

The Mayekawa Lecture: Some Reflections on Japanese Monetary Policy

by Ben S. Bernanke

Thank you for inviting me to speak at this conference on the lessons learned and challenges ahead for monetary policy. After a period of innovation and experimentation in monetary policy, during which the Bank of Japan has often been in the vanguard, it is certainly appropriate to step back to assess what we have learned and what we still need to understand.

Some review and assessment are appropriate for me personally as well. As many here will know, I've been thinking and writing about Japanese monetary policy for many years, as both an academic and policymaker, starting with a case study of the Bank of Japan that Rick Mishkin and I did in our 1992 paper on monetary frameworks and inflation targeting.¹ Much of my writing on Japan has been motivated by the unique—or, at least, initially unique—challenges that the Bank of Japan has faced in dealing with deflation and the effective lower bound on short-term interest rates. As an academic, I found these challenges intellectually fascinating. The issues became much less abstract, of course, after I joined the Federal Reserve Board in 2002 and we found ourselves confronting similar problems in the United States, beginning with the deflation scare of 2003 and then the American encounter with the effective lower bound starting in late 2008.

I reviewed my articles and speeches on Japan in preparation for this talk. My speeches in particular have tended to be expositional, and I accordingly tried to reflect the professional consensus of the time—including the thinking of scholars like Paul Krugman (1998), Michael Woodford and Gauti Eggertsson (2003), and Lars Svensson (2003)—as well as my own views. In retrospect, much of what I wrote about Japan in the decade before the Global Financial Crisis has held up reasonably well. For example, my 2002 speech on deflation, plus subsequent papers in 2004 with Vincent Reinhart and with Reinhart and Brian Sack, pushed back on the view—which had credence in some circles at the time—that, when short-term interest rates are near zero, the central bank is “out of ammunition.” I argued instead that central banks have a number of options for further easing financial conditions after short rates hit zero, and my coauthors and I discussed and evaluated many of the policy tools that would be

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1. My papers and speeches with substantial reference to Japanese monetary policy include Bernanke (2009a, 2003, 2002, 2000), Bernanke and Mishkin (1992), and Bernanke, Reinhart, and Sack (2004). More recently, I have also been blogging on monetary topics, including Japanese monetary policy; see, for example Bernanke (2016b).

used in the American and Japanese reflation efforts, including forward guidance (both unconditional and conditional on economic conditions), large-scale asset purchases, changes in the mix of assets held by the central bank, credit programs based on low-cost central bank lending, and even what in Japan is called yield curve control.² (I did not however anticipate negative interest rates.)

In other pieces I argued that central bank purchase programs should focus on longer-term assets and not be concentrated on bills, as had been Japanese practice in earlier forays into quantitative easing.³ I made the point, associated with Reifschneider and Williams (2000), that in the face of deflation risks it was important not to try to conserve policy ammunition but to move “decisively and preemptively” (Bernanke, 2002). I emphasized the need to set an inflation target high enough to provide some buffer against deflation, and I noted that temporary overshoots of the target to compensate for prior inflation shortfalls could be warranted following a period in which rates are constrained by the effective lower bound.⁴ I frequently acknowledged the need to complement monetary policy with fiscal and structural measures and cited the critical importance of assuring financial stability through lender-of-last resort actions, financial regulatory reform, and bank recapitalization.

However, I certainly did not get it all right. In particular, in earlier writings I was too optimistic and too certain about the ease with which a determined central bank could conquer deflation, and I had little patience with the alternative view. For example, in a 2000 paper written while I was still an academic, I criticized the Bank of Japan for its “self-induced paralysis” and for showing insufficient “Rooseveltian resolve.” I asserted that more-aggressive policies would certainly yield better results, as Franklin Roosevelt’s unorthodox strategies seemed to do in 1933, and, indeed, as Minister Takahashi Korekiyo’s policies did in Japan during the same period. But when I found myself in the role of Fed chairman, confronted by the heavy responsibilities and uncertainties that came with that office, I regretted the tone of some of my earlier comments. Central banks do have viable options at the effective lower bound, but the problem has proved less tractable, in both the United States and Japan, than I had suggested. In particular, in some of my early writings, I did not always demarcate sharply enough between what monetary policy can achieve on its own, and what requires some degree of coordination with fiscal policy. At a 2011 press conference, in response to a question from a Japanese reporter about my earlier views, I responded, “I’m a little bit more sympathetic to central bankers now than I was ten years ago.” Why ending deflation and escaping the effective lower bound has proved tougher than I once expected will be one of the themes of my talk today.

