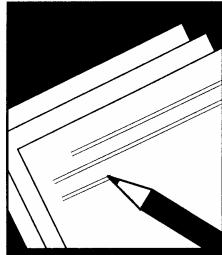


# Policy Discussion Paper



# IMF Policy Discussion Paper

## Does Excess Liquidity Pose a Threat in Japan?

*Gauti Eggertsson and Jonathan D. Ostry*

## IMF Policy Discussion Paper

Research Department

### Does Excess Liquidity Pose a Threat in Japan?

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#### Abstract

**This Policy Discussion Paper should not be reported as representing the views of the IMF.**

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This paper examines the effects of quantitative easing implemented by the Bank of Japan (BoJ) since early 2001, looking specifically at the impact on inflation expectations and real asset prices. It suggests a number of possible channels through which quantitative easing may have exerted influence, and reviews some of the empirical evidence linking open market operations and long-term bond purchases to real yields and other asset prices. It argues that quantitative easing has had smaller effects on nominal and real variables than desired, mainly because the BoJ has not succeeded in credibly communicating its policy intentions once the zero bound on short-term rates ceases to be binding. It argues that setting clear goals for inflation and a return to interest rate targeting are not only key elements of a successful strategy to avoid deflation, but are also essential to pin down expectations and avoid instability once deflation wanes.

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## I. INTRODUCTION

The adoption by the Bank of Japan (BoJ) in early-2001 of an official policy of quantitative easing—that is, a policy of deliberately injecting liquidity beyond the level needed to keep short-term interest rates at zero—has by most accounts had mixed success. While a deflationary spiral has been avoided, and spikes in short-term interest rates that could have destabilized the banking system during periods of high temporary demand for liquidity (say around mid-year or end-year book closings) have been averted, the policy has not managed to quickly turn around deflation expectations or stimulate a rapid return to positive growth in nominal GDP. While Japan has shown some signs of recovery since the BoJ's policy was put in place, and deflationary pressures on at least some measures (especially the CPI, but not the GDP deflator) have eased, it is difficult to tell how much of this is due to monetary policy as opposed to other influences, including the strong pickup in Asia's (particularly China's) growth, or the ongoing progress in bank and corporate restructuring.

There has been a considerable literature that emphasizes that clear goals for inflation—if credible—can be useful to stimulate spending and stabilize prices in a deflationary environment, even if quantitative easing may be of little or no help (see, e.g., Krugman, 1998; Svensson, 2001; and Eggertsson and Woodford, 2003). The lessons from this literature are relevant to the Japanese context today given the soft patch in its economic recovery during 2004 and early 2005 and the persistence of mild deflation. Beyond this, the prospect of an end to the deflationary environment and quantitative easing, and the resulting return of positive short-term interest rates, will put a premium on improving the BoJ's

communication strategy over and above recent efforts, not least to give guidance about how policy will be conducted in the new environment. Fortunately, the principles of a successful communication strategy in a post-deflationary environment are much the same as under deflationary conditions: the BoJ needs to set clear objectives for inflation or the price level and discuss how it aims to achieve these goals through appropriate management of current and expected future short-term interest rates.

This policy paper tries to offer some guidance about how the transition to the post-deflation monetary policy regime should be handled. This issue is of considerable practical importance. Since quantitative easing was put in place, high powered money has increased by more than 50 percent. Such an increase will, if it is allowed to persist, eventually result in a very sizable increase in the price level. So sooner or later, the BoJ will have to confront the issue of how to manage the transition out of quantitative easing if excessive inflation is to be avoided. The argument that merely discussing the issue could destabilize markets—say because it might signal an earlier end to the current policy than markets had assumed, and so undercut the recovery—highlights the importance of clear and transparent communication with markets. Markets are very aware of the issue, so avoiding a debate on how to handle the transition is not the key to managing it successfully.

This paper is motivated by the policy issue of how to avoid derailing the recovery or destabilizing the banking system as the monetary policy framework evolves during this transitional period in Japan. It argues that a move to interest rate targeting as the main policy instrument, supplemented by some form of price level or inflation goal as the ultimate objective, is likely to be needed as the recovery gains momentum and deflationary pressures

subside. Provided such policies and BoJ communications are well managed, however, the paper concludes, the risks associated with the process of reducing excess liquidity should be manageable. The BoJ will also need to be aware of possible adverse portfolio effects as it contracts the monetary base by selling long-term bonds.<sup>2</sup> To avoid potential risks, the paper suggests that the Ministry of Finance could exchange long-term bonds for short-term bonds to stabilize the relative supply of long- and short-term liquidity.

