Monetary Policy Beyond the Zero Interest Rate Policy under Deflation

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1. Introduction

The economic growth rate has been quite low during the 1990s. General prices and wages have been declining since the late 1990s, and deflation seems to have set in. Although the nominal interest rate has been zero for the last few years, that has failed to stimulate investment and consumption. Several fiscal stimulus packages—discretionary public expenditures and tax cuts—have been employed, but they too failed to stimulate private-sector investment and consumption. Due to deficit spending and declining tax revenues, the government debt-GDP ratio has risen from 60% in the beginning of the 1990s to 140% in 2002. According to the Moody’s, the Japanese government bonds are now rated below the Botswana counterpart. With apparent ineffectiveness of monetary and fiscal policy, the Japanese economy is drifting downward. The size of the nominal GDP has shrunk by 5% between 1997 and 2003.

The difficulties of the Japanese economy are quite unprecedented among industrialized countries in the postwar period. They pose a challenge both in economic theory and in policy practice. The core of the symptoms is a combination of deflation, accumulation of debts, banking fragility, and loss of growth. The challenges lie in four major policy areas: Monetary Policy, Bank Supervision, Fiscal Policy, and Exchange Rate Policy. They are briefly described here and analyzed in detail in later sections.

The Japanese economy is suffering from an unusual set of circumstances—some of them have not been seen for a long time in world economic history. A combination of deflation (negative rate of changes in the general price levels, such as Consumer Price Index and GDP deflator) and a sustained zero interest rate is a rare situation. The Japanese case may be the first example of liquidity trap since the experiences in the Great
Depression in the 1930s. The Bank of Japan has maintained the nominal interest rate at zero percent since 1999 (with a brief period of raising the interest rate to 0.25% from August 2000 to March 2001). But, the prices have not responded to the policy. Deflation and the zero nominal interest rate means that the real interest rate is positive. Many economists have called for monetary easing, in terms expanding monetary base, even with the interest rate being zero, since price movements are fundamentally of monetary phenomenon. The Bank of Japan economists have argued that the effects of quantitative easing are uncertain. To purchase the long-term government bonds was seen as one option, and indeed the amount of monthly purchase was raised in several steps from 1999 to 2002. More aggressive options for the Bank of Japan, that is to purchase real assets, such as real estates and equities, were proposed by economists but not implemented by the Bank of Japan. The Bank of Japan has contended that such unconventional monetary policy has at best uncertain effects and potentially very risky—it may result in damaging balance sheets of the Bank and also in hyper-inflation due to too much liquidity. Many economists thought that the aggressive options were at least worth trying with few side-effects and dismissed the concern over hyper-inflation as a remote possibility because of known weapons to battle it before it becomes reality. But, with the zero interest rate and continuation of purchase of long-term bonds, what else could the central bank do, when the prices continue to decline even at the zero interest rate (i.e., the real interest rate remains high)?

Deflation (or unexpected disinflation in general) causes a particular hardship on borrowers with nominal debt contracts. Asset price deflation makes those individuals and corporations who invested in real estates and stocks with borrowed funds particularly hard
One possible adjustment mechanism for a weak, stagnant open-economy is one through currency depreciation. Investors may want to escape from the economy with a banking crisis and without growth potential for other stronger economies. Capital outflows most likely cause the currency of the weak economy to depreciate. Depreciation helps an ailing economy by stimulating exports. This is part of an automatic adjustment mechanism. However, a quick and large depreciation, such as one in an emerging market currency crisis, results in high inflation, but this does not apply to a deflationary economy like Japan in the beginning of the 2000s. Depreciation in fact helps curing deflation in Japan. Theoretically speaking, the argument is right. However, depreciation is not happening to Japan. The yen repeatedly appreciated to the level that choked off exports (or at least squeezed profits in the export sector). Should the monetary authority actively seek yen depreciation, given that private-sector adjustment is not there and other traditional policy has either failed or become ineffective?

2. The Lost Decade

Let us review a rise and fall of the Japanese economy in key indicators. The average growth rate of Japanese real GDP from 1981 to 1992 was 4.4%, while that from 1993 to 2002 was 1.1%. The drop in the growth rate by 3% from the 1980s to the 1990s is substantial. The magic of the Japanese economy and the fame of the Japanese management completely faded away. The 1990s is now known as a lost decade in Japan, and the above statistics illustrate the point.

A debate over the causes of this significant change in growth trend has emerged. One camp, probably labeled as a real business cycle camp, emphasizes a slowdown in
technological progress (lower total factor productivity growth) and preference of workers for more leisure. In fact, the labor input has declined as much as output, so the output per labor has not declined, or even increased slightly over the decade. The unemployment has increased steadily. Hayashi and Prescott (2002) cited the change in the total factor productivity growth and increased national holidays as possible explanations for the slowdown of Japanese economic growth. Others cite the losing competitiveness of Japanese exports and the hollowing out of the Japanese industrial base. Japanese corporations are investing increasingly in China and other Asian countries. Many Japanese multinationals, such as Sony and Toyota, are truly global in the sense production and earnings are evenly divided among Japan, the North America and EU. Consumers are also to blame for the stagnant economy. They are too risk-averse in consuming because they are wary of the prospects of pensions.

On the supply side, the real-business-cycle explanation of the Japanese lost decade has the same difficulty with the real-business-cycle explanation of the Great Depression. The decline in output is basically explained by a sudden mass-preference for leisure, and the fact that unemployment is increasing is ignored. Another problem with the supply side explanation is disinflation and deflation. If aggregate supply has declined without affecting aggregate demand, the prices should rise due to excess demand. Aggregate demand must have decreased faster than aggregate supply, because the inflation rate has become lower and lower, and eventually became negative.

