base money assets.

But when short-term interest rates fall to zero, then there is no difference in the interest component of the net yield for the two assets, so their marginal service yields will also be equal. That condition is brought about by holders choosing to keep on hand so much money that its service yield at the margin is driven down to zero. But then, at the margin, base money and bills become perfect substitutes—the distinguishing characteristic of base money is lost (at the margin, not overall). Consequently, open market operations that exchange bills for money in private portfolios have effects that are like those of replacing a billion dollars worth of $5 currency notes with a billion dollars worth of $10 notes. To an approximation, in other words, there is no effect.

Accordingly, for increased growth rates of base money to be stimulative it is necessary that the assets bought from private portfolios be ones that are not perfect substitutes for government bills (or for money). Longer term government bonds represent one possibility. But to me it seems likely that long-term government bonds are quite close substitutes for government bills. According to the expectations theory of the term structure, which says that long-term interest rates are appropriate averages of expected short-term rates, long-term and short-term government securities are perfect substitutes. There is evidence suggesting that this theory is not empirically accurate, but there is no widely accepted alternative to rely upon. And even if the short-term and long-term securities are not perfect substitutes, it is not obvious that purchases of the latter would have a stimulative effect on the macroeconomy.

Consequently, I contend that the best course of action would be for the BOJ—or any central bank in a similar situation—to purchase foreign exchange.[13] Lars Svensson (2000) has made a closely-related proposal.[14] It is clear that the purchase of enough foreign exchange would depreciate the value of the yen. With prices in Japan initially rising less rapidly than the price of foreign exchange,[15] a real exchange rate depreciation would result, and this would tend to stimulate exports and to increase Japanese income and production. That is what is needed—to increase Japanese income and spending.

It is important to keep in mind, however, that increases in income have strong and reliable positive effects on imports. Indeed, the strength of income effects on imports is probably strong enough that the overall effect of the stimulative policy would be to increase Japan's imports (in real terms) from its trading partners.[16] Under that assumption it is not the case that the recommended policy would tend to depress aggregate demand in other nations. Fear of that outcome should not be permitted to discourage stimulative monetary policy.[17]

Recently, the BOJ has taken actions that indicate an intention to pursue a more stimulative policy than in the past. To date, however, it has not given any official

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[13] See McCallum (2000a, 2002).

[14] It should be noted that a few economists including myself, Marvin Goodfriend (1997), Allan Meltzer (1998, 1999, 2000), and John Taylor (1997) have been urging a more expansionary policy for the BOJ at least since 1995. Our first proposals did not, however, emphasize purchases of foreign exchange per se.

[15] Even in the unlikely event that Japanese domestic prices increased along with the price of foreign exchange, there would be a benefit—this would raise nominal interest rates, leading to an escape from the "liquidity trap" situation described above.

[16] After some short time lag, perhaps.

[17] It is my impression that this fear did keep the International Monetary Fund from supporting policy proposals of the type expressed here, until recently. See Section 8 below.

consideration to the possibility of purchasing foreign exchange as a way of providing a more stimulative monetary policy.[18] We need to look into the reasons for this attitude.

6. Bank of Japan Law

Only recently, in 1998,[19] did the BOJ gain monetary policy independence, i.e., the right/duty to conduct monetary policy as judged appropriate by itself (rather than by the Ministry of Finance). The provisions of this independence are codified in a legal document that, in English, is termed "The Bank of Japan Law." The provisions of this law are of strong relevance because the BOJ evidently sees the Law as an obstacle to a policy of the type recommended above. Purchases of foreign exchange, it is contended, are the province of the Ministry of Finance, not the BOJ. An unofficial English translation of the Law, made by the BOJ, can be found on the BOJ's web site (http://www.boj.or.jp). The following comments and interpretation are based on that version, as amended January 6, 2001.

