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Japan's Inflation Dynamics and Agents' Behavior

Conference Minutes of the Sixth Joint Conference Organized by the University of Tokyo Center for Advanced Research in Finance (CARF) and the Bank of Japan (BOJ) Research and Statistics Department

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Japan's Inflation Dynamics and Agents' Behavior

On November 26, 2015, the Research and Statistics Department of the Bank of Japan (BOJ) and the Center for Advanced Research in Finance (CARF) of the University of Tokyo held a joint conference titled “Japan's Inflation Dynamics and Agents' Behavior.”¹ This document is a staff translation of the conference minutes. All contributions submitted to the conference are available from the Bank of Japan website as working papers or research papers (some are available only in Japanese).

Executive Summary

The main takeaways of the conference can be summarized in the following four points.

First, there was a broad consensus among conference participants that inflation dynamics in Japan have recently changed along with a gradual shift in inflation expectations. As a result, Japan seems to have started escaping from a deflationary equilibrium. However, there remains considerable dispersion in inflation expectations and aggregate inflation expectations have not yet reached 2 percent, the inflation rate that the Bank of Japan aims to attain under its Quantitative and Qualitative Monetary Easing policy. How to best model expectations formation remains an important challenge for academia as well as policy makers.

Second, conference participants highlighted the importance of the “norm” as a key determinant of firms' price-setting behavior. The norm can be regarded as a variant of inflation expectations, but carries the connotation of fairness and shared values in society. During the deflation era, zero inflation was the strong social norm in Japan and hence an overwhelming majority of firms did not change their prices. Although not yet conclusive, there have recently been indications of a change in the norm and

¹ The views expressed throughout this summary are those of the speakers and commenters at the time of the conference and do not necessarily reflect those of the Bank of Japan or the Research and Statistics Department. All inquiries should be addressed to the Economic Analysis Group, Economic Research Division, Bank of Japan (post.rsd18@boj.or.jp).

firms' price-setting behavior.

Third, many conference participants pointed out that firms have remained very cautious in terms of raising wages and increasing investment, even if their price-setting may have become a little more aggressive. A possible reason is that they are not sufficiently confident regarding future prospects of the domestic economy and their competitiveness at the global level. Another possible reason is that Japan's labor market for regular workers has remained very rigid due to existing practices such as lifetime employment. At the same time, the bargaining power of trade unions has diminished substantially and there has been an increase in temporary workers, who are paid lower wages. There was a strong sense among participants that, under these circumstances, the government needs to steadily implement its growth strategy in order to raise growth expectations. Monetary easing plays a complementary role to that growth strategy.

Fourth, it was pointed out that, along with the change in inflation dynamics, Japanese households' behavior seems to have changed in that they are taking more risks in terms of their portfolio choices.

Japan's Inflation Dynamics and Agents' Behavior

This document is a summary of the conference titled “Japan’s Inflation Dynamics and Agents’ Behavior” (co-hosted by CARF and the BOJ Research and Statistics Department) held at the BOJ head office on November 26, 2015. The conference consisted of the presentation of five research papers followed by a panel discussion (see Appendix 1 for the program). Participants and their affiliation are those at the time of the conference (see Appendix 2 for a list of participants and their affiliation). Overall proceedings were chaired by **Yosuke Uno**.

I. Welcome Address

Toshitaka Sekine, the Director-General of the BOJ’s Research and Statistics Department, touched on the fact that the conference marked the tenth anniversary since it was first held in 2005. He noted that although it may be too early to call it “traditional,” the conference, in a sense, has gradually gained in status. Recalling that the conference ten years ago centered on such issues as “Why did Japan’s economy fall into a long-term slump?” and “What prevented deflation from accelerating?,” he highlighted that discussions on these issues offered valuable insights at the time and still do so today. He added that the significance of the conference had increased over the years and noted that the exchange of views between academia and the BOJ was imperative for drawing our attention to profound trend changes which at times can be overlooked in the midst of short-term economic and price movements.

At this conference themed “Japan’s Inflation Dynamics and Agents’ Behavior,” presentations of research papers focused on the following four topics: inflation expectations; the price-setting behavior of Japanese firms; wages and labor market outcomes; and portfolio choices of households. **Sekine** pointed out that all these four topics were of primary interest to the BOJ in the sense that they were linked directly to monetary policy issues currently faced by the BOJ. In closing, he expressed his hope that the conference would see even more in-depth discussions based on high quality research than past conferences and asked participants to hold lively debates that may shape monetary policy in the future.

II. Opening Session

“Japan’s Inflation Dynamics and Agents’ Behavior” (in Japanese)

by Naoko Hara (Bank of Japan)

Hara provided a brief overview of recent developments in Japan’s inflation and of changes in firms’ and households’ behavior by outlining relevant observations and reviewing related studies. She then highlighted issues discussed later on in the paper. Regarding recent developments in Japan’s inflation, she pointed out that Japan had seen price increases in a broad range of items in recent years, and that once volatile items such as energy were excluded, consumer prices had been trending upward for almost two years. She argued that these price movements suggested that Japan’s economy seemed to be in the process of escaping from the prolonged deflationary phase and moving on to a mild inflationary phase, and stated that this laid the ground for the following two issues to be addressed at this conference: (i) What is necessary to achieve the BOJ’s price stability target of 2 percent in a stable manner? And (ii) how will firms’ and households’ behavior evolve under the inflationary environment?

With regard to the first point, **Hara** made it clear that, in line with discussions on the Phillips curve, price increases in recent years were attributable to (i) improvements in the output gap, (ii) an increase in import prices, and (iii) a rise in inflation expectations. Based on this perspective, she argued that the formation of inflation expectations and the price-setting behavior of firms were likely the two key factors which would determine whether Japan’s economy could reach the price stability target. With respect to the formation of inflation expectations, two key questions were the following: (i) Why do inflation expectations vary even though the BOJ has clearly indicated its target inflation rate? And (ii) why do inflation expectations change at a sluggish pace and deviate from the optimal level consistent with the rational expectations hypothesis? With respect to firms’ price-setting behavior, **Hara** first reviewed the various hypotheses on the reasons for sticky prices (e.g., menu costs, strategic behavior in imperfectly competitive markets, etc.) and presented two points for discussion: (i) how the price-setting behavior underlying the flattened Phillips curve for Japan during the period of deflation could be explained, and (ii) what kinds of changes could be observed in the current recovery phase.

With regard to the second point, that is, changes in firms’ and households’ behavior, she proposed to focus on labor market outcomes and portfolio choices of households. She

argued that in order to balance mild inflation and the stabilization of the business cycle it was important for both nominal wages and real household incomes to grow in a sustainable manner. She highlighted that, helped in part by the rise in base wages for the first time in a while, nominal wages in Japan had been growing, but the pace did not markedly exceed the increase in prices. In this context, **Hara** pointed out that although nominal wages had traditionally been considered to be flexible, several recent empirical studies had shown that since the second half of the 1990s wages had become rigid. This, she argued raised the question why nominal wages had become rigid and how monetary policy affects real wages. Furthermore, pointing out that firms and households appeared to have become more willing to take on risks in recent years, she suggested that possible underlying factors may be changes in asset prices and portfolio rebalancing in the wake of QQE. Nevertheless, investment by firms and households still remained cautious, as evidenced by the rise in cash holdings. She argued that in light of the economy shifting toward a mild inflationary phase, it would be worthwhile to examine how households' portfolio choices evolve and what factors, if any, are inhibiting investment in risky assets.

