

IMES DISCUSSION PAPER SERIES

**Financial System and Monetary Policy Implementation:
Summary of the 2009 International Conference Organized by the
Institute for Monetary and Economic Studies of the Bank of Japan**

Shigenori Shiratsuka, Wataru Takahashi, and Kozo Ueda

Discussion Paper No. 2009-E-20

IMES

INSTITUTE FOR MONETARY AND ECONOMIC STUDIES

BANK OF JAPAN

2-1-1 NIHONBASHI-HONGOKUCHO

CHUO-KU, TOKYO 103-8660

JAPAN

You can download this and other papers at the IMES Web site:

<http://www.imes.boj.or.jp>

Do not reprint or reproduce without permission.

NOTE: IMES Discussion Paper Series is circulated in order to stimulate discussion and comments. Views expressed in Discussion Paper Series are those of authors and do not necessarily reflect those of the Bank of Japan or the Institute for Monetary and Economic Studies.

**Financial System and Monetary Policy Implementation:
Summary of the 2009 International Conference Organized by the
Institute for Monetary and Economic Studies of the Bank of Japan**

Shigenori Shiratsuka*, Wataru Takahashi, and Kozo Ueda*****

*Associate Director-General, Institute for Monetary and Economic Studies, Bank of Japan
(E-mail: shigenori.shiratsuka @ boj.or.jp)

**Director-General, Institute for Monetary and Economic Studies, Bank of Japan (E-mail:
wataru.takahashi @ boj.or.jp)

***Director, Institute for Monetary and Economic Studies, Bank of Japan (E-mail:
kouzou.ueda @ boj.or.jp)

As the organizers of the conference, we would like to express our sincere appreciation to our honorary advisers, Bennett T. McCallum and Maurice Obstfeld, our chief councillor, Kazuo Ueda, and all other participants at the conference for their fruitful presentations and discussions. Our special thanks go to Junko Miyoshi and other staff members of the Institute for Monetary and Economic Studies, who devotedly helped to organize the conference.

The Institute for Monetary and Economic Studies (IMES) of the Bank of Japan (BOJ) held its 2009 International Conference, entitled “Financial System and Monetary Policy Implementation,” on May 27 and 28, 2009, at the Bank of Japan Head Office in Tokyo. (See Appendix 1 for the program.) The conference explored a wide range of financial and prudential issues and their implications for monetary policy, including counterparty risk in interbank markets, market liquidity in bond markets, and capital adequacy regulation and procyclicality in financial systems. Some 100 distinguished guests from academia, international organizations, and central banks attended the conference. (See Appendix 2 for a list of the participants.¹)

The conference began with opening remarks by the Governor of the BOJ, Masaaki Shirakawa, followed by keynote speeches by the two honorary advisers of the IMES, Bennett T. McCallum (Carnegie Mellon University) and Maurice Obstfeld (University of California at Berkeley). The six subsequent sessions each consisted of a paper presentation and two designated discussions, followed by floor discussions. The conference concluded with a policy panel discussion.

I. Opening Session

In the opening remarks,² **Shirakawa** began by arguing that interactions between financial system and monetary policy had posed important policy challenges to the BOJ since the late 1980s, when the bubble emerged, and recollected that long and winding evolution had been taking place in the way of thinking of monetary policy management occurring since that time. He pointed out striking similarities between policy measures formerly taken by the BOJ after the burst of the bubble and those recently taken by central banks in the major economies. He argued that liquidity was the most important concept in understanding the recent financial crisis and that the principal role for central banks had been and would continue to be to serve as guardians of liquidity. Finally, he touched on specific issues and challenges for central banks, including the implementation of unconventional policy measures and risk-taking channel of monetary policy.

In the first keynote speech,³ **McCallum** remarked on the crucial role of learnability in monetary policy analysis. To form expectations rationally, he said, individual agents needed to learn the dynamic properties of the system based on observed data. Showing some cases in which determinacy did not relate to stable and

¹ Their affiliation is as of the time the conference was held.

² For details, see Shirakawa (2009).

³ For details, see McCallum (2009).

learnable solutions, he pointed out that determinacy was neither necessary nor sufficient for making a single rational expectations solution plausible. The role of determinacy, he argued, needed to be reconsidered and substantially deemphasized or replaced.

In a second keynote speech,⁴ **Obstfeld** first pointed out the importance of a global and systemic perspective on financial stability in light of the growing importance assumed by emerging economies in the global economy in recent years. In the recent financial crisis, he described the U.S. Federal Reserve (Fed) as an international lender of last resort in dollars funding by extending currency swap lines with foreign central banks. Nevertheless, he argued, greater institutionalization of international coordination was required than in the past. He concluded that the International Monetary Fund (IMF) could play the role of an international lender of last resort by establishing access to individual central bank credit lines, while pointing to remaining problems such as moral hazard.

II. Paper Presentation Session

A. Liquidity, Business Cycles, and Monetary Policy⁵

Nobuhiro Kiyotaki (Princeton University) presented a model of monetary economy comprised of assets with different liquidity levels: capital, equity, and money. In the model he presented, equity was less liquid than money as entrepreneurs were unable to immediately sell all the equity holdings. Entrepreneurs faced the borrowing constraint as they were able to finance only a fraction of their investment by issuing new equities. At equilibrium, entrepreneurs held money, even though returns from holding money were lower than from non-monetary assets (liquidity premium). Once non-monetary assets became less liquid exogenously in the asset market, he noted, aggregate investment fell, as the liquidity constraint for investment expenditures tightened. In such an environment, he argued, open market operations that made it possible to purchase equity by issuing money might alleviate liquidity shocks, since money outperformed other assets in terms of liquidity and mitigated the turmoil arising from the sudden loss of liquidity of non-monetary assets.