Figure 1 shows the inflation rate, measured by the consumer price index (CPI) excluding fresh food and being adjusted for the introduction of the consumption tax in 1989 and the increase of the consumption tax rate in 1997. The CPI inflation rate shows a
cyclical movement, reflecting ups and downs of real economy. The sustained strong
economic growth toward the end of the 1980s resulted in 3% inflation in 1990, and a
temporal recovery in 1996 produced positive inflation rate in 1997. However, there is a
clear downward trend of the inflation rate from 1990 to 2002. The inflation rate has been
negative since 1998, but it became significantly so (minus 1%) since the fall of 2000. The
longer the economy is in the deflationary environment, the harder the prospect becomes of
getting out of it.

The CPI inflation rate rose in 2003, and became positive in October 2003, for the
first time in the last six years. Some observers think that the Japanese economy is finally
getting out of deflation. However, the increase in the CPI inflation rate in the summer and
fall of 2003 is commonly attributed to the special factors, such as the hike in the cigarette
tax and the rice price increase due to a cold summer. The GDP deflator is still showing
deflation by more than 3%. The CPI inflation has an upward bias and the GDP deflator has
a downward bias. Most likely, the true deflation is somewhere at the
1%-2%.

There is also a debate regarding the causes of disinflation and deflation. Just like
the debate over the cause of output stagnation, there is a camp which argues that deflation
reflects the real factors. Technological progress in IT goods drove down prices; imports
from China have driven down prices of domestically produced goods in competition; and
structural reforms, such as breaking down monopolies, in Japan put competitive pressure
on prices. Many of those who think that this is the case even regard that deflation is a good
thing, because they represent more efficiency in production.

Those who regard deflation as a monetary phenomenon have a different view.
Lower prices of IT goods, imports of inexpensive Chinese goods, efficient allocation of resources and more competition all point to the change in relative prices. Those goods with higher productivity most likely experience the fall in prices in relation to other goods. However, whether overall price levels go up or down depends on how much money is supplied to the economy. Inflation and deflation are each a consequence of monetary policy in the long run. We will review this debate in details in the later sections of this paper.

A combination of very slow growth of the real economy and deflation, the Japanese nominal GDP has been actually shrinking since 1997. The size of nominal GDP in 2002 was about 5% smaller than the peak in 1997. The size of the Japanese economy in terms of the US dollar is greatly influenced by the changes in the yen/dollar rate. Still, the yen/dollar rate reflects productivity and macroeconomic growth in the long run. Therefore, the relative size of the two countries shows the relative strength and growth of their economies. The size of the Japanese economy went from just above 30% of the U.S. economy in 1985 to more than 70% of the U.S. economy in 1995—most of which reflects the appreciation of the yen from 260 yen/dollar to 80 yen/dollar. And then the ratio came down to below 40% in 2002. The decline in the ratio in the second half of the 1990s reflects slower growth in Japan and deflation.

The rise and fall of the Japanese economy can be most visibly demonstrated by the rise and fall of asset prices. The stock and land prices quadrupled in the 1980s, and the stock prices peaked at the end of 1989, while the land prices peaked in 1991. By 2002 these asset prices lost all the gains made in the preceding ten years. The price levels have become one-fourth of the peak values in eleven to twelve years. With the benefit of hindsight, the
asset price inflation in the 1980s is considered to be a bubble, and the deflation in the 1990s is a result of its burst. The magnitude of the bubble and its burst is certainly one of the largest among the history of bubbles in the world. The land prices have been declining steadily, and the speed of decline has not slowed down.

The magnitude of the increase and decrease in asset prices certainly put any real estate investors in difficult positions. Most severely affected were the developers, real estate companies and construction companies. They took inventory of land with borrowed money, while the value of land started to fall. Either developing commercial properties or selling land outright would have made them instantly insolvent. Instead, they stopped interest payment to banks. Banks that regarded going-concern values of corporations much higher than liquidation values kept lending to these nonperforming corporations, hoping that one day, land prices would turn up and development would take place. The hope has never turned into a reality, and many of these corporations did go bankrupt, or banks were forced to write down or forgive these nonperforming loans.

Those who hold debts—almost all of them are nominally fixed amount of debts—suffer from general price declines and asset price declines, as the real burden of debts become large. Those who borrowed to build owner-occupied housing at around the peak of the bubble suffer from negative wealth effect (more savings to make up losses) and negative equity (additional payments are needed to get out of current housing, a severe constraint for moving to new housing). Consumption was depressed.

So, asset price deflation adversely affected output activities through many channels, including nonperforming loans, capital shortage of banks, negative wealth effects, and negative equity of mortgaged home owners. In short, asset price deflation
caused negative demand shocks. But, negative demand shocks depressed consumer prices and asset prices. Thus, a deflationary spiral occurred.

Combining all these observations, one may conclude that Japan in the 1990s suffered from debt deflation, a mechanism that is sometimes used to explain what happened in the Great Depression of the 1930s. (See Fisher (1933) for a seminal work, and King (1993) for more modern application.) The experience of Japan in the 1990s may not be as acute as the Great Depression, maybe because Japan in the 1990s had more safety net than the US in the 1930s, but the cumulative damage of the prolonged recession in Japan may rival the damage done by the Great Depression.

In the next two subsections, chronological explanation of the bubble and its burst will be given. The description of what went wrong will be useful in discussing various policy options and application of economic theories in solving the current difficulties in later sections. In some of the critical points in history, there is no consensus even among the economists. This shows the magnitude and complexity of the debt deflation in Japan.

3. The zero bound nominal interest rate and quantitative easing

When the nominal policy interest rate was brought down to zero, it was difficult to imagine a channel through which conventional monetary policy could continue to work. The nominal interest rate cannot be negative, and providing more monetary base by buying more treasury bills (open market operations) does not seem to have a channel to be effective in stimulating either consumption or investment. What else could the central bank do other than keeping the short-term interest rate at zero? When the prices continue to decline even at the zero interest rate, the real interest rate will rise and there seems to be nothing conventional monetary policy can do to stop it.
The zero bound interest rate has generated a sudden burst of interest in the literature. See Svensson (2001) and Eggertsson and Woodford (2003), Jung, Teranishi, and Watanabe (2003) to name a few.