In the remainder of my remarks, I’d like to do three things. First, I want to reaffirm the importance of the Bank of Japan’s continued pursuit of its two percent inflation

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2. For a discussion of yield-curve targeting, see Bernanke (2002). Bernanke and Reinhart (2004) discuss variations of forward guidance and changes in the composition of the balance sheet. Bernanke, Reinhart, and Sack (2004) found that forward guidance and asset purchases seemed less effective in Japan than in the United States.

3. As Fed chair, I tried to name our purchases of longer-term assets “credit easing,” to distinguish them from quantitative easing focused on shorter-term securities and the money supply, as pursued by Japan in 2001–2006 (Bernanke, 2009b). The term didn’t catch on.

4. Bernanke (2000, 2002, 2003).

goal, notwithstanding the fact that, on some important metrics, the Japanese economy today is doing well. Second, I'll comment in general terms on Japanese monetary policy since 2013, the first arrow of Abenomics. Although much progress has been made, even the very aggressive policies under Governor Kuroda have not yet achieved the inflation target. I'll discuss some aspects of the Japanese economy that have made reaching that goal difficult.

Looking forward, it may be that actions already taken, together with some lift from the global economy, will be sufficient to allow the Bank of Japan to reach its target in the next few years. There are no guarantees, however, and with some bad luck the improvement achieved thus far could be reversed. The final portion of my remarks will be some speculations on the policy options that would remain available in that contingency.

The case for continued pursuit of the inflation target

As I've noted, despite progress, the Bank of Japan is still some distance from achieving its two percent inflation target, with core-core inflation (that is, excluding energy prices as well as food prices) recently hovering close to zero. Should the Bank just declare victory and give up? Some might argue that extraordinary efforts are no longer needed. Although Japan's economy is growing only slowly, that largely reflects longer-term forces, notably a shrinking labor force and slow productivity growth, factors which are not amenable to monetary policy. Indeed, as is often pointed out, on a per capita basis Japan's growth has not been that much worse than that of the United States in recent years. The Japanese labor market appears tight, with unemployment near recent lows, and the employment-population ratio for prime-age workers, recently at 73.3 percent, is higher than that of the United States (68.7 percent).⁵ This performance has been achieved despite some extraordinary headwinds, including the Global Financial Crisis of 2008, the earthquake and tsunami of 2011 (which was followed by a shutdown of nuclear power generation), and the ripple effects of Chinese efforts to make the transition to a more inward-looking, services-oriented growth model. Consumption tax increases in 2014 were an additional drag on growth.

So why continue the pursuit of the inflation target? One argument is that the combination of higher inflation, higher nominal interest rates, and higher nominal GDP growth would help to reduce Japan's heavy fiscal burden. As a back-of-the-envelope exercise, I calculated the change in the present value of the future principal payments of outstanding Japanese government bonds (JGBs) that would be associated with a hypothetical once-and-for-all increase of inflation and nominal interest rates in Japan from zero to two percent, beginning in 2018.⁶ (I ignore bills, other government obligations, and future coupon payments on outstanding JGBs; I don't think inclusion of those items would change the result much.) I assume that coupon payments on JGBs issued in the future reflect the higher rate environment, so that the only fiscal benefit of

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5. Data, from the OECD, are for 2015, ages 15–64, all persons; see https://stats.oecd.org/Index.aspx?DataSetCode=LFS_SEXAGE_I_R.

6. Of course, a bigger effect could be obtained by aiming for inflation well above 2 percent (Blanchard and Posen, 2015). I won't enter here the debate about the optimal level of the inflation target.

higher inflation is to reduce the real value of currently outstanding JGBs.⁷ According to this calculation, a jump in inflation and interest rates to 2 percent would lower the value of Japan's debt to its GDP by about 21 percentage points—a substantial benefit, though perhaps not a game-changer given that the ratio is currently above 200 percent.⁸ I'll say more about the fiscal implications of higher inflation later.

However, for me, the more important benefit of achieving the inflation target is that it will promote greater economic stability in the future, by restoring the ability of monetary policy to respond to recessionary shocks. Over the past two decades, that ability has been limited by the proximity of short-term rates to their effective lower bound. To get a rough sense of how important this constraint has been, I estimated a standard Taylor-type rule for Japan (Taylor, 1993), regressing the policy interest rate (the overnight call rate) on the core-core inflation rate and the unemployment rate. The data are monthly. I used two alternative sample periods during which the effective lower bound was not relevant, 1980–95 and 1985–95.⁹ I made no adjustment for changes over time in the inflation target, the natural rate of unemployment, or the neutral interest rate: Despite these simplifications, the estimated coefficients are reasonable, similar to those found in Taylor rule estimates for the United States.¹⁰