In his comments, **Zheng Liu** (Federal Reserve Bank [Fed] of San Francisco) argued for the essential nature of studying the quantitative importance of liquidity constraints. He also emphasized that conventional monetary policy, to exchange money for bonds, was neutral to the economy in the model. Second discussant **Marianne Nessén** (Sveriges Riksbank) pointed out that market operations could result in the tax

⁴ For details, see Obstfeld (2009).

⁵ For details, see Kiyotaki and Moore (2009).

distortions associated with government losses and demanded full-scale welfare analysis of this issue. She also argued that workers in the model had only constrained access to the financial markets and predicted that more unconstrained access to financial markets might lead to different results.

From the floor, adding to Liu's comments, **David Altig** (Fed Atlanta) asked if the model implied that quantitative easing was useless while credit easing was effective. In response, **Kiyotaki** said open market operations would be more effective if they removed illiquid assets from the private sector, rather than merely changing the composition of liquid assets such as money and bonds. Voicing agreement with Nessén, **Frank Smets** (European Central Bank [ECB]) and **Paul Tucker** (Bank of England [BOE]) pointed out that open market operations described in the model were not really repos but outright purchases of risky assets. **Smets** asked whether the use of repo transactions would have similar beneficial effects. **Tucker** argued that the liquidity merits had to be weighed against the risk of credit losses. In reply, **Kiyotaki** maintained that illiquid assets earned higher expected returns than money due to the liquidity premium and that government on average stood to gain from market operations. He said, in response to Nessén, that if workers were involved in investment opportunities such as housing investment with borrowing constraints, they resembled entrepreneurs within the model. He admitted welfare analysis was necessary, but the assumption of heterogeneous agents made such analysis difficult. **Marvin Goodfriend** (Carnegie Mellon University) pointed out that the subject of the model was not narrow liquidity but broad liquidity and cast doubt on whether a central bank had the leeway to increase broad liquidity by adding reserves.

B. Segmentation in the US Dollar Money Markets During the Financial Crisis⁶

James J. McAndrews (Fed New York) analyzed the integration of overnight Eurodollar and federal funds (FF) markets, which were well-integrated in normal times. Drawing on transaction-level data for Eurodollar and federal funds loans, as well as the LIBOR panel of overnight interest rates, he found evidence for significant rate differences between the two market segments during the financial crisis from August 2007. He pointed out that the foreign exchange swap program between central banks significantly reduced the spread between the LIBOR and federal funds rates, proposing that segmentation in the two markets resulted from (1) the absence of reserve requirements for dollars outside the United States; (2) time zone differences; and (3) different

⁶ For details, see McAndrews (2009).

counterparties in different geographic areas.

As reasons for differences in the spreads, **Katrin Assenmacher** (Swiss National Bank) pointed out deviations between quoted rates and effective rates, differences in creditworthiness, and mismatches in time zones. She suggested comparing LIBOR with the Asian Eurodollar rates. Working from intraday data, **Shin-ichi Fukuda** (University of Tokyo) pointed out that even within the FF market in New York, large divergences emerged during the crisis.

From the floor, in line with Assenmacher's discussion, **Hans Genberg** (Hong Kong Monetary Authority), **Smets, Javier Suarez** (Center for Monetary and Financial Studies), and **Tucker** raised questions about the effects of differences in counterparty risk on the regression results. For example, **Genberg** asked if counterparty risk induced deviations from covered interest parity. **Tucker** pointed out that banks without a presence in the United States might have been rationed by U.S. resident lenders due to perceptions of counterparty risk, arguing that reflected not counterparty risk but asymmetric information. In response, **McAndrews** maintained that policy measures for interbank markets, including the foreign exchange swap program, needed to be assessed with consideration on their impacts on counterparty risk. In response to Fukuda's comment, **McAndrews** acknowledged large intraday divergences within the FF market, even within the same time zone and geographical jurisdiction. In response to the suggestion by Smets to examine the time of day, **McAndrews** noted data constraints of seeing the time of settlement, rather than the time of the actual trade, resulting in the long delays between settlement and the trade times. In relation to the dollar swaps program, **Genberg** and **Obstfeld** emphasized the effects of market turbulence on exchange rates. **Obstfeld** asked if the result in the paper was affected by the perception that U.S. banks ultimately had access to a well-defined lender of last resort in dollars. Expanding on Obstfeld's keynote speech, **Grant Spencer** (Reserve Bank of New Zealand) emphasized the importance of a global approach to the lender of last resort.

C. A Financial System Perspective on Japan's Experience in the Late 1980s⁷

Hyun Song Shin (Princeton University) revisited Japan's experiences in the late 1980s in light of lessons learned from the U.S. subprime crisis. He focused on the fact that large manufacturers became net creditors from net debtors, thereby becoming the part of the financial intermediation sector. The Japanese large firms raised funds by issuing securities and supplied that new money to the banking sector in the form of newly

⁷ For details, see Hattori, Shin and Takahashi (2009).

introduced time deposits with liberalized interest rates. When good borrowers already had credit, easy monetary conditions that promoted greater credit supply increased credit availability to marginal borrowers, especially real estate-related firms.

