Limitations of Monetary Policy
– Three Considerations Regarding the Zero Interest Rate Policy –

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1. Introduction

The new Bank of Japan Law has given Policy Board members greater freedom of expression. Having already focused on driving down interest rates close to zero, and with the money supply policy transmission route damaged, the central bank's new efforts to explain its policies and encourage dialogue are a good sign.

But on the key matter of future monetary policy, most of the board members have publicly criticized quantitative easing without elaborating further. While there may be a need to monitor the economy and watch for the effects of monetary policy, how will the central bank react to an exchange rate or other external shock that could debilitate the economy? To prevent unnecessary expectations and conjecture about the next monetary policy, three aspects of monetary policy need to be examined.

First, we must clarify the confusion surrounding the definition and impact of quantitative easing. Second is the issue of compatibility between the central bank's monetary policy and politically influenced fiscal policy, especially since public will ultimately bear the full impact, risk and cost of these economic policies. And third, we examine how to assess the BOJ balance sheet in light of discussions on how it may be affected by various policy proposals.
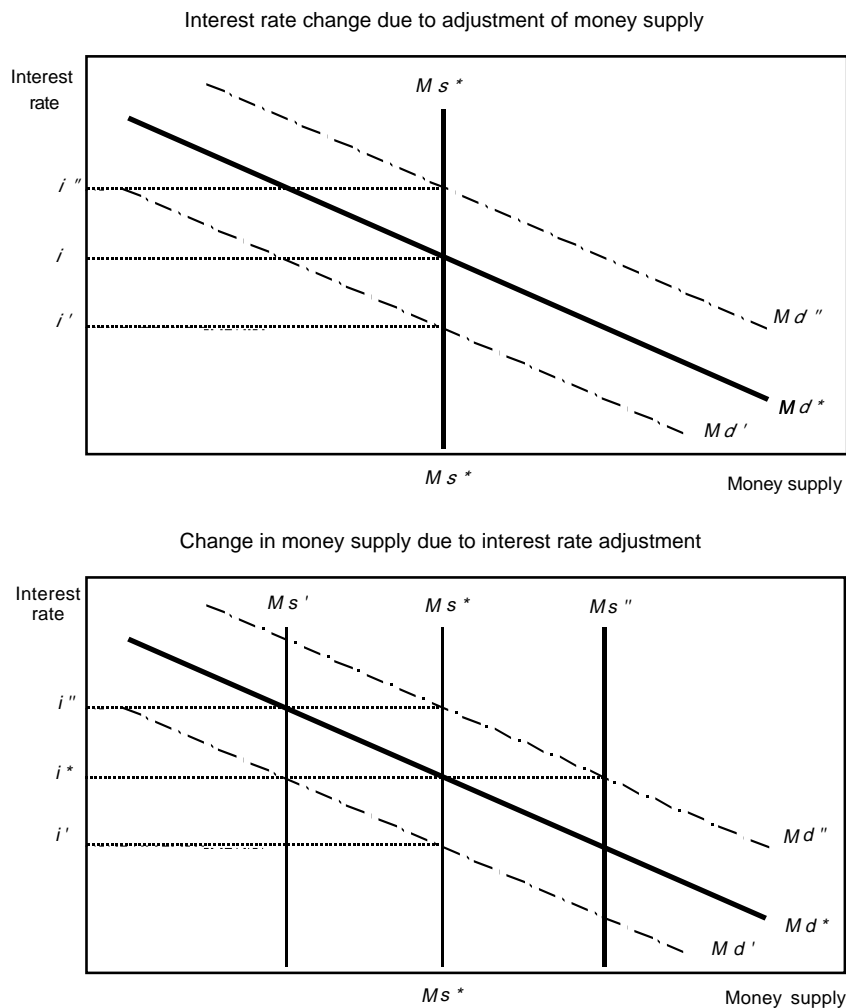
2. Impact of Quantitative Easing

In pursuing an interest rate policy, there is a strong relationship between short-term rates and the money supply. When Federal Reserve Chairman Paul Volker tackled high inflation in the 1970s by switching to interim money supply targets, short-term interest rates fluctuated widely as predicted in textbooks. One Policy Board member has asserted that quantitative easing and interest rate levels are two sides of the same coin: theoretically, when money demand is unstable, it is not uncommon for the central bank to be unable to control both the money sup-

ply and interest rates at the same time (in Figure 1, when money supply Ms* is maintained, interest rate i fluctuates with changes in money demand.

