Monetary Policy in a Zero-Interest Rate Environment
—*Should the Money Supply be Increased?*

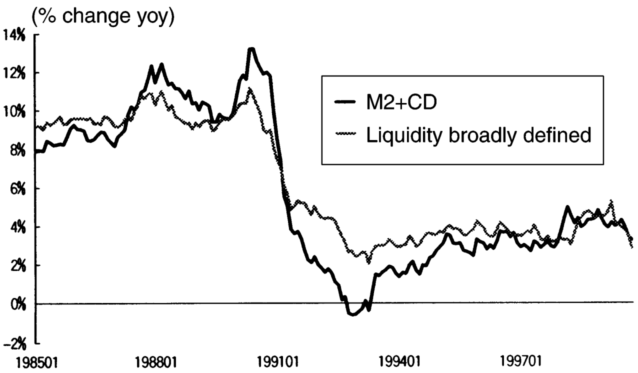
By Koichi Haji and Yasuji Yajima
Economic and Industrial Research Group

1. Falling Prices Prolong Economic Malaise

Various reasons have been advanced for Japan's prolonged recession since the collapse of the bubble economy: troubled financial institutions causing jitters in the financial system and impairing functions; excessive investment during the bubble period resulting in excessive corporate debt and excess capacity; and large-scale hiring during the bubble period, which expanded labor costs and saddled companies with high fixed costs. What is clear, however, is that deflation in the post-bubble period, in contrast to the inflationary 1980s, has made it even harder to solve Japan's problems. Falling prices exacerbate the drop in asset prices of land and stocks, making it even more difficult for companies to adjust balance sheets and for financial institutions to address bad-debt problems.

From a long-term perspective, a relationship can be seen between the money supply (the amount of money in the economy) and economic variables such as GDP and prices. At the beginning of the 1990s, the Bank of Japan (BOJ) substantially curbed money supply growth in an effort to ease Japan out of its asset bubble. One view, however, is that this nudged prices into a downward slide and depressed the economy. Today it is frequently argued that any economic recovery depends on arresting deflation, and that to achieve this the BOJ should expand the money supply. It is certainly true that at the beginning of the 1990s, the growth in money supply was substantially reduced from its previous level. Quite obviously, money supply

Figure 1 Money Supply Growth



Source: Bank of Japan

growth exceeding 10% per year in the late 1980s bubble period needed to be brought down; however, if we consider Japan's potential real growth rate of 2-3% with inflation at 2%, money supply growth needs to be at a higher level than it is today.

2. Interest Rates or Money Supply?

Among the policy tools at the BOJ's disposal are changes in the discount rate, changes in the reserve rate applied to deposits, and various short-term open market operations. While changes in the discount rate used to occupy the central place in the Bank's policy arsenal, since around 1995 its main policy tool has been manipulating the unsecured call rate through short-term open market operations. In regard to these kinds of interest rate targeting operations, informed observers have for some time argued that the BOJ should target the monetary base or volume of the money supply in its operations.

However, in normal financial markets, interest rates and money supply are seen as two sides of the same coin. Since short-term financial markets have an unsteady but downward sloping demand curve, bringing down the discount rate, call rates, and other interest rates requires raising the volume of funds. Lowering policy rates will increase the amount of base money, and under normal conditions, cause money supply to expand as banks increase their loans. In post-bubble Japan some critics have criticized the BOJ for not easing the money supply. However, despite timing problems, the Bank has in effect pursued the same ends by lowering short-term interest rates.

Figure 2 Suggestions for Money Supply Expansion

Monetary easing measure	Main advocate	Description
(1) Expansion of monetary base	Fumio Hayashi (University of Tokyo)	Considering that the monetary base has increased over the past three years by around 7-8% per year, the goal should be 8-9%.
	Nobuyuki Nakahara (BOJ Policy Board)	Increase monetary base growth to about 10% yoy in Q3 99.
(2) Manipulation of excess reserves	Mitsuhiro Fukao (Keio University)	Increase surplus reserves by ¥500 billion per month.
(3) Unsterilized intervention	Koichi Hamada (Yale University)	Do not sterilize the intervention funds.
(4) Provision of private sector credit by the BOJ		Directly supply funds to private sector. Purchase assets such as stocks and land.
Increased open market purchases, underwriting of government bonds.	Mitsuhiro Fukao (Keio University)	Increase BOJ open market purchases above current ¥400 billion per month.
	Paul Krugman (MIT)	BOJ finances the fiscal deficit.