As the first discussant, **Spencer** expressed his views on the main drivers of credit supply: new injection of funds into the banking system, a shift in funds from lower leveraged financial institutions to higher leveraged ones, and banks' market share strategies in booms. Second discussant **Tsutomu Watanabe** (Hitotsubashi University) pointed out that the prime holders of securities issued by non-financial firms were foreigners in the Flow of Funds Statistics. He also argued that the purchase by foreigners of securities issued by governments had declined in the late 1980s, a change attributable to government efforts to pare public debt.

Addressing the issue of macroprudential policy from the floor, **Kiyohiko G. Nishimura** (BOJ) asked about implications of a leverage ratio cap. **Shin** replied that it was needed to consider a way of siphoning off excess capital. He proposed a Pigovian tax to the equity by gauging the spillover effects on the financial system. Adding to Spencer's comments, **Christopher Kent** (Reserve Bank of Australia) pointed out the role of competitive pressures as a driving force, sparked by financial deregulation and innovation. In response, **Wataru Takahashi** (BOJ) noted that the market share strategy explanation was somewhat outdated and applied to Japanese banks in the 1960s and the 1970s, but admitted they had not changed dramatically, even under conditions of financial liberalization. In response to Watanabe's comment, **Masazumi Hattori** (BOJ) pointed out that when foreign subsidiaries of Japanese non-financial firms purchased bonds issued by Japanese firms, the Flow of Funds Statistics categorized such transaction as undertaken by foreign entities. **Goodfriend, John Murray** (Bank of Canada), and **Shigenori Shiratsuka** (BOJ) from the floor pointed to the political economy of regulation and uneven financial liberalization as a major factor underlying excessive risk-taking at that time. To this, **McCallum** mentioned political pressures upon Japan to implement an expansionary monetary and fiscal policy. **Akira Ariyoshi** (IMF) and **Assenmacher** pointed to the heavy involvement by subsidiaries of Japanese banks in lending to sectors related to real estate. **Donald L. Kohn** (Board of Governors of the Federal Reserve System [Fed]) asked why final investors, including foreigners, were willing to take more risks when leverage increased.

D. The Procyclical Effects of Bank Capital Regulation⁸

Suarez examined the procyclical effects of bank capital regulation on credit supply,

⁸ For details, see Rafael and Suarez (2009).

proposing a tractable dynamic equilibrium model of relationship lending, thereby evaluating the effects of the minimum capital requirements under Basel I and II. He explained, in the model, banks anticipated that shocks to their earnings as well as the cyclical position of the economy would impair their capacity to lend in the future and thus retained precautionary capital buffers. He presented various quantitative arguments that, despite larger precautionary buffers, contractions in bank credit on the arrival of a recession were greater under risk-sensitive capital requirements (Basel II) than under risk-insensitive ones (Basel I). He also showed that small cyclical adjustments in confidence levels would significantly reduce procyclical effects on credit supply without compromising long-run solvency targets for banks.

In his comments, **Haibin Zhu** (Bank for International Settlements [BIS]) pointed out the importance and difficulty, when designing a framework for contingent capital requirements, of constructing indicators for banking distress and linking such indicators to minimum capital requirements. For future extension, he proposed accounting for the possibility that Basel II improved bank capacity in risk measurements and risk pricing, potentially reducing procyclical effects considered in the paper. In his comments, **Kent** pointed out that there might be other ways to extend this modeling framework so as to reduce the procyclicality of effects on credit supply. In particular, referring to Australian experiences with two different types of economic depressions in the 1890s and the 1930s, he argued to enrich the way the risk evolved through the business cycle, including via a role for asset-price and credit market developments..

Genberg, **Goodfriend** and **Spencer** cast doubts on the feasibility of implementing macroprudential measures, including setting optimal countercyclical capital regulations. For example, **Goodfriend** argued that discretionary countercyclical capital regulations were more difficult than inflation targeting because the former required more accurate assessments of productivity shocks. **Spencer** questioned how macroprudential measures handled asymmetry; in particular, dampening a boom in which banks hoard capital. Admitting practical difficulties, **Jaime Caruana** (BIS) supported Suarez's attempt, arguing that policymakers needed to find a balance to avoid slipping back to a risk-insensitive system. **Suarez** replied that the model had yet to provide a full answer to policy implementation, but would serve as a toolkit allowing economists and central bank officials to check their favorite adjustments for procyclicality. To address the risk sensitivity of capital requirements, he mentioned a possible extension to incorporate heterogeneity into the risk of investment projects. Responding to Kent's comment, **Suarez** noted that it was possible to analyze the model with a richer stochastic process for aggregate shocks. **Murray** suggested incorporating

macroprudential considerations to recognize the real economic consequences of procyclicality.

