Monetary Policy in a Post-Financial Crisis Era:

Summary of the 2014 BOJ-IMES Conference Organized by the Institute for Monetary and Economic Studies of the Bank of Japan by Ichiro Fukunaga, Daisuke Ikeda, and Akira Otani

I. Introduction

The Institute for Monetary and Economic Studies (IMES) of the Bank of Japan (BOJ) held the 2014 BOJ-IMES Conference, entitled "Monetary Policy in a Post-Financial Crisis Era," on May 28–29, 2014, at the BOJ Head Office in Tokyo.[1] The conference was attended by some 80 distinguished participants from academia, international organizations, and central banks.[2] The participants discussed monetary policy issues raised by the recent financial crisis and its aftermath.

The conference began with opening remarks delivered by the Governor of the BOJ, **Haruhiko Kuroda**. An honorary adviser of the IMES, **Marvin Goodfriend** (Carnegie Mellon University), gave the keynote speech; **David A. Lipton** (International Monetary Fund) gave a guest speech; an honorary adviser of the IMES, **Maurice Obstfeld** (University of California at Berkeley), chaired a policy panel discussion; and five papers were presented.

Ichiro Fukunaga: Director, Institute for Monetary and Economic Studies, Bank of Japan
(E-mail: ichirou.fukunaga@boj.or.jp)
Daisuke Ikeda: Director, Institute for Monetary and Economic Studies, Bank of Japan
(E-mail: daisuke.ikeda@boj.or.jp)
Akira Otani: Associate Director-General, Head of Economic and Financial Studies Division, Institute for Monetary and Economic Studies, Bank of Japan (E-mail: akira.ootani@boj.or.jp)

....

1. On behalf of the conference organizers, we would like to express our sincere gratitude to the IMES's honorary adviser Marvin Goodfriend, the former honorary advisor Maurice Obstfeld, the chief councillor Kazuo Ueda, and all other conference participants for thought-provoking presentations and discussions. We also would like to thank the IMES's former Director-General Tomoo Yoshida and other staff members of the IMES who devoted much energy to organizing this conference. The views expressed throughout this summary are those of the speakers and do not necessarily reflect those of their respective institutions. All remaining errors are our own.
2. See Appendix 1 for the program. See Appendix 2 for the list of participants; their affiliation is as of May 28–29, 2014.

II. Opening Remarks[3]

In his opening remarks, **Kuroda** first provided a brief summary of views regarding the changes in the role of central banks from their establishment up to the recent global financial crisis. Then he mentioned three major lessons to be learned from the recent crisis and its aftermath. First, stability of the economy as a whole could not be achieved just by stabilizing prices and the real economy. Stabilization of the financial system also mattered. Second, it was possible to implement monetary easing even in a situation where the policy rate was around zero percent. Central banks in advanced economies had been underpinning economic recovery in the wake of the recent global financial crisis by using unconventional policy tools, such as asset purchases and forward guidance. Third, related to the second lesson, expectation management through communication with the market was critical to guiding the economy toward recovery.

Next, he raised three issues that had been revealed by the three lessons and needed to be resolved in the future. The first issue was how to achieve both price stability and financial stability, which could be rephrased as the issue of the division of roles between monetary policy and macroprudential policy. The second issue related to the effectiveness of forward guidance in expectation management, which depended on the strength of the commitment and future policy flexibility. The third issue concerned differences between the international spillover effects of conventional and unconventional monetary policy.

III. Keynote Speech: Federal Reserve Monetary Policy as a Carry Trade[4]

Goodfriend discussed a central bank's operational credibility for monetary policy and derived policy implications on the use of interest on reserves at the zero interest lower bound. He first discussed what a central bank must do to acquire operational credibility for monetary policy against deflation and inflation at the zero lower bound. Ordinary interest rate policy powers were severely attenuated at the zero lower bound, and the operational credibility against deflation necessitated a willingness to expand reserves to purchase long-term securities on an unprecedented scale. He emphasized the critical role of interest on reserves in securing operational credibility against both inflation and deflation. Interest on reserves enabled a central bank to raise short-term interest rates without first shrinking its balance sheet. A central bank that expanded bank reserves to gain operational credibility against deflation must also be prepared to increase market interest rates quickly and aggressively by raising interest on reserves to secure operational credibility against inflation. The credibility against inflation, in turn, secured credibility for aggressive monetary policy against deflation at the zero lower bound.

He then assessed the recent actions undertaken by the Federal Reserve (Fed) and derived policy implications. He argued that the Fed's monetary policy at the zero lower bound should be conceived as a "carry trade," in the sense that it involved the acqui-

....
3. For details, see Kuroda (2014).
4. For details, see Goodfriend (2014).

sition of higher-interest long-term securities in exchange for the issuance of lower-interest reserves. It should be noted, however, that to secure credibility against inflation, the Fed would have to carry the acquired long-term securities by paying interest on reserves in line with market interest rates even after the interest rate policy exited the zero bound. The interest on reserves would be likely to accompany a negative cash flow problem on the Fed's carry trade as short rates and interest on reserves rose above the coupon interest that the Fed earned on its long-term securities. If this occurred, the credibility of the Fed's anti-inflation policy would be jeopardized. From this perspective, he argued that a central bank should retain net interest income on the front end of its carry trade at the zero lower bound against expected interest costs on the back end when the short-term interest rate rose to facilitate its operational independence and to attain operational credibility for monetary policy. He pointed out that despite the negative cash flow problem, the Fed had chosen not to retain surplus capital above its modest longstanding level even though its assets would have risen from US$1 trillion in September 2008 to around US$4.5 trillion by the end of 2014. In conclusion, he recommended that Treasury securities acquired by the Fed be exempted from the federal debt ceiling to facilitate retention of the Fed net interest income against its carry trade.

IV. Guest Speech: From Deflation to Reflation: Japan's New Monetary Policy Framework, Effectiveness, and Broad Lessons[5]

Lipton assessed the progress in exiting deflation under the BOJ's quantitative and qualitative easing (QQE), after reviewing the 15-year-long deflation that Japan had experienced. Then he drew some lessons for other countries facing deflation risks as well as for the BOJ's next steps. He also commented on QQE from the view of the role of International Monetary Fund (IMF) in monitoring the effects of its member countries' policies on the global economy.

He first reviewed the developments in Japan's economy preceding the adoption of QQE. The long deflation had been caused by several factors including the collapse of the bubble, balance-sheet repair in the banking system, the Asian Financial Crisis, and the decline in investment and risk aversion. Demand-management tools including monetary and fiscal policy had been deployed but had failed to break the deflation.

Then he explained that QQE differed from what had been tried before in that it was a bigger and bolder commitment aimed at shifting expectations, additionally it was complemented by fiscal and structural reforms to lift growth expectations and support price momentum. The aggressive and concerted policy action had a pronounced immediate effect and inflation had indeed been making steady progress toward the 2 percent target. Meanwhile, he cautioned that it was too soon to declare success, and pointed out some challenges as the BOJ plans its next steps. First, the BOJ's communication strategy might still need to be refined further to close the gap between the market's medium-term inflation forecast and the forecast by the BOJ's Policy Board members. Second, cooperation with concrete growth and fiscal strategies was even more critical to overcome the still-widespread passivity and low appetite for risk-taking in Japan's

....
5. For details, see Lipton (2014).

economy and to support QQE in its efforts to place inflation on a secure upward path toward 2 percent.

