

Efficient Monetary Policy Design near Price Stability

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Using dynamic programming methods, we study the design of optimal monetary policy in a simple, calibrated open-economy model and evaluate the effect of the liquidity trap generated by the zero bound on nominal interest rates. We show that the optimal policy near price stability is asymmetric. As inflation declines, policy turns expansionary sooner and more aggressively than would be optimal in the absence of the zero bound. This introduces an upward bias in the average level of inflation. We also discuss operational issues associated with the interpretation and implementation of policy at the zero bound in relation to the recent situation in Japan. *J. Japan. Int. Econ.*, December 2000, **14**(4), pp. 327–365. Board of Governors of the Federal Reserve System, Washington, D.C. 20551. © 2000 Academic Press

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1. INTRODUCTION

Since February 12, 1999, the Bank of Japan has taken the unprecedented step of maintaining overnight interest rates “as low as possible.” This action was the latest in a series of policy easings that started in 1991 and have brought the Bank’s discount rate down to a mere 50 basis points and short-term interest rates to near zero since September 1995. In April 1999, the Policy Board of the Bank took the additional step of announcing a commitment to maintain this “zero interest

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rate policy” until deflationary tendencies in the Japanese economy end, ensuring that policy should be expected to remain unchanged for quite some time. As the Bank’s Deputy Governor Yamaguchi (1999a) observed recently, this policy has been successful thus far in that “the Japanese economy has, if only barely, escaped deflation.” He also noted, however, that despite these unprecedented steps, real GDP has “barely grown, an annual rate of 1%” for several years. For Japan, the 1990s appear as a long and nearly uninterrupted period of recession.²

At the end of the 1980s, it would have been nearly impossible to envision such a predicament for this advanced industrialized nation. The Japanese economy enjoyed real growth of about 4% during that decade. Japan also managed to maintain near price stability during the 1980s. However, starting with the collapse of equity prices at the end of the 1980s, a number of structural problems have emerged during the 1990s and as a result the Japanese economy is still going through a process of adjustment.³ Although the Bank of Japan eventually adopted a policy of zero overnight nominal interest rates, the deflationary environment that persisted through much of the 1990s placed a lower bound on the short-term real rate of interest and ruled out the negative real interest rates that the Bank might have chosen to promote, had inflation been higher. Thus, the earlier success of maintaining an environment of near price stability may have contributed, at least to some degree, to the difficulties in providing sufficiently expansionary monetary conditions to ease the economy out of its slump.

At least for the past 30 years, the question of whether the zero bound on nominal interest might present such a practical difficulty for the conduct of monetary policy did not appear to be an important issue. The primary concern of monetary policy in most industrialized countries was how to reduce inflation and achieve and maintain price stability—not how to defend against the possible pitfalls associated with deflation. The success in achieving the price stability goal and the lessons offered by the recent experience in Japan, however, have again focused attention on the zero bound. An example of this confluence of events and concerns became evident at a 1996 central bank conference sponsored by the Federal Reserve Bank of Kansas City in Jackson Hole, Wyoming. The topic of the conference, “Achieving Price Stability,” was meant to describe policies for reducing inflation but the issues associated with the deflationary environment in Japan also became part of the discussion. As IMF First Deputy Managing Director Fischer noted: “On Japan, I don’t doubt that Japanese monetary authorities would have liked to have cut the real interest rate, if they could have, and that the zero constraint on the nominal

² While the slow growth in real GDP may be partly due to slow growth in potential output, available estimates still suggest a significant negative output gap. For example, the June 1999 OECD Economic Outlook estimated output gaps of 2.5 and 4.3% respectively for 1998 and 1999.

³ The Bank’s perspective on these developments has been articulated on several occasions, e.g., by Governor Hayami (1999) and Deputy Governor Yamaguchi (1999a, b). Recent analyses of the economic conditions in the Japanese economy appear in Aghevli *et al.* (1998) and International Monetary Fund (1999).

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