E. Credit Risk and the Macroeconomy: Evidence from an Estimated DSGE Model⁹

Simon Gilchrist (Boston University) constructed a corporate credit spread with medium-risk but long-maturity, ranging from 1973 to 2008, based on the estimated distribution of firm-specific distance-to-defaults, comparing its predictive content for economic activity with that of other standard financial indicators. He then estimated a dynamic stochastic general equilibrium (DSGE) model with the financial accelerator mechanism using the credit spreads and demonstrated that medium-risk, long-maturity credit spreads offered significant predictive power for real economic variables, suggesting important links between financial conditions and macroeconomic outcomes. Based on projections from a DSGE model, he pointed out that a significant fraction of cyclical fluctuations in output and investment over the period from 1973 to 2008 were attributable to disturbances originating in the financial sector.

In his comments, **Todd Clark** (Fed Kansas City) suggested the rigorous evaluation of spreads obtained in the paper, comparing this to other financial indices, examining data stability, and checking the performance of out-of-sample forecasting. He added that the paper needed to clarify the benefit of including those spreads for the DSGE model estimation, asking if their financial shock affected only investment. Presenting quantitative examples, **Tomoyuki Nakajima** (Kyoto University) pointed out that the approach used in the paper—using a linearized model to account for risk premiums and asset prices by adding an exogenous risk premium shock to the Euler equation—yielded a biased estimation result.

From the floor, **Nishimura** voiced agreement with Nakajima, asking if linear approximation was appropriate for an environment in which GDP contracted for two consecutive quarters by more than 10% on an annualized basis. **Gilchrist** admitted the model featured two nonlinearities stemming from the financial contract and the risk premium and conceded the importance of analyzing their interactions. In his response to Clark's comments, **Gilchrist** argued that despite cases in which adverse financial shock caused negative co-movement of consumption and investment, the sign of the correlation depended on the specification of monetary policy rules. **Ipppei Fujiwara** (BOJ) and **Liu**, respectively, questioned the validity of the identification of financial shocks and an intertemporal shock. **Smets** suggested that the author could generate

⁹ For details, see Gilchrist, Ortiz and Zakrajšek (2009).

artificial data using the estimated shocks to check whether the model could capture the lead lag relationships between premium and output. **Shin** suggested considering quantities as well as premiums.

F. Central Banking in the Credit Turmoil: An Assessment of Federal Reserve Practice¹⁰

Goodfriend presented a framework for reconsidering central banking in light of the extraordinary circumstances presented by the financial turmoil, classifying core central banking initiatives as monetary policy, credit policy, and interest rate policy, and emphasizing the importance of the three-fold taxonomy under current circumstances. Based on a fiscal perspective, he argued that, under the zero bound of nominal interest rates, monetary policy required more support from fiscal authorities than was usually granted. He also pointed out that since a central bank's credit policy amounted to fiscal policy, central bank independence was incompatible over time with all but limited, temporary last resort lending to depository institutions, and argued that a central bank needed to maintain a distance from credit policy to the full extent possible. Finally, drawing on a study of the 1951 Fed-Treasury Accord on Monetary Policy, he provided six principles as the basis for a comprehensive credit policy.

In his comments, **Smets** questioned whether the framework in the paper was the best way to describe monetary policy implementation in countries other than the United States. He also suggested distinguishing between credit policy and liquidity management in unconventional policy measures using the central bank balance sheet. **Hiroshi Ugai** (BOJ) questioned the perspective wherein, at the zero bound of nominal interest rates, an increase on the liability side of the central bank balance sheet effectively stimulated the economy, reviewing Japan's experiences with quantitative easing policy in 2001-06. A central bank needed to proceed with credit policy as one of important monetary policy tools based on its own decisions and on its own responsibility, he argued, while maintaining its cautious stance against stepping further into the area of fiscal policy.

From the floor, **Shiratsuka** pointed out, in line with Smets' discussion, the nature of monetary policy in normal times differed from the nature of liquidity management in times of crisis. **Kohn** suggested that the importance of liquidity should not be underestimated. In response, **Goodfriend** noted that he avoided using "liquidity" because the term was poorly understood. In response to Ugai's questions, he also maintained that the effectiveness of a certain action on expanding the central bank

¹⁰ For details, see Goodfriend (2009).

balance sheet depended crucially on the credibility of the central bank action. **Shin** argued that direct intervention to financial intermediation would be more effective in reducing premiums in the financial markets than expanding excess reserves and purchasing corporate bonds. **Kent** suggested discussing frameworks in place at other central banks, particularly regarding interest payment on reserves. In response, **Goodfriend** said that he hoped to examine his framework from an international perspective. Regarding fiscal policy, **McAndrews** and **Shirakawa** emphasized that the paper needed to clearly define fiscal policy, given fiscal policy's strong implications for the credibility of central banks. **Tucker** argued that the paper needed to consider policies and principles from the perspective of a fiscal authority. In response, **Goodfriend** noted that central banks needed to address political issues associated with unconventional monetary policy in times of financial crisis. In his comments, **McCallum** remarked that a clear taxonomy stemmed ultimately from the understanding of money—for example, if the paper took the position that a central bank was basically a monetary authority rather than a fiscal authority.

III. Policy Panel Discussion

In the panel discussion chaired by Kazuo Ueda (University of Tokyo), Hiroshi Nakaso (BOJ), Kohn, Tucker, and Caruana stated their views on recent policy measures in response to the global financial turmoil.