With the estimated Taylor rules in hand, I projected how the call rate would have evolved out of sample, from October 1995 on, if (hypothetically, of course) the Bank of Japan had been able to respond to economic conditions without the constraint of the effective lower bound (Figure 1). Interestingly, the call rate projected by this simple equation is positive today, between 1 and 2 percent, in large part reflecting the low level of unemployment. Taken at face value, that result implies that Japanese monetary policy is not currently constrained by the effective lower bound.¹¹ However, given that inflation remains well below target, I don't find that implication to be plausible. I attribute the result instead to the fact that my estimates ignore both the well-established downward trend in equilibrium real interest rates and Japan's adoption of a higher inflation target in 2013—both of which, if properly accounted for, would tend to lower the rate projected by the Taylor rule. So there is likely a significant upward bias in the post-1995 rate projections in Figure 1.

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7. If BOJ policy were able to keep the yields on newly issued JGBs low even as inflation rose, of course the fiscal impact would be greater.

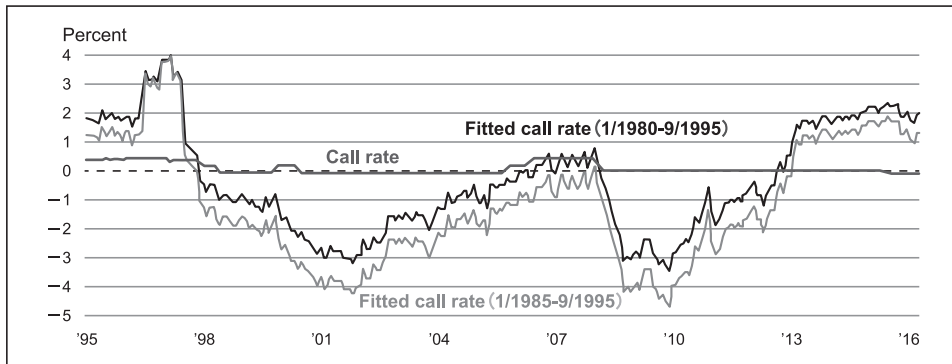
8. See <http://www.mof.go.jp/english/jgbs/reference/Others/redemption01.pdf> for recent data on the maturity distribution of outstanding JGBs, which provided the basis of my calculation. As of the last fiscal year, outstanding JGBs have a notional principal value of about 845 trillion yen. Including other obligations, notably 112 trillion yen in financing bills, government obligations total about 1,116 trillion yen (see http://www.mof.go.jp/english/jgbs/publication/newsletter/jgb2017_03e.pdf). For comparison, Japanese nominal GDP is about 540 trillion yen.

9. Specifically, the estimation samples are January 1980–September 1995 and January 1985–September 1995 (monthly data), and projections are made from October 1995 through February 2017. October 1995 was the first month in which the call rate fell persistently below 0.5 percent. For the policy rate, I used the average monthly collateralized overnight call rate for January 1980–June 1985 and the uncollateralized rate thereafter. I adjusted for the effects on inflation of the 2014 consumption tax by assuming that the core-core CPI was unchanged between March and April of 2014.

10. The coefficient on unemployment for the 1985–95 sample is -1.58 ($t=-3.82$) and the coefficient on inflation is 1.46 ($t=8.31$). For the 1980–95 sample the coefficients are -1.52 ($t=-4.61$) and 1.19 ($t=6.67$) respectively.

11. A similar result obtains when the Taylor (1993) rule is used to project the U.S. federal funds rate in recent years.

Figure 1 Fitted values of the call rate based on a simple Taylor rule, October 1995–February 2017



Note: Fitted call rate obtained by regressing historical call rate on core-core inflation and unemployment over specified periods. Inflation adjusted for effects of 2014 consumption tax.

Sources: Author's calculations, Japan MIC, Bank of Japan, Haver Analytics.

Despite that bias, the projections suggest that, in the absence of an effective lower bound on rates, the call rate might have fallen to as low as -4 percent, not only during the Global Great Recession but also during the long Japanese recession (September 2000–April 2003) at the beginning of the past decade. As Kiley and Roberts (2017) have recently shown for the United States, frequent encounters with the effective lower bound on interest rates can significantly degrade economic performance over time. That's true not only because of the constraint the lower bound imposes on monetary policy, but also because the implied floor on real interest rates impedes capital investment and puts pressure on borrowers' balance sheets during the weakest phase of the business cycle. Indeed, real rates have been far less variable since 1995 in Japan, suggesting that they are not playing their normal stabilizing role.¹² Achieving the inflation target in a sustained way, which would presumably also raise nominal interest rates about 2 percentage points from current levels, would not solve these problems but would likely meaningfully reduce them. In short, if the Bank of Japan wants to restore its ability to respond to future economic shocks, it needs to remain aggressive in pursuit of its inflation target.