Beyond the zero interest rate policy, the central bank can expand monetary base by purchasing long bonds and other kinds of assets as well as short-term (treasury) bills. One perspective is that it is important to expand monetary base, regardless of what assets the Bank of Japan buys, because increased monetary base has to find way to other kinds of assets. However, many have pointed out, and it is observed in Japan, that expanded monetary base through an increased open market operations does not necessarily result in a boom in other kinds of assets or bank lending. Since cash and short-term bills become perfect substitute, there will be excess reserves at the central bank. It matters what kind of assets that the Bank of Japan purchase against its injection of monetary base. So, it has to be examined whether effectiveness of monetary expansion is different for different assets that the central bank will purchase.

Another issue to examine is whether the Bank of Japan can credibly promise easy money not just for now but for future. By providing enough liquidity, the central bank may create expectation that the interest rate may be kept low in the future. The expectation of deflation to end soon may be generated by extraordinary liquidity. However, if this is the channel to use, the central bank should also announce the inflation target in the future to make the commitment more explicitly and credibly. (See below the section on inflation targeting.)

Those who believe in the power of monetary policy even at the zero interest rate have pointed out beneficial effects of quantitative easing through several different channels.
First, more monetary base must find ways to be invested in stocks, foreign bonds and domestic bonds, if not lent to corporations. Portfolio shift must occur to riskier assets. If money is directed to the stock market, the stock prices will rise and this is good for banks who hold equities on their balance sheets and the overall economy. If money finds its way to foreign bonds, the yen would be depreciated and exporting sectors earn more profits. If liquidity flows into long bonds, then the long bond interest rate will be lowered and that is good for investment. Although it is not clear beforehand which channel will work, there is nothing to lose by trying it.

Second, another possible channel of quantitative easing to stimulate the economy is through inflation expectation. By providing enough quantity, consumers and investors may be convinced of the coming certainty of getting out of deflation. This expectation channel is important for lowering the real interest rate.

Therefore, important debating points on the actions of the central bank under deflation are as follows: (1) which assets the central bank should purchase; (2) how to signal commitments of the central bank to the future policy. However, before examining these issues, it is important to review costs of deflation, since several commentators (and even economists) in Japan sometimes have expressed a view that there is nothing wrong with deflation. Some even think that deflation is beneficial.

4. Adverse Effects of Deflation

Deflation is quite damaging to the economy. The costs of hyper-inflation have been a concern of central banks and economists around the world in the last half century. Great efforts by central banks have successfully lowered the inflation rate around world to
the single digit in most of the industrial countries by the late 1990s. However, costs of deflation had not been appreciated until they became apparent in Japan. Now many think that deflation may be more damaging than inflation.

The first problem is not due to deflation *per se*, but a problem with unexpected disinflation. An unintended income transfer is a result of unexpected disinflation, that is, the lowering of the inflation rate. When deflation occurs unexpectedly, it is a special, extreme case of unexpected disinflation. Suppose that a five-year loan contract was made in 1997 in Japan, a borrower and a lender would not have expected that the price level of 2002 would be lower than that of 1997. The 5-year interest rate (bank debenture) in 1997 was at around 1.6%. The inflation rate at the time was close to 0.5% (if the effect of consumption tax increase was adjusted). Therefore with a static expectation, the real interest rate was about 1.1%, and the real value of the loan for the borrower five years later would have been about 2% lower. This was expectation. However, the reality was that the inflation rate in the following five years was negative, making the real burden of about 2% higher instead. In this sense, with a contract of 100 million yen, there was an *ex post* transfer of 4 million yen from borrowers to lenders. Although unexpected disinflation is supposed to produce windfall gains to lenders, even lenders may suffer if borrowers go bankrupt due to increased burden of liability.

Under deflation when the interest rate is already zero, even expected deflation has an adverse effect. Deflation with the nominal interest rate being zero will make monetary policy ineffective. This situation can be viewed as a famous liquidity trap. Costs of deflation when the interest rate is zero can be understood in the following four categories.

First, the zero bound interest rate means that the central bank loses a grip on the
real interest rate (equal to the nominal interest rate minus the inflation rate), because the real interest rate becomes the absolute value of deflation rate, as the nominal interest rate equals zero. As deflation becomes worse, the real interest rate goes up. The high real interest rate will dampen consumption and investment. Consumption will be depressed as reward for waiting for a later timing for purchasing consumer durables becomes higher. In other words, prices are dropping (and the real interest rate is high) and consumers will postpone the timing of purchase. Investment will be depressed as the cost of capital will be higher.

Second, deflation of the general price levels will likely cause, or worsen, asset price deflation. The discounted sum of the future returns to fixed investment, land, or equities of companies, will fall as deflation becomes worse and the real interest rate becomes higher. Then, land prices and stock prices will fall. General deflation will cause, through a standard asset pricing method, asset price deflation. This in turn will cause financial fragility, as many companies and banks hold equities and use land as collateral.

Third, the difficulty of not having a monetary policy tool under deflation with the zero interest rate policy will be increased if downward wage adjustment is difficult. Some economists think that costs of low inflation starts at around 2% inflation rate, as the downward rigidity of wages will make it difficult to make smooth reallocation of labor force. (See Akerlof, Dickens, and Perry (1996) for a detailed study on this point.) In Japan, bonus payments for almost all regular full time workers have a large share of annual earnings. Bonus payments are known to be much more flexible than the monthly wage. (See Ito (1992) some econometric evidence for earlier periods. See also Kuroda and Yamamoto (2003a, 2003b) for a more recent study on the adjustment of the hourly wage
part, but not bonuses. When Kuroda and Yamamoto (2003c) asks the question on the impact of nominal rigidity on unemployment rate in a simulation model, the bonus adjustment is taken into account with a large impact lowering hike of the unemployment rate.) Although this is less of a problem in Japan where labor income flexibility including bonus payments is higher than Europe and the United States, deflation certainly makes it harder to adjust real wages.