The BOJ Law mentions foreign exchange purchases in Articles 15, 40, 41, and 42. These all presume that such purchases will be made either for the purpose of "cooperating … with foreign central banks and international institutions…" or else "to stabilize the exchange rate of the national currency." Those activities, furthermore, are to be conducted in a manner specified by the Ministry of Finance. So viewed alone these passages do indeed suggest that the BOJ has no mandate to purchase foreign exchange in the manner suggested above, i.e., for macroeconomic demand management.

However, Articles 1 and 2 of the Law stipulate that a primary duty of the BOJ is to "carry out currency and monetary control …" in a manner "aimed at, through the pursuit of price stability, contributing to the sound development of the national economy." Also, Article 3 states that "the BOJ's autonomy regarding currency and monetary control shall be respected." Thus the Law also gives support to the idea that foreign exchange purchases for the purpose of monetary control are consistent with the duties assigned to the BOJ. Evidently, there is some internal inconsistency in the Law.

Furthermore, Article 15 states that the Policy Board will decide on matters inclusive of " determining or altering the guidelines for currency and monetary control in other forms," i.e., forms other than money-market control. This suggests, crucially, that the Policy Board already has the authority to adopt policies for exerting monetary control by the purchase or sale of foreign exchange. In that regard it is important to emphasize again that the purpose of the foreign exchange transactions in question is definitely not to stabilize the exchange rate. Instead, the recommended policy makes the level of the exchange rate subservient to monetary policy, with the latter directed at maintaining price stability so as to promote the sound development of the Japanese national economy. So Article 15 adds to the apparent inconsistency in the Law.

Finally, let us consider Article 43, which states that the BOJ "… may not conduct any business other than those prescribed by this Law unless such business is necessary to

[18] In an interview with Bloomberg reported on July 19, 2001, Dr. Kunio Okina, Director of the BOJ's Institute for Monetary and Economic Studies, suggested that the BOJ should consider purchase of foreign exchange as a tool of monetary policy, while leaving exchange rates to the currency market. But on July 25, Mr. Sakuya Fujiwara, Deputy Governor of the BOJ, indicated (in a question-and-answer session at the Tokyo Foreign Correspondents' Club) that Okina's suggestion does not reflect BOJ policy.

[19] The law was promulgated on June 11, 1997 and put into effect on April 1, 1998. It has been amended several times.

achieve the Bank's objectives prescribed by this Law and the Bank obtains authorization from the Minister of Finance and the Prime Minister." It seems clear that this article does not rule out the suggested activities per se, because they are integral to the BOJ's achievement of its assigned objectives. Under current conditions, moreover, they might well be deemed "necessary." Nevertheless, it would seem to be appropriate for the BOJ to seek approval from the Minister of Finance and the Prime Minister, since such a step would keep the proposed actions from conflicting with Article 43. Since the government has favored more monetary stimulus, a well-formulated proposal should face no difficulty in winning approval.

7. Monetary Policy and Exchange Rate Policy

That the BOJ Law does not recognize foreign exchange transactions as a means for conducting monetary policy is illogical but not actually surprising, partly because transactions involving government bills are satisfactory and desirable under normal conditions—i.e., with interest rates substantially above zero. Another important reason is that the Japanese arrangements are not out of line with those pertaining to central banks in other economies. In the United States, for example, it is generally understood (despite unclear legislation) that foreign exchange policy is primarily the province of the Treasury.[20] That assignment has not been troublesome for U.S. monetary policy in recent years, but arguably that is because the Treasury has seen fit to let the foreign exchange value of the dollar be determined by market forces without substantial intervention. Even in the euro area, where monetary legislation for the European Central Bank is expressly designed to protect central bank independence and direct it toward price level stability or low inflation, there is an anomalous provision regarding exchange rates of the euro vis-a-vis the dollar, the yen, and other currencies. This appears in Article 109 of the Maastricht Treaty, which gives the E.U. Council of Ministers (i.e., the member nations' finance ministers[21]) the power to make agreements on an exchange-rate system for the euro (relative to non-EU currencies) or to adopt "general orientations" for exchange-rate policy. These actions are supposed not to conflict with the goal of price stability, but the provision is nevertheless an anomaly.