Monetary policy under Abenomics

I'll turn now to some issues bearing on recent monetary policy. Of course, the current economic policy regime is associated with Shinzo Abe, who became prime minister in December 2012. The Prime Minister's plan to rekindle growth and end deflation, dubbed Abenomics, famously includes the three arrows of monetary policy, fiscal policy, and structural reform.¹³ With Abe's support, the Bank of Japan announced a

12. In monthly data, the variance of the ex post real interest rate was 1.77 percentage points during the period January 1980–September 1995, but only 0.46 percentage points from October 1995 to February 2017, the period during which the call rate was at or close to zero. For this purpose the ex post real interest rate is defined as the call rate less the twelve-month lagged core-core inflation rate.

13. For a discussion of the macroeconomic effects of Abenomics, see Hausman and Wieland (2014, 2015).

new inflation target of 2 percent on January 22, 2013, and a new governor, Haruhiko Kuroda, took office two months later. Under Governor Kuroda, the Bank has adopted a policy of so-called quantitative and qualitative easing (QQE), including purchases of exchange-traded funds and other private assets as well as of Japanese government bonds. As a result of QQE, the Bank of Japan's balance sheet has grown to a size equivalent to about 88 percent of Japanese GDP by the end of 2016. For comparison, the analogous figures for the Federal Reserve and the European Central Bank are about 24 percent and 34 percent, respectively.¹⁴ The Bank has also adopted modestly negative interest rates, although it has not gone as far as the Europeans in that direction and has taken a number of steps to shield banks from possible adverse effects on their profits.

More recently, the BOJ modified its policy framework by beginning to target the yield on ten-year JGBs, initially at around zero, and by committing to overshoot for a time the two percent inflation target (Kuroda, 2016). As I discussed in a recent blog post (Bernanke, 2016b), I see these both as constructive steps. In particular, committing to overshoot the inflation target is consistent with theoretical analyses that conclude that, when short-term rates are at the effective lower bound, the central bank should compensate by committing to keep rates lower than it otherwise would as inflation rises (Krugman, 1998; Eggertsson and Woodford, 2003). More generally, the overshooting commitment should help to quell speculation that the BOJ will abandon the fight against deflation prematurely.

The adoption of yield curve control can be interpreted as a change from a quantity target (80 trillion yen in annual JGB purchases) to a price target (the JGB yield). As the BOJ has acquired an increasing share of outstanding JGBs, the remaining stock in private hands has become less price-sensitive, because banks and other holders value JGBs for reasons other than yield. Thus, even as it becomes more difficult for the BOJ to meet a fixed quantity target for JGB purchases, the Bank will find it easier to manage JGB yields, and it will likely be able to do so with lower volumes of purchases than in the past.¹⁵ Since limits on the supply of JGBs in private hands will no longer be a barrier to the implementation of policy, the new framework is more sustainable than the previous one. Setting a target for JGB yields may also allow the Bank to better project and manage the effects of its policies on the economy and on financial institutions.

Certainly, the policies undertaken since 2013, especially those by the Bank of Japan, appear to be having significant effects. Despite having little space to reduce the call rate, since Abe's election the Bank has effected a substantial easing in financial conditions, as reflected in the stock market, longer-term interest rates, and the exchange rate.¹⁶ Growth has picked up, averaging about 1.1 percent since the beginning of 2013. That's probably above potential, consistent with the improvements we've seen in the

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14. Source: Haver Analytics.

15. The supply of U.S. Treasuries, in contrast, seems more price-sensitive, implying that a yield-curve control policy in the United States could have led to large swings in Fed holdings. The possibility of losing control of our balance sheet was one reason that the Fed did not set yield targets, especially at long horizons.

16. Since October 2012 the ten-year JGB yield has fallen from about 0.8 percent to close to zero, the thirty-year yield has declined from 1.9 percent to 0.8 percent, the Nikkei 225 stock index has risen from 8,800 to more than 19,000, and the trade-weighted exchange rate has fallen from 107 to 86 (2010=100). Source: Haver Analytics.

labor market. After years of contraction, nominal GDP growth has averaged close to 2.1 percent over the past four years, which is a positive for fiscal sustainability. And, importantly, there are signs that the long deflation has ended, with core-core inflation during 2013–2015 in the range of 0.5–0.7 percent (excluding the change in the consumption tax), although, worryingly, it dropped close to zero in 2016. When Hausman and Wieland (2014) did an early review of Abenomics and BOJ policies, they concluded it easily passed a cost-benefit test; three years later, that assessment looks to be holding up.