III. Session 1

Chairperson: Shin-ichi Fukuda (University of Tokyo)

A. “Inflation Expectations and Monetary Policy under Disagreements”

by Yoshiyuki Nakazono (Yokohama City University)

Paper presentation

Nakazono examined how inflation expectations of agents in the private sector had evolved with the introduction of QQE, focusing on two types of disagreement: cross-sectional disagreement among agents and dissonance in the long-run inflation outlook between the central bank and agents in the private sector. He highlighted the following three findings from his empirical analysis using a wide range of survey data on inflation expectations.

First, since the introduction of QQE, there continues to be considerable disagreement among agents in the private sector—including households, economists, and market participants—regarding inflation expectations. Moreover, the formation of expectations has been rigid and expectations have been slow to change. **Nakazono** argued that this finding was consistent with the implications of sticky or noisy

information models, which assume that updating information or the accurate revision of forecasts takes time. Second, he argued that following the introduction of QQE, private sector inflation expectations continued to diverge from the BOJ's price stability target, and this divergence was particularly pronounced for longer-term inflation expectations. He argued that, given that in other countries using an inflation target the divergence was much smaller than in Japan, the finding suggested that the BOJ's inflation target did not sufficiently anchor inflation expectations. Third and finally, he pointed out that estimation results for a Taylor rule-type policy reaction function suggest that the private sector's perceptions regarding the BOJ's monetary policy stance have shown no drastic changes even after the introduction of QQE. He argued that this contrasts with the case of the United States, where quantitative easing brought about a regime change.

Comments from discussant

Discussant **Masahiro Hori** praised the paper for its comprehensive analysis of inflation expectations in Japan using a wide range of survey data available today. As for the paper's conclusion that QQE had failed to bring about a regime change, however, he argued that it was somewhat unclear how this conclusion was reached based on the empirical results. In particular, he pointed out that it was intuitively obvious that in the real world agents' expectations do not change immediately even after a drastic change in monetary policy, and that therefore the paper should have taken greater account of the fact that in practice agents tend to revise their expectations gradually by learning over time.

Hori then offered three comments. First, he argued that the sticky information model assuming information updating at fixed intervals was inappropriate for analyzing regime changes such as the introduction of QQE. The reason was that it would be more natural to assume that the frequency of information updating changes endogenously, depending on the importance of the news. Second, regarding the fact that the divergence between the BOJ's inflation target and private sector inflation expectations was quite large, he pointed out that while this divergence was indeed smaller for other countries right now, it had been fairly large when inflation targeting was first introduced and might become smaller in Japan as well. Third, the author's conclusion regarding regime changes in monetary policy based on the estimation results of a Taylor rule-type policy reaction function were rather ambiguous, because no explicit criteria for a regime change were presented in the paper.

Discussion

From the floor, **Kazuo Ueda** argued that the conjecture based on the sticky information model contrasted with the fact that economists and market participants form their expectations rationally using all information available. Citing the charts in the paper showing that economists' short-run forecasts are revised frequently whereas long-run forecasts are revised less frequently, he argued that it would be natural to think that most information obtained on a daily basis can be interpreted to be noise affecting only short-run forecasts, implying that the noisy information model, rather than the sticky information model, is more appropriate. On the other hand, **Kikuo Iwata** made the point that it is households that form their expectations rationally, while economists and large firms did not necessarily do so. Since many economists are simply employees working for a company, they are afraid of being the only ones to make an incorrect forecast, which may harm their reputation both within and outside the company. As a result, they are reluctant to change their forecasts substantially, and many large firms that are frequently in touch with such economists tend to follow suit. In fact, this is true in the *Tankan*, which shows that the inflation expectations of large—not small—firms are lower than the BOJ's target rate. The argument that economists tend to be afraid of being criticized for changing their forecasts was seconded by **Toshiyuki Suzuki**, and **Fukuda**, who chaired the session, added that in fact many economists tended to change their forecasts in the same month, suggesting that it may be costly for economists to make the wrong forecast alone as a result of deviating from other economists' forecasts. **Noritaka Kudoh** offered a possible alternative explanation for rigid expectations formation, namely, higher order expectations—that is, expectations based on other agents' expectations: even though an agent may have access to private information, other agents do not have the same information, so that the agent may not change his expectation.

Sekine noted that it would be better to distinguish between sticky information models and noisy information models, since they may have different implications for monetary policy. He also asked for opinions on which inflation expectations indicators used in the paper matter the most. For instance, is it firms' inflation expectations that matter, given that firms actually set prices? And when measuring future inflation rates or confidence in the central bank's inflation target, is it long-run or short-run expectations that are of greater importance? Meanwhile, **Suzuki** raised the issue whether inflation expectations not only from survey data but also derived from inflation-indexed bonds

should be used. **Fukuda** expressed his doubts on whether information rigidity was sufficient to explain the current situation, given that although goods markets may have been characterized by rigidity, expectations in the foreign exchange and stock markets appeared to change relatively quickly.

In response to **Hori**'s comment, paper presenter **Nakazono** mentioned that it seemed questionable to argue that agents are still in the process of learning, given that two years had already passed since QQE was first introduced. He further argued that given that there had been little improvement in the accuracy of inflation forecasting, there was little evidence of learning from inflation experience, and that the divergence between the BOJ's inflation target and private sector inflation expectations may be due to structural factors such as a lack of central bank credibility. In response to **Sekine**'s comment, **Nakazono** highlighted that recent studies on the United States show that inflation expectations of firms are quite similar to those of households and this holds true for small firms in particular, implying that, to a certain extent, inflation expectations of households can be used as a substitute for inflation expectations of firms, survey data on which are limited.

B. "Price Rigidity During Periods of Deflation: Causes and Implications" (in Japanese)

by Tsutomu Watanabe (University of Tokyo)

Paper presentation

Watanabe discussed the underlying factors of mild deflation and the flattening of the Phillips curve since the second half of the 1990s based on the menu cost model. He pointed out that, when looking at the histogram of price changes of individual items in the Consumer Price Index (CPI), the peak of the distribution, i.e., the mode, was in positive territory in the first half of the 1990s but shifted to around zero in the second half of the 1990s and has more or less remained there until this day. In contrast, in the United States and other countries the peak had stayed positive within the range of 1-3 percent, and even in Switzerland—which entered deflation in 2012—it remained in positive territory, highlighting how unusual the situation in Japan, where prices of many items remained unchanged, was.