A. Panelist Speeches

Nakaso began by reviewing unconventional policy measures taken by four major central banks, the BOJ, the Fed, the BOE, and the ECB. He said that unconventional policies had been introduced when the policy rate had been brought to an effective lower bound and conventional policy instruments had been more or less exhausted. He then offered his typology of unconventional policy measures by a central bank: Pure credit easing was the assumption of credit risk on the central bank balance sheet without creating excess reserves, while pure quantitative easing was the creation of excess reserves without assuming credit risk—for example, through the purchase of government securities. In reality, he said, combined policies of credit and quantitative easing, which involved large-scale liquidity injection as well as extending credits to targeted dysfunctional markets, had been implemented. He pointed out, as a result, balance sheets of the four central banks had expanded, generating significant downward pressure on money market rates. He added that a general consensus appeared to exist among central banks to keep money market rates at positive levels, thereby minimizing

the negative side effects—for example, the contraction of the money market.

He also offered several interim assessments of the effectiveness of certain unconventional measures, focusing on policies implemented by the BOJ. He claimed that U.S. dollar funds-supplying operations had sharply reduced OIS-LIBOR spreads under conditions in which the currency swap market had broken down after the Lehman Brothers failure. With respect to unconventional measures for dysfunctional credit markets, presenting regression results, he reported that Special Funds-Supplying Operations to Facilitate Corporate Financing, fixed-rate full-allotment liquidity provisions with eligible corporate debt as collateral, in combination with CP repo operations and CP outright purchases, had reduced CP-OIS spreads.

Finally, he remarked that each central bank had purchased government bonds but that their rationales or announced objectives differed. He concluded that reading market reaction was not a straightforward activity and that the long-term effects of such outright purchases needed to be monitored.

Kohn pointed out that one aspect of the current crisis was the severe adverse effects on both securities markets and financial intermediaries, attributable to their tight interconnections. He emphasized feedback loop mechanisms between financial intermediation and non-financial spending, which amplified financial disruptions, especially declined funding liquidity and market liquidity. Given such issues, he argued, merely lowering the FF rate was insufficient, since such rate reductions did not trickle down to the broader markets. The Fed needed to step into credit policy, so-called credit easing, he argued, to intervene directly in dysfunctional markets.

In an exit strategy, he argued, a central bank needed to fight a war on two fronts: the risk of deflation in the near term and the risk of inflation over the long term. He also noted the importance of convincing the public that a central bank had a framework for an exit strategy and the will to implement this when the time came. He pointed to encouraging signs within the United States that the administration recognized the value of an independent monetary authority and argued that this provided the Fed with an additional tool to tighten policy when needed.

With regard to what the Fed would do after an exit, he pointed out that the Fed was all the more aware of the fragility and complexity of the financial intermediation process and the interactions of the financial sector with the real economy. He then raised two points. First, he demanded that central bank economists include more highly developed credit sectors in monetary policy analysis. Second, he called for liquidity facilities, even after the crisis had passed, to maintain stability under ordinary circumstances. He then addressed the role of asset prices in monetary policy, expressing agreement with Shirakawa concerning the need to extend the forecast horizon, but

maintaining that he remained undecided whether, if a bubble element were seen in asset prices potentially affecting output and inflation, a central bank would tighten monetary condition and sacrifice its macroeconomic objectives. As his first choice, he specified more effective financial supervision and regulation to combat an asset price bubble.

Finally, regarding an inflation objective, he expressed discomfort with the idea of raising the numerical definition of the inflation objective even temporarily, given the difficulty of controlling expectations.

Tucker focused on three types of last resort policies in times of financial crisis: lender of last resort, market maker of last resort, and capital of last resort.¹¹ Of the three, he noted, the first had been discussed extensively and was well understood, but the remaining two were less understood and required innovation.

First, he stated that the BOE acted as the lender of last resort by balancing the provision of liquidity insurance against the cost of creating incentives for banks to take greater risks. He provided five principles for their facilities: (1) to avoid conflicts with monetary policy, and ideally to support it; (2) to hold adequate collateral; (3) to provide liquidity with longer maturities than overnight or a week; (4) to use loans, either repos or swaps, rather than outright purchases; and (5) to provide only to commercial banks via permanent facilities. He added that liquidity insurance facilities needed to be provided with banks, in the judgment of the BOE, free of serious questions regarding solvency.

Second, he described the role of market maker of last resort as an uncharted territory for a central bank, reflecting an advance in market-based financial intermediation. He suggested that a central bank needed to have the capability to support liquidity in capital markets, taking as an example of the BOE's facilities to provide a backstop bid for CPs and corporate bonds. He then gave five principles for this role: namely, (1) to support monetary policy; (2) to impose penalties; (3) to use an auction mechanism; (4) to limit the exposures to the central bank's capital resources; and (5) to avoid supplanting the market under normal circumstances.

Third and finally, he discussed capital of last resort, stating that, however rarely, the fiscal authority was by many expected in practice to provide such a role drawing on its risk-taking capacity. He argued that the threshold for injecting capital could be determined in coordination with a central bank and regulatory authority. Addressing moral hazard, he suggested transferring any risks back to the banking sector. For example, he pointed out that any losses suffered by the fiscal authority could have to be covered by the surviving banking system. He emphasized that any such capital of last

¹¹ For details, see Tucker (2009).

resort policy would desirably adhere to principles to be mapped out before successors faced a future crisis.

Caruana discussed monetary policy lessons learned from the current crisis in relation to financial stability, underscoring three points: our limited knowledge of the economy and the financial system as well as their interactions; limited incentives, rather than knowledge, for market self-correction mechanisms; and the extraordinary cost of the current systemic crisis.

