WHAT ECONOMIC EFFECT DOES A ZERO INTEREST RATE HAVE?
- ANALYSIS OF THE CURRENT JAPANESE MONETARY POLICY -

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EXECUTIVE SUMMARY
Throughout the 1990’s, the Japanese economy experienced a prolonged downturn. To respond to this situation, the government of Japan and the Bank of Japan (BOJ) took various kinds of measures to stimulate the economy. In this paper, we analyze the effects of these measures, especially focusing on monetary policy. Currently, the main monetary policy is called “zero interest policy” in which the overnight call rate is almost zero. This is the first time the BOJ has adopted a policy such as the “zero interest policy.” After analyzing the effects and problems of monetary policy, we make recommendations for stimulating the Japanese economy in the future.

I. THE CURRENT MACROECONOMIC SITUATION IN JAPAN
Since the autumn of 1997, adverse domestic and overseas factors, such as failures of financial institutions and the resulting decrease of confidence in the financial system, a rise in consumption tax rate, constraint on fiscal expenditures, growing insecurity in the labor market and financial and economic turmoil in Asia, have combined to erode household and corporate confidence. As a result, the Japanese economy faced severe conditions in the autumn of 1998 referred to as a “recessionary vicious cycle.” Consequently, the real GDP has declined for 5 consecutive quarters since the fourth quarter of 1997. The real GDP in 1998 marked a -2.5% growth. The unemployment rate increased from 2.9% in 1994 to 4.1% in 1998. (It is still increasing. The latest rate in 1999 was 4.7% - this is the highest figure in the post-war period.) The private investment marked a -7.7% growth in 1998 and a -5.6% growth in 1999.

To overcome a financial crisis and the downturn in economic activity, the government resorted to all available fiscal, tax, and industrial policy measures such as the Comprehensive Economic Measures(April,1998) and the Emergency Economic Package( November,1998). Parallel action was taken in the area of structural reform such as reforming the financial system, bolstering industrial competitiveness, creating new employment opportunities, reforming the labor market, and fundamentally revamping and improving government policies pertaining to small and medium enterprises. The measures basically aim at 1) creating new demand by increasing public investment as well as implementing measures to wipe out concern about employment, in order to facilitate a shift from public to private demand, and to put the economy onto the track of a full-fledged recovery led by private demand. 2) promoting structural reform of the Japanese economy through measures such as giving support to small and medium-sized enterprises and venture businesses, technological innovation as well as establishment of a new solid foundation for economic development.

The bank of Japan (BOJ) also has taken measures against a backdrop of weak activity, deflationary pressures and continuing banking system strains. The situation of the money market in 1998 was such that a rise in long-term interest rates, a fall in stock prices and an appreciation of the yen gave rise to the concern that these would negatively affect the economy. In response to this situation, the BOJ focused on preventing the economy from falling into a deflationary spiral and on easing the severe conditions for corporate financing. To ease money conditions and stabilize financial markets, BOJ cut the overnight call rate - its operating target- from slightly below 0.50% percent to 0.25 percent on September,1998. Moreover, in February,1999, the BOJ cut the overnight call rate to “the lowest possible”-this implies an overnight call rate of zero. In mid-April, the Governor announced that the BOJ would “maintain the current zero interest rate policy until deflationary concerns are dispelled.”

The Japanese economy has not yet gotten out of this severe situation, since, thus far; the economy has failed to attain a self-sustained recovery led by private demand. However, activities continue to improve moderately through the influence of various policy measures mentioned above and of the Asian economic recovery. With positive corporate activities beginning to be observed, movements toward autonomous recovery have begun to appear gradually. Given these developments, it was estimated that the Japanese economy would achieve a real GDP growth rate of about 0.6% in FY 1999.

II. EFFECTS OF JAPANESE MONETARY POLICY IN THE LATE 1990’S
During a period of economic slump in the late 1990’s, the BOJ’s main policy objectives are; 1) to increase output, 2) to weaken deflationary pressure, and 3) to sustain the financial system. To accomplish these objectives, the BOJ has continued expansionary monetary policy.
In this section, we examine how this policy affected various indexes in the macro economy of Japan.

1. IS-LM Analysis

First, we analyze Japanese macro economic policy by using the IS-LM model. In this analysis, we offer an overview of both fiscal and monetary policies in Japan during the 1990's in order to grasp the fluctuations of the Japanese economy in this period.