The remainder of this paper is organized as follows. The next section describes the main features of the current policy regime, and the likely effects to date of quantitative easing. Sections III and IV attempt to interpret the recent experience in terms of the Keynesian liquidity trap and more modern intertemporal models in which aggregate demand depends on both current and future real interest rates. Section V surveys some recent empirical evidence on the link between quantitative easing and inflationary expectations and portfolio effects. Section VI asks how contracting the monetary base—necessary to avoid inflationary pressures in the future—is likely to affect the recovery through a variety of channels (including disruptions in short-term rates, expectations, long rates, and balance sheet losses). A final section attempts to summarize the main policy implications.

## **II. MONETARY TARGETING IN JAPAN**

On March 19, 2001, the BoJ adopted a framework of quantitative easing to battle deflation and an extended economic downturn, since the short-term interest rate—the Bank's

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<sup>2</sup> This risk should not be overstated, however, since the average residual maturity of the BoJ's bond portfolio is only around 2–3 years.

previous policy target—had already been lowered to zero. Since then, the BoJ has increased the monetary base by more than 50 percent, creating a significant volume of excess liquidity. The Bank implemented this policy by targeting “current accounts” of commercial banks, which are money balances that commercial banks hold at the BoJ. The target for current accounts originally announced was 5 trillion yen. Later, this target was raised on eight occasions, and stands at 30–35 trillion yen today.

By targeting larger current account balances—a variable that is easily measured by the BoJ—the Bank sought to increase the monetary base, and thus to ease monetary conditions.<sup>3</sup> The monetary base has increased by roughly 60 percent since the adoption of this policy, with current account balances accounting for about 70 percent of the

Figure 1. Selected Narrow Monetary Aggregates, September 1997 - January 2005

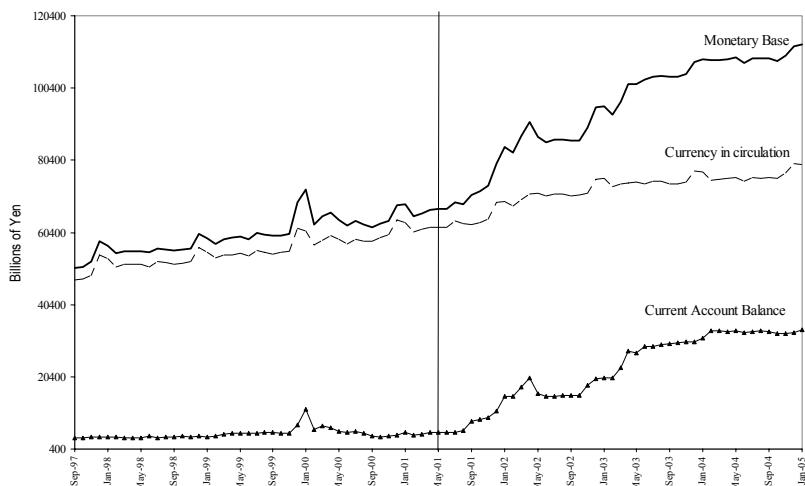
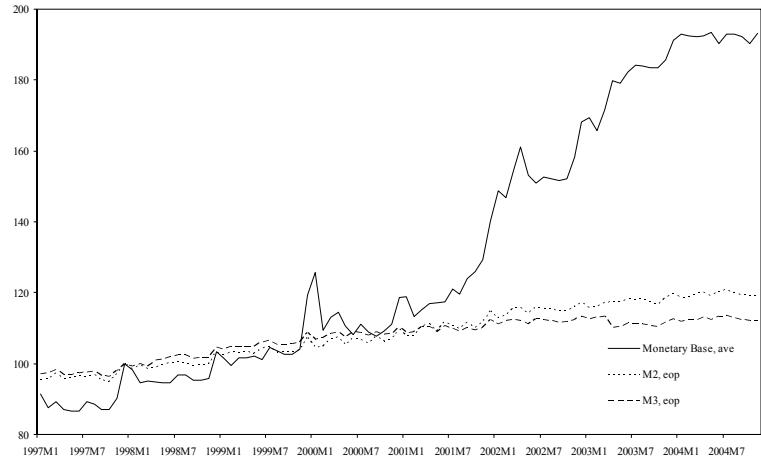


Figure 2. Trends in Real Money Supply, 1997 - 2004 (Dec 1997=100)



<sup>3</sup> The monetary base is defined as the sum of current accounts and bank notes and coins in circulation.

increase (see Figure 1). However, the increase in the monetary base has not resulted in parallel increases in broader monetary aggregates, such as M2 and M3, which are not directly under the control of the central bank. These broader measures of money supply have stayed relatively stable as shown in Figure 2.