Given the above lessons, he claimed, policymakers needed to be more responsive to the build-up of financial imbalances, not just to clean-up efforts when adverse impacts emerged. In particular, he emphasized that prudential policy needed to incorporate a more pronounced macroeconomic viewpoint. To assess systemic risks and procyclicality, he conceded, requirements included early warning systems, a better architecture for a system of cooperation, and better market infrastructures. And yet, he argued, strengthening all these areas would still not suffice. Macroeconomic policy should not only be used to deal with the aftermath of the collapse of an asset price bubble. To demonstrate the need for macroeconomic policy also to help to lean against the build-up of excessive risk, he provided the example of Spain around 1999. The Spanish economy had been experiencing a housing boom when interest rates declined dramatically, due to accession to the euro system. Interest rates, determined by the ECB, were below what Spain needed in terms of economic conditions. Therefore, on prudential grounds, the Spanish policymakers chose to introduce a new framework for loan provisions, taking 20% of operating profits for an initial couple of years. This policy, he contended, had successfully constrained credit risks and created better buffers, although this policy had not restrained credit growth significantly. This pointed to the need for coordination with monetary policy.

Finally, he suggested that monetary policy needed to consider a risk-taking channel that encouraged risk appetite under low interest rates, particularly when maintained for extended periods. He pointed to the advantages of not treating asset prices as exogenous when they, in fact, were inherently influenced by the policy stance, since they had a considerable influence on credit cycles, even though central banks would face the trade-off between financial stability and monetary stability. The trade-off between financial stability and monetary stability seemed to be more apparent than real. In the long-run, the two goals were likely to be complementary.

B. General Discussions

Following statements by panelists, **Ueda** moved on to a general discussion with floor

participants, raising several questions himself. His questions addressed several issues: the effectiveness of quantitative easing and credit easing and their transmission channels; the differences between the BOJ's quantitative easing policy from 2001 to 2006 and those currently undertaken by major central banks, particularly levels of overnight interest rates and the role of policy commitment; the targets of credit easing; and exit strategies from unconventional policies.

Regarding differences between quantitative easing and credit easing, **Spencer** inquired about the primary objective of these two policies and the extent to which that objective had been achieved. **Tucker** replied that the BOE had implemented quantitative easing to stimulate nominal demand by expanding broad money and so potentially reducing risk premiums in the financial markets through the portfolio rebalancing channel. **Nakaso** responded that the BOJ had stepped into credit easing due to significant deterioration in functions of corporate financing markets. He argued that declining reliance on the BOJ's credit facilities pointed to a positive signal, since the facilities were designed to be attractive only in times of crisis, adding that the BOJ had implemented credit easing within its risk-taking capacity.

Regarding policy commitments, **Murray** stated that, consistent with their projections, the Bank of Canada had recently committed to maintaining its target overnight rate at 25 basis points for a full year. Positive response to such commitment had been observed in the yield curve, he added. **Nessén** remarked that Sveriges Riksbank had disclosed interest rate forecasts seeking to manage market expectations. Admitting the difficulty of such expectations management, she stated that financial markets were contemplating narrower fan charts of interest rate projections and money market operations with a fixed interest rate and at longer-term maturities. **Smets** noted that lengthening the maturity of money market operations, as the ECB had done, could be used to flatten the yield curve. In response, **Tucker** remarked that conducting money market operations at longer-term maturities at a fixed rate might leave people, and even policymakers, unclear about their plans, and that such subtle signals were unlikely to be helpful for these reasons. **Kohn** commented that the public had not understood the conditionality inherent in the low interest rate policy adopted by the Fed from 2003 to 2005. Under current circumstances and high associated uncertainties, **Nakaso** remarked, an improved communication strategy might prove more important.

Regarding the exit strategy, **Altig** raised the question as to what would be an appropriate strategy under large budget deficits, which could undermine the credibility of monetary policy. **Kohn** and **Tucker** emphasized the importance of focusing on the ultimate objective of monetary policy in deciding when to raise interest rates in the exit process. **Kohn** spoke to the need to consider the possibility that uncertainty about the

future path of fiscal policy and its sustainability would raise risk premiums. **Nakaso** noted that credit instruments and bonds currently on the asset side of these central bank balance sheets had longer maturities than the BOJ's experience with quantitative easing policy. The BOJ, he remarked, had reduced current account balances smoothly in three months by running off money market operations which had had relatively short and diversified maturities.

Shirakawa raised questions as to how a central bank should respond to financial imbalances over longer time horizons than conventional models could cover, and how a central bank should explain such policy actions to the public. **Suarez** expressed concerns that the objective of macroprudential policy might conflict with the primary objective of price stability. **Smets** suggested that moral hazard issues, such as too-big-to-fail, and orderly resolution schemes of insolvent banks called for more attention following the recent crisis. **Kent** suggested that regulatory policies alone might not be sufficient given the important role of the unregulated shadow banking system. In response, **Caruana** remarked that policymakers needed to make use not just of prudential regulation, but all available tools to stave off a financial crisis. He also pointed out that better consolidation of the banking system would prove vital in discussing shadow banking system issues. **Tucker** agreed with the importance of addressing too-big-to-fail issue, adding to this the need to develop new instruments for macroprudential policy. **Kohn** maintained that his cost-benefit calculus of leaning-against-the-window remained costly, and noted that such a calculus would be complicated in a real time basis.