When monetary policy must provide further economic stimulation, some differences emerge between a policy designed to suppress inflation by controlling the money supply and a zero interest rate policy. However, monetary easing that significantly exceeds what is required under the present zero interest rate policy not only increases the money supply but implies major changes to the framework of monetary policy. In the process, of course, short-term interest rates may fluctuate widely.

Thus two possibilities emerge for the next stage of monetary policy: (1) a shift to emphasizing money supply management while anticipating some short-term fluctuation in interest rates, or (2) a continuation of the present interest rate policy while slightly expanding the monetary base in pursuit of the following limited effects.

Figure 1 Due to Money Demand Fluctuations, the Central Bank Controls Only One Variable

Interest rate change due to adjustment of money supply

Change in money supply due to interest rate adjustment

Five effects of quantitative easing

Quantitative easing is generally expected to impact the real economy through five routes.

(1) Money supply route – Expanding the monetary base causes the money supply to increase, thereby stimulating corporate and household activity. While expected to be the largest, this effect will be limited due to the damaged condition of the banking system, as evidenced by the declining credit multiplier.

(2) Expected inflation route – Base money expansion increases inflationary expectations, causing real interest rates to decline. While corporate activity will be stimulated, doubts linger in the event of inflation and the ability to respond effectively.

(3) Bank's asset preference route – Despite a liquidity trap, the accumulation of reserve deposits with zero nominal returns causes banks to expand credit and buy government bonds. As a result, bank portfolios shift toward greater risk exposure, and augment the imperfect capital markets. However, the effect will be limited because banks have an insufficient risk tolerance given their present equity and credit risk management capabilities.

(4) Market's asset preference route – The effects of declining overnight call rates extend to term securities through arbitration. This in turn causes overall interest rate levels to decline. While other determinants besides short-term rates play a major role in long-term interest rates, it is possible to achieve a temporary effect when inflationary expectations are stable.

(5) Financial markets route – Easing affects the foreign exchange rate and asset prices, contributing to the real economy's improvement.

Negative effects and obstacles to quantitative easing

On the other hand, quantitative easing also implies negative effects and obstacles.

(1) If the velocity of money becomes unstable, for example when the money supply cannot keep pace with a rapid economic expansion, there is a risk that monetary policy becomes temporarily destabilized by excessive tightening.

(2) If the call rate continues to remain below ordinary deposit rates, the call market, which has conveyed the central bank's policy intentions to the market for many years, will contract.

(3) There may not be enough resources to adequately achieve quantitative easing.

The following are necessary to minimize the negative effects and maximize the positive effects.

1. Realistically, 220 trillion yen in government bonds and 20 trillion yen in financial bonds are available, which is sufficient to conduct market operations. But from the perspective of ease of operation and preventing a recurrence of last year's Japan premium, it is important to further expand the FB market and diversify government bond maturities.
2. When a 1 trillion yen buildup occurs (the BOJ is supplying funds that exceed daily demand by 1 trillion yen), rather than sustaining unanimous zero interest rate expectations in the short-term market, it would be preferable to put aside moral hazard concerns and make the short-term market more attractive by encouraging many different perspectives to flourish.
3. Regarding monetary policy swings which tend to tighten money more than necessary, the problems of quantitative easing might be alleviated if conducted not for the short term but as a medium-term policy. On the other hand, with respect to an assertive monetary policy, evidence of its impact on the real economy is insufficient, and there is substantial concern that confidence in the BOJ may suffer depending on the nature of results and side effects. Some kind of arrangement is needed in which the public bears this risk together with the BOJ. For example, the Bank of England regularly discloses the status of its inflation targetting and also presents an analysis of causes if its predictions have erred. If the BOJ were also to disclose more of its decision making process, its credibility would actually increase even if short-term targets were missed.