Next, he mentioned lessons pertaining to other countries that were currently facing deflation risks. In particular, the euro area economy had been slow to recover from the global financial crisis, although the European Central Bank (ECB) had proactively and aggressively taken measures to deal with this situation. Some economic conditions in the euro area mirrored those of Japan at the onset of deflation. He argued that the euro area should remain ahead of the curve and consider forceful actions before low inflation became entrenched to guard against the risk of deflation.

Finally, he assessed QQE in view of the IMF's role. The IMF was mandated to monitor whether policy actions of its member countries led to spillovers that might have a significant impact on the global economy. The IMF had supported Japan's efforts to use QQE even though the policy had led to yen depreciation as a side effect. He referred to three factors on which the IMF's judgment was based. First, Japan had few alternative policies to escape deflation and reach its inflation target other than QQE. Second, while the weaker yen might have had some adverse impact on neighboring countries and the rest of the world, the policy impact must be temporary in nature. Third, Japan needed to complement its QQE with other policies that supported reflation to avoid relying too much on QQE and its short-term impact on the real exchange rate. He argued that there was little doubt that successful QQE and an escape from deflation would have meaningful positive spillovers to the global economy over the medium to long term, and thus it was necessary to weigh short-term negative spillovers against potential medium- to long-term positive spillovers.

From the floor, **Takatoshi Ito** (National Graduate Institute for Policy Studies) argued that the effect of QQE on the exchange rate was sort of a correction of an over-appreciation of the yen and that QQE was not an active depreciation policy. **Koichi Hamada** (Yale University) pointed out that any country under a flexible exchange rate could counteract and offset the short-term negative spillover effects of monetary expansions of other countries.

V. Paper Presentation Sessions

A. We Are All QE-sians Now[6]

In the wake of the recent global financial crisis, the Fed, the ECB, and the Bank of England (BOE) had adopted unconventional policies that had expanded their balance sheets. The BOJ had also increased its balance sheet by introducing QQE in 2013. **Ito** called these policies as "quantitative easing (QE)" and conducted an empirical analysis of the effect of the BOJ's QQE and its QE during 2001–06. In his terminology, QE meant increasing the size of a central bank's balance sheet and maintaining the increased size. In this sense, the four major central banks were all "QE-sians" now. His broad terminology of QE contained two types: pure-QE and credit easing. The former emphasized the size of a central bank's balance sheet, while the latter stressed its com-

....
6. For details, see Ito (2014).

position. A representative example of pure-QE was the BOJ's QE during 2001–06. A typical example of the credit easing was that introduced by the Fed at the onset of the failure of Lehman Brothers. The QQE adopted now by the BOJ had both elements of pure-QE (a large-scale expansion of the BOJ's balance sheet) and credit easing (the BOJ's purchases of ETFs and Japan real estate investment trusts (J-REITs) as well as the extension of the average remaining maturity of its purchases of Japanese government bonds). According to his empirical analysis, the BOJ's QE—including QQE—lowered long-term rates and depreciated the yen through an increase in the monetary base in Japan. In addition, QQE strongly raised stock prices through not only the public anticipation of the BOJ's introduction of a new policy framework after November 2012 (when the House of Representatives was dissolved), but also the public surprise concerning the greater than expected change in the BOJ's actual policy framework introduced in April 2013. Furthermore, QQE had successfully raised inflation expectations and made the Phillips curve steeper in Japan. Finally, **Ito** mentioned that potential losses in central banks' balance sheets during the exit process from QE might threaten central banks' independence and argued that an explicit agreement between the central bank and the fiscal authority to cover the losses was desirable.

The discussant, **Jan Marc Berk** (De Nederlandsche Bank), argued that the ECB's unconventional policy was not pure-QE and differed from that by the Fed and pointed out that the author's empirical setup and interpretation could be questioned. Regarding the unconventional policies introduced by the ECB, such as the long-term refinancing operation (LTRO) and the Securities Markets Programme (SMP), he noted that these policies had addressed impairments in the monetary transmission mechanism in the euro area, which structurally differed from that in the United States: the financial intermediation system was market-based in the United States, while it was bank-based in the euro area. Regarding the interpretation of the author's estimation results, he pointed out that the transmission mechanisms of QE, the exchange rate channel in particular, were not necessarily clear because there were numerous endogeneity issues and omitted factors in the empirical setup. Finally, **Berk** emphasized the importance of the distributional effect of QE and suggested that it was crucial to address how to deal with implications of this effect for the reputation, independence, and credibility of central banks.

From the floor, **Obstfeld** argued that the goals of the LTRO and the SMP were to support sovereign debt prices and strengthen bank balance sheets, so they were very different from pure-QE. **Yves Mersch** (European Central Bank) commented that the situation in Europe today was quite different from that in the United States during the recent financial crisis, so the direct effect of unconventional policy on asset prices would be quite different. **Paul Tucker** (Harvard University) posed the question of why the portfolio balance channel would not work in the euro area given the presence of long-term investment institutions with a demand for longish-term bonds. **Thomas J. Jordan** (Swiss National Bank) asked whether the impact of QE was linear or showed something like diminishing returns. **Ito** answered that it might be nonlinear and S-shaped, with an increase in the beginning but diminishing returns later. **Kazuo Ueda** (University of Tokyo) asked why the BOJ's recent QQE had had different effects on Japan's economy, asset prices in particular, from its QE during 2001–06. **Ito** answered

that the differences in the policy effects were mainly due to the existence of the inflation target of 2 percent and the purchases of long-maturity bonds instead of short-maturity bonds. **Kazumasa Iwata** (Japan Center for Economic Research) asked whether the recent increase in Japan's consumer price index was due to a rise in import prices stemming from the yen depreciation. **Ito** answered that a price increase had been observed for not only tradable goods but also other wide-ranging goods and services. **R. Anton Braun** (Federal Reserve Bank of Atlanta) suggested the use of the excess reserve ratio in the author's empirical analysis.

B. Reserve Requirement Policy over the Business Cycle[7]

The recent financial crisis has triggered an intense debate on the pros and cons of using macroprudential policy for macroeconomic stabilization purposes. **Carlos A. Végh** (Johns Hopkins University) focused on reserve requirement policy (RRP) as a macroeconomic stabilization tool and presented empirical results, in order to contribute to the discussion on macroprudential policy. The dataset used in the analysis covered 52 countries during 1970–2011. He first reported the following stylized facts. About two-thirds of developing countries in the sample tended to change reserve requirements more than once in one business cycle, versus only one-third of industrial countries (and no industrial countries since 2004). Most developing countries used RRP countercyclically as a macroeconomic stabilization tool. The finding was based on the positive correlation between the cyclical components of real GDP growth and reserve requirements in these countries. The finding was also related to the fact that only slightly more than half of the developing countries had engaged in countercyclical monetary policy. He argued that these countries were reluctant to use monetary policy countercyclically because of "fear of free falling" in their currency value in bad times and "fear of capital inflows" in good times. On the one hand, if interest rates were lowered in bad times, the currency could depreciate rapidly. On the other hand, if interest rates were raised in good times, too much capital could flow into the country. Both rapid currency depreciation and massive capital inflow could ultimately destabilize the economy. Next, **Végh** reported the results on complementarity/substitutability between monetary policy and RRP. The most common policy mix for developing countries was acyclical interest rate policy and countercyclical RRP. He reported the estimation results on expanded Taylor rules that included a nominal exchange rate as well as inflation and an output gap and argued that RRP acted as a substitute for interest rate policy in these countries. The estimation suggested that RRP was countercyclical while an interest rate did not respond systematically to output fluctuations but tended to increase when the currency depreciated.