Despite the existence of these actual arrangements, it is a serious mistake to view monetary policy and exchange rate policy as independent entities, as they implicitly suggest. Indeed, although it would be a slight exaggeration to claim that monetary and exchange-rate policies are merely different aspects of one macroeconomic policy tool, that claim comes closer to the truth than the view suggesting independence. (In making this statement, I am assuming that the nation under discussion does not attempt to manage exchange rates by direct controls, which would of course introduce serious microeconomic inefficiencies and inducements for corruption.) To develop that argument is the purpose of the present section.

One way to begin is to recall the nature of monetary arrangements under a gold

[20] On this topic see Broaddus and Goodfriend (1996), which takes a position similar to that of the present section, and Hetzel (1996). The quotes on p. 21 of the latter are useful.

[21] The Council members are finance or economics ministers when the business is finance or economics, in which case the Council is known as Ecofin. For other issues, other ministers will represent the member countries. When the Council is attended by the countries' prime ministers, the meeting becomes a "summit."

standard (or any other metallic standard). Any such arrangement on an international basis clearly dictates exchange rates among all nations that adopt gold-standard regimes. But such regimes are simultaneously specifications of domestic monetary standards, ones that require monetary policy to be governed by the overriding obligation of maintaining the domestic-money price of gold (and consequently the value of money in terms of gold).

For fiat money systems the relevant analytical point is that, from a long-run perspective, money stock and exchange rate paths cannot be independently controlled or managed, basically as a consequence of the long-run neutrality of money. Short-run non-neutralities are a fact of life, of course, so there is some scope for temporary departures of exchange rates from the paths implied by monetary policy. These departures can be effected by fiscal actions or possibly by sterilized—hence non-monetary—exchange market interventions. But since such departures can only be temporary, it is inappropriate (and dangerous) to think of them as reflecting distinct maintained policies.

A counter-argument that some might raise would point out that real exchange rates can be affected permanently by fiscal stances. A higher steady-state ratio of government spending to income tends, for example, to generate a higher real foreign-exchange value of a nation's currency. But an increased ratio of government consumption to income has a one-time effect on the real exchange rate, not a continuing or ongoing effect. Thus a monetary policy that generates an average inflation rate that is inconsistent with a fixed nominal exchange rate—or more generally a specified nominal exchange-rate path featuring a non-zero rate of depreciation or appreciation—will eventually lead to a breakdown. Fiscal policy cannot, that is, be used to overcome long-run inconsistencies between money stock, price level, and exchange rate paths. Useful papers elaborating on this point have been written by Bordo and Schwartz (1996), Garber and Svensson (1995), and Obstfeld and Rogoff (1995).

Furthermore, it is important to keep in mind that a large fraction of fiscal policy actions involves switches between bond finance and tax finance for given streams of government purchases. This reminder is relevant because many standard and widely-used macroeconomic models incorporate the property of Ricardian equivalence, i.e., the property that switches between bond and tax finance have no effect on macroeconomic variables of primary importance, including real and nominal exchange rates (and net exports).[22] Admittedly, it is quite unlikely that actual economies possess this Ricardian property in full, but evidence suggests that deviations are fairly minor. Thus for most fiscal policy actions, there will be at most minor or short-lived effects on exchange rates.

The other possible way of exerting a policy effect on exchange rates is via sterilized interventions, i.e., foreign exchange transactions that are offset so as to result in no net change in the economy's outstanding stock of base money. It is widely agreed by students of the issue, however, that effects of sterilized interventions are at most small and temporary.[23] Thus they too cannot provide a means for escaping the long run links between money stock and exchange rate magnitudes.