None of the policy alternatives presents a clear picture of the economic impact because the policy effects depend on the extent policies can alter the public's expectations. Whether the desired expectations take shape depends on the BOJ's credibility among the markets and public. Thus within the scope of quantitative management and interest rate policies, implementing the most effective quantitative policy requires that we simultaneously improve the efficiency of short-term markets and take measures to increase the credibility of the BOJ.

Given the uncertainties of the policy choices described above, the ultimate decision to implement a more effective but riskier monetary policy involves two practical considerations that outweigh theoretical arguments: (1) determining the probability that more emphasis will need to be put on monetary policy, and (2) ascertaining whether the BOJ will be strong enough to endure this shift.

3. Choosing Monetary Policy Risk Over Fiscal Policy

In formulating and implementing monetary policy, the BOJ affirms sensible and responsible operating guidelines: to pursue long-term price stability because it contributes to economic development, and to refrain from policies whose side effects are disproportional to their

intended effect. However, from the public's perspective, all fiscal, monetary and structural policies emanating from the BOJ, Diet, or bureaucracy share a common end result: their effect, cost, and risk are ultimately absorbed by the public. Despite the government's perilous fiscal condition, the fact is that no one envisions a fiscal balance in the future. While granting the BOJ's independence, the time has past for debating the positive and negative effects of monetary policy alone. What is needed today is a broader approach encompassing both fiscal and monetary policy.

Since disclosure is limited, we performed a rough simulation of the future fiscal balance based on the MOF's medium term fiscal forecast released in January 1999 (assuming a nominal growth rate of 0.7% in 2000 and slightly below 2% from 2002 forward, and progress in refinancing with present low interest rates). The simulation revealed: (1) the primary balance (revenue and expenditure equilibrium excluding interest expense of government bonds) shows no sign of balancing over the next decade, and reaches a 6.3 trillion yen deficit in 2008, and (2) considering annual increases in the deficit and refinancing bonds, total government bond issues will increase from 340 trillion yen today to 530 trillion yen in 2008. Adding the long-term debt of local governments and future fiscal investment bonds, Japan's long-term debt will exceed 1,000 trillion yen, the equivalent of approximately twice the GDP.

Even assuming a 2% growth rate (equivalent to a nominal growth rate of almost 4%), five years from now in 2003 the fiscal deficit will contract by no more than 10% of the baseline projection. In ten years, the primary balance will barely manage to break even. However, the simulation assumes that social security benefits will grow 0%. While the outcome of social security reforms is not yet certain, if we assume that social security benefits grow 4%, the gains from the 2% growth scenario above are completely offset (Table 1).

Table 1 Medium-Term Simulation of the Fiscal Balance

(¥ trillion)