The discussant, **Michael P. Leahy** (Board of Governors of the Federal Reserve System), first expressed appreciation for the dataset's construction and the empirical analysis based on it. Then he discussed the authors' findings on the use of RRP. First, regarding the finding on countries that employed RRP as a macroeconomic stabilization tool, it would be worth investigating the central banks' motivation for changing reserve requirements by reviewing the banks' announcement, documentation, and in-

....
7. For details, see Federico, Vegh, and Vuletin (2014).

terviews. Second, regarding the finding on activist countries that used RRP in a countercyclical way, due attention should be paid to the long and variable lags of the RRP effect in estimating the correlation between GDP and RRP. Focusing only on contemporaneous correlations might mislead the authors in their judgment of whether RRP was countercyclical. Next, he expressed some thoughts and conjectures stimulated by the paper. First, the paper could be interpreted as being about the choice of monetary policy instruments rather than about the use of a macroprudential tool. Second, RRP could not necessarily be separated from monetary policy. An increase in the reserve requirement puts upward pressure on interest rates and can have the same effect as an increase in interest rates. Perhaps RRP might be more successful in some countries than interest rate policy because RRP acted as a countercyclical fiscal policy tool that imposed a tax on the banking sector, especially in countries with a poorly functioning financial system. Finally, it was important to clarify what operation was used to implement interest rate policy as an alternative to RRP, because central banks could adopt different kinds of operations to influence interest rates, including RRP.

From the floor, **Mehmet Yörükoğlu** (Central Bank of the Republic of Turkey) mentioned the policy approach of his bank, where RRP was used to address credit growth and capital inflows and interest rate policy was used to deal with inflation. **Tobias Adrian** (Federal Reserve Bank of New York) asked whether RRP was effective in stabilizing the economy and why RRP was used much less in industrial countries. **Obstfeld** asked whether RRP would fade as emerging economies developed their capital markets and nonbank sources of lending. In reply, **Végh** referred to another paper of his that showed the effectiveness of RRP in reducing credit growth and GDP in five Latin American countries. Regarding the inactive use of RRP in industrial countries, he mentioned that many industrial countries did not need to worry much about a free fall in exchange rates and that there was no point in using both interest rate policy and RRP if they were substitutes in these countries. **Naoyuki Yoshino** (Asian Development Bank Institute) pointed out that the transmission speed might differ between RRP and interest rate policy because RRP influenced the banking sector immediately and capital markets gradually, while interest rate policy influenced immediately not only banks but also capital markets. **Tucker** asked about the importance of what seemed to be an implicit assumption that reserves were non-interest-bearing in the authors' analysis, because central banks in advanced economies had in recent years moved to paying the policy rate of interest on reserves. **Végh** replied that his empirical results should hold qualitatively as long as interest on reserves was less than the short-term interest rate.

C. Banking, Liquidity and Bank Runs in an Infinite Horizon Economy[8]

Nobuhiro Kiyotaki (Princeton University) presented a model that featured both financial frictions and bank runs due to liquidity mismatch. He emphasized the complementary nature of a financial accelerator mechanism and runs on banks, which was key to understanding the Great Recession of 2008–09 in the United States. In response to a negative shock to the economy, a financial accelerator mechanism exacerbated the deterioration of banks' balance-sheet conditions, which in turn raised the likelihood of

....
8. For details, see Gertler and Kiyotaki (2014).

bank runs. In particular, high bank leverage and a low liquidation value of bank assets were associated with a high likelihood of bank runs. Bank runs, if they occurred, caused a financial crisis and further distress in the real economy. He mentioned that even if bank runs did not materialize, an increase in the likelihood of bank runs had negative effects on the economy because it caused an increase in the cost of raising funds and a decrease in banks' net worth, which were exacerbated by financial frictions. He then discussed the role of *ex ante* and *ex post* policies to address financial crises. In the model's framework, bank runs could be eliminated by introducing deposit insurance. In practice, however, it was difficult to introduce such insurance at all types of financial institutions. In addition, trying to do so might induce the moral hazard of risk-taking. Capital requirements could reduce both risk-taking and the likelihood of bank runs, but could increase the cost of intermediation to the extent that raising equity capital was costly. In light of these considerations, he argued that addressing financial crises required not only these *ex ante* policies but also *ex post* ones such as lender-of-last-resort functions and asset purchases by central banks.

The discussant, **Braun**, commented that the presented model could account for the chronology of the recent financial crisis in the United States: a slowdown in economic activity, an increase in bank leverage, a rise in susceptibility to bank runs, and a sudden large and persistent decline in economic activity caused by bank runs. He then raised a question about who were the banks in the model in view of the recent financial crisis and considered potential candidates. Money market funds and a company such as Bear Stearns were less likely to be the banks in the model, because their behavior differed from the model's assumptions and predictions. He argued that Lehman Brothers might correspond to the banks in the model, because the model captured an increase in the cost of raising funds and a sudden collapse in lending through repo markets in September 2008. Next, he commented on modeling issues. In particular, the model was so simple that it described only runs on all banks or no runs at all. He added that modifying the model to feature doubling down, as seen in the case of Bear Stearns, would enrich the behavior of banks in the model. Finally, he reflected on policy issues and pointed out a difference between Japan and the United States. The BOJ could purchase a broad range of assets, while it would be difficult for the Fed to do so because the types of assets the Fed could purchase were tightly restricted.

The session chair, **Esther L. George** (Federal Reserve Bank of Kansas City), kicked off the general discussion by posing the question of whether asset purchases that could raise moral hazard issues should be conducted by a central bank or a fiscal authority. **Ueda** pointed out that the model provided a justification for asset purchases, in particular the so-called QE1 conducted by the Fed. Regarding moral hazard issues raised by a central bank's lender-of-last-resort function, **Kuroda** commented that it was not productive in the real world to try to completely eliminate the function in order to minimize moral hazard issues. **Yoshino** mentioned that a capital-injection scheme in which banks that had received injected capital must repay the capital could mitigate moral hazard issues. Regarding capital requirements, **Adrian** asked about a tradeoff between the benefits and costs. **Obstfeld** commented that one could use the presented model and conduct quantitative analysis on capital requirements from the standpoint of welfare. **Kiyotaki** replied that while imposing capital requirements could decrease

the volume of intermediation, capital requirements could produce a large welfare gain by reducing the fear of bank runs. **Narayana R. Kocherlakota** (Federal Reserve Bank of Minneapolis) argued that it might be inappropriate to rely heavily on the presented model for welfare analysis because the model seemed to lack an important mechanism in which a collapse in financial activities spilled over into the real economy. **Good-friend** argued that in the fall of 2008 the fear that had caused people to boost savings might cause the economy to collapse before the bank run kicked in. **Végh** pointed out that it would be difficult to use the presented model to predict a crisis because a bank run in the model was unexpected. **Hamada** expressed his concern about whether it was appropriate to use a rational expectations model with an infinite horizon to describe consumer behaviors within a financial crisis.