By plotting points that correspond to the interest rate and (real, nominal, or per capita) GDP combination from 1995 to 1998, we determined equilibrium for each year in the IS-LM framework (graph 1). Then, we tried to draw how the IS and/or LM curve shifted in these years and if the shifts correspond to the policies that the Japanese government and/or the Bank of Japan (BOJ) adopted. As shown in table 1, government expenditure rose steadily, as did the money supply from 1995 to 1998. Judging from these data, we first presumed that both the IS and LM curve would shift outward since the data imply that both the fiscal and the monetary policy were expansionary during this period. However, the value of GDP in 1998 was not consistent with this presumption. GDP significantly decreased in 1998. Given the fact that GDP declined, we concluded that IS curve might shift inward in this year because of other economic conditions. As to the LM curve, it is ambiguous from the data which direction the LM curve shifted in 1998. We assumed the LM curve kept moving outward because money supply kept increasing and interest rates continued to fall in this year.

Monetary policy: After the burst of the bubble economy in the late 1980's, the Japanese economy experienced years of slump in the early 90's. Throughout the 1990's, Japanese monetary policy had been stimulative and supported the recovery of economic activity along with the expansionary fiscal policies. Aided by substantially stimulative monetary policy measures, the Japanese economy had bottomed out at the end of 1993. Then, the pace of recovery began to accelerate at the end of 1995, and the recovery steadily continued in 1996. This is shown in graph 1 as outward shifts of the LM curves, fall of interest rates, and increases of outputs. However, as already stated, Japanese economic growth slowed during 1997. As a result of tightening fiscal policy and successive shrinking private confidence, the economy began to decelerate and became increasingly sluggish toward the end of fiscal year 1997. In September 1998, in response to this situation, the BOJ decided to ease monetary conditions and cut the overnight call rate to move on average around 0.25 percent. Moreover, in February 1999, the BOJ decided to further ease policy by encouraging the overnight call rate to “move as low as possible.” This policy is continuing today, and is called the “zero interest policy.” During this period, the LM curve kept shifting outwards and could soften the decline in outputs. Now, since several indicators show that the Japanese economy is beginning to recover, whether the BOJ continues the zero interest policy is under debate. However, in the last week, the BOJ announced again that they would not change the policy till they confirm that the economy is truly on the path to recovery.

Fiscal policy: In the late 1990's, Japanese fiscal policy has been expansionary to support aggregate demand. A series of stimulus packages - mainly consisting of public working spending and tax cuts- were adopted in 1993, 94 and 95, and these helped the recovery in economic activity. During 1995 to 1997, Real GDP value steadily increased by a mean of 2.7 percent per year. This is shown in the graph as outward shifts of IS curves. However, in 1997, the Japanese government judged that the economy had recovered and suddenly started a tightening fiscal policy with concerns over deteriorating public finances. The Diet passed the Fiscal Structural Reform Act (FRSA) that committed the government to lowering the government deficit, and then, public working spending sharply fell. Moreover, as a result of an earlier planned increase in the consumption tax rate from 3 to 5 percent in April 1997, tax revenue rose. In 1998, although government spending slightly increased, tightening fiscal policy contributed to shrinking economic activity. In this year, GDP showed negative growth by -2.9% and the Japanese economy unexpectedly entered the severest recession in the post war era. Private consumption substantially declined and so did business investment. It is shown in the graph as a large inward shift of the IS curve. In April 1998, the government announced it would adopt another stimulus package. Then, in November 1998, the government decided to use an additional stimulus package and suspend implementation of the FRSA. In 1999, the Japanese government continued expansionary fiscal policy to support a recovery of economic activities. We observe in the graph that an IS curve may still keep moving inward in 1999, however these expansionary policies might lessen the inward shift of the IS curve. We do not have data on GDP in 1999 yet. The government estimated that GDP will increase by 0.6 % in
this year. In fact, we can observe several symptoms such as a recovery of stock prices which tell us that the Japanese economy is beginning to improve.

2. Analysis of Other Factors
Money supply has been expanded since early 1990. As stated above, the IS-LM predicts that expansion of money supply increases output level. These effects all contribute to up-thrust. The growth rate of the output, however, was low or even negative and the unemployment rate has increased. In this section, by comparing the expected outcome and the practice, we examine possible factors that are affected by the money expansion; investment, consumption, imports and exports, and inflation and unemployment.