Baseline scenario		FY 98	99	2000	2001 (in 3 years)	2003 (in 5 years)	2008 (in 10 years)
JGB expense		18.2	19.8	18.3	18.4	19.9	24.8
	Interest expense	12.3	11.1	11.2	11.5	12.3	15.5
Tax allocated to local govt.		14.3	13.5	14.9	15.7	16	17.8
General revenue		55.5	48.5	46.9	46.9	46.9	46.9
	Social security benefits	14.8	16.1	16.1	16.1	16.1	16.1
	Public works	14.1	9.4	9.4	9.4	9.4	9.4
Total expenditure (= revenue)		88	81.9	80.1	81	82.9	89.4
Revenue	Tax, other	54	50.8	49.7	51.5	53.1	58.4
	Bonds (= funds shortfall)	34	31.1	30.4	29.6	29.8	31.1
Budget deficit (general account)		−28.1	−22.3	−23.3	−22.7	−22.1	−21.8
	Primary balance	−15.9	−11.2	−12.1	−11.2	−9.8	−6.3
Value of outstanding JGBs		311	338	366	390	426	532
Assumed nominal growth rate (%)		−2.1	0.1	0.9	1.2	1.8	1.8
Simulation	Growth rate + 1%	–	–	–	0.7	1.3	4.2
results	Growth rate + 2%	–	–	–	0.7	1.8	5.9
(¥ trillion	Social sec. benefit + 2%	–	–	–	−0.5	−1.3	−3.3
change)	Social sec. benefit + 4%	–	–	–	−1.2	−2.8	−6.0

Table 2 Optimal Fiscal Deficit Level (ratio to GDP)

		Savings rate	
		30.00%	25.00%
	0.20%	8.02%	1.55%
Population	0.15%	8.06%	1.59%
	0.10%	8.09%	1.62%
growth	0.05%	8.13%	1.66%
	0.00%	8.17%	1.69%
rate	−0.05%	8.21%	1.73%
	−0.10%	8.24%	1.77%
	−0.15%	8.28%	1.80%
	−0.20%	8.32%	1.84%

The size of the fiscal deficit is not a problem in itself. Indeed, for countries with large excess savings or a high population growth rate, a moderate fiscal deficit can contribute to healthy growth over the medium term. To estimate the appropriate level for the fiscal deficit, we used our optimal fiscal balance model, which draws on the theory of Professor Ibori of Tokyo University, to estimate the allowable level of fiscal deficit as a ratio of GDP based on national savings and the population growth rate. The result was approximately 8%, and the present fiscal deficit level adheres to the upper end of this range. However, considering that aging will

cause the savings rate to decline, the fiscal deficit needs to be reduced immediately to approximately 1.8% of GDP (8 trillion yen). It is abnormal for the fiscal deficit to remain above 20 trillion yen on a general account basis.

The danger lies in the accompanying rise in long-term interest rates. Our long-term interest rate model estimates that interest rates will be pushed up 1.5% by the worsening fiscal balance (the fiscal premium). In addition, the model reflects the past structure of large personal savings. Considering the sharp increase in new pension recipients around 2007 and the rapid deterioration of Japan's savings-investment balance, interest rates should rise even higher. For the public, while the risk of additional monetary measures is not low, the cost and risk of relatively painless fiscal measures are much higher. The next policy will continue to be weighted toward monetary policy.

4. The BOJ's Healthy Balance Sheet

Two reasons are often cited for eliminating reserve increases that focus on setting long-term interest rate targets and market operations for buying up government bonds: (1) moderate government spending, and (2) harm to the BOJ balance sheet. Let us consider the size and quality of a healthy balance sheet, and whether we can indicate an objective standard of soundness, particularly since market participants at home and abroad put much confidence in the BOJ balance sheet. The size of the BOJ balance sheet is 70 trillion yen (as of July 10, 1999), and its ratio to nominal GDP of 14% is larger than the 10% for the Bundesbank and 6.5% for the FRB. However, the difference between 14% and 10% does not seem enough to separate currency issued by the central bank into good money and bad money. On the other hand, the BOJ's equity ratio of 3.1% is higher than 2.2% for the FRB and 1.3% for the Bundesbank. Moreover, if currency is an indication of a country's level of trust, even if Japan has an IS balance to GDP ratio of 3% and less than perfect public accounting system, any country whose government holds net assets of 428 trillion (end of 1997) is not likely to be devoid of trust.