D. Monetary Policy, Financial Conditions, and Financial Stability[9]

Adrian discussed the roles of monetary and macroprudential policies by reviewing the literature on the monetary policy transmission channel and macroprudential policy tools. First, he reviewed the literature regarding the risk-taking channel of monetary policy through which expansionary monetary policy could lead to a buildup of financial vulnerabilities such as compressed risk premiums, excessive leverage, and excessive maturity transformation. This channel gave rise to a risk-return tradeoff between financial conditions and financial stability, which complemented the traditional tradeoff of monetary policy between inflation and real activity via a potential impact of financial vulnerabilities on future real activity. Next, he discussed the extent to which macroprudential policy could mitigate monetary policy's risk-return tradeoff by reviewing the literature on the usage of monetary and macroprudential policies to address financial vulnerabilities in asset markets, the banking sector, the shadow banking sector, and the nonfinancial sector. He argued that while countercyclical macroprudential policies were the first-order defense against buildups of vulnerabilities, monetary policy might also be a useful tool for addressing vulnerabilities when macroprudential policies were insufficient due to their limited impacts on the shadow banking and nonfinancial sectors, their limited international reach, and long lags in their effects. He also pointed out that countercyclical macroprudential policies would also influence financial conditions and thus the stance of monetary policy, and argued that monetary and macroprudential policies should be jointly determined. Finally, **Adrian** noted that although monetary and macroprudential policies could be aligned in many instances, there might be potential conflicts when monetary policy tried to be accommodative based on the current output gap and inflation while vulnerabilities were accumulated. In this case, he argued that future tail risk due to the potential of a financial crisis must be weighed against current conditions.

The discussant, **Frank Packer** (Bank for International Settlements), praised the presented paper for attempting a deeper consideration of the interaction between monetary and macroprudential policies. Then he pointed out that monetary and macroprudential policies could work in different dimensions and thus their interaction could differ from the authors' expectations. As an example, he mentioned the limits on real

....
9. For details, see Adrian and Liang (2014).

estate lending by banks imposed in 1990 in Japan. One of the outcomes of the limits was a shift in bank lending to housing finance companies, which arguably exacerbated problems after the bursting of the bubble. He also mentioned the issue of the composite financial conditions index used in the paper and argued that due attention should be paid to the features of individual variables in constructing the composite index. Regarding topics on macroprudential policy, he referred to recent research at the Bank for International Settlements on the effectiveness of macroprudential policies that showed the ratio of debt service to income was one of the most robust instruments in terms of significantly affecting the growth of credit to the housing sector. Finally, he pointed out that cross-border credit growth could exacerbate domestic credit booms and stressed the importance of policies to ameliorate the buildup of cross-border debt.

From the floor, **Kocherlakota** asked if there was a good historical example of conflicts between monetary and macroprudential policies such that central banks conducted accommodative monetary policy under a negative output gap, low inflation, and a buildup of financial vulnerabilities. He also asked if there was cross-border evidence that monetary policy easing in a large country led to the buildup of vulnerabilities in other countries. In reply, **Adrian** remarked that it was difficult to pin down the period of the conflict because it depended on how long it took for vulnerabilities to build up and for the policy effects to last, and mentioned that the United States tended to give cross-border issues little attention because it had been a relatively closed economy. **Jordan** asked about the relationship between structural and cyclical macroprudential policies. **Adrian** replied that cyclical policies had to take structural policies into account as given and structural problems were expected to be fixed in the long run. **Ito** raised the question of whether indifference curves could be drawn in the chart of monetary policy's risk-return tradeoff to find an optimal point in the balance between financial conditions and vulnerabilities. **Snorre Evjen** (Norges Bank) asked about the kind of financial stability indicators that central banks should monitor and target. **Goodfriend** proposed that financial vulnerabilities related to a short-term credit boom be distinguished from others, since the impact of vulnerabilities would be only second order without short-term credit boom. **Liew Yin Sze** (Monetary Authority of Singapore) pointed out that since exchange rates had a significant impact both on output and inflation outcomes in Asian economies, policymakers had to adopt a multi-pronged approach to reduce exchange rate volatility and maintain domestic macroeconomic and financial stability at the same time; in this regard, calibrating macroprudential policy measures in real time amid volatile cross-border capital flows could be challenging.

E. Post-Crisis Slow Recovery and Monetary Policy[10]

In the aftermath of the recent financial crisis and subsequent recession, slow recoveries have been observed in many countries. **Takushi Kurozumi** (Bank of Japan) presented a model that was able to describe such slow recoveries resulting from an adverse financial shock in the presence of endogenous growth in total factor productivity (TFP), and reported an analysis of optimal monetary policy in the face of the financial shock. If a negative financial shock hit the economy, firms' borrowing capacity shrank and the

....
10. For details, see Ikeda and Kurozumi (2014).

demand for investment and labor dropped. A decrease in demand caused a drop in supply in the long run, as the low demand discouraged investment in technology adoption as well as research and development (R&D) and thereby decreased TFP. In such an environment, the optimal monetary policy rule that maximized social welfare featured a strong response to output, as opposed to optimal monetary policy rules in a standard model that featured no response to output. A strong and timely monetary easing mitigated not only a decrease in demand in the short run but also a drop in TFP in the long run. **Kurozumi** showed that a nominal GDP growth or level targeting rule performed well because it reacted to output, while a strict inflation or price-level targeting rule induced a sizable welfare loss because it had no response to output. Comparing the optimal monetary policy rule with a discretional monetary policy in a simulated crisis scenario, he mentioned that a regime shift to the optimal monetary policy rule was desirable, since the discretional monetary policy could suffer from the zero interest lower bound. Finally, he emphasized that to obtain these results it was crucial to take into account the welfare loss resulting from a permanent decline in consumption caused by a drop in TFP.

The discussant, **Mark A. Wynne** (Federal Reserve Bank of Dallas), mentioned that in the United States deep recessions tended to be followed by strong recoveries, in line with Milton Friedman's "plucking theory" of business cycles. **Wynne** noted, however, that this theory did not apply to the recent recovery because economic activity had been weak, underperforming the pre-crisis growth trend. He commented that the presented paper was an important step toward understanding slow recoveries and the role of monetary policy, and made two suggestions to improve the model. First, he commented that the authors should use a more general borrowing constraint in their model because the borrowing constraint played an important role in propagating the effect of financial shock. Second, he suggested that an important next step would be to deal with the zero lower bound issue explicitly and try to model monetary policy as it had actually been conducted in the wake of the recent financial crisis. He concluded that addressing the next step would deepen understanding of the mechanism of slow recoveries and the effect of monetary policy during and after a crisis.