Larger current account balances have been achieved mainly through open market operations in government bonds. This can be seen in Table 1, which shows the balance sheet of the BoJ. As can be seen there, the increase in the monetary base has mostly been achieved by purchases of government securities, and the main result has been an increase in deposits—that is the sum of current accounts held by commercial banks at the BoJ plus government deposits (the increase in deposits stems almost exclusively from an increase in the former).

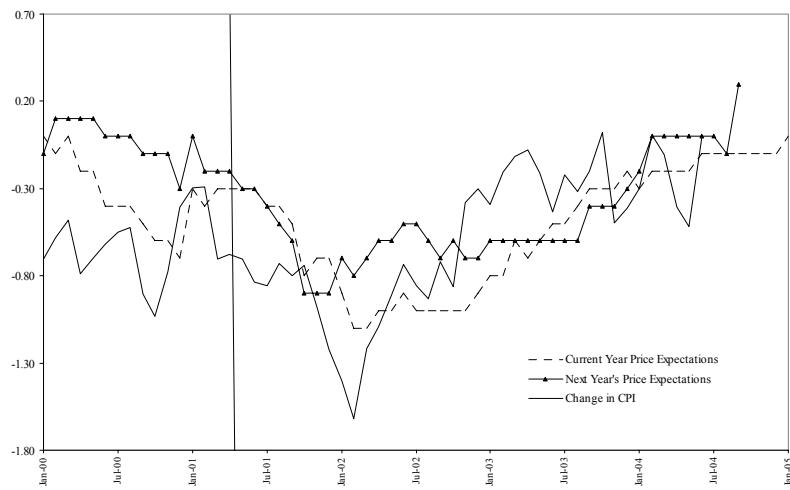
Table 1. The Balance Sheet of the Bank of Japan (in billions of Yen)

	April 2001	Dec. 2001	Dec. 2002	Dec. 2003	Dec. 2004	Feb. 2005
<b>Assets</b>	<b>112,326</b>	<b>117,508</b>	<b>125,126</b>	<b>131,369</b>	<b>144,547</b>	<b>151,409</b>
of which:						
Govt. Securities	64,164	75,591	83,124	93,503	95,026	99,469
Bills Purchased	8,707	20,714	28,042	23,843	36,073	37,765
<b>Liabilities</b>	<b>107,219</b>	<b>112,476</b>	<b>119,989</b>	<b>126,107</b>	<b>139,259</b>	<b>146,121</b>
of which:						
Bank Notes	60,039	69,004	75,472	76,910	77,956	73,082
Deposits	18,047	22,511	27,269	36,281	38,297	38,905
<b>Bank Capital and Reserves</b>	<b>5,107</b>	<b>5,032</b>	<b>5,137</b>	<b>5,261</b>	<b>5,287</b>	<b>5,287</b>

The effect of quantitative easing on the price level and inflation expectations has been modest, however. If prices and output are proportional to the monetary base (as one interpretation of the quantity theory of money would suggest) and the quantitative easing was

expected to be permanent, long-term expectations about the future price level should have increased dramatically. In contrast, inflationary expectations in Japan actually deteriorated for a

Figure 3. Inflation and Inflationary Expectations, September 1997 - January 2005



full year after the framework of quantitative easing was launched, as shown in Figure 3 (which indicates current and one-year-ahead expectations as measured by a survey of professional forecasters). And while there has been some improvement in inflationary expectations more recently, these are even now only barely positive, and are thus not contributing significantly to a reduction in real interest rates that could stimulate aggregate demand, as a monetary policy-induced view of the recovery would imply. This being said, it is impossible to gauge from the data in Figure 3 how expectations would have evolved in the absence of aggressive quantitative easing, that is, what the counterfactual to the present policy looks like. This leaves open the possibility that, while quantitative easing fell short of its desired effects, the evolution of inflationary expectations and economic activity could have been even worse under an alternative (or less aggressive) policy stance.