3. Monetary Adjustment in a Zero-Interest Rate Policy Environment

Despite an easy monetary policy since July 1991, growth in the money supply has remained stubbornly low. In February 1999 the BOJ began a zero-interest rate policy in which the call rate has been practically zero. Meanwhile, fiscal stimulation was also continued, causing the fiscal deficit and government debt to balloon. When policymakers finally realized the futility of fiscal stimulation, expectations turned to monetary policy once again. But with the call rate near zero and limitations of interest rate targets appeerent, those advocating “quantitative easing” again came to the fore, insisting that shifting from interest rate to money supply targets would allow further monetary easing and stimulate the economy from the monetary side.

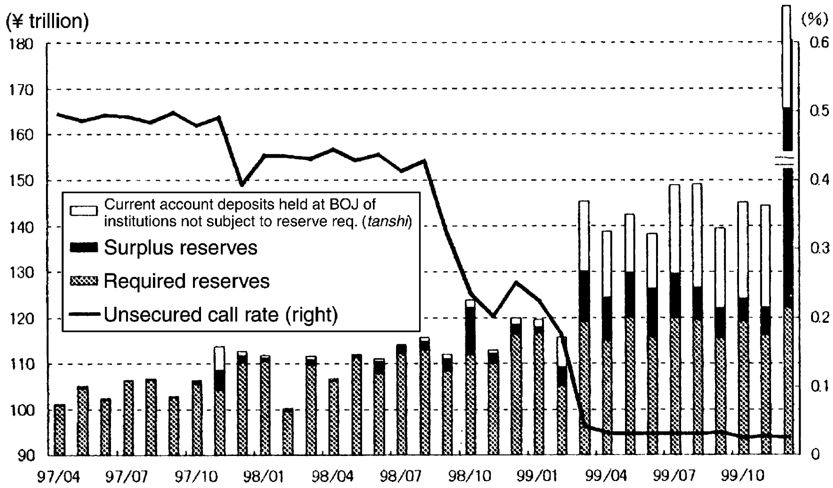
What is advocated as quantitative monetary easing can be divided into two parts: (1) setting monetary targets, and (2) taking specific measures to increase the money supply. Possible targets include base money, money supply, and nominal GDP growth targets, as well as inflation targeting. Targeting may be important from the perspective of identifying monetary policy goals; however, it remains doubtful whether simply setting inflation or other targets can change the behavior of companies and consumers. Unless the BOJ has the means to achieve any of these targets, it is unlikely that targeting will have any major impact on the economy.

Specific policy suggestions for increasing money supply growth are outlined in Figure 2. The next section discusses, in the context of the problems currently facing the Japanese economy the zero-interest rate policy environment, whether these measures will actually serve to increase the money supply.

4. Factors Obstructing Money Supply Growth

In short-term financial markets under the zero-interest rate policy environment, reserves held in BOJ deposits have accumulated beyond required reserve requirements, while enormous amounts of funds are accumulating at *tanshi* call loan companies that arrange interbank funding. Normally, when the BOJ supplies base money, the process of credit creation causes the money supply to increase. However, this route assumes that money supply growth is being constrained by legal reserve requirements. In the current situation, reserve deposits are actually in surplus and thus not a constraint on money supply, leaving the money supply to be determined by other factors.