Next, focusing on the variance of the distribution, he showed that in Japan, the variance was smallest when the peak was zero, which, he argued, was consistent with the

implication of the menu cost model, in which the frequency of price changes is high, i.e., the slope of the Phillips curve is steep, during periods of high inflation, and vice versa. He further pointed out that, in the cases of the United States and other countries, the variance of the distribution was at its minimum when the inflation rate was in the 1-2 percent range. He argued that this implied that menu costs are negligible if the change in prices is around 1-2 percent, in other words, inflation of around 1-2 percent is the “norm” under which this sort of price increase is socially acceptable in these countries. He concluded by further arguing that the situation differed in Japan, where since the second half of the 1990s the “norm” had been to keep nominal prices unchanged, and this “norm” in Japan had flattened the slope of the Phillips curve and had been the primary cause preventing Japan’s economy from overcoming deflation.

Comments from discussant

Discussant **Hideo Hayakawa** highly praised the paper for its in-depth analysis of the underlying factors of the flattening of the Phillips curve and the fact that it went all the way down to the level of individual items in the CPI. He also mentioned its significance in the sense that while it revealed new findings, it also raised new puzzles. He offered several comments. First, while the paper suggested that Japan was the odd case out in that the distribution of price changes shapes a peak around zero, it might rather be other countries like the United States that were the oddity. Based on the menu cost model or the Calvo model, the highest peak of the distribution should be around zero and a small peak should be observed somewhere in positive territory. If the highest peak of the distribution is around 2 percent, this means that most prices are flexible, and hence nominal price rigidity and concomitant welfare costs will not be an issue. He argued that the difference may be attributable to differences in the way items are defined in price statistics in Japan and the United States. In Japan, prices are surveyed, in principle, for one item per item category only, whereas in the United States, data on several items for each item category are collected. As a result, in the United States, the peak of the distribution is likely to be formed around the average rate of price increase of many goods. If we were to calculate the distribution of price changes in the United States further down at the level of individual items, the peak of the distribution, just like in Japan, may well be zero. Even if this were the case, the peak of the distribution at zero should be higher for Japan, since the prices of services—for which the “norm” used to be that they would go up in April following the annual wage increases in spring—have remained unchanged for such a long time.

Next, **Hayakawa** argued that “asymmetric menu costs,” which the paper singled out as the main cause of nominal price rigidity during the deflation period, were actually not the cause but simply another way of describing downward price rigidity and that we have to investigate what these asymmetric menu costs are. One possible explanation, he suggested, was that they reflect price rigidity and, as argued in the paper, the presence of “candidates for price reduction” (items with room for further reductions since their prices had been left unchanged despite a decline in marginal costs) under a kinked demand curve. Another possible explanation—which was akin to applying the “efficiency wage hypothesis”—was that reductions in service prices might send out the wrong signal, giving the impression that quality had declined. He also touched on the differences in the timing of price increases seen recently between the *Nikkei-UTokyo Daily Price Index* and the *Hitotsubashi Unit Value Price Index* and pointed out that price increases last year were possibly due to a rise in prices per quantity—where firms reduced the quantity of certain products to keep the nominal price unchanged—, whereas price increases this year were due to a decrease in the number of special sales days. Firms pricing strategies do not solely consist of deciding whether to adjust prices, but also comprise changes in product sizes or the frequency of special sales days. This, he emphasized, makes it extremely difficult to capture the nature and role of menu costs.

Discussion

In the open floor discussion, **Yutaka Harada** said that the paper seemed to suggest that since price increases were sluggish monetary policy only seemed to have a small effect, although the impact of monetary policy on the real economy should be greater the flatter the slope of the Phillips curve. Further, with regard to the point that especially the price of many service items had remained unchanged, **Iwata** raised the following questions: (1) whether there was a link between the fact that the rate of change in imputed rent has been consistently negative and that there have been no quality adjustments in the case of imputed rent; and (2) whether there were any differences between other countries and Japan in the frequency with which public utility charges, which often remain unchanged for a long time, are adjusted. **Toshiki Jinushi** commented that there might not be as many “candidates for price reduction” as argued in the paper, given that “optimal prices” may have risen reflecting upward pressure on prices due to the cost push brought about by the recent depreciation of the yen and changes in the pass-through rate. He also asked what the implications of the increase in temporary workers for the menu cost model were. Session chair **Fukuda** said that it

was difficult to explain the opportunistic price hikes across a broad range of goods taking advantage of the rise in the consumption tax rate simply based on the menu cost model, and suggested that whether firms can change prices greatly depends on whether such changes are socially acceptable or not. Turning to **Hayakawa's** comments, **Fukuda** argued that the real rigidity arising from a kinked demand curve or the efficiency wage hypothesis are not sufficient to explain price developments during the deflation period and that the problem of Japan's deflation was made more complex by the coexistence of both nominal and real rigidity.

Paper presenter **Watanabe** reiterated that the nominal price rigidity since the second half of the 1990s arose endogenously during the period of falling inflation. Responding to **Hayakawa's** comment, he agreed that there were differences in the way items are defined in price statistics in Japan and the United States, but that even if broader items categories in Japan's CPI comparable to those in the United States were used, the peak of the distribution would still be around zero. As to **Harada's** comment, he agreed that the flattening of the Phillips curve means a higher degree of non-neutrality of money, which should increase the impact of monetary policy on the real economy. In response to **Iwata's** comment, he mentioned that other research he had carried out indicated that housing rent in the CPI has a downward bias of roughly 1 percent due to depreciation and therefore the rate of change in housing rent adjusted for depreciation might be positive on a year-on-year basis. As for public utility charges, he pointed out that a rise in public sector prices might be one way to change the "norm," referring to the example of tuition fees of state universities in the United States, which unlike public university fees in Japan, have been raised significantly. Regarding **Jinushi's** comment, he responded by noting that an increase in "optimal prices" triggered by yen depreciation can partly help in escaping from deflation, but yen depreciation will not raise "optimal prices" in the service sector, where prices have long remained unchanged. Replying to **Fukuda's** comment regarding the consumption tax hike, he agreed that opportunistic price hikes could be observed in the three days following the consumption tax hike (April 1-3, 2014) in the *Nikkei-UTokyo Daily Price Index*, but prices were subsequently lowered again as consumption began to weaken. In addition, he referred to an empirical study which showed that opportunities price hikes were observed at restaurants in Italy when the euro was first introduced.

IV. Session 2

Chairperson: Toshiki Jinushi (Kobe University)

A. “The Quantitative Monetary Easing Policy and the Labor Market” (in Japanese)

by Hiroaki Miyamoto (University of Tokyo)

Paper presentation

Presenter **Miyamoto** examined recent monetary policies and their effects mainly on the labor market using a structural vector autoregression (VAR) model and a dynamic stochastic general equilibrium (DSGE) model. Presenting the estimation results of a five variable structural VAR model including monetary policy variable (the monetary base), he argued that monetary policy easing shocks increased production, decreased unemployment, and raised both inflation and nominal wages (total cash earnings). He suggested that the nominal wage gains, however, were largely attributable to increases in the number of working hours arising from output growth, implying that nominal wages per hour did not significantly increase. The results also showed that the impact of monetary easing on core nominal wages (scheduled cash earnings) was smaller than that on total nominal wages (total cash earnings) including bonuses.