From the floor, **Adrian** asked about any direct evidence on the role of TFP in a financial crisis. In reply, the co-author, **Daisuke Ikeda** (Bank of Japan), mentioned the literature that empirically showed a drop in R&D in the manufacturing sector after the financial crisis in the late 1990s in Japan. **Kurozumi** added that after the recent financial crisis a slowdown in TFP had been observed particularly in the United Kingdom and the euro area. **Goodfriend** suggested that it would strengthen the authors' argument on monetary policy if they could provide empirical evidence on the relationship between financial conditions and productivity growth. **Kocherlakota** mentioned a sharp decline in TFP in 1929–33 followed by a strong recovery in TFP in 1933–37, and commented that it would be interesting if the presented model could capture such a phenomenon. **Ikeda** answered that with some modifications to the modeling of R&D the model could explain such a decline and recovery in TFP. Finally, the session chair, **Jun Il Kim** (Bank of Korea), commented that the transmission mechanism of monetary policy presented in the paper was a large departure from conventional thinking in the sense that monetary policy in the presented model worked on not only the demand

side but also the supply side through the effect on endogenous TFP.

VI. Policy Panel Discussion

In the policy panel discussion moderated by **Obstfeld**, six panelists, **Jordan, Mersch**, **Hiroshi Nakaso** (Bank of Japan), **Charles I. Plosser** (Federal Reserve Bank of Philadelphia), **Raghuram G. Rajan** (Reserve Bank of India), and **Tucker** presented wide-ranging issues relevant to central banks' policies during and after the recent financial crisis, and this was followed by a general discussion from the floor. **Obstfeld** began the panel discussion by posing several questions to panelists: how well could central banks conduct forward guidance policy; what did we know about the process of exiting from the current unconventional monetary policy; how did central banks deal with spillover effects from one country to another; how well had policymakers improved international coordination; and how should monetary policy deal with financial stability in relation to macroprudential policy.

A. Remarks by Panelists

Jordan described the situation of the Swiss economy after the recent financial crisis, and discussed the policy reaction of the Swiss National Bank (SNB) against the impact of spillovers of accommodative monetary policy conducted in larger economies. During and after the crisis, the Swiss franc had appreciated significantly against all major currencies due to its safe-haven characteristics and a shrinkage in the interest rate differentials. Because this appreciation put strong downward pressure on the Swiss consumer prices, in the end the SNB introduced a minimum exchange rate policy to prevent deflation. Although this policy was considered to be an emergency measure at the time it was introduced, it became the key policy measure due to the Swiss franc's long-lasting strength. This was due not only to the weakness of the global economic recovery but also to the continuing highly accommodative monetary policies in major economies, which differed from the situation in the 1970s, when the SNB had introduced a similar measure for the first time. On top of this, he mentioned the concern that a prolonged period of very low interest rates could create financial stability problems. He noted that while monetary policy should be used mainly to achieve the goal of price stability to avoid deflation, macroprudential tools such as a countercyclical capital buffer should be used to achieve the goal of financial stability.

Mersch discussed the ECB's forward guidance and the possibility of QE policy as a policy option in the future. Regarding the former, he first explained that the ECB's forward guidance took the form of qualitative guidance conditional on the assessment of three areas: the inflation outlook, the real economy, and unutilized capacity. He stated that qualitative forward guidance worked well in the sense that it lowered the expected level of future interest rates and reduced market uncertainty surrounding this level by clarifying the ECB's policy intentions. At the same time, he pointed out that date-based guidance could be misinterpreted as an unconditional commitment, and that outcome-based guidance might need to repeatedly communicate conditionality with increasingly complex systems of thresholds as targeted variables approached their

numerical thresholds. Regarding other policy options, he commented that QE seemed suited to cope with a significant fall in aggregate demand and the risk of falling inflation expectations. He noted, however, that the ECB should be mindful of the potential risks and side effects, such as financial stability concerns and moral hazard problems in private investment behavior. The side effects also included concerns regarding the independence of central banks, because some interaction with fiscal policy could occur under QE policies. He also commented on the possibility of international cooperation. He mentioned that it was important to improve the analytical framework to gain a better understanding of the international propagation of shocks and prepare for rapid and coordinated action in exceptional circumstances. Having said this, he noted that each central bank had its own constitutional mandates and could not exceed them because of the need for democratic legitimacy.

Based on the BOJ's experience, **Nakaso** posed three challenges with respect to forward guidance, control of short-term interest rates, and asset purchases. In terms of the challenge with respect to forward guidance, he explained that the forward guidance currently adopted by the BOJ reflected its intention to raise inflation expectations and thus could be stronger than the guidance issued by the Fed and the BOE in a situation where inflation expectations seemed to be anchored to a certain level. He added that the forward guidance by the BOJ could be seen as containing a holistic judgment in the sense that it included phrases such as "as long as necessary." In terms of the challenge with respect to control of short-term interest rates, he explained the BOJ's experience at the time of exit from QE in 2006, when the BOJ had strived to stabilize short-term market rates by conducting fine-tuning of open market operations including both the provision and draining of liquidity. He argued that the Fed might face similar challenges in the forthcoming normalization phase, when it might rely extensively on reverse repos and a term-deposit facility for liquidity draining, which would not guarantee that it could control the upper end of market rates as well as the lower end. He also mentioned a tradeoff between market rate controllability and improvement of market functioning, noting that a discount-window type of marginal lending facility to cap market rates could be at odds with the intention of reviving market functioning. Finally, in terms of the challenge with respect to asset purchases, he argued that if long-term interest rates remained affected as long as central banks carried large balance sheets, close attention should be paid to the potential buildup of financial imbalances which might be caused by the distortion in a flatter or inverse yield curve when the short-term interest rate was hiked.

Plosser discussed the role of forward guidance and transparency in influencing expectations.[11] He first explained that the stance of monetary policy encompassed not just the current level of the short-term policy rate but also its expected future path, and that expectations about future monetary policy could play an important role in determining the economic outcomes of monetary policy. On top of this, he argued that one of the most important ways to support credibility and thus the effectiveness of forward guidance was to practice it as part of a systematic policy framework, and to be more explicit about a central bank's reaction function. He commented that one

....
11. For details, see Plosser (2014).

way to be more explicit was to indicate the likely behavior of the policy rate based on a few Taylor-like rules that were consistent with the past conduct of monetary policy and robust to uncertainties regarding economic models. He added that the principles of a systemic policy framework applied equally well to balance-sheet policies, arguing that the signals conveyed by such policies should be consistent with forward guidance on future interest rate policies. In this regard, he mentioned that the use of particular economic models, including the FRB/US model, seemed to be a reasonable starting point for providing economic forecasts based on the policy rules. He concluded that steps toward greater transparency and communication would mark significant progress and encourage the Fed to conduct policy in a more systematic manner.