Fourth, a deflationary spiral makes it more difficult to get out of deflation. Deflation in general prices (CPI) causes weaker output activities and declines in asset prices. Declines in asset prices further depress output activities. In turn, recession will depress general prices, namely deflation. As this logic is understood, consumers and corporations will develop deflationary expectations, making a forward-looking real interest rate higher. It would be difficult to make corrections on a higher forward-looking real interest rate, once it is set in the mind of consumers and corporations. The commitment by a credible central bank about the future monetary policy path is the only way to have some influences on the deflationary expectation.

5. Unconventional Monetary Policy

(5.1) Actions by the Bank of Japan

In March 2001, the Bank of Japan decided to change the policy instrument from the short-term interest rate (uncollateralized call rate) to the reserves (current account) that commercial banks hold at the Bank of Japan. From March 2001 to date (summer of 2003), three instruments were used to indicate the stance of monetary policy, or the degree of quantitative easing: excess reserves (the balance of current account at the Bank of Japan), the amount of monthly purchase of long bonds from the market by the Bank of Japan, and
the change in the official discount rate. In addition, the Lombard-type lending facility was introduced. The Bank of Japan increased the degree of quantitative easing in steps as shown in Table 1.

The amount of monthly purchases of long bonds expanded from 400 billion at the time of financial crisis. It was raised to 600 billion in August 2001, to 800 billion in December, 1 trillion yen in February 28, and 1.2 trillion yen in October 30. This shows that the Bank of Japan has been willing to expand money supply by substituting short and long bonds. In a sense, monetization of long bonds has been implemented.

The Bank of Japan also introduced the purchase of equities that are held by financial institutions, but this is a part of a policy to stabilize the financial system rather than monetary policy. The Bank held a Policy Board meeting separate from the Monetary Policy Board meeting to decide this action in September 2002. Equities held by commercial banks had become a source of volatility in financial stability, as the mark-to-market evaluation became negative and deducted from tier one capital. The Bank of Japan decided to purchase at market price equities from commercial banks in order to determine the loss (or profits), so that risk of the further losses would be prevented. The size of the purchase was set to 2 trillion yen at the time, and then increased to 3 trillion yen later.

The Bank of Japan has expanded assets to buy to asset back securities (ABS). In April 2003, the Bank announced that they would study ways to expand instruments for purchase to include ABS. In June 2003, they issued statements on how to select the types of ABS to purchase, without distorting market pricing. In a sense, this is an unusual step for the central bank. The credit risk is high and the market may be small. The purpose seems to
encourage banks to lend to small- and medium-sized firms and then securitize the loan. The lowest grade that the Bank would purchase would be BB (double B) for ABS and A-1 (single A one) for CPs (commercial papers). Purchase of these ABS will be made upon request from banks.

These actions—an increase in long-term bond purchase, purchase of ABS, purchase of equities from commercial banks—are considered to be unconventional policy, that the Bank of Japan has done in the deflation economy.

(5.2) Advocates

Those who fear the costs of deflation, as elaborated in the preceding subsection, have advocated various unconventional monetary policies in order to bring the economy out of deflation quickly. The steps taken by the Bank of Japan were too little too late. Proposed unconventional monetary policy includes the purchase of real assets including equities, real estates, and asset-backed securities as well as long bonds and foreign bonds, by the Bank of Japan. Purchasing individual stocks may pose a political and market difficulty in which particular stocks to pick, but purchasing a market-based index fund avoids the difficulty. The listed funds of market-based funds may be more appropriate for transparency and liquidity. In the case of real estates, it is also difficult to purchase individual real estate plots, but Real Estate Investment Trusts (REITs), again listed in the stock exchange, are good investment instruments. (See Ito (1999), Meltzer (2001), Svensson (2001), Bernanke (2002), to name a few.)

Purchasing long bonds is closest among unconventional monetary policy to the conventional monetary policy tools, and that is what the Bank of Japan has already practiced. Prior to March 2001, The Bank of Japan had been purchasing long-term (mainly
Japanese government bonds (JGBs) by 400 billion yen per month for the long-term provision of monetary base. The limit was raised to 600 billion yen per month in August 2001, in several steps to 1.2 trillion yen in October 2002. Advocates of stronger actions wanted to increase the size of purchase.

A direct benefit of purchasing long bonds is to lower the long-term interest rates. The purchase of long bonds will flatten the yield curve, stimulating investment. Second, another channel, but diametrically opposite in an apparent implication, is that to lower long term rate implies the longer duration of the zero interest rate policy. Since the long term interest rate is the compounding of the expected future interest rate, the lowering of the long-term interest rate, either by purchasing the long bonds or others, must be based on changing the expectation of the future path of the short-term interest rates.

The possible reconciliation of the second and third channel is based on the following scenario: if the Bank of Japan succeeds in creating an expectation that the short-term interest rate will be maintained at zero, even when the current inflation rate becomes positive, tolerating the negative interest rate. If this commitment is credibly transmitted to the market, inflationary expectation will not be translated into higher long rates. Nominal long rates remain low, while inflationary expectation becomes positive. Adopting inflation target is one way to transmit this kind of commitment.

The advocates of quantitative easing cite that the economy has become more stimulated after the Bank of Japan raised more aggressively the target for excess reserves and the amount of long bond purchases. The yen depreciated from the high of 100 yen/dollar at the early 2000 to 130 yen/dollar at the end of 2001, and the long-term interest rate came down to below 1 percent toward the end of 2002. All these are at least partially
results of quantitative easing.