Next, assuming that central banks control the monetary base, he showed that the DSGE model—constructed by incorporating labor market frictions and nominal wage rigidities—can mostly replicate the developments in macroeconomic variables generated by the structural VAR model. In particular, his analysis revealed that although a monetary easing shock in the medium to long run led to a rise in total nominal wages that exceeded the rise in inflation rates, the rise in core nominal wages was lower than the rise in prices, so that real wage declined. Reasons included the following: (i) core nominal wage are revised less frequently (approximately every five quarters) than total nominal wages (approximately every two quarters); (ii) because of workers’ weak bargaining power, even when the economy improves workers do not benefit much from higher profits; (iii) the extent to which nominal wages are indexed to inflation is low; and (iv) the steady-state trend inflation rate is low. Noting that his model assumes an extremely simple monetary policy rule and does not incorporate assumptions such as the zero lower bound on nominal interest rates, he conceded that the effects of monetary policies obtained in his analysis may be overestimated.

Comments from discussant

Pointing out that Sims (2012) suggested in his Nobel Prize lecture that the use of structural VAR and DSGE models represents a way to scientifically examine policies, discussant **Kudoh** praised this paper as a pioneering study in the sense that it takes exactly this approach.² He then provided an alternative reading of the policy implications of the findings; namely, given that the empirical results based on the DSGE model show that a decline in real wages leads to a substantial improvement in hiring as well as to increases in output and inflation, it is not necessary for nominal wages to rise very much. He argued that this optimistic conclusion based on the model, however, depended on the interest rate channel working properly, which is not the case under the zero lower bound on nominal interest rates.

Meanwhile, to quantitatively assess the estimation results obtained in the paper, he presented a simple calculation showing that the increase in the monetary base necessary to achieve the 2-percent inflation target within the next two years would have to be 1.2 quadrillion yen using the structural VAR model and 3,000 trillion yen using the DSGE model. These implausible figures implied that overseas economies or the exchange rate, which have substantial effects on Japan's economy, should be incorporated as channels for the transmission of monetary policy. With regard to the point that the paper uses the shock approach to measure monetary policy effects, he argued that most people were interested not in the effects of unexpected easing but of expected easing brought about by the combination of a 2-percent inflation target and expansion of the monetary base. In this regard, he proposed that introducing inflation expectations into the model might make the shock approach more useful.

Discussion

From the floor, **Kosuke Aoki** suggested that since the DSGE model in this paper was based on the Money-in-Utility model, the interest rate channel should be the only channel open for monetary policy and the irrelevance proposition of Eggertsson and Woodford (2003)—that is, quantitative monetary easing measures are irrelevant under the zero lower bound—should hold.³ With this in mind, he asked why the paper said that an increase in the monetary base affects the real economy. **Takashi Kano** pointed out that in the structural VAR model the response of production and prices over time to

² Sims, Christopher A. (2012) "Statistical Modeling of Monetary Policy and Its Effects," *American Economic Review*, Vol. 102, pp. 1187-1205.

³ Eggertsson, Gauti, and Michael Woodford (2003) "The Zero Bound on Interest Rates and Optimal Monetary Policy," *Brookings Papers on Economic Activity*, No. 1: 2003, pp.139-211.

a monetary policy shock was hump-shaped as in other studies, but no such response was observed in the DSGE model, and asked the reason for this.

Meanwhile, **Koji Nakamura** said that, given the structure of Japan's labor market, it would be desirable to take the dual nature of the labor market resulting from the large differences in laying off regular workers and temporary workers into account. In this connection, he noted that employers tended to regard scheduled wages of regular workers as fixed costs, while economic theory assumes that wages are variable costs that are determined in the labor market. In addition, he said that it was possible that the steady-state value of real wages had shifted downward. He mentioned that, due to structural changes such as globalization and technological change, the labor productivity of regular workers may have declined relative to that of temporary workers, while the actual real wages of regular workers had not fallen. He concluded by suggesting that existence of low productivity regular workers may have led to the sluggish wage growth of such workers.

Sekine commented that for a central bank, the response of inflation to monetary policy shocks is of primary interest. Given that the results in the paper showed that the response of inflation is similar regardless of whether nominal wages are rigid or perfectly flexible, he said it would be of utmost significance for the central bank if the response of inflation differed depending on workers' bargaining power or the indexation of wages. In addition, he stated that with regard to the estimation results in the case of changes in trend inflation rates, it was of great interest what happens when labor productivity growth and real output growth rates change in a steady state.

Iwata commented that in the case of regular workers the analysis on average wages per hour was irrelevant, since their wages are based on performance rather than working hours, whereas temporary workers' wages are on an hourly basis. Furthermore, he suggested that when, for instance, the wife begins working part-time, wages per household increase while wages per worker decrease. Thus, he argued, it would make more sense to take a wages-per-household approach rather than a wages-per-worker approach when thinking about household utility. **Harada** asked for details on the model and also commented that the link between the monetary base and inflation seemed to be implausible, since the paper used data for a period when the Phillips curve was flat.

Presenter **Miyamoto**, in response to **Kudoh** and **Aoki**'s comments, stated that in the model nominal interest rates were close to zero, but since the model did not impose the zero lower bound, this allowed for the interest rate channel to operate. He considered exploring the possibility of incorporating the zero lower bound on nominal interest in the estimation in the future. In reply to **Kano**'s comment, he said that the reason why a hump-shaped response was not observed in the DSGE model may have to do with the way wages are determined, but at present he did not have an exact answer.

Regarding **Iwata** and **Nakamura**'s comments, **Miyamoto** fully agreed that temporary workers should be incorporated, given that more than one in three workers in Japan were employed on a temporary basis. That being said, his DSGE model was already quite complex, so that it would be difficult to take worker heterogeneity into account. He also agreed with the rest of **Nakamura**'s comment, citing another of his studies suggesting that Japan's labor market saw some kind of structural change around 1998 and has since faced a downtrend in wages and a rise in the structural unemployment rate. Therefore, he shared the view that changes in the steady state should be taken into consideration. In reply to **Sekine**'s comment, he said that when both workers' bargaining power and the indexation of wages are high, the response of nominal wages to monetary policy shocks is large, resulting in real wage increases.

B. "Household Portfolios in a Secular Stagnation World: Evidence from Japan"

by Kosuke Aoki (University of Tokyo)

Paper presentation

Presenter **Aoki** first documented that over the past 20-year period of low inflation and low growth Japanese households had come to hold most of their assets in the form of cash rather than risky assets such as stocks. With this in mind, he examined the determinants of households' portfolio choices and how such choices were likely to change in an inflationary environment. Using a life-cycle portfolio choice model with borrowing constraints and a money demand motive, and calibrated to match Japanese household financial data, he showed that the model could replicate many key variables such as stock market participation rates and portfolio choices of middle-aged and older households, although it did not describe money holdings of younger households very well.