(1) Investment
Investment is one of the factors most affected by the change in money supply. Investment is expressed by the function of the real interest rate, \( r \), which is determined by demand and supply of money. We can summarize this with an equation relating investment \( I \) to the real interest rate \( r \).

\[ I = I_0 - br \]

From this equation, it is supposed that the investment increases when the real interest rate decreases. The interest rate has decreased since early 1990. However, as shown in Table 1, investments decreased from 1996 to 1998. Remarkably, it declined dramatically from 1997 to 1998. From the equation, it may be assumed that \( I_0 \) decreased during the periods and constant coefficient \( b \) was very small.

Decline of \( I_0 \) and/or small \( b \) may imply the following factors. First, domestic firms may not borrow/use the money because of the future uncertainty of the Japanese economy. Second, Japanese banks possibly are reluctant to lend the money to the companies because of sensitivity to risk. Third, there would be a mismatch between the money demand and supply in the investment market, because of the lack of accessibility to the money market, especially for small enterprises. Usually, the means of raising money for companies is limited to banks since it is difficult to issue new stocks to fund money. Finally, firms may have disincentive to increase investments because of the excess-investment during the bubble period.

(2) Imports and Exports
Imports and exports are affected by the monetary policy. The decrease in interest rates caused by the increase in money supply depreciates the home currency relative to foreign currency. The open economy model predicts decrease in imports and increase in exports, resulting in the increase of net export because domestic goods become relatively cheap and foreign goods become relatively expensive with depreciated currency. We can summarize this with an equation relating net export \( NX \) to the real exchange rate \( \varepsilon \).

\[ NX = NX(\varepsilon) \]

Note that net export and the real exchange rate have a negative relationship.

As can be seen in Table 1, export increased from 1995 to 1997, and then decreased. On the other hand, imports followed a similar tendency during the period. Net export increased gradually from 1996 to 1998 because of the depreciation of yen relative to foreign currency. Although export and net export followed the open economy model, imports did not follow the model. In addition, though the data from 1996 to 1998 were well explained by open economy model, the point year 1995 was above the line that fits the plots from 1996 to 1998. Even though the real exchange rate in 1996 was higher than those from 1996 to 1998, the net exports in 1995 were higher than expected. These discrepancies may be attributed to the Japanese on-going structural change toward a less restricted, more open economy that is supposed to remove the barriers to importing foreign goods. Moreover, the Asian economic crisis might impact the imports from the Asian countries by depreciating their currency more than the Japanese Yen. Anyhow, although an increase of net exports might contribute to the recovery of Japanese output, a huge trade surplus would cause conflict with other countries.

(3) Inflation and Unemployment
In general, when money supply is expansionary, people expect inflation will occur, leading to actual inflation. This is explained by the Quantity Equation:
\[ MV = PT \]

When velocity \( V \) and price \( P \) can be considered constant, the price must rise along with the rise in money supply.

On the contrary, in the Japanese economy, there is fear of a recessionary vicious cycle, because consumers are not confident (from the uncertainty for the future), and there is a pressure to reduce the price by the improvements to efficiency in the distribution system. In spite of continuous large monetary expansion, the inflation rate has not increased much in current Japan.

The Phillips curve predicts higher unemployment when there is a small change in the price level. However, the unemployment rate has increased. Looking at a concrete example, from 1992 to 1995, as the inflation rate decreased, the unemployment rate increased. Then, in 1996, the unemployment rate remained constant while the inflation rate increased, and in 1997, the unemployment rate increased, while the inflation rate increased. The Phillips curve could not explain this situation which might be attributed to a small change in inflation rate.

**4) Consumption**

It is difficult to evaluate the effect of monetary policy theoretically on consumption. However, we assumed that when interest rates decreased because of an expansion of the money supply, the private consumption level increased because the low interest rates give disincentives to save money. We can relate consumption \( C \) to the a and marginal propensity of consumption (MPC) \( c \), income \( Y \), and tax \( T \) as follows:

\[ C = a + c(Y - T) \]

As shown in Table 1, the private consumption ratio out of GDP has been stable from 1993 to 1998, although money supply has increased during the period. From our assumption, it may be presumed that \( a \) and/or \( MPC \) decreased during the period.