Still, the BOJ's stated objective of 2 percent inflation has not been reached, and the timeline for achieving the target has been repeatedly pushed back, which is disappointing. Why? From my outsider's perspective, it looks like some features of the Japanese economy, and the legacies of past policies, are interacting to prevent faster progress toward the BOJ's inflation objective. Importantly, the equilibrium real interest rate in Japan appears to be exceptionally low, probably negative. The equilibrium real rate, known to economists as r -star or the Wicksellian rate, is the real interest rate at which aggregate demand and potential output are equal. Equivalently, the equilibrium rate is the rate that defines a "neutral" stance of monetary policy.

That the equilibrium real rate in Japan would be low is hardly surprising. Indeed, there is considerable evidence that r -star has fallen to historically low levels in all the major economies. For example, Holston, Laubach, and Williams (2016) document a sharp downward trend in equilibrium real rates in the United States, Canada, the Euro Area, and the United Kingdom.

Broadly speaking, there are (at least) two explanations for the low level of r -star in the leading economies. The secular stagnation hypothesis, advanced by Alvin Hansen in the 1930s and recently revived by Larry Summers (2014), holds that the main driving forces of lower rates are a persistent downshift in economic growth and an associated decline in the returns to capital investment. Alternatively, the global savings glut hypothesis—a phrase I coined in a 2005 speech—focuses on the global imbalance between high desired savings and low desired investment, which is putting downward pressure on real interest rates. This view emphasizes that some excess saving is the result of policy decisions, such as the accumulation of large war chests of foreign reserves by some countries. The two hypotheses are not mutually exclusive and indeed are complementary: If there were no tendency toward secular stagnation in major economies, then capital investment opportunities would be sufficient to absorb global savings at a higher level of real interest rates. If there were no global savings glut, then secular stagnation in one country could be overcome by its residents investing abroad, including in emerging markets, through capital outflows and trade surpluses.

Both hypotheses appear relevant to Japan today. Japan's declining labor force and slow productivity growth are consistent with the secular stagnation view. Together with Japan's high current ratio of capital to labor, weak growth prospects depress the marginal returns to domestic capital investments. Moreover, an aging population with slowly growing real incomes will have limited demands for consumer durables or housing. In textbook terms, the IS curve is very far to the southwest in Japan, implying that very low or negative real interest rates are needed to get the economy to full employment and to create upward pressure on inflation.

The secular stagnation argument emphasizes the low return to domestic investment opportunities. For Japan, capital outflows have been an important alternative use of domestic saving. In principle, such outflows should afford Japanese savers higher returns, while also weakening the currency, promoting exports, and maintaining full employment at home. Of course, Japan's ability to benefit by this mechanism is limited by the extent that other major economies are suffering from slow growth and are themselves contending with the effective lower bound on interest rates. Ideally, Japan's excess savings not absorbed by other major economies would flow to capital-poor emerging markets, but this channel is narrowed by the global savings glut and policies aimed at promoting trade surpluses and reserve accumulation in many countries.¹⁷ Other factors that block the foreign-investment safety valve and thus depress r^* in Japan include the strong home bias of Japanese savers; international political constraints on the size of the country's export surplus; pricing-to-market behavior by Japan's exporting firms, which reduces the elasticity of exports to changes in the exchange rate; and the yen's status as a safe-haven currency, which means that it tends to appreciate at times of global economic, financial, or political stress.

A low r^* , together with low inflation rates, challenges the ability of monetary policy to reflate the economy. Of course, that's not to say that central bankers are helpless in that situation. In general, even at the effective lower bound, monetary policy can boost aggregate demand, employment, and inflation in one of two complementary ways—by easing financial conditions (for example, by lowering longer-term interest rates, depreciating the currency, or lifting the stock market)—which stimulates aggregate demand directly; or by raising the public's expectations of inflation, thereby lowering real interest rates as well as increasing expectations of future growth. In standard models with rational expectations, these two methods are just the opposite sides of the same coin. In particular, at the effective lower bound, monetary policy can ease financial conditions only to the extent that it affects inflation expectations. However, in practice I think it is important to maintain the possibility that the two approaches are behaviorally distinct, or at least that segments of the public could respond differentially to changes in financial conditions and hold different expectations about inflation and growth.