Rajan discussed two concerns about the protracted accommodative monetary policy in advanced countries.[12] First, he pointed out that the policy did not seem to create domestic demand so much because of debt overhang, structural problems, or fundamentally weak demand, while it seemed to shift demand away from other countries through cross-border capital flows and currency depreciation. In the meantime, some distortion might occur and leverage risks might build up in the financial sector under the condition that tremendous liquidity prevailed there and the world interest rate was set very low. In such an environment where people flocked into risky assets, transparency in central banks' policies might create a rather difficult situation in the process of exiting from the accommodative monetary policy. Second, he argued that the spillover effects of accommodative monetary policy might create much stronger demand in other countries than they wanted, inducing them to take additional monetary policy actions and eventually driving the world economy into a situation that was suboptimal. On the other hand, it was difficult for central banks to take account of the spillovers and other countries' policy reactions over time as long as they focused on their domestic mandates. Against this concern, he pointed out that the Precautionary and Liquidity Line of the IMF could be more helpful in offsetting a reversion to reserve accumulation as a way to build safety nets if it could be converted from a pull line—which could make countries fear the stigma of coming under the supervision of the IMF—to a push line, to which countries were given access without necessarily asking for it. He also stated that stronger international safety nets including multilateral swaps were worth exploring as a starting point for collective monetary policy cooperation.

From the viewpoint of a need for the legitimacy of central bank independence to be underpinned, **Tucker** discussed macroprudential policy and balance-sheet policy.[13] As for macroprudential policy, he argued that it should be used to keep the resilience of the banking system constant even when economic conditions were changing; an equity requirement of, say, 10 percent did not provide the desired degree of system resilience if the world became riskier than when the regulatory regime was calibrated. He added that stress testing conducted by central banks enabled them to engage in debate with the legislature and the public about the degree of resilience they desired in the banking system, thus contributing to ensuring the credibility and legitimacy of central banks. Second, he pointed out that the financial system was essentially a shape-shifter in the

....
12. For details, see Rajan (2014).
13. For details, see Tucker (2014).

sense that the financial system adapted to rule-based regulation. There was a distinct possibility that the substance of banking would move outside *de jure*, regulated banks. He also observed that some nonbanks such as securities dealers had the economic substance of banks through their prime brokerage business, exposing central banks to risk of having to provide liquidity assistance. As for balance-sheet policy, he argued that when central banks conducted QE policy in government bonds, cooperating with the government was essential in order to avoid government debt managers offsetting the economic effects and to recognize the financial risk entailed. As an example, he mentioned that the BOE and the U.K. government agreed on both: the government would indemnify the BOE for any loss and would keep debt management strategy unchanged. Bizarrely, in the United States the treasury had extended the maturity of its debt. In this regard, he added that central banks needed to accept that their policy overlapped with fiscal policy, but that that could be harmless as long as there was a clear 'fiscal carve-out,' so that elected politicians blessed the high-level regime and the public could see what happened when central banks made profits or incurred losses on their balance sheet.

B. General Discussions

Following the panelists' remarks, **Obstfeld** commented on a few issues relevant for central banks' policies in a post-crisis era. First, he pointed out that the recent crisis had shown that an optimal monetary policy did not necessarily guarantee that the financial sector would be robust and resilient. On top of this, he stated that monetary policy and macroprudential policy were inherently interrelated, for example, in that protracted accommodative monetary policies might create incentives which impaired financial stability. Second, he pointed out that the crisis had also shown the importance of global policy cooperation, because macroprudential policy on a stand-alone basis might be ineffective in globally integrated financial markets.

In response to Obstfeld's comments, **Mersch** discussed the prudential policy in Europe after the crisis. He first emphasized that the ECB was striving to preserve the integrity of the single currency and thus retain a single economic and monetary union. Then he mentioned that one of the policy priorities in Europe was to restore the confidence in the banking system, and that the banking union had been established to achieve this policy priority with a focus on microprudential policy rather than macroprudential policy. As for the macroprudential approaches in Japan, **Nakaso** explained that the Financial Services Agency (FSA) was the primary regulator in a position to conduct macroprudential policy. He added that because the BOJ had better access to the market, it could provide the FSA with an assessment of systemic conditions in the market, which was one of its key roles in macroprudential policy. **Tucker** explained that central banks could not help becoming involved in many macroprudential areas such as supervisory policy, regulatory policy, and thus credit policy, as long as the central bank was the monopoly issuer of the final settlement asset, i.e., fiat money, as that made it the final provider of liquidity. Lender-of-last-resort operations were risky interventions in the credit system and so the central bank had to be involved in banking policy and surveillance of its soundness. **Goodfriend** mentioned the problem of

excessively low minimum capital standards due to competitive international subsidization and asked if this problem had been resolved. **Anne Le Lorier** (Banque de France) raised a question as to whether central banks should embark on regulating nonbank entities and controlling them.

Regarding the mandate and accountability of central banks, **Jordan** agreed with Tucker's views on the importance of a cooperative relationship between a government and a central bank, and added that central banks' mandates should be as clear as possible and that they should remain time-consistent. He also emphasized that central banks' policy frameworks should be simple allowing them to concentrate on their mandates without too much fine-tuning. **Plosser** noted that central banks should not be accountable for things they cannot control. He pointed out that central banks would put their independence at risk if they ventured into policies that were not explicitly within their own domain. In addition, he stated that it was important for central banks to conduct policy in a systematic and predictable way by maintaining transparency in their communications, which helped to preserve their independence. **Ito** commented that he was struck by the contrast between Plosser and Tucker in the distance between the government and the central bank. He wondered whether this contrast derived from the unique fact that a central bank had been abolished twice in U.S. history, whereas it had not been abolished in the United Kingdom, Japan, or elsewhere.

Berk asked the panelists what the future of central bank independence looked like given the confluence between monetary and fiscal policies after the crisis. **Jordan** replied that it would depend on central banks' performance over the next few years in terms of financial stability as well as price stability, including a successful exit from unconventional monetary policy. He mentioned that, in order to avoid putting independence at risk, it was important to deliver on price stability by not only avoiding deflation but also avoiding inflation in the exit policy phase. He also stated that it was incorrect to think that monetary policy did not have any distributional effects, and therefore it was important to achieve price stability in the medium and long term. **Mersch** commented that during the crisis central banks' mandates had broadened in comparison with the time independence had been given to central banks, and that inevitably the central banks had to adjust their accountability and transparency so that no question occurred concerning their independence. **Rajan** expressed a concern that monetary policy was relied on too heavily when other policies did not work well. As a result, he argued that the global economy could become sub-optimal when major central banks took an unconventional set of policy actions. In addition to these panelists' comments, **Lipton** emphasized the importance of central banks' belief and credibility in achieving their mandates, and stated that they should not doubt their ability to achieve their mandates. On the other hand, **Végh** illustrated that central banks tended to allow the market to think that monetary policy was much more powerful than actually it was. **Wynne** raised a question as to what compelled central banks to try to conduct so many policies.