Decline of \( a \) and/or \( c \) may imply that consumers are afraid of the lasting recession and expect the deflation of goods, resulting in the restraint of consumption.

**IV. RECOMMENDATION**

As we stated above, the government of Japan has implemented various policies to stimulate its economy, though, they did not work. Based on this, we will make a recommendation for how to improve the Japanese economy.

1. **Monetary Policy**

It is preferable to continue “zero-interest policy” for the overnight call rate for a while because the fear of deflation still exits in the Japanese economic situation. By continuing “zero-interest policy”, investment and consumption will be stimulated, income and price will increase, and the stock market and assets will be positively affected. All of this will lead to economic recovery. Also, BOJ should make a clear positive commitment to maintaining “zero-interest policy” to avoid financial unrest. It is necessary for BOJ to maintain a rich, flexible money supply to support the economic recovery.

Currently, BOJ operates only short-term interest rates, but it is possible to expand its target to mid-term and/or long-term interest rates. BOJ should provide money to the market by purchasing bonds.

**Limitation of Monetary Policy**

The recent Japanese situation, in which the interest rate is almost zero, is unusual. It is doubtful that BOJ’s monetary policy is effective under this “zero-interest rate” condition. Moreover, the long term “zero-interest rate policy” may obstruct Japanese industries’ structural reconstruction.

To make this monetary policy effective, other complimentary policies should be implemented at the same time.

2. **Fiscal Policy**

The Japanese government should continue to use expansionary fiscal policy to stimulate economic activity. The increase in public works spending and tax cuts make governmental expenditure expansionary, which shifts the IS curve outward. Though there are signs of recovery in the Japanese economy, it is difficult to judge whether private investment and consumer confidence have recovered enough to support the economy.
Moreover, the present improvement of the economy is mainly due to government efforts, thus it is necessary to continue to make positive fiscal policy until the economy is judged to be on the right track owing to the private sector. In 1997, the government misjudged that the economy recovered and contracted fiscal expenditure and raised consumption tax rate, which led to a serious decline in the economy. This experience indicates that it is desirable to continue fiscal expansion.

**Limitation of Fiscal Policy**

One of the problems is that, although it has been necessary to expand fiscal expenditure, the amount of government bonds issued reached 310 trillion yen (63% of GDP) at the end of FY 1998 because of the several stimulus packages and a decrease in tax revenues. The increase in the amount of national bonds not only increases interest payments but also puts pressure on other expenditures, which spoils the fiscal flexibility. This also indicates the increase of burden on the next generation, therefore it is possible that people may be driven into saving more and consuming less to prepare for the future burden. Based on these concerns, it is necessary that fiscal expansion should be limited until the economy recovers. After that, the government must try to make its finances sound.

3. **Policies toward industrial structural reform**

Looking at private investment, investment in Information Technology (IT) is expected to increase and support the whole investment from underneath. It is forecasted that the ratio of IT investment to real investment in plant and equipment will reach about 25% by 2004. IT is the future promising area, as it played an important role in the recovery of the U.S. economy. To stimulate private investment in these expected growing areas, it is necessary to maintain the infrastructure, promote deregulation, and reform the taxation system to extract corporate vitality. Getting the stock market ready for the explosion of entrepreneurs in these promising areas is also required.

In the process of industrial reconstruction, unemployment may increase temporally, though, at the same time, we can support the unemployed by implementing a combined policy of development of unemployed people labor worker skills and extension of the terms of the unemployment insurance. These policies can ease the pain of the unemployed besides helping the structural reconstruction. The change of industrial structure will bring new employment opportunities and these will absorb the unemployed in the end.

4. **Policies toward increase of private consumption**

One of the crucial factors in economic growth, private consumption, has not increased recently because of the fear of an unstable financial system and the increase of the unemployment rate. Thus, to raise consumption disposition, which will increase GDP, the government needs to make efforts to get rid of anxiety about the unstable financial system, in addition to increasing disposable income through fiscal policy. Also, if industries’ structural reconstruction solves fears of unemployment, this may stimulate the marginal propensity of consumption.

In the long term, the social security system should be examined, as well. Uneasiness about life after retirement leads to savings activity, therefore, stabilizing pension, health care, and nursing care are effective ways to reduce the savings rate and increase consumption.

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