In any case, in Japan both channels of monetary policy transmission seem to be approaching their limits. First, today, not only are short-term interest rates in Japan at or near their effective lower bound but so are very long-term interest rates—a sort of “super liquidity trap,” if you will. In contrast, even though U.S. short rates remained near zero from 2008 through 2015, long-term rates remained well in positive territory, with the ten-year Treasury rate never falling below about 1.5 percent. Despite having no room to cut short-term rates, the Fed was able to ease policy by putting downward pressure on longer-term rates, through forward guidance (promises to keep short-term rates lower for longer) and quantitative easing (which lowered term premiums). Likewise, as already noted, the Bank of Japan has been able to ease financial conditions substantially in recent years, despite having little room to navigate at the short end of

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17. When I first wrote about the savings glut, China and other East Asian countries were a major source of capital outflows, related in large part to reserves accumulation. Recently, China's reserves have plateaued, but new sources of excess saving are arising, including outflows from China's private sector and from Europe.

the yield curve. However, now, with the whole term structure effectively at zero (and with the BOJ apparently unwilling to go significantly negative for financial stability reasons), the scope for substantial further easing of financial conditions in Japan, even through unconventional tools, seems limited.

Alternatively, as noted, the BOJ could lower real interest rates and stimulate activity if it could generate expectations of increased future inflation, for example, by promising to keep rates low even when inflation begins to rise at some point in the future. Are such promises credible? There appears to be evidence that central banks can make credible promises about the future, even if the promises are not fully time consistent in the technical sense. Inflation targeting itself is not time consistent, according to simple models like that of Barro and Gordon (1983), in that in such models there is always an incentive for policymakers to engineer an inflation “surprise” and enjoy the resulting boost to economic activity. Yet in practice inflation-targeting central banks have been able to establish credible frameworks and to anchor inflation expectations at target. The global experience also suggests that forward guidance (a commitment about future policy) eases financial conditions, even if the forward commitments made by the central bank are less than precise (see, for example Swanson 2017); and some of the effects of quantitative easing appear to be due to signaling about future policies. So, in general, the use of central bank talk to manage expectations should not be ruled out as a tool of monetary policy near the effective lower bound. One would expect such management to be especially effective if the central bank both demonstrates its resolve and if the government clearly supports the strategy—hence the potential significance of the dramatic changes under Abenomics, and the need for bold action that I stressed in my early writings on Japan.

Inflation expectations in Japan did rise after the initial announcement of QQE, but overall they have been less responsive than hoped (Bank of Japan, 2016), particularly when headline inflation was depressed by declining oil prices and other factors. It’s sometimes said that Japanese inflation expectations are adaptive, or that institutions like national wage bargaining lead to backward-looking behavior. These are less explanations than different ways of restating the basic puzzle, that inflation expectations in Japan have seemed overly sensitive to current developments and relatively unresponsive to central bank talk, even when that talk has been accompanied by vigorous measures such as large-scale asset purchases.

There are various ways to rationalize the weak response of inflation expectations to BOJ communications.¹⁸ For example, households and firms have limited bandwidth, so that, in the absence of good reasons to the contrary, they don’t spend much time or mental effort updating their beliefs about inflation. Given the quiescence of inflation,

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18. In theory, if inflation is highly persistent, then “adaptive” expectations are also “rational,” in that inflation expectations should respond sensitively to innovations to current inflation. In particular, more “adaptive” inflation expectations in Japan relative to the United States could in principle be due to greater persistence of inflation in Japan. To check this possibility, I estimated AR(4) models of quarterly headline and core-core inflation for Japan and the United States for 1996Q1 to the present. Japanese headline inflation is relatively more persistent at the four-quarter horizon, as a one percentage point innovation in inflation raises the four-quarter forecast by 0.43 percentage points, compared to 0.14 percentage points in the United States. However, the results reverse at longer horizons, and the results for core-core inflation are quite similar in the two countries, contradicting the view that Japanese inflation is noticeably more persistent.

that strategy would not have been very costly for private agents in Japan in recent years. Alternatively, people may have good information but still behave like Bayesians, updating based on actual inflation the probability that Japan has shifted from a regime with low inflation to one with higher inflation (Caskey, 1985); so far, the evidence for putting weight on the higher-inflation regime is limited. Both of these stories put some blame on earlier policies of the Bank of Japan, which allowed the deflationary mindset to become entrenched over many years.

As another, related possibility, Krugman (2014) offers a multiple-equilibrium interpretation of the stickiness of inflation expectations: Suppose that, for some reason, people come to expect relatively high inflation. With nominal interest rates at zero, the expectation of high inflation drives down real interest rates and pushes up activity and prices, confirming the initial expectation. But if people instead persist in expecting low or zero inflation, then real interest rates don't fall, and that inflation expectation is also self-confirming. This multiple-equilibrium interpretation seems a reasonable description of the BOJ's dilemma; if for whatever reason people don't expect inflation, then it's hard to generate inflation, which only confirms the public's skeptical view.