Another way to put the argument of this section is as follows. Most economists agree that central banks possess only one significant monetary policy tool. Some would describe it as control over the monetary base whereas others would emphasize the setting of short-term interest rates. But that distinction is unimportant with regard to the issue at

[22] An early statement of this result is provided by Stockman (1983, pp. 151-2).
[23] For a survey of the literature, see Edison (1993).

hand; what matters is that there is only one significant tool. Consequently, if the central bank is required (externally or by its own choice) to devote that policy tool to the achievement of some target path for an exchange rate, then the tool is not available for achievement of a domestic macroeconomic objective—be it expressed in terms of inflation alone or (e.g.) some combination of inflation and output deviations from their target values. In short, legislation or arrangements that give exchange rate control to the finance ministry, or some other branch of government, are basically inconsistent with central bank independence.

8. International Relations

During the late 1990s, some leading officials of the International Monetary Fund and the U.S. Treasury were opposed to monetary stimulus as a means for combating Japan's ongoing economic weakness. Their reason was that monetary stimulus would lead to exchange rate depreciation, which would be harmful to other nations seeking to expand (or, during the Asian crisis, maintain) exports to Japan. This source of objection to a more stimulative monetary policy, then or now, is inappropriate. First, it is highly unlikely that such a policy would lead to lessened imports by Japan, for an increase in Japanese real income would tend to increase imports and probably to an extent greater than any decrease brought about by Japanese exchange rate depreciation. Second, monetary policy should be directed primarily toward keeping inflation low (but non-negative!), with the avoidance of real cyclical fluctuations a secondary objective.[24] Fiscal policy and structural policies are more appropriate tools to use in managing balance-of-payments problems. Also, if Japan is not going to have a common currency with (e.g.) the United States, then their bilateral exchange rate should be free to float with each country managing its monetary affairs so as to keep a low inflation rate.[25] In short, the United States should not try to prevent a depreciation of the yen. More generally, the United States should not attempt to induce other nations to manage their monetary policy in a manner that is temporarily helpful for the United States.[26] From a long-term perspective, the United States will benefit from having other important nations conduct their monetary policies in a manner that yields low inflation with domestic macroeconomic stability.

9. Conclusion

On the basis of the arguments above, plus those presented in previous papers, my suggestion is that the Bank of Japan should temporarily increase the growth rate of base money to 10-15 percent per year, with most of the newly created base used to purchase foreign exchange (the remainder being used to purchase long-term government bonds). After a growth rate of nominal GDP of 4-5 percent is achieved, policy should revert to

[24] Real cyclical conditions should provide only a secondary objective for monetary policy because monetary effects on these conditions are temporary and poorly understood, whereas monetary effects on prices (and thus on inflation rates) are long-lasting and well understood.

[25] Moreover, decisions to share a common currency should be made on grounds of microeconomic efficiency, not in an attempt to solve macroeconomic stabilization difficulties.

[26] Indeed, it may well have been U.S. pressure that led the BOJ to be somewhat too loose (even on traditional standards that ignore asset price movements—see Figure 1, lower panel) during 1986-88, a stance that permitted the asset price boom of the late 1980s and set the stage for a clampdown that began the past decade's slump.

more normal arrangements, with a target of about 2 percent measured[27] inflation or 4-5 percent nominal GDP growth.

Purchasing foreign exchange for the purpose of monetary control is basically consistent with the provisions of the Bank of Japan Law that call for it to exert monetary control so as to contribute to the sound development of the Japanese economy. But since the Law does not mention this reason for conducting foreign exchange transactions, the BOJ should overcome the Law's internal inconsistencies by requesting approval from the Minister of Finance and the Prime Minister. It should also seek amendment of the Law so as to recognize the close relationship between monetary policy and exchange rate policy, thereby strengthening Japan's statutory basis for central bank independence.

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[27] Studies including Shiratsuka (1999) suggest that measured overstates actual inflation in Japan by about one percent per year.

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