Conducting counterfactual experiments, the study showed that in the case of a 2-percent increase in the inflation rate, (i) stock market participation rates rise, while the share of money holdings declines, (ii) the share of stock holdings of younger households rises, while that of middle-aged and older households remains unchanged. Based on these results, he emphasized that low inflation rates encouraged Japanese households to hold a considerable amount of their assets in the form of cash. In addition, he argued that the share of stock holdings is affected by the excess return of the stock market and the cost of stock market entry, with the latter implying that financial literacy and trust in securities companies are important.

Comments from discussant

Discussant **Charles Yuji Horioka** highly praised the presentation paper for successfully capturing the nature of Japanese household portfolio choices based on a traditional portfolio choice model. In addition, he suggested that the accuracy of the analysis could be further increased by setting appropriate parameter values based on historical data. He highlighted that the stock market participation rate of Japanese households remained high for some time after World War II, but the stock market crash of 1965 gave rise to distrust in securities companies, which inhibited households from investing in stocks as a whole. He said he was interested in how these developments could be incorporated in the paper to explain stock market participation rates. Regarding the costs of stock market participation, he suggested that it might be useful to conduct a cross-country comparison of stock trading fees, and that stock market participation might be inhibited by high trading fees for small value transactions. Further, he agreed with the author that the financial literacy of Japanese households was certainly low by international comparison, citing studies such as Lusardi (2013).⁴

Horioka further said that instead of employing parameter values from previous studies on the United States it would be better to use information for Japan wherever possible. He highlighted that for data on households' risk aversion and bequest motives, for instance, the *Survey of Living Preferences and Satisfaction* conducted by Osaka University could be employed, since this contained numerous hypothetical questions that could be used to set parameter values. He concluded his comments by suggesting that aside from money, stocks, and bonds, it would be useful to include other types of assets such as life insurance and land—which make up a large share of assets in

⁴ Lusardi, Annamari (2013) “Financial Literacy Around the World (FLAT World),” in *Insights: Financial Capability*, FINRA Investor Education Foundation.

Japan—in the analysis, which would provide a better understanding of Japanese household behavior.

Discussion

From the floor, **Kudoh** noted that, as shown by Allen and Gale (2000),⁵ differences across countries in financial literacy and cash holdings may stem from differences in financial systems, that is, whether a country has bank finance like Japan and Germany or non-bank finance like the United States and the United Kingdom. In this context, **Fukuda** pointed out that the background to the non-bank financial systems in the U.S. and the U.K. was that these countries generally had to be the frontrunners in developing new financial technologies, while Japan so far had been a follower and for that reason has relied heavily on bank finance. He argued that with Japan needing to make the transition to a non-bank financial system as a frontrunner, the underlying problems preventing households from investing in risky assets should be resolved.

Nakazono highlighted the link between debt—including housing loans—and portfolio choices and said that his intuition was that a rise in inflation should lead to a decline in leverage due to the drop in the real value of debt, which in turn should stimulate the appetite for equity investment. In this context, **Fukuda** put forward his view that Japanese households' portfolio choices are greatly influenced by the fact that purchasing a home is the most important financial decision Japanese households typically make, but Japan's housing market liquidity is extremely low. He also added that the composition of households' assets also depended heavily on whether they received inheritances in the form of cash or in the form of stocks or land.

Regarding the finding that the stock market participation rate and the share of stock holdings were evolving basically in the same direction, **Arito Ono** commented that empirical studies often showed that these tended to be determined by different factors. In addition, he mentioned that he found it odd that the paper discussed the low excess return of stocks and the high costs of stock market participation independently, and argued that high participation costs endogenously raise the equity risk premium.

Watanabe, highlighting that households' long-run inflation expectations had stayed positive even during the period of deflation, asked how the high share of cash holdings

⁵ Allen, Franklin and Douglas Gale (2000) *Comparing Financial Systems*, Cambridge and London: MIT Press.

could be explained in relation to these expectations. He added that it might be interesting to test whether the model can replicate higher sample moments such as the variance. He also asked how equity investment by public pension funds on behalf of households affected the welfare of households in the model.

Yasuharu Ukai pointed out that, according to a joint survey conducted by Kansai University and the University of Michigan, the degree of risk aversion of Japanese households varies significantly depending on the age group and that younger and older households are divided over their perceptions with respect to real assets. Specifically, while older households regard land as a safe asset, younger households see it as a risky asset. He therefore mentioned that setting parameters to correspond to different age groups might provide a different perspective on the effects of aging on Japan's economy. Meanwhile, **Kano** asked how income uncertainty was incorporated in the model. Finally, given that the model assumes a retirement age of 65, **Toshiaki Kouno** wondered how the results would change if a higher retirement age was assumed.

Presenter **Aoki**, in response to **Horioka's** comment on the historical background, said that it was insightful and that he would reflect it in the revision of the paper. He highlighted that, consistent with **Horioka's** comment, the existing literature on the U.S. also showed that the experience of large losses caused by a stock market crash tended to inhibit households from participating in the stock market. As to the various comments on housing assets, he replied that the model calibration controls for the effects of real assets to some extent by excluding housing-related expenditure data from income data, but he added that he would explore the possibility of including housing assets in households' portfolio choices in the future.

In response to **Ono's** comment, **Aoki** argued that, in his model, new entrants into the stock market were mostly households with a high share of bonds due to similarities between labor income processes and the risk profiles of bonds. Therefore, new entrants attempt to raise the share of stocks immediately upon entering the stock market, and he argued this to be the underlying mechanism for stock market participation rates and the share of stock holdings moving in the same direction.

In response to **Watanabe's** comment, **Aoki** stated that since his model assumes the economy is in a steady state, it is not possible to consider any deviation between actual inflation and expected inflation. He also made the point that when public pension

funds increase stock investments, households that already participate in the stock market try to offset stocks held indirectly through public pension funds by selling stocks they hold directly. On the other hand, households that did not hold stocks will participate in the stock market without incurring fixed costs.

In reply to **Ukai**'s comment, **Aoki** acknowledged that his model assumes the preference parameter to be the same across age groups, but since it is possible in the model to set different parameters across age groups, he would consider doing so in the future. With regard to **Kano**'s comment, he stated that his model assumes two shocks—a transitory and a permanent shock—both of which are assumed to have constant variance. However, if the variance were to be increased, stock market participation rates would move upward via increased precautionary savings. He further said that he would leave time-varying uncertainty for future examination.

V. Panel Discussion

Moderator: **Kikuo Iwata (Bank of Japan)**

Panelists: **Shin-ichi Fukuda (University of Tokyo)**

Toshiki Jinushi (Kobe University)

Kazuhito Ikee (Keio University)

Toshitaka Sekine (Bank of Japan)

In this session, panelists provided short presentations, followed by open floor discussions. The session came to a close with the moderator summing up the discussion.