Buying foreign bonds outright by the central bank amounts to unsterilized intervention in the foreign exchange market. Can unsterilized intervention under the zero interest rate be effective in depreciating currency or in stimulating the economy in general? This is a question not previously considered in the literature. According to the traditional monetarist model, where unsterilized intervention works, but not sterilized intervention, the effectiveness comes from changing the interest rate differential. Then, even unsterilized intervention would become ineffective because the interest rate would not change.

There, however, is a different camp. The relative quantity of monetary base would explain the exchange rate changes. According to this view, an increase in monetary base should be allocated to different assets, not necessarily bonds where the interest rate matters, and some of them to foreign assets, so that unsterilized intervention even at the zero interest rate would work in depreciating the currency.

Monetary policy activists think not only that the Bank of Japan actions were too little too late, but many more actions are warranted under the continued deflationary and stagnant environment. Outright purchases of listed stock index funds as monetary policy is one candidate. Those who sell stocks to the Bank of Japan are risk-taking investors, unlike investors who sell long bonds to the Bank of Japan. Risk money would circulate to other stocks, foreign bonds, or real estates. If funds stayed in the stock market, that would be good for the stock market, but driving up the stock price is not the direct purpose of stock purchases. Foreign bonds may become favorite for the investors who receive new cash for selling stocks. That channel would depreciate the yen, so that it would stimulate the export
sector. If risk money moves toward real estate money, then real estate deflation may stop. Desired portfolio shifts among private-sector investors will be achieved more by the central bank purchase of risky assets. This is justified when the interest rate is zero.

As mentioned above, the Bank of Japan indeed purchased stocks, but this was regarded as a policy to maintain stability in the financial system by removing a source of volatility from the commercial banks’ balance sheet. There is little reason that the Bank of Japan should refrain from purchasing a market-based portfolio of stocks from the market, while purchasing individual stocks from commercial banks outside the market. The former is more transparent, and good for the economy in general rather than individual banks.

Another possible asset category that the Bank of Japan can purchase is foreign bonds. In fact, this amounts to unsterilized intervention, assuming that there is no counter transactions in domestic securities by the Bank, and whether this is effective or not depends on how one views the channel of effectiveness from intervention to the exchange rate.

The real estate is difficult type of assets that the central bank can purchase, because appropriate pricing of individual real estate properties is difficult. However, listed real estate investment trust (REIT) is a class of assets that can be transacted with fair pricing. The Bank of Japan can purchase this asset in order to provide the risk money to the market. The channel of forcing portfolio shifts among risk-money investors is the same as the case of purchasing the equities in the market.

These additional steps would have been beneficial to the Japanese economy that was trapped in deflation with the zero interest rate. In addition to all the benefits described in the case of long bonds purchase, real asset and foreign asset purchases by the central bank have probable benefits of forcing portfolio shifts on those investors who are used to
taking risk in the stock market and foreign exchange market.

(5.3. Skeptics)

Despite obvious merits of quantitative easing, there are theoretical skeptics and empirical skeptics. Theoretical skeptics argue that when cash and short-term bonds become perfect substitute (i.e., zero interest rate with excess reserves), providing more cash to the public does not change any behavior of consumers or corporations. Empirical skeptics cite the tremendous decline in the velocity of money, so that an increase in monetary base did not result in a comparable increase in money supply (M2). One of the reasons for this disjoint was the banking problem. Banks that had nonperforming loans on their balance sheets tend to hoard cash by keeping liquidity at the Bank of Japan as excess reserves or piling up government securities instead of using liquidity to lend. So long as the banking fragility is with Japan, pushing monetary base does not result in increasing bank lending.

Those who oppose the use of unconventional monetary policy tend to use the following logic. First, deflation in Japan is either a good thing or a not-so-bad thing. When prices are dropping due to supply-side factors—innovations in high tech sectors and cheaper imports--, that is good for consumers and the economy at large. Real income would increase as income does not decrease and prices drop.

Second, unconventional monetary policy does not work in stimulating the economy anyway, or has even adverse side effects. Side effects, they argue, include putting the Bank of Japan balance sheet at risk of possible capital loss and increasing the risk of hyper-inflation. Critics argue that capital losses by the central bank would make the market lose confidence in the currency and therefore the yen would depreciate...
precipitously. When liquidity is provided to such an extent through unconventional policy, it is like piling up dry timber, and one strike of a match would create hyperinflation without time to control it.

Advocates of active monetary policy rebut the argument as follows. As mentioned above, deflation has definite bad effects, regardless of its causes. Prices decline due to technological progress, i.e., supply side factors may be true, but that is in terms of relative prices. Computer prices will decline relative to other more traditional goods and services, but the consumer prices as the average prices of all goods and services do not have to decline. The consumer prices are determined more by monetary policy than by prices of particular goods and services.

Some skeptics have argued that deflation is good for consumers, as real income would increase if income does not decrease. This may have been true in the first year or two of deflation in Japan, as the inflation-slide (cost-of-living-adjustment) of pensions was suspended by the parliament. But, as pensions started to decrease, the pain was felt even by pensioners.

It is true that the balance sheet of the central bank, if it starts to purchase equities and foreign bonds, would be exposed to the volatility of equity prices and the exchange rate. But, monetary policy activists would argue that purchases of those assets by the central bank do help the economy overcoming deflation, and the risk is worth taking. Moreover, capital losses by the central bank, if it ever happens, may be partially offset by seigniorage that the central bank earn from printing money, and, if it is not enough, the hole in the balance sheet (insolvency) may be easily filled by capital injection by the fiscal authority. In the consolidated balance sheet of the public sector, the central bank balance sheet can be
integrated into the government, and therefore concern by the Bank of Japan over such actions is unfounded. If the political problem of taking blame for the loss is a real reason for concern, the Ministry of Finance could give a promise of capital injection in the case of capital losses due to the price drop of assets, while achieving the inflation purpose, without asking the Bank executives to take responsibility. This action would lessen the burden on the Bank of Japan in taking more bold actions.