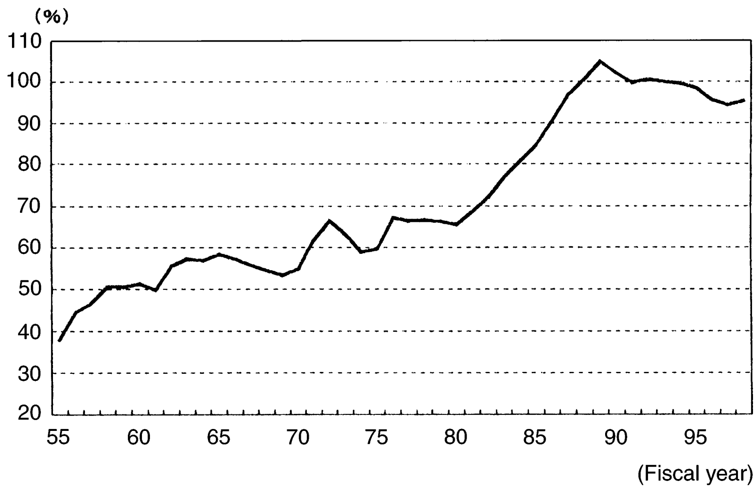
Figure 3 Level of Reserve Deposits



Note: Shows average levels for each period.
Source: Bank of Japan

An unusual situation exists in the Japanese economy due to severe balance sheet problems. In the aftermath of the bubble, corporate borrowers found their balance sheets containing too much loan debt. Many were faced with an urgent need to trim balance sheets, which had ballooned on both the asset and liability sides, and pay off their debt by disposing of assets that were unprofitable or idle. The banking sector also found itself in trouble, having pushed loans too far during the bubble period. Many banks now had excessive loans that prevented them from meeting capital adequacy ratios and other banking criteria. From the viewpoint of the overall Japanese economy, the ratio of bank loans to nominal GDP had diverged greatly over the trend line. The amount of loans become too large in relation to the economy, and no conspicuous improvement was seen after the bubble had burst. To ameliorate the situation, in the medium term banks need to actually cut back their loan business. Under these circumstances, even when the BOJ supplies base money, banks cannot increase their lending business, rendering the money supply growth mechanism through bank lending ineffective.

Figure 4 Total Bank Loans as a Ratio to Nominal GDP



Sources: EPA, BOJ

Looking at the growth of domestic credit in the real money supply, we find that not only did overall growth slow after the bubble's collapse, but growth in credit was now led by claims on treasury accounts and claims on local governments. Very little growth in credit demand from the private sector was seen. That was because the banks lending the money and the companies and households borrowing it had balance sheet problems, impeding money supply growth through the channel of bank loans.

Monetary policy is sometimes likened to a brake; when financial institutions are keen to supply credit, they generate a demand for funds in the call markets, and the BOJ can use the call rate and official discount rate to adjust the amount of deposit reserves and thus indirectly control the money supply. In a zero interest rate policy environment, the problem is whether monetary policy can also act as an accelerator and increase the money supply.

5. Money Supply in an Environment of Balance Sheet Problems

A simplified balance sheet for companies and households is shown in Figure 5. Assets include cash and deposits, which are included in money supply statistics; financial assets such as government bonds and bank debentures that are not included in the money supply; and real assets such as plant and equipment. Liabilities include debt such as bank loans and corporate bonds, and net assets such as capital, legal reserves, and earnings available for dividends. Total assets and liabilities must match and cancel each other out.

Figure 5 Simplified Balance Sheet

Assets	Liabilities	
Financial assets	Liabilities	
Assets included in money supply	Bank loans, etc.	
Assets not included in money supply		
	Capital	Net assets
Real assets	Legal reserves	
	Earnings payable as dividends	

Using this balance sheet to consider a money supply increase, the "assets included in the money supply" under "financial assets" in the left column increase as the money supply grows. Since both sides of the balance sheet must balance each other out, we are left with three methods for the liabilities side (Figure 6).

Figure 6 Methods to Expand Money Supply from the Perspective of Money Holders

(1) Increase liabilities	Increase bank loans, corporate bond issues, etc.
(2) Convert assets across categories	Decrease assets not included in the money supply
(3) Increase net assets	Expand fiscal deficit, current account surplus

The first method of expanding the money supply — increasing the liabilities on the right of the balance sheet — is what monetary policy normally expects to do. However, as explained above, balance sheet problems are hindering the corporate and household sectors from further adding liabilities and expanding the money supply. In the second method of converting assets to increase the money supply, options include: (1) the purchase of real assets by the central government, BOJ, or banks, and (2) converting financial assets not included in the money supply such as government bonds and bank debentures into assets such as cash and deposits that are included in the money supply. In a high-interest rate environment, reducing interest rates would no doubt encourage a shift to financial assets included in the money supply. However, since today's low-interest rate environment presents few options, the effect of such asset conversions on the real economy would be limited. The third option of increasing net assets through such measures as deficit spending, similar to purchases of real assets by the central government, actually falls under the category of fiscal rather than monetary policy.

The current economic problem in Japan is a balance sheet difficulty requiring companies and households to reduce liabilities. To improve the situation, money supply growth must be increased and deflation overcome. However, the problem is that monetary policy is no longer effective in achieving these goals due to the breakdown in the usual policy route of bank lending. Today, with both fiscal and monetary policy at a stage where conventional wisdom no longer holds, the choice is no longer between fiscal and monetary policy; to increase the money supply and achieve an economic recovery, a combination of both fiscal and monetary policy actions will be needed.