A. Presentations by Panelists

Fukuda first summed up the discussions of Session 1 and then pointed to the importance of building up basic facts to specify the background to Japan's inflation dynamics. In this context, he highlighted the significance of the papers presented in Session 1, which documented the situation based on detailed data. He further mentioned that the paper by **Nakazono** left room for further debate on why inflation expectations had evolved in such a sluggish manner and whether this was really attributable to information rigidity. Similarly, the paper by **Watanabe** opened the door for future analyses of why there had been an endogenous increase in price rigidity and

why, unlike in other countries, it had become the “norm” in Japan not to change prices.

In relation to the discussion in Session 1, **Fukuda** stated his personal views on the heterogeneity of inflation expectations and price rigidity. First, regarding the heterogeneity of inflation expectations, he noted that, in addition to heterogeneity in firms’ and households’ expectations, heterogeneity in the expectations of investors in financial markets were also important for the effects of monetary policies. He noted that following announcement by the Noda administration that it would dissolve Parliament in November 2012, expectations in the stock market and the foreign exchange market had changed drastically. He argued, however, that it was foreign investors that had changed their expectations in a forward-looking manner, while expectations of domestic investors had remained backward-looking and shifted only very slowly. The reason, he suggested, was that domestic investors were not confident that Japan’s economy would overcome its medium- and long-term challenges. Second, with regard to price rigidity, referring to cross-country data for major economies, he pointed out that Japan was the only country which had hardly seen any increases in prices and wages in the past 20 years, implying that Japan’s economy was certainly not “normal.” He remarked that the two lost decades can be divided into two phases: the first decade (from the 1990s to the early 2000s), which was characterized by balance-sheet adjustments at financial institutions and firms, and the following decade (from the early 2000s onward), in which Japan’s economy was plagued by sluggish growth expectations and price competition from emerging economies. During the two lost decades, he noted, Japanese firms were unable to increase retail prices despite rising input prices, so that their margins shrank. Against this background, whether firms will be able to raise retail prices despite the plunge in input costs as a result of the recent decline in oil prices could be regarded as a litmus test to see if inflation rates will indeed rise in the future.

Jinushi began by summing up the discussion in Session 2. He commented that both the **Miyamoto** and **Aoki** papers provided detailed analyses based on models with micro-foundations. Regarding the **Miyamoto** paper, he noted that incorporating the dual labor market consisting of regular and temporary workers remained an important future research issue. Similarly, the **Aoki** paper left room for discussion on how housing investment can be considered in the context of household portfolio choices.

Jinushi then put forward his views based on the discussion in Session 2. First, he

pointed out that wages of temporary workers had significantly outpaced those of regular workers in the case of both male and female workers. Citing the fact that at the time of the Great East Japan Earthquake, wages in the disaster-stricken areas sharply increased due to a substantial decline in labor supply, he argued that supply-side factors—together with demand side factors—were currently exerting upward pressure on wages in the labor market. Regarding employment, he said that the increase in the number of workers almost exclusively owed to a rise in the number of temporary workers and that whether this trend lasted would greatly influence future monetary policy. Next, with respect to prices, he pointed out that the exchange rate pass-through may have increased, and while the impact of exchange rate changes on inflation tended to be transitory, changes in the pass-through may result in a more persistent upward push to prices. He also mentioned that the recent increase in household debt reflected a broader increase in risk-taking, including home purchases. He noted that, based on these considerations, QQE would most likely achieve the BOJ's price stability target, although there was some uncertainty regarding the timing.

With regard to the conference theme, “Japan’s Inflation Dynamics and Agents’ Behavior,” **Ikeo** highlighted that in standard economic theory, agents’ behavior depends not on the general price level but on relative prices. He then pointed out that the deterioration in the terms of trade since the second half of the 1990s represented a profound change in relative prices for Japan’s economy. This deterioration in the terms of trade, he said, was not a change in monetary but in real terms, and that Japan’s inflation dynamics should be recognized as a change in real terms. In this context, he argued that the economic impact of the deterioration in the terms of trade was equivalent to a decline in total factor productivity, and the deterioration in the terms of trade caused an annual trade loss of more than 20 trillion yen, which played a role in Japan’s deflation and was a major reason for the sluggishness in real wages. He argued that the increase in prices currently observed was basically driven by the improvements in the terms of trade against the backdrop of the decline in oil prices, but he doubted whether this trend would be sustained if there was a rebound in oil prices.

Ikeo then moved on to talk about economic policies. He said that although “Abenomics” consisted of a mix of policies, so that it was difficult to exactly identify the effects of each policy, it seemed that the current recovery to a large extent was driven by fiscal policies. In addition, he agreed with the view that expectations matter and argued that in this case, it makes little sense to separate short-term cyclical issues

from medium- to long-run structural issues, since it was the low medium- to long-run growth expectations that discouraged firms from raising core wages, hiring regular workers, and increasing business fixed investment. He further argued that raising growth expectations was not simply a matter of lifting confidence but required taking decisive actions against the shrinking population and working step-by-step towards the goals pursued by the “three new arrows” of Abenomics. He also touched on two fundamental problems regarding the social insurance system, namely that (i) in the medical and welfare sector, which makes up a considerable share of Japan’s economy, fixed prices are employed in a wide range of areas, thus preventing the price mechanism from operating properly and resulting in a considerable mismatch between supply and demand in the labor market, and (ii) pensioners, which make up roughly one-third of the total population, will face a decrease in real income, since once prices start to rise again, the so-called “macroeconomic slide,” based on which pension benefits are automatically adjusted, will kick in.

Next, **Sekine** started out by mentioning that to understand the current situation it was necessary to recognize why Japan experienced mild but persistent deflation. He provided a brief overview of price developments since the 1990s based on the theoretical considerations employed by Bullard (2010).⁶ Specifically, it is assumed that the economy has two equilibria, namely an inflationary equilibrium (i.e., a situation in which both the inflation rate and the policy interest rate are positive) and a deflationary equilibrium (i.e., a situation in which the inflation rate is negative and the policy interest rate zero). Following the burst of the asset price bubble, Japan’s economy had gradually moved away from an inflationary equilibrium and, reflecting a large shift in inflation expectations during the financial crisis of the second half of the 1990s, had fallen into a deflationary equilibrium from which it could not escape for a prolonged period. Bullard’s analysis ended in 2010, but **Sekine** argued that looking at more recent data, it appeared that Japan had moved away from the deflationary equilibrium, although there still was a long way to go to return to an inflationary equilibrium. **Sekine** continued that while this appeared to be the case, it was of course difficult to substantiate this argument, since inflation expectations could not be directly observed. In this context, he noted that the BOJ carefully monitored a variety of inflation expectations measures, including the survey data used in the **Nakazono** paper.