### III. MONEY DEMAND AT ZERO INTEREST RATES AND THE LIQUIDITY TRAP

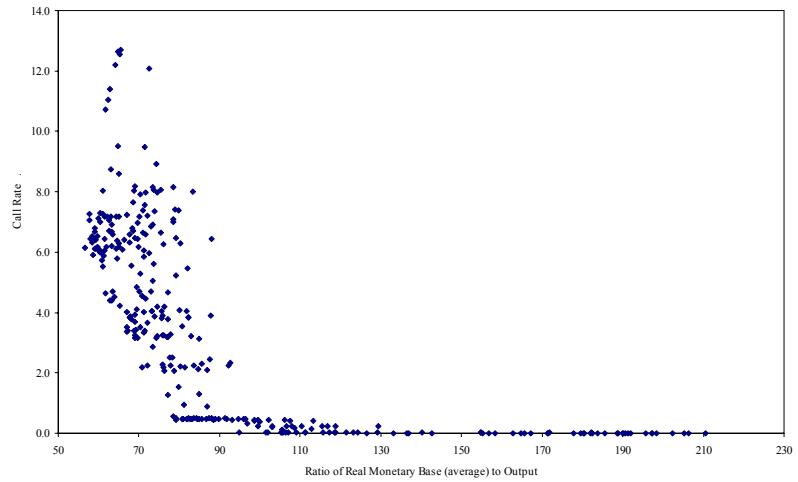
The simplest explanation for why an increase in the monetary base may have only limited effects on inflationary expectations and real macroeconomic variables dates back to Keynes.

He argued that increasing the monetary base by buying short-term government bonds is irrelevant at zero interest rates. This has been coined the liquidity trap. The logic is simple. At zero interest rates, money and short-term government bonds become perfect substitutes. Therefore, it matters little for economic activity if commercial banks (or private individuals) hold money or government bonds—the two assets being perfect substitutes. The recent experience in Japan gives some support to this proposition. The net result of the open market operations by the BoJ is that commercial banks have built up sizable idle cash balances in their current accounts at the BoJ instead of holding short-term liquidity in the form of government bonds. There is little economic rationale to expect such balances to affect the spending or investment decisions of either banks or individuals.

The basic prediction of the Keynesian liquidity trap is that, as the short-term interest rate decreases toward zero,

the demand for real money balances becomes infinitely elastic. Figure 4, which plots the ratio of the real monetary base over GDP against the short-term interest rate in Japan over 1980–2004, is at

Figure 4. Real Monetary Base and the Call Rate (in percent), 1980–2004



least suggestive of a liquidity trap during this period. As the short term interest rate declined and the monetary base increased, the main consequence has been that banks and individuals

increased their holdings of cash balances, with little effect on the price level, aggregate demand, or output.

Does this imply that the policy of quantitative easing has been completely irrelevant in Japan? The next section outlines a modern theoretical framework that gives some support to the Keynesian irrelevance proposition, highlights some caveats, and discusses empirical tests based on high-frequency data around policy announcements.

#### **IV. A MODERN VIEW OF THE LIQUIDITY TRAP**

The modern view of the liquidity trap is more subtle than the static Keynesian IS-LM model. It relies on an intertemporal stochastic general equilibrium model where aggregate demand depends on current and future real interest rates, rather than simply current rates as in the Keynesian model. In this framework, the liquidity trap arises when temporary shocks make the zero bound binding (these shocks can be due to a host of factors).

In contrast to the static framework, monetary policy can still be effective if it changes expectations about future interest rates and inflation at the point when it is expected that the zero bound will no longer be binding (for example when it is expected that the shocks that made the zero bound binding subside). If the money supply is higher at that future date, this increases inflationary expectations and lowers the (long-term) real rate of interest, stimulating demand even if the short-term interest rate is zero. When the short-term interest rate is zero, aggregate demand does not change with higher current money supply, but increases with the expectation of higher future money supply.

Since there is a relationship between the future interest rate and future money supply, another way of stating this result is that successful monetary easing in a liquidity trap involves committing to lower the future nominal interest rate for any given price level once deflationary pressures have subsided (see, for example, Jung and others, 2001; Reifschneider and Williams, 2003; and Eggertsson and Woodford, 2003). This was indeed the rationale for the BoJ's announcement that it would keep the interest rate low for a substantial period of time (as it was for the Federal Reserve, when it announced that it would keep interest rates low for a "substantial period" once policy rates had been lowered to 1 percent, a point beyond which it was reluctant to go). The gradual improvement in inflationary expectations in the period since the BoJ's announcement may reflect to some degree improved perceptions about the duration of the quantitative easing policy and the timing of any move to restore positive policy interest rates.

#### **A. When Is Quantitative Easing Effective/Irrelevant?**

According to the view outlined above, quantitative easing will only increase demand if it changes expectations about the future money supply, or the path of future interest rates. The Keynesian liquidity trap is thus only a true trap if the central bank is unable to move expectations. There are several plausible conditions under which this is the case, so that quantitative easing indeed becomes irrelevant.

Krugman (1998), for example, shows that if the public expects the money supply in the future to revert to some constant value, quantitative easing will be ineffective. Any

increase in the money supply in this case is expected to be reversed, and the long-run price level is therefore unaffected.