(5.4) The case in the United States

Clouse, Henderson, Orphanides, Small, and Tinsley (2000) considered various policy options that the Federal Reserve could do in order to stimulate the economy, if and when the nominal interest rate becomes zero. The first option (keep buying treasury bills) may work if expectations of future paths of inflation are changed by the central bank’s continued purchase of treasury bills. However, if that is the only action that the central bank carries out, the public may not be convinced of the power of the central bank to get out of deflation. The bank credit channel may not work if banks do not find it profitable to increase lending when the interest rate of short-term securities is already zero. Additional liquidity ends up in the excess reserves at the central bank.

The second option (buying long bonds) may work by lowering the expected rate of future interest rate, since the long rate is the weighted sum of the future short-term rates, according to the expectations theory. Another possible channel is the portfolio balance effect, through which risk premium will be lowered, and the long bond rate will be lowered. Those who had long bonds will shift their portfolio and corporate bonds may be demanded.

The third possibility is that the central bank writes options on treasury securities so that the central bank would lose money if the interest rate rose above the certain level.
This would give a strong signal that the Bank would commit to the low interest rate for some time.

The fourth possibility is through intervention. The effectiveness of intervention has been subject to debate. Possible channels of effectiveness come from the signaling channel (signaling of future monetary policy change) and the portfolio shift channel (shifting from domestic to foreign bonds). Under the normal (positive interest rate) circumstances, unsterilized intervention has a stronger effect, but at zero interest rate, sterilized and unsterilized intervention will not be different, unless increasing the monetary base itself has an effect to stimulate the economy. The authors believe that it would take a large scale intervention to influence the exchange rate, and the duration of effectiveness may be fairly short. Thus, they are rather skeptical on this option.

The fifth option is to purchase debt instruments of U.S. Financial Services Institutions, such as Ginnie Mae, Freddie Mac, and Fannie Mae. The authors first clarified what securities the Federal Reserve can legally purchase as a part of open market operations. There are interest rate spreads between the Treasury securities and those US FSI securities. If any purchase of these securities by the Federal Reserve changes the risk premium, then the purchase will have stimulating effects. The option of purchasing private debt is limited by law to banker’s acceptance and for rediscount. Corporate debts and equities are not eligible for purchase, according to the law.

Lending to depository institutions is the sixth option. This can be done with various types of collaterals. Even corporate bonds or equities could be used as collateral, if the Federal Reserve finds it satisfactory. Credit risk of collaterals stay with depository institutions. Also making loans to individuals, partnership, and corporations, for which
credit is not available from other banking institutions, can be possible in “unusual and exigent circumstances.” In a severe credit crunch situation, this option may be activated. Although legally this may be possible, the authors point out several drawbacks, such as adverse selection and political problems.

The seventh channel is the money rains (helicopter money), that transfer wealth to the public from the money-printing Federal Reserve. Aside from a question on legal mandate, there are significant difficulties in implementing such wealth transfers. Possibly, the money-printing tax cut is an easiest way for implementation, this looks more like fiscal policy, rather than monetary policy.

Although this paper does not particularly recommend any instruments when the interest rate is at zero, it sorts out options and considers both legal possibility and possible effectiveness from economic theory. One option conspicuously absent in this paper is inflation targeting. Although the author recognizes the importance of signaling channel, inflation targeting is not even mentioned in the paper.

6. Inflation Targeting

One particular proposal to enhance credibility of the Bank of Japan to carry out its unconventional monetary policy is to adopt inflation targeting. See Ito (1999), Bernanke (2000), and Svensson (2000, 2001) to name a few. In one version, adopting inflation targeting means that the central bank announces the point (or a range) of inflation rate that the central bank will target with a specified date (or a period) in future to achieve it. Performance of the central bank will be assessed on the basis of how well the target was achieved. It the central bank cannot achieve the target and it was not due to unavoidable circumstances that are beyond the central bank’s control, the central bank is held
Inflation targeting has four kinds of benefits. First, by credibly announcing that the Bank of Japan adopts inflation targeting, people’s expectations of future inflation rates may be influenced. As argued above, the deflationary expectation (i.e., deflation will continue) has been taking hold. Unless expectations change, it is difficult and it takes time to get out of a deflationary spiral. The Bank of Japan can signal its resolve by announcement in order to get out of deflation in a speedier manner. Second, inflation targeting is a good monetary policy framework to conduct policy and communicate policy intention to the public. The Bank of Japan will be held responsible for achieving the target, so that changes in policy will be justified relative to achieving the target. Third, the inflation targeting is an appropriate framework of accountability for an independent central bank. Many central banks, both in industrial countries and emerging market countries, have gained legal independence in the last fifteen years. (It was argued that independence was proved to be effective in lowering inflation rate, such as Alesina and Summers (1993).) An independent central bank can decide the official discount rate without interference of the government (Ministry of Finance), and a governor’s job is guaranteed. In return, the central bank is asked to be accountable in their actions. Many independent central banks have a monetary policy board (committee) to make important decisions. Minutes of discussions and voting results at such a committee are disclosed. But, in order to be accountable, a central bank has to announce what they attempt to achieve. One of the best ways to be accountable is to adopt inflation targeting. This model of an independent central bank with a monetary policy committee and inflation targeting has been implemented in the United Kingdom, Canada, Australia, and Thailand, to name a few.
Some observers might think that accountability means a preparation for a stick—if the central bank fails to achieve the target, the central bank (or Governor) has to take responsibility. However, to adopt inflation targeting is also a protection of the central bank. This is the next point of argument.