Obstfeld inquired for the implications of Caruana's description of the Spanish prudential policy on the design of regulatory structure in currency areas like the euro area, arguing that the success of the Spanish policy depended on financial segmentation between the Spanish economy and the rest of the euro area. **Caruana** voiced his agreement, stating that the effects of prudential policy in one country were limited, since private banks faced competition with foreign private banks. He therefore urged each country to seek to coordinate with common standards.

References

Gilchrist, Simon, Alberto Ortiz, and Egon Zakrajšek, "Credit Risk and the Macroeconomy: Evidence from an Estimated DSGE Model," paper presented at the 2009 International Conference on "Financial System and Monetary Policy Implementation" held at the Institute for Monetary and Economic Studies, Bank of Japan, 2009.

- Goodfriend, Marvin, “Central Banking in the Credit Turmoil: An Assessment of Federal Reserve Practice,” paper presented at the 2009 International Conference on “Financial System and Monetary Policy Implementation” held at the Institute for Monetary and Economic Studies, Bank of Japan, 2009.
- Hattori, Masazumi, Hyun Song Shin, and Wataru Takahashi, “A Financial System Perspective on Japan's Experience in the Late 1980s,” paper presented at the 2009 International Conference on “Financial System and Monetary Policy Implementation” held at the Institute for Monetary and Economic Studies, Bank of Japan, 2009.
- Kiyotaki, Nobuhiro and John Moore, “Liquidity, Business Cycles, and Monetary Policy,” paper presented at the 2009 International Conference on “Financial System and Monetary Policy Implementation” held at the Institute for Monetary and Economic Studies, Bank of Japan, 2009.
- McAndrews, James J., “Segmentation in the U.S. Dollar Money Markets during the Financial Crisis,” paper presented at the 2009 International Conference on “Financial System and Monetary Policy Implementation” held at the Institute for Monetary and Economic Studies, Bank of Japan, 2009.
- McCallum, Bennett T., “The Role of ‘Determinacy’ in Monetary Policy Analysis,” remarks presented at the 2009 International Conference on “Financial System and Monetary Policy Implementation” held at the Institute for Monetary and Economic Studies, Bank of Japan, 2009.
- Obstfeld, Maurice, “Lenders of Last Resort in a Globalized World,” remarks presented at the 2009 International Conference on “Financial System and Monetary Policy Implementation” held at the Institute for Monetary and Economic Studies, Bank of Japan, 2009.
- Repullo, Rafael and Javier Suarez, “The Procyclical Effects of Bank Capital Regulation,” paper presented at the 2009 International Conference on “Financial System and Monetary Policy Implementation” held at the Institute for Monetary and Economic Studies, Bank of Japan, 2009.
- Shirakawa, Masaaki, “Opening Speech,” remarks presented at the 2009 International Conference on “Financial System and Monetary Policy Implementation” held at the Institute for Monetary and Economic Studies, Bank of Japan, 2009.
- Tucker, Paul, “The Repertoire of Official Sector Interventions in the Financial System: Last Resort Lending, Market-Making, and Capital,” remarks presented at the 2009 International Conference on “Financial System and Monetary Policy Implementation” held at the Institute for Monetary and Economic Studies, Bank of Japan, 2009 (available at <http://www.bankofengland.co.uk/publications/speeches/2009/speeches390.pdf>).

Appendix 1: Program

Wednesday, May 27, 2009

Morning

Opening Session

- Chairperson: **Kiyohiko G. Nishimura**, Bank of Japan
- Introductory Speech: **Masaaki Shirakawa**, Bank of Japan
- Keynote Speeches: **Bennett T. McCallum**, Carnegie Mellon University
Topic: The Role of ‘Determinacy’ in Monetary Policy Analysis
Maurice Obstfeld, University of California at Berkeley
Topic: Lenders of Last Resort in a Globalized World

Session 1: Liquidity, Business Cycles, and Monetary Policy

- Chairperson: **Wataru Takahashi**, Bank of Japan
- Paper presenter: **Nobuhiro Kiyotaki**, Princeton University
- Discussant: **Zheng Liu**, Federal Reserve Bank of San Francisco
- Discussant: **Marianne Nessén**, Sveriges Riksbank

Session 2: Segmentation in the U.S. Dollar Money Markets During the Financial Crisis

- Chairperson: **John Murray**, Bank of Canada
- Paper presenter: **James J. McAndrews**, Federal Reserve Bank of New York
- Discussant: **Katrin Assenmacher**, Swiss National Bank
- Discussant: **Shin-ichi Fukuda**, University of Tokyo

Afternoon

Session 3: A Financial System Perspective on Japan’s Experience in the Late 1980s

- Chairperson: **Shigenori Shiratsuka**, Bank of Japan
- Paper presenter: **Masazumi Hattori**, Bank of Japan, **Hyun Song Shin**, Princeton University, and **Wataru Takahashi**, Bank of Japan
- Discussant: **Grant Spencer**, Reserve Bank of New Zealand
- Discussant: **Tsutomu Watanabe**, Hitotsubashi University