Eggertsson and Woodford (2003) argue that the same result applies if the public expects the central bank to follow a “Taylor rule,” which may indeed summarize behavior of a number of central banks in industrial countries. A central bank following a Taylor rule raises interest rates in response to inflation above target and output above trend. Conversely, unless the zero bound is binding, the central bank reduces the interest rate if inflation is below target or output is below trend (an output gap). If the public expects the central bank to follow the Taylor rule, it anticipates an interest rate hike as soon as there are inflationary pressures in excess of the implicit inflation target. If the target is perceived to be price stability, this would imply that quantitative easing has no effect, because commitment to the Taylor rule would imply that any increase in the monetary base would be reversed as soon as deflationary pressures had subsided.

Eggertsson (2004) argues that if a central bank is discretionary, that is, unable to commit to future policy, and minimizes a standard loss function that depends on inflation and the output gap, it will also be unable to increase inflationary expectations at the zero bound, because it will always have an incentive to renege on an inflation promise or extend “quantitative easing” in order to achieve low ex post inflation. This “deflation bias” has the same implication as the previous two irrelevance propositions, namely that the public will expect any increase in the monetary base to be reversed as soon as deflationary pressures subside.

## B. Long-Term Bond Purchases and Foreign Exchange Intervention

It has been suggested that the irrelevance results outlined above can fail due to a portfolio channel (see, e.g., Meltzer, 1999; McCallum, 2000; and Coenen and Wieland, 2003). If the monetary base is expanded by purchasing assets other than short-term governments bonds, the BoJ may be able to change the prices of those assets. One example is purchases of long-term government bonds, a policy the BoJ has in fact adopted.

Eggertsson and Woodford (2003), however, cast doubt on the effectiveness of such a portfolio channel, arguing that in a general equilibrium model, purchases of long-term government bonds have no effect on long-term yields if expectations about future interest rates remain constant. The reason is that the long-term interest rate depends on expectations of future short-term interest rates and a risk premium. Neither of these, however, depends on the quantity of long-term bonds in circulation or on the monetary base at zero interest rates. Open market operations involving purchases of long-term bonds, but which provide no credible indication about the duration of the quantitative easing policy, are thus unlikely to be effective.

Another possible channel through which quantitative easing might operate is via unsterilized purchases of foreign exchange—unsterilized intervention being a tool to both expand base money and depreciate the currency. The interest rate parity condition, however, implies that the value of the exchange rate should depend on current and future interest rate differentials, and thus unsterilized intervention would only change the exchange rate if it changed expectations about future interest rates. To the extent that open market operations in

the foreign exchange market leave expectations unchanged, they would be unlikely to have much economic effect.

### C. Quantitative Easing and the Liquidity Channel

“Liquidity” effects provide another possible channel through which quantitative easing may retain potency at zero interest rates. The idea is that an increase in the monetary base provides the private sector with liquid assets that may lead to an expansion in aggregate demand. If a firm or household is liquidity constrained, for example, its consumption or investment would depend on its available liquid assets.

The problem with this hypothesis is that if short-term liquidity is properly defined, increasing the monetary base would have no effect on overall liquidity. The reason is that quantitative easing, including as practiced by the BoJ, is conducted by purchasing government bonds. Since bonds and money are already perfect substitutes at zero interest rates, a sensible definition of overall liquidity should include *both* money and government bonds. This broader aggregate is unchanged by open market operations. For policy operations that increase liquidity to be effective, they would need to transfer wealth from the public to the private sector, for example by a direct cash transfer, or a wealth transfer from nonliquidity constrained firms/consumers to liquidity constrained firms/consumers (see, for example, Goodfriend, 2000). That, however, is a form of fiscal policy, rather than monetary policy or quantitative easing.

#### **D. Policy Implications**

The previous sections suggest that, to be effective, quantitative easing needs to alter the public's expectations about the future course of money and interest rates—that is, beyond the period in which the zero bound on short-term interest rates ceases to be binding. As we have seen in Japan's case, quantitative easing has not had particularly noticeable effects on inflationary expectations and the speed of economic recovery, but it does not follow that the policy has been totally ineffective given the difficulty of identifying the relevant counterfactual. Moreover, the gradual recovery in output and inflationary expectations, and the avoidance of more widespread financial sector instability provide some ammunition to those who are disposed to seeing the glass as half full rather than half empty. Ultimately, the verdict depends on an empirical, rather than a theoretical, evaluation—an issue to which we now turn.

In terms of the present conjuncture, there are of course clear implications that would flow from an evaluation of the success or failure of quantitative easing. To the degree that the strong versions of the irrelevance propositions hold, managing the transition to positive interest rates should not pose particular challenges for the central bank: the BoJ will simply contract the monetary base, allow interest rates to rise, and secure a balanced and durable recovery. However, to the degree that expectational issues, or portfolio or liquidity effects are important empirically, there could be more serious challenges to be faced as the BoJ begins the transition of mopping up the excess liquidity in the system.