Instead of giving the BOJ balance sheet special treatment as a central bank, we focused on the price fluctuation risk of its government bond portfolio – the largest asset item on the balance sheet – and measured financial soundness using an ALM approach. Specifically, we assumed that bonds are the only asset, and estimating from cumulative past operations of the portfolio, we ran 100 interest rate paths, and then measured bond price changes that fall short of liabilities (which are 0% here; Figure 2). We then sought the probability at which these changes would fall within the range of equity capital and annual reserves. With regard to the redemption of matured bonds, we assumed that an equivalent amount of newly issued 10-year government bonds are purchased.

Figure 2 Interest Rate Term Structure of Japanese Government Bonds
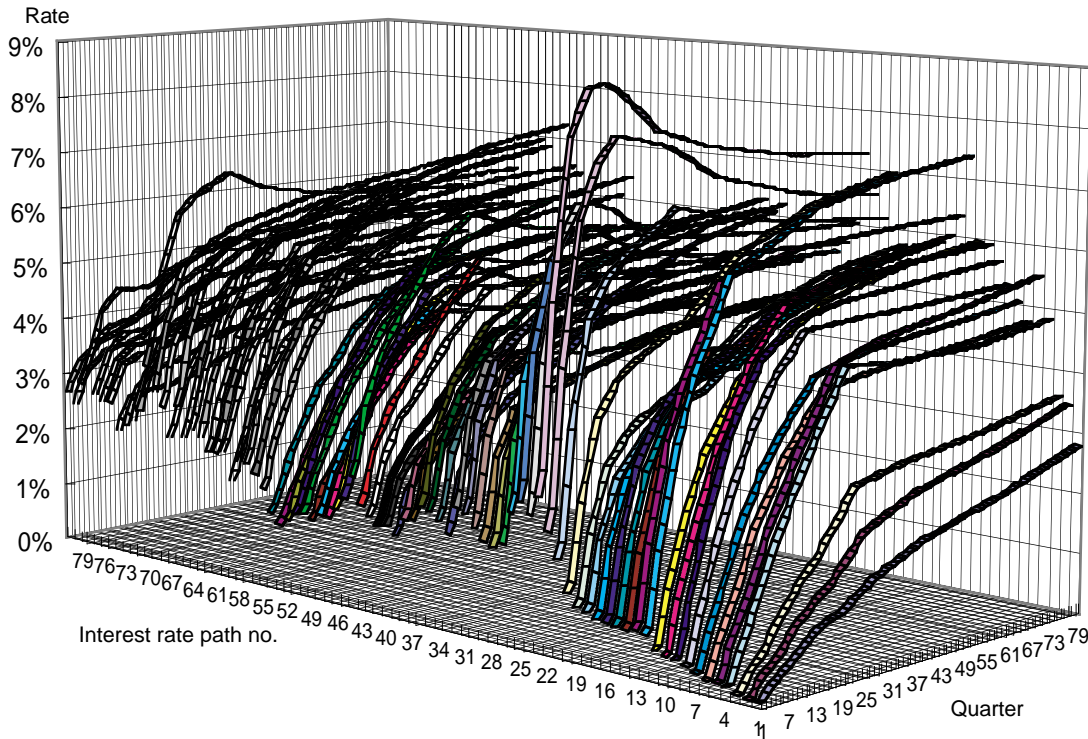
On the other hand, the BOJ's broadly defined equity capital is 3.3 trillion yen, consisting of 2.2 trillion yen in equity capital and an average reserve payment of 1.1 trillion over the past three years. In addition, by applying a 3.7% rate for unrealized gains among the top four life insurance companies (March 1999), we estimated that the BOJ has another 2 trillion yen in unrealized gains from government bond holdings. Our ALM model found that the interest rate fluctuation risk of the BOJ's 54 trillion yen of government bond holdings is approximately 2.5 trillion yen, then peaks in three years at 3.5 trillion yen before falling back to 2.3 trillion yen in five years. The probability of failure is less than 1% even if the unrealized gains are omitted. Given that the consensus among rating organizations and market participants that internationally superior banks have a failure rate of 2.5% or less, the BOJ is sound beyond question. Thus it is unlikely that the BOJ balance sheet will constrain the range of policy actions such as increases in bond purchasing operations.