Regarding the exit policy from QE and forward guidance, **Nakaso** claimed that the true test for the effectiveness of forward guidance was still to come, in the sense that it should be tested whether forward guidance compressed the level and volatility of expected short-term rates even when markets expected an exit from the zero interest

rate policy was approaching. On the possibility of overreaction in the financial markets during the exit process, **Tucker** said that policymakers should not be overly concerned about short bursts of volatility. Smoothing volatility could easily lead to excessive risk-taking, so policy could have perverse effects. Policy should systematically feed-back from the outlook for inflation given an unavoidably highly uncertain assessment of the balance of aggregate demand and supply. In that familiar setup, withdrawing some of the extraordinary monetary accommodation would be quite normal. His suggestion was based on his recognition that the financial markets always second-guessed central banks' actions in the search for profit, but that their behavior might have only short-run effects on volatility because of the lack of attention given to fundamentals. Next, **Kocherlakota** commented on two challenges for policy in the near future. First, he posed the challenge for central banks of devising an effective way to communicate with the market about their exit policies. He explained that it was not business as usual in the sense that there could be no return to the Taylor rule for a while, even if the output gap and the inflation gap were resolved. Second, he referred to the observation that the natural interest rate would continue to remain low for some years compared to historical standards. He pointed out that keeping interest rates low might be associated with financial instability. In relation to these comments, **Kazuo Momma** (Bank of Japan) asked whether central banks were succeeding appropriately in sharing uncertainty involved in the economic outlook with the market. He emphasized that care should be taken in setting an achievable target on the real side of economy, such as the natural interest rate and the natural unemployment rate, because nobody knew exactly what these rates were and this made central banks' communication more complicated. **Plosser** agreed that it was important to understand that there were measurement errors in economic variables, and stressed that it was important to implement robust policy rules against measurement errors and to achieve transparency in communication. **Yörükoğlu** commented that central banks did not share a quantitative standard model which enabled them to assess how the stock and flow of QE affected prices.

Regarding exchange rate and foreign reserves policies, **Jordan** referred to Goodfriend's keynote speech that pointed out an aspect of the carry trade in monetary policy and stated that the SNB could temporarily face capital losses, due to foreign exchange rate fluctuations, but that the SNB should be able to compensate potential losses in the long run through seigniorage. **Nakaso** mentioned the fact that Japan was more or less in a situation similar to Switzerland in the sense that it had large foreign reserves. On top of this, he supposed that the SNB was now one of the QE-sians, and that its exit strategy was no less difficult than that of other central banks given the relative size of its balance sheet. **Braun** asked about potential scenarios in which Switzerland faced the "queasiness" of QE-sians, for instance, would a sharp depreciation of the Euro make the Swiss National Bank queasy? **Jordan** replied that the SNB differed greatly from the QE-sians as the SNB implemented a minimum exchange rate policy and did not have any quantitative target for the size of its balance sheet.

Regarding **Rajan**'s concerns about the international spillovers of prolonged accommodative monetary policy in advanced countries, **Goodfriend** suspected that the United States, the euro area, and Japan were not subject to such a sub-optimal situation as Rajan had pointed out, because they still had inflation below the target level. **Plosser**

17

suggested that being transparent and operating in a predictable way amounted to international coordination of a sort, because doing so helped other countries to cope with policies. **Hamada** argued that monetary policy coordination between major countries is not necessary under the genuine float perhaps except for such an adjustment case as Plosser had pointed out. **Ito** stated that, for major central banks, domestic considerations justified their QE policy. He objected to the view that these countries were in a currency war, noting that even usual interest rate policy as well as QE policy caused international spillovers and that there was often a misconception that QE functioned only through exchange rates.

In response to these comments, **Rajan** argued that whether each country was in a sub-optimal situation due to the international spillovers would depend on the extent to which central banks' policies could take care of financial risk as well as the level of domestic inflation. He also mentioned that in Japan structural policies (the "third arrow" of "Abenomics") were important for positive feedback on general prices rather than import prices, although QQE might contribute to a rise in inflationary expectations in the short run. **Végh** argued that attention must be paid to international cooperation not only among advanced countries but also between advanced countries and emerging countries. He illustrated that tapering by the Fed might cause capital outflows from emerging countries and hence the depreciation of their currencies, forcing them to raise interest rates while their GDPs were falling. **Nakaso** commented that we might need to improve collectively devised international mechanisms for facilitating adjustments when the direction of capital flows changed quite abruptly. In this regard, he mentioned that the central bank community had already stepped into the area of supranational policy measures, including central bank swap lines to cope with the global liquidity shortage of U.S. dollars.

References

Adrian, Tobias, and Nellie Liang, "Monetary Policy, Financial Conditions, and Financial Stability," paper presented at the 2014 BOJ-IMES Conference on "Monetary Policy in a Post-Financial Crisis Era," in Tokyo on May 28–29, 2014.

Federico, Pablo, Carlos A. Vegh, and Guillermo Vuletin, "Reserve Requirement Policy over the Business Cycle," IMES Discussion Paper No. 2014-E-6, Institute for Monetary and Economic Studies, Bank of Japan, 2014.

Gertler, Mark, and Nobuhiro Kiyotaki, "Banking, Liquidity and Bank Runs in an Infinite Horizon Economy," IMES Discussion Paper No. 2014-E-7, Institute for Monetary and Economic Studies, Bank of Japan, 2014.

Goodfriend, Marvin, "Monetary Policy as a Carry Trade," *Monetary and Economic Studies*, 32, Institute for Monetary and Economic Studies, Bank of Japan, 2014, pp. 29–44 (this issue).

Ikeda, Daisuke, and Takushi Kurozumi, "Post-Crisis Slow Recovery and Monetary Policy," paper presented at the 2014 BOJ-IMES Conference on "Monetary Policy in a Post-Financial Crisis Era," in Tokyo on May 28–29, 2014.

Ito, Takatoshi, "We Are All QE-sians Now," IMES Discussion Paper No. 2014-E-5, Institute for Monetary and Economic Studies, Bank of Japan, 2014.

Kuroda, Haruhiko, "Opening Remarks," *Monetary and Economic Studies*, 32, Institute for Monetary and Economic Studies, Bank of Japan, 2014, pp. 25–28 (this issue).

Lipton, David, "From Deflation to Reflation? Japan's New Monetary Policy Framework, Effectiveness, and Broad Lessons," speech at the 2014 BOJ-IMES Conference on "Monetary Policy in a Post-Financial Crisis Era," in Tokyo on May 28–29, 2014 (available at http://www.imf.org/external/np/speeches/2014/052814.htm).

Plosser, Charles I., "Influencing Expectations in the Conduct of Monetary Policy," remarks at the 2014 Bank of Japan-Institute for Monetary and Economic Studies Conference: Monetary Policy in a Post-Financial Crisis Era, in Tokyo on May 28–29, 2014 (available at http://www.philadelphiafed.org/publications/speeches/plosser/2014/05-28-14-boj.cfm).

Rajan, Raghuram G., "Concerns about Competitive Monetary Easing," remarks in the Policy Panel Discussion at the 2014 BOJ-IMES Conference on "Monetary Policy in a Post-Financial Crisis Era," organized by the Institute of Monetary and Economic Studies, Bank of Japan, in Tokyo on May 28–29, 2014 (available at http://www.rbi.org.in/scripts/BS_SpeechesView.aspx?Id=896).

Tucker, Paul, "Underpinning the Legitimacy of Independent Central Banks," remarks at the 2014 BOJ-IMES Conference on "Monetary Policy in a Post-Financial Crisis Era," in Tokyo on May 28–29, 2014.