## V. SOME EMPIRICAL EVIDENCE ON THE EFFECTS OF QUANTITATIVE EASING

The irrelevance propositions discussed above are not, as discussed earlier, conclusive. Rather, they suggest that if expectations about future money supply or interest rates are unaffected, then quantitative easing is unlikely to be effective. Yet, one could plausibly argue that quantitative easing can change expectations. The degree to which this is important needs to be addressed empirically.

### A. Empirical Evidence on the Effect of Quantitative Easing on Expectations

The figure on inflationary expectations reported earlier (Figure 3) suggests that expectations did not react strongly to the adoption of the quantitative easing policy framework. The vertical line in Figure 3 indicates the date the new policy was announced. A full year later, inflationary expectations continued to worsen. Such expectations are still only barely positive today, casting doubt on the notion that effects of quantitative easing on expectations have been large.

This evidence is suggestive but not conclusive. Looking at the effect of BoJ policy announcements of changes in the targeted level of current account balances using higher-frequency data may be more revealing. Such announcements were the key element of the BoJ's new policy framework. The hypothesis is that a target of higher current account balances may convey information or act as a signal about the likely duration of quantitative easing, and thus of the targeted price level. Under this view, a higher target for current accounts is a signal that the Bank is "softer" on inflation. If the signal is credible, it will increase inflationary expectations permanently, reducing the real rate of return and

stimulating demand. A simple way of testing this hypothesis is to study the behavior of long-term yields around the dates the BoJ announced higher targets for current account balances. If this policy provides a credible signal, the implied forward interest rates should rise at the date of announcements. Bernanke and others (2004) study the behavior of 5-year yields. They find no significant effect of this policy on these asset prices. This evidence thus suggests that targeting higher current account balances has not been effective in communicating an increase in the long-term inflation target of the BoJ.

An examination of the behavior of other asset prices, however, gives a more positive impression. In the study cited above, Bernanke and others (2004) find that on the six occasions in which the BoJ made a “surprise” announcement of an increase in its target for current account balances, the Nikkei 500 rose between 3 and 6 percent. The most likely explanation is that the market interpreted an increase in the current account target as an indication that the BoJ would keep monetary policy loose for a substantial period of time, that is, that the BoJ would keep interest rates low even after deflationary shocks have subsided, for a given path of the price level. Thus the evidence from the stock market indicates that there may have been some effect of these policy announcements, although it is still difficult to ascertain how large this effect was, given the small number of observations available.

## **B. Empirical Evidence on the Portfolio Channel**

As discussed above, it has been argued that quantitative easing can curb deflation through a portfolio channel if the monetary base is expanded by purchasing assets other than

short-term governments bonds. The argument is that the BoJ may be able to affect prices of those assets by changing their relative supply.

There is some evidence that the yields on long-term bonds have declined in Japan around the time of announcements that the BoJ plans to step up its purchases of longer-maturities Japanese government bonds (JGBs) (Bernanke and others, 2004). This is in contrast to the finding that additional purchases of short-term instruments—quantitative easing per se—has had little effect on long-term yields, as discussed above. This may be interpreted as evidence in favor of a portfolio channel for quantitative easing as long as it involves assets other than short-term bonds. Some further evidence of the importance of the portfolio channel is provided in the paper cited above through an estimation of a no-arbitrage VAR-based model of the term structure. That estimation indicates that the reduction in long-term interest rates in Japan cannot be explained only by a reduction in expected future short-rates. This leads the authors to suggest that the residual may be due to a portfolio channel.

The empirical evidence that Bernanke and others document can be rationalized, however, by effects other than the portfolio channel. If the BoJ's purchases of long-term bonds signal a future monetary easing, the apparent effectiveness of the policy could also be due to an expectations channel, as discussed above (this channel could of course in principle operate in the case of purchases of shorter-maturity securities, although empirically this appears not to be the case). A further explanation of the model-based comparison is that some institutions have a strong preference for holding long-term bonds. Inelastic demand for such instruments allows the BoJ to alter their price by affecting the relative supply of long- and short-term bonds in the hands of the public. Such an effect on the yields of long-term

government bonds, however, does not seem to have implied a similar reduction in the cost of long-term borrowing by firms. Thus, if the BoJ were able to reduce long-term JGB rates only by decoupling them from the rest of the interest rate structure, it is unclear there would be much of an effect on investment or economic activity more generally.