As I discussed in a recent comment at Brookings (Bernanke, 2017), and as I believe Mark Gertler will say something about later in the conference, understanding the links between central bank talk and the expectations of households, businesses, and markets is an increasingly important challenge for monetary policymakers. As I noted, the evidence suggests that, through reputational capital or other mechanisms, central bankers can induce expectations of future policies even when those policies are not fully time consistent. But how best to manage expectations, particularly when contemplating a shift from one set of steady-state policies to another, remains unclear. Japan's experience illustrates how difficult such management can be.

What tools remain?

The Bank of Japan has made important progress since 2013. Policy has been much more forward-leaning, as was necessary given the powerful grip of deflationary forces. As I've discussed today, the BOJ's actions have significantly eased financial conditions, promoted general economic recovery, and brought inflation into positive territory. It may be that the BOJ's new framework, together with fiscal policies in the pipeline, will deliver enough stimulus for the Bank to achieve its inflation target in the next couple of years, particularly if the global economy cooperates.

However, the situation is not entirely comfortable. Inflation is still well below 2 percent and not decisively on a path to target. And the tools used in the past few years are running into limits, as I've discussed. In particular, interest rates are close to the effective lower bound not only at the short end but throughout the term structure; and, in the absence of persistent increases in realized inflation, expected inflation has remained low. While it's not clear at this juncture that the BOJ will have to do more, we can't rule out that possibility for the future. At this point, what's left in the toolkit?

Blanchard and Posen (2015) have argued that, to increase inflation expectations in a situation in which those expectations have an important backward-looking component, it's important that actual inflation be pushed up first. They recommend that

the government take advantage of Japan's semi-centralized wage bargaining process to pressure and cajole firms into granting larger nominal wage increases, and to pass those increases along into prices. The government sector could do its part by granting wage increases to its own workers.

If successful, pressuring firms for wage and price increases could lead to higher inflation expectations, at least for a time. However, although higher wage income would presumably increase consumption, there's no guarantee that aggregate demand would rise enough to be consistent with full employment at the higher price level. If not, then the price and wage increases would ultimately be temporary, or—in analogy to the unsuccessful U.S. wage-price controls of the 1970s—firms would find ways to game the system that allow them to maintain profitability while still perhaps *reporting* higher wages and prices.

Whether it chooses to engage in an incomes policy or not, the government must still ensure that aggregate demand is sufficient to sustain higher wages and prices. Assuming, again, that we are several years down the road and inflation has not returned, how could that be done? When central bank action on its own reaches its limits, then fiscal policy is the usual alternative. However, in Japan, even fiscal policy may face constraints, resulting from the high debt-to-GDP ratio that already exists in Japan. This leads, inevitably I think, to discussions of coordination between monetary and fiscal policy. There are many ways such coordination could be implemented, but the key elements of a possible approach are that (1) the government commits to a new program of spending and tax cuts and (2) the central bank promises to act as needed to offset any effects of the program on the path of Japan's ratio of government debt to GDP.

As I said, there are various ways this promise could be implemented: A direct approach, consistent with the arguments of Krugman (1998) and Eggertsson and Woodford (2003), would be for the BOJ to commit to a temporary overshoot of its inflation target, sufficient to avoid any increase in the debt-to-GDP ratio. This commitment amounts to a promise of monetary financing of the fiscal program, without relying on exotic concepts like helicopter drops (Reichlin, Turner, and Woodford, 2013; Bernanke, 2016a). To illustrate the possibilities, I extend my earlier analysis of the effects of inflation on Japan's debt burden. Given the maturity structure of outstanding JGBs, the BOJ could effectively finance a fiscal program sized at two percent of GDP by holding inflation 0.7 percentage points above its target for three years, or by 0.4 percentage points for five years. Further, that calculation ignores any increase in revenue that may result if easier monetary and fiscal policies spur growth in nominal GDP. For its part, the government could reduce the degree of inflation overshoot needed by financing its program through long-term debt, which would be most affected by an increase in inflation.¹⁹

I won't discuss here the composition of this hypothetical fiscal program, except to note that it might be worthwhile to use it to advance the structural reforms that are the third arrow of Abenomics, and which are essential for increasing growth in the long run. For example, retraining programs and income supports could reduce the resistance to reform of less-efficient sectors, and targeted social services could facilitate increased

19. Lengthening the maturity of the government's debt would also increase the credibility of inflation promises, since it would imply a greater fiscal benefit to the government from inflating.

labor force participation by women and older people.