Session 4: The Procyclical Effects of Bank Capital Regulation

Chairperson: **Shigenori Shiratsuka**, Bank of Japan
Paper presenter: **Javier Suarez**, Centro de Estudios Monetarios y Financieros
Discussant: **Haibin Zhu**, Bank for International Settlement
Discussant: **Christopher Kent**, Reserve Bank of Australia

Session 5: Credit Risk and the Macroeconomy: Evidence from an Estimated DSGE Model

Chairperson: **Hans Genberg**, Hong Kong Monetary Authority
Paper presenter: **Simon Gilchrist**, Boston University
Discussant: **Todd Clark**, Federal Reserve Bank of Kansas City
Discussant: **Tomoyuki Nakajima**, Kyoto University

Thursday, May 28, 2009

Morning

Session 6: Central Banking in the Credit Turmoil: An Assessment of Federal Reserve Practice

Chairperson: **David Altig**, Federal Reserve Bank of Atlanta
Paper presenter: **Marvin Goodfriend**, Carnegie Mellon University
Discussant: **Frank Smets**, European Central Bank
Discussant: **Hiroshi Ugai**, Bank of Japan

Policy Panel Discussion

Chairperson: **Kazuo Ueda**, University of Tokyo
Panelists: **Jaime Caruana**, Bank for International Settlement
Donald L. Kohn, Board of Governors of the Federal Reserve System
Paul Tucker, Bank of England
Hiroshi Nakaso, Bank of Japan

Appendix 2: List of Participants

Ashvin Ahuja	Bank of Thailand
David Altig	Federal Reserve Bank of Atlanta
Yoichi Arai	University of Tokyo
Akira Ariyoshi	International Monetary Fund
Katrin Assenmacher	Swiss National Bank
Jaime Caruana	Bank for International Settlements
Todd Clark	Federal Reserve Bank of Kansas City
Sebastián Claro	Central Bank of Chile
Julen Esteban-Pretel	University of Tokyo
Junichi Fujimoto	University of Tokyo
Ippei Fujiwara	Bank of Japan
Shin-ichi Fukuda	University of Tokyo
Hans Genberg	Hong Kong Monetary Authority
Simon Gilchrist	Boston University
Marvin Goodfriend	Carnegie Mellon University
Kristin Gulbrandsen	Central Bank of Norway
Masazumi Hattori	Bank of Japan
Hideo Hayakawa	Bank of Japan
Charles Yuji Horioka	Osaka University
Selahattin Imrohoroglu	University of Southern California
Nobuo Inaba	Ricoh Company, Ltd.
Takatoshi Ito	University of Tokyo
Kazumasa Iwata	Economic and Social Research Institute, Cabinet Office
Hideki Izawa	Kobe University
Ji Zhihong	People's Bank of China
Toshiki Jinushi	Kobe University
Takashi Kano	University of Tokyo
Hiroyuki Kasahara	University of Western Ontario
Christopher Kent	Reserve Bank of Australia
Yukinobu Kitamura	Hitotsubashi University
Nobuhiro Kiyotaki	Princeton University
Donald Kohn	Federal Reserve System
Jong Kyu Lee	The Bank of Korea
Zheng Liu	Federal Reserve Bank of San Francisco
Naoki Makimoto	University of Tsukuba
James J. McAndrews	Federal Reserve Bank of New York
Bennett T. McCallum	Carnegie Mellon University
John Murray	Bank of Canada
Tomoyuki Nakajima	Kyoto University
Hiroshi Nakaso	Bank of Japan
Marianne Nessén	Sveriges Riksbank
Kiyohiko G. Nishimura	Bank of Japan

Maurice Obstfeld	University of California at Berkeley
Kazuhiko Ohashi	Hitotsubashi University
Mitsuaki Okabe	Meiji Gakuin University
Yuri Okina	Japan Research Institute
Tsunao Okumura	Yokohama National University
Arito Ono	Mizuho Research Institute
Keisuke Otsu	Sophia University
Juan Ruiz	Bank of Spain
Jean-Luc Schneider	Organisation for Economic Co-operation and Development
Mohamad Hasni Shaari	Central Bank of Malaysia
Hyun Song Shin	Princeton University
Mototsugu Shintani	Vanderbilt University
Etsuro Shioji	Hitotsubashi University
Masaaki Shirakawa	Bank of Japan
Shigenori Shiratsuka	Bank of Japan
Frank Smets	European Central Bank
Yutaka Soejima	Bank of Japan
Grant Spencer	Reserve Bank of New Zealand
Javier Suarez	Centro de Estudios Monetarios y Financieros (CEMFI)
Miyako Suda	Bank of Japan
Antti Suvanto	Bank of Finland
Hiroo Taguchi	Hosei University
Wataru Takahashi	Bank of Japan
Kenshi Taketa	Aoyama Gakuin University
Takayuki Tsuruga	Kansai University
Paul Tucker	Bank of England
Kazuo Ueda	University of Tokyo
Hiroshi Ugai	Bank of Japan
Cees Ullersma	Netherlands Bank
Tsutomu Watanabe	Hitotsubashi University
Wako Watanabe	Keio University
Tomoyoshi Yabu	Keio University
Hirohide Yamaguchi	Bank of Japan
Yutaka Yamaguchi	Former Deputy Governor of Bank of Japan
Yap Wy-En	Monetary Authority of Singapore
Jiro Yoshida	University of Tokyo
Naoyuki Yoshino	Keio University
Haibin Zhu	Bank for International Settlements