Fourth, a central bank that adopts inflation targeting also gains independence on policy instruments. Although the central bank becomes independent, it cannot be totally independent ignoring what is happening to the economy. Often the level of the inflation target is set by the government, as in the United Kingdom, or in consultation with the government. However, by agreeing to inflation targeting with accountability, the central bank gains instrument independence. The government, politicians, or any other institutions will not be able to pressure the central bank for particular policy actions. The central bank would take sole responsibility to guide prices to the target. Inflation targeting sets the perimeter of independence.

The general case for inflation targeting has been made, for example, by Bernanke and Mishkin (1997), Bernanke, Laubach, Mishkin, and Posen (1999), and Svensson (2000). Various proposals that mention targeting a price level or an inflation rate in Japan, see Krugman (1998), that proposed 4% for 15 years, Ito (1999) that proposed 1 to 3% range to be achieved in two years, and Svensson (2001) that proposed price level targeting.

Critics of inflation targeting have argued both on technical reasons and on more substantive reasons. (Critics are mostly economists at the Bank of Japan. See for example, Fujiki, Okina, and Shiratsuka (2001))

For the technical front, the critics argued that it is difficult to define an appropriate price index (Bank of Japan (2000)) and an appropriate range, given uncertainty about the
bias in the price index. The critics’ arguments can be rebutted as follows: The consumer price index, CPI, is a standard measure for inflation. It may be better to use a core CPI, that excludes fresh food and first-round shocks of energy prices, but there is no such measure in Japan. The CPI excluding fresh food is available in Japan, and this is good enough to use. If the energy prices volatility messes up the inflation rate in Japan, that can be explained and responsibility of the Bank of Japan should be excused. This can be regarded as an escape clause in accountability. The upward bias in the consumer price index, constructed by the Laspeyres index, is well-known. (See Advisory Commission to Study the Consumer Price Index. 1996, for the U.S. case, and Shiratsuka (1999) for the Japanese case of such a bias.) It is commonly estimated that the bias is somewhere between 1% and 2.5%. That is, the CPI inflation rate of 1% is in fact an absolute price stability. Therefore, the technical problem is surmountable easily. In fact, when the Bank of Japan monetary policy committee has changed the policy instrument in March 2001, they have adopted the CPI inflation rate excluding fresh food. Therefore, now even the Bank of Japan seems to have agreed that the CPI excluding fresh food is a good enough measure.

On the substantive part, critics (see, for example, Fujiki, Okina and Shiratsuka) have argued the following. First, no credible policy instruments are available to stimulate the economy when the interest rate is already zero. Second, there are side-effects of possibly damaging the balance sheet of the Bank of Japan. Third, by increasing liquidity so much, there is a danger of causing hyper-inflation in the future. They consider unconventional monetary policy to be uncertain in its effectiveness, while there are definite side-effects.

For policy instruments, as argued above, unconventional policy advocates
identify equities (listed stock price index funds), REITs, and foreign bonds, when purchasing long bonds do not work, and the transmission channel is a portfolio shift.

Is the Bank of Japan trying to pursue inflation targeting? One may interpret that Mr. Fukui, after assuming Governorship in March 2003, is sending this kind of message, but without committing to an inflation target framework. Governor Fukui (2003) emphasized the importance of tolerating inflation with zero interest rate even after deflation would be ended.

7. Lessons from the Japanese Experiences

There are several lessons learned from the Japanese experience with deflation. First, it is important not to fall into deflation. Avoiding deflation is easier than getting out of it. Second, once the economy falls into deflation, it is best to get out of it as soon as possible. Third, various options, that would not be employed in the usual environment should be considered.

Looking at the difficulties that Japan fell in, concerns of disinflation in the United States were raised. The Federal Reserve Board has issued two studies exploring options for the central bank when the nominal short-term interest rate becomes zero. Clouse, Henderson, Orphanides, Small, and Tinsley (2000) studied policy tools at the zero interest rate, based on historical experiences of the US in the 1930s and Japan in the 1990s. The following options were considered for the Federal Reserve from the economic and legal point of views: (1) To keep purchasing treasury bills at the zero interest rate and increase liquidity; (2) To purchase treasury bonds; (3) To write options on Treasury securities; (4) To purchase foreign bonds (intervention); (5) To purchase debt of US financial service institutions, such as federally-insured mortgage backed securities, and private sector; (6)
Lending to depository institutions and private sectors; and (7) money rain. (See details of these options described in section 3.3.4 above.) The paper was written at the time that the Bank of Japan had just adopted the zero interest rate policy and the United States inflation rate was coming down. It can be regarded as a preparatory work just in case. The paper was written on the presumption that if there are enough policy instruments at the zero interest rate, then the monetary authorities may not fear finding themselves at the zero interest rate—no precautionary positive interest rate beforehand. The results of the investigation are largely uncertain. Several options may be promising, but the size of their effects was uncertain.

Ahearne, Gagnon, Haltmaier, and Kamin (2002) advanced research on deflation further. The paper directly examined the experiences of the Japanese economy. The paper regards that deflation is definitely something that carries adverse effects, and endorses early, preemptive actions to avoid it. Stimulus to avoid deflation should “go beyond the levels conventionally implied by baseline forecasts of future inflation and economic activity.” It states that the power of monetary and fiscal policy did not fall during the phase of disinflation, but rather during the positive interest rates, in the early 1990s. The paper cites an internal study and Bernanke and Gertler (1999) stating that by early action, such as lowering the interest rate by 200 basis points any time between 1991 and early 1995, deflation could have been avoided. However, it avoids direct criticism of past policy for not responding early enough, since deflation in Japan was unexpected by Japanese politicians as well as by the market.

Bernanke (2002, 2003) emphasized that the United States should make sure that it does not fall into deflation in the first place. He recommends employing even
unconventional monetary policy to prevent the economy from falling into deflation.