Now it seems reasonable (and consistent with much empirical evidence) that a well-designed fiscal program would increase aggregate demand and output, and, via Phillips curve effects, ultimately also put upward pressure on inflation. Notably, fiscal policy does not rely solely on changing expectations about future inflation or output. We might still ask whether the monetary component of the program would be necessary or helpful. I'll briefly address two arguments against asking the central bank for yet a new commitment.

First, one might wonder whether a commitment by the BOJ to offset the increase in debt through higher inflation would be any more credible than other commitments it has made to increase inflation, including those supported by large-scale asset purchases. If Japanese households and firms maintain the skeptical attitude of recent years, the BOJ's announcement would not much change inflation expectations, and (one could argue) the monetary element of the program would have little benefit, relative to the fiscal program alone. The possibility that inflation expectations can remain sticky, even in the face of strong fiscal and monetary actions, is the flaw in the argument I once made that a "determined" central bank can always raise inflation.

In the context of my proposal, however, it may not be necessary for the public to believe the central bank's claim that it will allow an overshoot of inflation; it may only be necessary that the administration and the legislators believe it. Presumably, a key reason that a government might not approve an expansionary fiscal program at a time when it is warranted by macroeconomic conditions is concerns about the resulting buildup of the national debt. If legislators believed that monetary policies would be used to offset that buildup, they might be more willing to act. Moreover, they would understand that monetary policy would not lean against the expansionary fiscal actions, increasing the multiplier and providing more "bang for the buck." So the purpose of monetary-fiscal coordination as I've described it is not to augment a given fiscal program with central bank promises—or not only to do that—but rather to make the fiscal program politically feasible in the first place. Of course, to the extent that the central bank honors its commitments to allow a temporary overshoot of its inflation target, the impact of the combined program would ultimately be all the larger.

A second concern about possible close coordination of fiscal and monetary policies is that it would violate central bank independence. When I last spoke at a Bank of Japan conference in Tokyo, in 2010, I laid out in some detail the case for the independence of monetary policy from short-term political pressures, combined of course with the transparency and accountability which is essential in a democracy (Bernanke, 2010). Narrowly, the case for central bank independence turns on avoiding an upward inflation bias that can result if politicians pressure monetary policymakers to be too expansionary, or to be a regular source of government finance (Barro and Gordon, 1983). Upward inflation bias does not appear to be a problem in Japan, to put it mildly. A more general case for independence argues that distance from politics allows monetary policymakers to be more objective and scientific in their evaluations of incoming data and policy options; to achieve greater consistency and continuity in policy; and, in general, to take a longer-term view. I find this broader perspective compelling.

Would coordination with fiscal policymakers in the way I've described endanger

these values? It would be important to define clearly the commitment that the central bank is making; for example, it would have to be clear that the commitment to aim for a temporary inflation overshoot applies only to the current program and is not ongoing. Moreover, it's understood that in all circumstances the central bank retains control of the tools of monetary policy, implying that—for better or worse—the government has to accept the risk that a future leadership of the bank would renege on the commitment. It seems to me that such an agreement, if it could be struck, would not violate independence, any more than (as I once argued) a treaty between two independent countries violates the principle of sovereignty. We must also remember that central bank independence is a means, not an end. A central bank's independence is threatened when it faces pressures to do something outside of, or contrary to, its mandate. That's not what would be happening here: In this case, the central bank would be cooperating with the fiscal authorities with the express purpose of *achieving* its mandate.

Conclusion

Japan has made substantial economic progress in recent years, including progress toward the Bank of Japan's 2 percent inflation target. Unfortunately, inflation remains below the target, despite the BOJ's aggressive approach under Governor Kuroda and the general improvement in the economy. If monetary policy is to be useful in fighting future recessions, getting inflation up is essential.

If all goes well, the BOJ's current policy framework may yet be sufficient to achieve the inflation objective. We'll have to wait and see. If not, there are relatively few options available. The most promising possibility—should we get to that point—is more explicit coordination of monetary and fiscal policies. Monetary policy that is aimed at limiting the impact of fiscal expansion on the government's debt could both make fiscal policymakers more willing to act and increase the impact of their actions. The BOJ may be reluctant to take such a step. In the possible future state that I am contemplating, however, there would be no real alternative other than to abandon the fight to raise inflation and, perhaps, even to accept a new bout of deflation. After such a long and valiant effort to end deflation and raise interest rates from their effective lower bound, that would be a most disappointing outcome.

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