⁶ Bullard, James (2010) “Seven Faces of ‘The Peril,’” *Federal Reserve Bank of St. Louis Review*, Vol. 92, No.5, pp. 339-352

Sekine then discussed two aspects with regard to inflation expectations that he had been focusing on recently. The first of these was the distribution of price increases mentioned in the **Watanabe** paper, and he said that although the mode of the distribution until September 2015 had remained at zero, two points were notable, namely, (i) the peak of the distribution had become lower, and (ii) the distribution had gradually shifted into positive territory. These developments were significant in that although the changes in the distribution were only gradual, they were going in the right direction. The second aspect with regard to inflation expectations **Sekine** was paying attention to was the common factor derived from services prices and wages. He argued that, under several assumptions, this common factor could be regarded as an indicator of inflation expectations, and he pointed out that it had remained in positive territory since 2013 after having been in negative territory for a long time. He pointed out that nominal wages, on the other hand, had remained weak relative to medium- to long-term nominal labor productivity (the sum of the GDP deflator and potential labor productivity). In closing, he stated that his judgment was that, with regard to Japan's economy, the glass was currently "half empty and half full," meaning that the economy was gradually moving out the deflationary equilibrium, but had yet to reach an inflationary equilibrium.

B. Discussion

The presentations by the panelists were followed by a lively open floor discussion, which focused mainly on Japan's growth expectations and monetary policies.

Growth expectations

Moderator **Iwata** started the discussion by asking about the issues that needed to be addressed to raise growth expectations for Japan's economy. **Fukuda** replied by focusing on the sluggishness in domestic fixed investment and pointing out that (i) the notion that Japanese managers are too conservative is not really accurate, given that firms have actively expanded their overseas business, which tends to be relatively risky, and that (ii) firms that did expand their domestic business fixed investment in the mid-2000s have yet to enjoy the benefits of such expansion and therefore are unsure whether boosting domestic business fixed investment will directly raise profits. He said that without such confidence it was unlikely that firms would raise their expectations and increase domestic investment.

Mentioning his own involvement in corporate governance reforms, **Ikeo** argued that the

only way to raise growth expectations was to make steady efforts such as those outlined in the government's growth strategy, even if the immediate results may be muted. Turning to firms' behavior, he touched on the case of Germany, which, unlike Japan, did not experience a deterioration in the terms of trade, even though it is a commodity-importing country. He added that, unlike German firms, Japanese firms were unable to increase retail prices to pass on higher materials prices and instead wages fell. He concluded that more research was necessary to examine whether this situation was caused merely by weak demand or whether it was due to the weak competitiveness of Japanese firms.

Sekine, while agreeing with **Ikeo's** view that Japan's economy of late has benefitted from trade gains, said he expected the economy to grow gradually, supported by a cyclical mechanism in which higher corporate profits trickle down to business fixed investment and wages. He noted that he found it puzzling that domestic business fixed investment and wages remained sluggish despite the fact that corporate profits had currently reached historically high levels.

Jinushi touched on current developments in the labor market and noted that firms seem to have become more aggressive in hiring college graduates as regular workers, especially female graduates. He inferred that such shifts in firms' hiring behavior were due to the decline in the supply of younger workers and noted that the number of regular workers would expand steadily, while that of temporary workers might plateau.

From the floor, **Hayakawa** commented that the terms of trade had notably deteriorated for export-oriented manufacturing firms, chiefly in the electrical machinery industry. Referring to Shioji (2015),⁷ he argued that while firms in these industries had seen a rise in productivity, their competitiveness vis-à-vis China and Korea had declined since the second half of the 1990s, resulting in a worsening of the terms of trade. He went on arguing that since many firms consider their medium- to long-run competitiveness to be weak, this had led to a situation in which high corporate profits had not trickled down to business fixed investment or wages. This, he added, was attributable to Japan's labor market structure such as the lifetime employment system, which, unlike in other countries, made it difficult for firms to change their investment plans frequently in response to profit opportunities. Along similar lines, **Harada** highlighted that, unlike

⁷ Shioji, Etsuro (2015) "Productivity, Demand and Inter-Sectoral Labor Allocation in Japan," *Japan Labor Review*, Vol. 12, No.2, pp. 65-85.

in the case of overseas business ventures, the failure of a domestic business directly gave rise to employment-related problems, so that reforms of employment regulations—including relating to lay-offs—might help to encourage Japanese firms to change their behavior.

Regarding firms' lack of confidence in their competitiveness, **Takashi Kozu** commented that with increased diversity within the global economy, many Japanese manufacturing firms may find it difficult to decide in which countries to set up their main business bases. Some emerging economies that had been enjoying high growth had recently seen a slowdown, while others were increasingly facing a debt overhang problem. Firms were therefore wondering whether to shift their main bases back to advanced economies, despite severe price competition. In addition to these demand-side considerations, there were also supply-side considerations, with wage increases in China leading firms to reconsider China's role as the hub of their global value chains. Japan's manufacturing sector therefore was currently facing complex issues from both a supply and a demand side perspective, **Kozu** argued. In the domestic market, on the other hand, he went on, firms were under the pressure to transform their business models in response to a shrinking customer base due to population decline, and many firms still lacked a clear vision regarding their domestic business strategies, which overall may have delayed their decision-making with respect to employment and business fixed investment.

With regard to the labor market, **Sekine**, referring to OECD indicators of employment protection legislation, noted that, as of 2013, there had only been minimal progress in Japan in the deregulation of employment protection. He added that he was interested in how this would change under "Abenomics." **Fukuda** stated that the lifetime employment system was an important legacy of the past, and considering that households were still planning their life cycle expenditure based on this system, Japan's labor market structure may not change so easily.

Harada said that the discussion so far seemed to suggest that price increases could not be achieved without an increase in growth expectations; however, when looking at other countries, there was no significant correlation between inflation and growth expectations. **Ikeo** noted that the widely used term "deflationary mindset" referred to both inflation expectations and growth expectations and that a clear distinction should be made between the two in discussions. Furthermore, it was not the case that without

a rise in growth expectations there could not be a rise in inflation; rather, the medium- to long-term concern was high inflation with low growth, and the BOJ should be well prepared to control such a situation. **Fukuda** said that, in general, the link between inflation expectations and growth expectations was ambiguous, but looking at the symptoms of Japan's deflation suggested that the nominal price and real rigidities discussed in the **Watanabe** and **Nakazono** sessions were deeply intertwined, indicating that there was some sort of link between low growth expectations and deflation.

Monetary policy

Next, moderator **Iwata** asked for views on the role of monetary policy under low growth expectations. **Ikeo** said that in general, the role of macroeconomic policies was to provide an environment that helps to raise growth expectations, but under the zero lower bound on nominal interest rates, the additional effects of quantitative easing were minute; in other words, a zero interest rate policy essentially was the limit for monetary policy.

Sekine, while touching on the discussions on "secular stagnation," noted that whether structural reforms or demand stimulus were more important continued to be a hotly debated issue among central bankers. He pointed out that while European economists seemed to argue that structural reforms were more important, North American economists tended to argue that demand stimulus measures were more effective. The latter further argue that structural problems can be addressed through demand stimulus measures, pointing to the importance of hysteresis in unemployment or the effects of business fixed investment on capital accumulation. He commented that this implied that even QQE was not just a demand stimulus tool.