5. Seeking a Policy Framework for Exchange Rates and Monetary Policy in the Medium Term

Given the expectations toward monetary policy and the strength of the BOJ to implement that

policy, there is essentially no need to narrow the range of available monetary policy choices.

However, the inability to confirm the stability and shape of the IS and LM curves complicates any effort to switch from the present interest policy to a quantitative management policy centered around the money supply.

Two effective alternatives that refrain from quantitative management while staying within the zero interest rate context are: (1) to increase the slope of the LM curve, that is, preserve only the banks that can accept credit risk, and (2) to increase the supply of money, and allow this to indirectly produce a real effect through one of the five routes. The most effective of these routes is the exchange rate route.

Although exchange rates are generally not considered subject to quantitative analysis, turning points and trends can be revealed by using special filters. The Nissay Exchange Rate Index has a lead time of three months and indicates turning points. Many of the model's explanatory variables consist of monetary policy factors such as the Japan-U.S. base money differential (Figure 3). Thus while not perfect, the model shows that monetary policy can influence exchange rates to a limited extent. However, this is not through direct intervention in foreign exchange markets, which has only a short-term effect, but due to monetary policy over the medium term.

Figure 3 Effect of U.S. and Japanese Monetary Policy on Exchange Rates
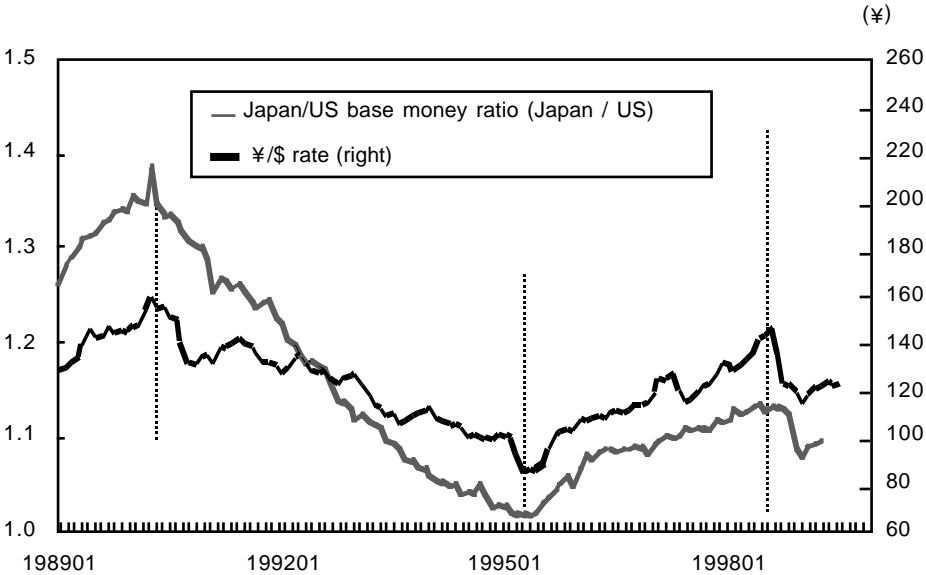
Thus the realistic policy is to ripen expectations of monetary easing by further expanding the base money, and its impact on the exchange rate.

However, if the economy deteriorates significantly in the second half of the year, fiscal spending and political pressure on the BOJ will increase. When that happens, the only alternatives available may be a non-strategic increase in bond purchase operations in an appeal to supply and demand expectations in the bond market, and the encouragement of government bond purchases by individuals. Considering the monetary policy lag time, perhaps the best policy is to pursue a real exchange rate policy for the present, while also encouraging a national debate on a new monetary policy framework such as inflation targeting to further increase confidence in the BOJ.