APPENDIX 1: PROGRAM

Wednesday, May 28, 2014

Morning

Opening Session

Chairperson:	**Tomoo Yoshida**, Bank of Japan
Opening Remarks:	**Haruhiko Kuroda**, Bank of Japan
Keynote Speech:	**Marvin Goodfriend**, Carnegie Mellon University

Session 1: We Are All QE-sians Now

Chairperson:	**Narayana R. Kocherlakota**, Federal Reserve Bank of Minneapolis
Paper Presenter:	**Takatoshi Ito**, National Graduate Institute for Policy Studies
Discussant:	**Jan Marc Berk**, De Nederlandsche Bank

Session 2: Reserve Requirement Policy over the Business Cycle

Chairperson:	**Anne Le Lorier**, Banque de France
Paper Presenter:	**Carlos A. Végh**, Johns Hopkins University
Discussant:	**Michael P. Leahy**, Board of Governors of the Federal Reserve System

Guest Speech

Chairperson:	**Kazuo Momma**, Bank of Japan
Speaker:	**David A. Lipton**, International Monetary Fund

Afternoon

Policy Panel Discussion

Moderator:	**Maurice Obstfeld**, University of California at Berkeley
Panelists:	**Thomas J. Jordan**, Swiss National Bank
	Yves Mersch, European Central Bank
	Hiroshi Nakaso, Bank of Japan
	Charles I. Plosser, Federal Reserve Bank of Philadelphia
	Raghuram G. Rajan, Reserve Bank of India
	Paul Tucker, Harvard University

Thursday, May 29, 2014

Morning

Session 3: Banking, Liquidity and Bank Runs in an Infinite Horizon Economy

Chairperson: **Esther L. George**, Federal Reserve Bank of Kansas City

Paper Presenter: **Nobuhiro Kiyotaki**, Princeton University

Discussant: **R. Anton Braun**, Federal Reserve Bank of Atlanta

Session 4: Monetary Policy, Financial Conditions, and Financial Stability

Chairperson: **Mehmet Yörükoğlu**, Central Bank of the Republic of Turkey

Paper Presenter: **Tobias Adrian**, Federal Reserve Bank of New York

Discussant: **Frank Packer**, Bank for International Settlements

Session 5: Post-Crisis Slow Recovery and Monetary Policy

Chairperson: **Jun Il Kim**, Bank of Korea

Paper Presenter: **Takushi Kurozumi**, Bank of Japan

Discussant: **Mark A. Wynne**, Federal Reserve Bank of Dallas

APPENDIX 2: LIST OF PARTICIPANTS

Tobias Adrian	Federal Reserve Bank of New York
Vivek Aggarwal	Reserve Bank of India
Maria Almasara Cyd Amador	Bangko Sentral ng Pilipinas
Masayoshi Amamiya	Bank of Japan
Kosuke Aoki	University of Tokyo
Yasushi Asako	Waseda University
Jacek A. Bartkiewicz	National Bank of Poland
Jan Marc Berk	De Nederlandsche Bank
R. Anton Braun	Federal Reserve Bank of Atlanta
Rashad I. Cassim	South African Reserve Bank
Lillian Cheung	Hong Kong Monetary Authority
Alberto Cogliati	Banca d'Italia
Troy Davig	Federal Reserve Bank of Kansas City
Norhana Endut	Bank Negara Malaysia
Snorre Evjen	Norges Bank
Hiroshi Fujiki	Chuo University
Ichiro Fukunaga	Bank of Japan
Esther L. George	Federal Reserve Bank of Kansas City
Marvin Goodfriend	Carnegie Mellon University
Koichi Hamada	Yale University
Hideo Hayakawa	Fujitsu Research Institute
Yasuo Hirose	Keio University
Akinari Horii	The Canon Institute for Global Studies
Daisuke Ikeda	Bank of Japan
Selahattin İmrohoroğlu	University of Southern California
Nobuo Inaba	Ricoh Company, Ltd.
Takatoshi Ito	National Graduate Institute for Policy Studies
Kazumasa Iwata	Japan Center for Economic Research
Kikuo Iwata	Bank of Japan
Thomas J. Jordan	Swiss National Bank
Keimei Kaizuka	Ministry of Finance
Takashi Kano	Hitotsubashi University
Masahiro Kawai	University of Tokyo
Jonathan P. Kearns	Reserve Bank of Australia
Ben Kelmanson	International Monetary Fund
Jun Il Kim	Bank of Korea
Hiroo Kindaichi	Bank of Japan
Nobuyuki Kinoshita	Bank of Japan
Michio Kitahara	Bank of Japan

Yukinobu Kitamura	Hitotsubashi University
Takahide Kiuchi	Bank of Japan
Nobuhiro Kiyotaki	Princeton University
Narayana R. Kocherlakota	Federal Reserve Bank of Minneapolis
Junko Koeda	University of Tokyo
Jarmo J. Kontulainen	Bank of Finland
Haruhiko Kuroda	Bank of Japan
Takushi Kurozumi	Bank of Japan
Anne Le Lorier	Banque de France
Michael P. Leahy	Board of Governors of the Federal Reserve System
Liew Yin Sze	Monetary Authority of Singapore
David A. Lipton	International Monetary Fund
Liu Yuling	People's Bank of China
Eiji Maeda	Bank of Japan
José M. Marqués Sevillano	Banco de España
Yves Mersch	European Central Bank
Ryuzo Miyao	Bank of Japan
Kazuo Momma	Bank of Japan
Yoshihisa Morimoto	Bank of Japan
Hiroshi Nakaso	Bank of Japan
Mitsuru Nomura	Bank of Japan
Maurice Obstfeld	University of California at Berkeley
Shingo Odaka	Bank of Japan
Akira Otani	Bank of Japan
Frank Packer	Bank for International Settlements
Songtum Pinto	Bank of Thailand
Charles I. Plosser	Federal Reserve Bank of Philadelphia
Raghuram G. Rajan	Reserve Bank of India
Changyong Rhee	International Monetary Fund
Takehiro Sato	Bank of Japan
Özlen Şavkar	Central Bank of the Republic of Turkey
Jürgen Schaaf	European Central Bank
Jean-Luc Schneider	Organisation for Economic Co-operation and Development
Toshitaka Sekine	Bank of Japan
Seiichi Shimizu	Bank of Japan
Andrey Sinyakov	Central Bank of the Russian Federation
Yoshiki Tanji	Bank of Japan
Haruyuki Toyama	Bank of Japan

Paul Tucker	Harvard University
Shinichi Uchida	Bank of Japan
Kazuo Ueda	University of Tokyo
Kozo Ueda	Waseda University
Hiroshi Ugai	Hitotsubashi University
Enrico Vasconcelos	Banco Central do Brasil
Carlos A. Végh	Johns Hopkins University
Kenichirou Watanabe	Bank of Japan
Mark A. Wynne	Federal Reserve Bank of Dallas
Hiromi Yamaoka	Bank of Japan
Kei-Mu Yi	Federal Reserve Bank of Minneapolis
Tatsuya Yonetani	Bank of Japan
Mehmet Yörükoğlu	Central Bank of the Republic of Turkey
Tomoo Yoshida	Bank of Japan
Naoyuki Yoshino	Asian Development Bank Institute
Nobuyasu Yoshioka	Bank of Japan
Doddy Zulverdi	Bank Indonesia