In response, **Fukuda** said that North American economists were indeed proponents of demand stimulus measures, but he highlighted that they were focusing more on fiscal than monetary policies, since the latter entailed the risk of asset price bubbles. While agreeing with this comment, **Sekine** noted that this did not mean that monetary policy was ineffective under a zero lower bound; rather, it exerted effects through transmission channels other than the real interest rate channel, such as the exchange rate channel. He went on by highlighting that although the exchange rate channel had had little effect on the core CPI, which excludes energy prices, the current rise in services prices and wages suggested that the channel was nevertheless working, with high corporate profits brought on by the depreciation of the yen trickling down and exerting upward pressure

on prices.

Kudoh noted that the lack of appropriate models made it difficult to accurately identify the effects of unconventional monetary policies, and added that the yen had depreciated since the second half of 2012 mainly due to expectations that monetary and fiscal policies would change drastically following the formation of the Abe administration. Under these circumstances, he cautioned that it was necessary to clearly understand the transmission mechanisms of monetary policy, since otherwise we might find ourselves in the unfortunate situation where “it is too late when we realize that the accelerator was pressed too hard.”

Next, **Suzuki** noted that **Sekine**'s argument with regard to a “deflationary equilibrium” was based on the premise that there was a zero lower bound on nominal interest rates, but the situation in Europe indicated that it was possible to adopt negative interest rates. **Suzuki** therefore wondered how the equilibrium would change if the policy interest rate was negative. **Fukuda** replied that unless the policy interest rate could be lowered to minus infinity, **Sekine**'s argument still held even under negative interest rates.

Based on the above discussion, **Fukuda** argued that current monetary policy seemed to have some effect not only on financial markets, but also on the real economy, and only a few believed that QQE had no impact. On the other hand, a serious problem for Japan was that, taking account of the size of its public debt, there was hardly any room left for active fiscal policies and that this, in turn, had imposed an excessive burden on monetary policy. He concluded that, as mentioned by many discussants, Japan's economy was unlikely to move forward in a positive way unless structural reforms were carried out in many areas of the economy.

C. Summing-up by the Moderator

Moderator **Iwata** summed up the panel discussion and put forward his own views as well. He noted that, as already mentioned by **Sekine**, the aim of QQE was to shift upward or steepen the Phillips curve and to improve the output gap. He highlighted that, as a result, the labor market had tightened, leading to steady increases in wages of both regular and temporary workers. This labor shortage would threaten firms' survival unless they improved labor productivity. This situation, he concluded, would encourage firms to make both labor-saving investment and investment in human capital in order to raise their labor productivity.

Iwata added that while such an improvement in labor productivity via the tightening of the labor market could be regarded as another channel of monetary policy, he agreed with the argument put forward by **Ikeo** and **Fukuda** that it was necessary to steadily implement the various measures set out in the government's growth strategy, and he recognized that unless this was achieved inflation of 2 percent under low growth was a possible outcome.

In closing, **Iwata** stated that the series of issues discussed at the conference would be useful for the conduct of monetary policy in the future.

VI. Closing Remarks

In his closing remarks, **Fukuda**, on behalf of the Center for Advanced Research in Finance of the University of Tokyo, praised the conference once again, stating that it played an essential role in the Center fulfilling its social responsibilities. Looking back on the themes of past conferences, he noted that the repeated discussion of price changes in Japan highlighted the complicated situation that Japan's economy was facing. He went on to observe that although past conferences had dealt with similar themes, the quality of the presentations was constantly increasing and the conferences helped to deepen our understanding of Japan's economy. He finished by saying that he hoped this conference series would build on its tradition and continue for many years to come.



**Sixth Joint Conference Organized by the University of Tokyo CARF
and the BOJ Research and Statistics Department:
Japan's Inflation Dynamics and Agents' Behavior**

Conference Date: Thursday, November 26, 2015

Venue: Conference Room A, Bank of Japan

Program

Introduction

9:00 Welcome Address

Toshitaka Sekine, Director-General of the Research and Statistics Department,
Bank of Japan

9:05 **Japan's Inflation Dynamics and Agents' Behavior (in Japanese)**

Naoko Hara, Bank of Japan

Session 1

Chairperson: **Shin-ichi Fukuda**, University of Tokyo

9:50 **Inflation Expectations and Monetary Policy under Disagreements**

Yoshiyuki Nakazono, Yokohama City University

Discussant: **Masahiro Hori**, Economic and Social Research Institute, Cabinet Office

10:50 Coffee Break

11:00 **Price Rigidity During Periods of Deflation: Causes and Implications (in Japanese)**

Tsutomu Watanabe, University of Tokyo

Discussant: **Hideo Hayakawa**, Fujitsu Research Institute

12: 00 Lunch

Session 2

Chairperson: **Toshiki Jinushi**, Kobe University

13: 30 **The Quantitative Monetary Easing Policy and the Labor Market (in Japanese)**

Hiroaki Miyamoto, University of Tokyo

Discussant: **Noritaka Kudoh**, Nagoya University

14: 30 **Household Portfolios in a Secular Stagnation World: Evidence from Japan**

Kosuke Aoki, University of Tokyo

Discussant: **Charles Yuji Horioka**, Asian Growth Research Institute

15: 30 Coffee Break

Panel Discussion

15: 45 Moderator: **Kikuo Iwata**, Deputy Governor, Bank of Japan

Panelists: **Shin-ichi Fukuda**, University of Tokyo

Toshiki Jinushi, Kobe University

Kazuhito Ikee, Keio University

Toshitaka Sekine, Bank of Japan

17: 45 Closing Remarks

Shin-ichi Fukuda, University of Tokyo

18: 30 Conference Dinner

Speech: **Shigehiro Kuwabara**, Executive Director, Bank of Japan

List of Speakers and Commenters (in alphabetical order, titles omitted)

Name	Affiliation
Kosuke Aoki	University of Tokyo
Shin-ichi Fukuda	University of Tokyo
Naoko Hara	Bank of Japan
Yutaka Harada	Bank of Japan
Hideo Hayakawa	Fujitsu Research Institute
Masahiro Hori	Cabinet Office
Charles Yuji Horioka	Asian Growth Research Institute
Kazuhito Ikeo	Keio University
Kikuo Iwata	Bank of Japan
Toshiki Jinushi	Kobe University
Takashi Kano	Hitotsubashi University
Toshiaki Kouno	Senshu University
Takashi Koza	Ricoh Institute of Sustainability and Business
Noritaka Kudoh	Nagoya University
Hiroaki Miyamoto	University of Tokyo
Koji Nakamura	Bank of Japan
Yoshiyuki Nakazono	Yokohama City University
Arito Ono	Chuo University
Toshitaka Sekine	Bank of Japan
Toshiyuki Suzuki	Bank of Tokyo-Mitsubishi UFJ
Kazuo Ueda	University of Tokyo
Yasuharu Ukai	Kansai University
Yosuke Uno	Bank of Japan
Tutomu Watanabe	University of Tokyo