## **VI. WILL CONTRACTING BASE MONEY CAUSE PROBLEMS AS JAPAN EXITS DEFLATION?**

As mentioned above, the monetary base has expanded by more than 50 percent since the policy of quantitative easing was adopted. As the economy recovers, the BoJ will need to contract the base to prevent excessive inflation since in the long run—as interest rates return to their equilibrium value—the price level is roughly proportional to the monetary base. Are there risks in effecting such a large decrease in the monetary base as the economy recovers?

### **A. Disruption in Short-Term Interest Rates**

As output slack diminishes, finding the right target for the monetary base may be exceedingly hard. Most central banks have learned that monetary targeting at positive interest rates can lead to considerable volatility in short-term interest rates, due to instability in, and unforecastability of, the demand for money. As a result, most central banks use the nominal interest rate as their policy instrument, and let the market determine the level of money balances. In Japan, if the BoJ targets the monetary base when short-term interest rates turn positive again, large fluctuations in rates seem likely. As the economy recovers, therefore, the BoJ should start using the nominal interest rate once again as the instrument of policy.

## **B. Disruption in Expectations**

A key problem with a transition from the framework of quantitative easing is that the market may interpret a shift towards an interest rate target as a signal of tighter monetary policy in the future, or of the BoJ's intention to raise interest rates faster than previously assumed. Large changes in the monetary base—that would be required as the economy recovers as argued above—may therefore lead to large and erratic movements in expectations if the market does not know how to interpret them. A key element of a successful transition strategy is therefore an effective management of expectations. A successful strategy should then have two pillars: clear goals for the evolution of inflation or the price level, and a clear target for the policy variable—the nominal interest rate. With these two pillars in place, there is less reason to worry that expectations would be disrupted.

## **C. Disruption in Long Rates**

Long-term interest rates depend in part on the expected path of future short rates. Effective management of expectations is therefore also critical to prevent excessive volatility in long-term yields. Pinning down expectations with explicit short-term interest rate targets and medium-term inflation or price level goals should prevent large fluctuations in long rates.

As discussed above, long rates may also depend on the relative supply of long- and short-term government bonds due to a portfolio channel. Since the Bank of Japan holds a significant amount of government long-term bonds on its balance sheet, the relative supply of

long-term bonds may change considerably when the BoJ contracts the monetary base.<sup>4</sup>

Contracting the base by selling long-term bonds is equivalent to lengthening the maturity structure of outstanding debt of the (consolidated) government. This could increase long-term yields on government bonds absent other actions. To avoid this, the Ministry of Finance could stand ready to exchange long-term bonds held at the BoJ for short-term government bonds. This would allow the BoJ to keep the relative supply of long- and short-term bonds stable, avoiding any large portfolio disruption. Even if there are doubts of the importance of the portfolio channel, it would be almost costless to eliminate this risk altogether.

#### **D. Balance Sheet Losses**

Another danger in the exit from the zero interest rate regime is that an unexpected increase in interest rates may cause significant capital losses for some banks and individuals. Commercial banks hold considerable amounts of government bonds, and would experience a capital loss with an increase in their yields. However, an increase in interest rates would likely only come at a time of economic expansion, which implies that the value of other assets held by commercial banks would increase, that is, equity prices would increase and the credit risk on outstanding loans would decline. The net effect is ambiguous, although one cannot exclude the possibility that some banks would suffer losses.<sup>5</sup>

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<sup>4</sup> The BoJ may not need to sell large amounts of long-term government bonds to reverse quantitative easing, however, since it also has significant holdings of short-term paper, as well as temporary liquidity-providing operations that could be allowed to lapse.

<sup>5</sup> The large interest rate increase in the United States in the 1980s caused some banking problems, but those interest rate hikes came at a time of economic contraction.

Stress tests reported in the IMF's recent Financial Sector Stability Assessment indicate that credit risk is the dominant factor affecting the value of the banks equity (Table 2). The poor health of Japanese banks has been mainly driven by nonperforming loans, which in turn have mainly resulted from the economic contraction.

Table 2. Stress Test from IMF FSSA Report (2003)

Shock	Loss Measured as percentage of Equity			
	City Banks	Credit Cooperatives	Regional Banks	Life Insurance
Equity price stress	20 percent decline in prices	44%	3%	9%
Interest rate stress	100 bp increase in yields	33%	72%	22%
Credit risk stress	3 percent credit loss on loan book	93%	35%	45%

Table 2 shows some results for “typical” shocks to equity prices, interest rates and credit quality. The equity and interest rate shocks each represent about two-standard deviation movements in the underlying risk factor over a three-month horizon (sample period: 1970–2000). In 2002, for example, Japanese equity prices fell by more than 20 percent while long-term yields declined by nearly 100 basis points (bp). The credit risk stress test also represents a shock of the same order of magnitude of that observed in 2002, when three of seven city banks reported losses that exceeded 3 percent of their loan portfolio.