8. Is Yen Depreciation an answer to the problem?

In Japan, current account surpluses continue to mount, and the currency tends to appreciate, if anything. Japanese investors may have unusually strong home bias—preference for domestic yen-denominated securities with very low interest rate. If they had preferred foreign assets with positive interest rates to zero-interest deposits and securities, the exchange rate would have depreciated, and that would have stimulated certain sectors of the economy. Some economists think that active policy causing yen depreciation is an answer to the difficult situation in Japan, given that the automatic adjustment is not happening. Svensson (2001) proposed that unlimited intervention can be applied so that the yen depreciates to a pre-specified level, say 160 yen/dollar, and thereby stimulating the economy. Depreciation is beneficial to the economy, both by stimulating the export sector and causing imported inflation.

However, it is not clear how much intervention it would take to depreciate the yen. If an amount becomes too large, it may affect the global financial markets, as US treasury bills and European treasury bills had to be purchased.

9. Concluding Thoughts

This paper reviewed the experiences of the Japanese economy as it fell into deflation. Even at the zero interest rate, the economy does not show signs of getting out of deflation. Indeed, zero percent is the lower bound for nominal interest rate. Debates on other possible monetary policy options have been reviewed in this paper. A process of debt deflation seems to have been in progress. Deflation affects consumption and investment.
adversely, and the recession causes further deflation. As borrowers suffer from the increased real cost of debt, the asset prices are also affected by deflation. Once the economy is in deflation, the power of monetary policy is limited.

There are several lessons from the saga of the Japanese economy. First, deflation is dangerous, and it is better to avoid it before the economy falls into it. The policy should be unusually loosening when disinflation continues or there is a possibility that deflation may occur. Once the economy falls into it, it is important to apply all the policies, including unconventional ones to get out of it as early as possible. Once deflationary expectation sets in, it becomes doubly difficult to get out of deflation, since there is no conventional monetary policy that could lower the real interest rate. Third, the power of inflation targeting should be reappraised since having a credible inflation target will help getting out of a deflationary spiral as well as avoiding deflation in the first place.

In addition to monetary policy, options of fiscal policy and intervention policy are reviewed. It seems that each policy instrument alone may have difficulties pulling the economy out of deflation. However, with a combination of various policies, along with inflation targeting, may have a best bet to combat deflation. The Japanese experiences of deflation in the late 1990s and the beginning of 2000s will give an interesting case study for the future macroeconomic management and monetary policy.
References:


Bernanke, Ben S. 2003. “Some Thoughts on Monetary Policy in Japan”, the Japan Society of Monetary Economics, Tokyo, Japan, May 31. (Available at the FRB website.)


Clouse, James; Dale Henderson; Athanasios Orphanides, David Small, and Peter Tinsley (2000). “Monetary Policy When the Nominal Short-Term Interest Rate is Zero,” Federal Reserve Board, Finance and Economic Discussion Series, 2000-51, November. (Available from the Federal Reserve Board website.)


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Figure 1: CPI inflation rate excl fresh food, 1985–2002
<table>
<thead>
<tr>
<th>Dates</th>
<th>Monetary Policy Action</th>
<th>Official Discount Rate</th>
<th>Current Account Balance at BOJ</th>
<th>JGB purchase per month (yen)</th>
<th>Others</th>
</tr>
</thead>
<tbody>
<tr>
<td>Prior to Zero interest rate</td>
<td>[1998 Sept 9] 0.25%</td>
<td>[1995 Sept 8] ODR 0.5%</td>
<td>400 billion yen</td>
<td></td>
<td>Start of the Zero Interest Rate Policy</td>
</tr>
<tr>
<td>1999 Feb 12</td>
<td>0.15% immediately and later as low as possible</td>
<td></td>
<td></td>
<td></td>
<td>Interest rate increase</td>
</tr>
<tr>
<td>2000 August 11</td>
<td>0.25%</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001 Feb 9</td>
<td>-</td>
<td>ODR 0.35%</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2001 Feb 28</td>
<td>0.15%</td>
<td>ODR 0.25%</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
| March 19 | Expected to be driven down to 0%                            |                        | 5 trillion yen                  | “will increase” but the ceiling at the balance of bank notes | Reinstating Zero Interest Rate Policy New Policy Instrument (Current Account at BOJ) Excess reserves of 1 trillion yen (Required reserve at 4 trillion yen) New measures will be maintained until the CPI inflation rate will become stably
<table>
<thead>
<tr>
<th>Date</th>
<th>Description</th>
<th>Number of Yen</th>
<th>Amount</th>
<th>Notes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2001</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>August 14</td>
<td></td>
<td></td>
<td>6 trillion yen</td>
<td>600 billion</td>
</tr>
<tr>
<td>Sept 18</td>
<td>ODR 0.10%</td>
<td>8 trillion yen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>December 19</td>
<td></td>
<td>10—15 trillion yen</td>
<td>800 billion</td>
<td></td>
</tr>
<tr>
<td>2002</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Feb 28</td>
<td></td>
<td></td>
<td>1 trillion yen</td>
<td></td>
</tr>
<tr>
<td>Sept 18</td>
<td></td>
<td></td>
<td></td>
<td>Decided to purchase equities from commercial banks (not a part of monetary policy, but for financial systemic stability)</td>
</tr>
<tr>
<td>Oct 30</td>
<td></td>
<td>15—20 trillion yen</td>
<td>1.2 trillion yen</td>
<td></td>
</tr>
<tr>
<td>2003</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>March 25</td>
<td></td>
<td>17—22 trillion yen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>April 8</td>
<td></td>
<td></td>
<td></td>
<td>Decided to consider purchasing ABS</td>
</tr>
<tr>
<td>April 30</td>
<td></td>
<td>22—27 trillion yen</td>
<td></td>
<td></td>
</tr>
<tr>
<td>May 20</td>
<td></td>
<td>27—30 trillion yen</td>
<td></td>
<td></td>
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