Looking ahead, while long-term yields could well rise by 200 bp, with substantial effects on banks and especially credit cooperatives, it bears noting that any losses made by the banks on their holdings of government bonds have a counterpart in gains made by the government. Thus, if capital losses become a serious problem, the Ministry of Finance (MoF)

would in principle have the resources necessary to compensate banks for their losses (although it may be difficult in practice for the MoF to realize these gains).

Again the appropriate management of expectations can minimize the danger of capital losses. Losses will only accrue if there are unexpected movements in interest rates, since expected changes under market-to-market accounting should already be reflected in the balance sheets of banks. To minimize the danger of capital losses, it is important for the BoJ to shift to an interest rate from a quantity target, thus helping markets to improve their ability to forecast the future course of rates.

## **VII. POLICY SUGGESTIONS**

While the soft patch in economic activity reminds us that Japan's battle with deflation is not over, the undisputed need in due course to reduce, and ultimately eliminate, Japan's sizable excess liquidity means that the BoJ should take the opportunity to clearly communicate its policy intentions going forward and so help to avoid potentially bumpy adjustments in private expectations as interest rates return to more normal levels. Whatever verdict one gives to the experience with quantitative easing thus far, such a framework is unlikely to be useful, and could well be destabilizing, once economic slack is reduced, given the ample evidence that monetary targeting in such circumstances is usually associated with excessive volatility in short-term interest rates. This paper suggests that the BoJ will need in due course to resume targeting short-term interest rates instead of current accounts or base money.

It is critical, however, to complement an interest rate target with clear inflation and/or price level goals. Absent clear communication of this sort, the BoJ runs the risk of confusing the market, which might interpret the change in the policy framework as an indication that the BoJ intends to raise interest rates prematurely or excessively, and so undermine the recovery. Indeed, the limited effectiveness of quantitative easing in the past may be due to insufficiently credible communications about the BoJ's inflation or price level objectives for the period in which the zero bound on short-term interest rates ceases to be binding.

There are many well known advantages of explicit price or inflation goals and some of them have particular appeal during the prospective transition period. One risk is that inflationary expectations could prematurely pick up, prompting an earlier and sharper-than-desired increase in policy rates to guard against an overshooting of inflation. To the extent that movements in inflationary expectations are not justified (e.g., the market misreads the policy stance of the BoJ), this may cause an unnecessary economic slowdown. If the Bank credibly communicates its long-term goal for inflation or prices, the risk of unwarranted increases in inflationary expectations and, likewise, policy rates, is much reduced. It is worth pointing out, however, that if history is to judge, the danger of overshooting may not be very large. Sweden, Japan, and the United States, for example, moved from a deflationary situation into modest inflation during the 1930s without sharp movements in expectations (see, for example, Kumar and others, 2003, for a discussion).

There are some advantages to announcing price level goals over inflation goals, especially in periods with low interest rates, although under normal circumstances the trade-off is perhaps less clear cut (hence there may be advantages—as suggested by Svensson,

2001—to a *temporary* price level targeting regime as practiced in Sweden during the 1930s). One is that a price level goal incorporates an “automatic stabilizer.” If the central bank announces a price level goal that is credible, the government commits itself to undo any deflation with subsequent inflation. Since higher inflationary expectations are helpful when the zero bound is binding (to lower real interest rates and increase demand), this is exactly what is needed. A similar argument applies to the exit phase from the zero bound. One risk is that the economy will overheat in the exit phase and inflation will overshoot the goal set by the central bank. If the BoJ has a credible price level goal, higher inflation would be associated with expected disinflation, thus reducing inflationary expectations and increasing real interest rates. Those expectations would thus reduce demand growth and so diminish the chance of overheating. To avoid the possibility that overshooting implies a commitment to actual deflation in a price level targeting regime, there are some advantages to announcing a price level target with a trend rate of growth of prices, as argued by Svensson (2001).

As pointed out in the last section, there may be some dangers stemming from an increase in long-term interest rates due a portfolio channel. As the economy recovers, it is expected that the Bank of Japan will need to liquidate a large number of long-term government bonds. This will increase the supply of long-term bonds in the market which may increase yields on those assets. Although the magnitude and importance of this channel is open to question, it is prudent to guard against it. A straightforward way of doing this would be for the Ministry of Finance to buy back all long-term bonds held by the BoJ and replace them with short-term debt. This would offset any potential adverse portfolio effect that a contraction of the monetary base could imply.

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