BOJ Reports & Research Papers

August 2024

Broad-Perspective Review Series

Economic Activity, Prices, and Monetary Policy over the Past 25 Years

Summary of the Second Workshop on the "Review of Monetary Policy from a Broad Perspective"

Bank of Japan

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Abstract

On May 21, 2024, the second workshop on the "Review of Monetary Policy from a Broad Perspective," entitled "Economic Activity, Prices, and Monetary Policy over the Past 25 Years," was held at the Bank of Japan's Head Office. At the workshop, economists and financial and economic experts participated in a lively discussion.

Session 1 provided a review of economic and price developments in Japan since the late 1990s and a presentation on recent changes in the environment. Participants then discussed issues such as the impact of "Quantitative and Qualitative Monetary Easing" on the economy and prices, the reasons why behavior and a mindset based on the assumption that wages and prices would not increase easily had become entrenched as the norm in society, and whether the norm should be judged as changing.

Session 2 provided a presentation on the effectiveness of unconventional monetary policy through the "expectations channel" under the effective lower bound on interest rates and on the economic implications of moderate price increases. Participants then discussed issues such as the mechanisms of inflation expectations formation, the evaluation of the effects of monetary policy on expectations, and the consistency of theoretical views on the benefits of moderate price increases with reality.

In the panel discussion in Session 3, participants started by discussing reasons why the norm had formed and recent changes in the norm. Participants highlighted reasons for the formation of the norm since the late 1990s, such as the fact that maintaining employment had become the top priority, leading to a suppression of wages, and the fact that price competition continued to be severe. Meanwhile, while one view was that the norm was changing due to factors such as the growing shortage of labor, another view was that there

* The views expressed at the workshop and summarized in this paper are those of the individual speakers and do not necessarily represent the views of the organizations to which they belong.

had been no major structural changes in the labor market and that the recent increases in wages and prices may have been a temporary phenomenon caused by exogenous shocks. In addition, panelists reviewed the lessons learned from the monetary policy of the past 25 years. With regard to unconventional monetary policy, some argued that it had had positive effects such as improving the output gap even under the effective lower bound on interest rates, while others pointed to the difficulty of influencing expectations and the side effects of prolonged monetary easing on productivity.

Contents

1. Introduction

This paper is a summary of the second workshop on the "Review of Monetary Policy from a Broad Perspective" (the Review hereafter), which was held on May 21, 2024, at the Head Office of the Bank of Japan (BOJ). The workshop, entitled "Economic Activity, Prices, and Monetary Policy over the Past 25 Years," began with opening remarks by BOJ Deputy Governor Ryozo Himino. In Sessions 1 and 2, staff members of the BOJ's Research and Statistics Department and Monetary Affairs Department gave presentations, followed by comments from discussants and discussions with floor participants, addressing two topics: economic activity and prices, and monetary policy. After a panel discussion in the third session, the workshop concluded with closing remarks by BOJ Deputy Governor Shinichi Uchida (see Appendix 1 for the program).

The remainder of this paper is a summary of the opening remarks, the two presentation sessions, the panel discussion, and the closing remarks. The affiliations of speakers below are as of the date of the workshop, and their honorific titles are omitted (see Appendix 2 for a list of speakers and their affiliations). Teppei Nagano, Head of the Policy Planning Division, Monetary Affairs Department, BOJ, served as moderator for the entire workshop.

2. Opening Remarks

In his opening remarks, Himino stressed the importance of widely sharing the knowledge and experience gained on unconventional monetary policy in Japan. He went on to note that, based on analyses and discussions to date, it could be said that unconventional monetary policy under the zero lower bound on nominal interest rates had been effective in influencing economic activity and prices to a certain extent. He further stated that, on the other hand, it also had had side effects on market functioning and the financial system, and then raised the following three issues for further discussion.

First, he raised the issue of how to assess the long-term effects and side effects of monetary policy. He noted that, in terms of economic theory, there were two opposing views on the impact of prolonged monetary easing: one that it would enhance productivity and the growth potential, and the other that it would suppress them. He then argued that there was insufficient empirical work on this issue worldwide.

Second, he raised the issue of the transmission channels of monetary policy. Given that, in the face of the effective lower bound on interest rates, one channel worked via changes in asset prices, such as stock prices, exchange rates, and real estate prices, and another worked via the impact on expectations, he posed the question how the impact of monetary policy on economic activity and prices through these channels should be assessed.

Third, he raised the issue of how the performance of the Japanese economy amid headwinds such as the aging and decline of the population should be assessed. He pointed out that there could be various kinds of views on the performance, depending on the assessment criteria, and then expressed his interest in opinions on how the sustainable and stable achievement of the price stability target of 2 percent would affect economic performance in the future.

Finally, he concluded his opening remarks by expressing his hope for active discussions from multiple perspectives during this workshop.

3. Session 1: Economic Activity and Prices "Economic Activity and Prices in Japan over the Past 25 Years"

(1) Presentation[1]

Presenter Ichiro Fukunaga provided an overview of economic activity and prices in Japan since the late 1990s, when the consumer price index (CPI) began to decline continuously, based on academic discussions and the "Results of the Survey regarding Corporate Behavior since the Mid-1990s" (hereafter, "Corporate Survey") conducted as part of the Review.[2] He then discussed signs of changes in Japan's economy in terms of (1) the global economic landscape, (2) the labor market, and (3) firms' price-setting behavior during the period of high inflation in the 2020s.

He started by summarizing discussions on the underlying factors -- both on the demand side and the supply side -- of Japan's economic stagnation and mild deflation in the 1990s and 2000s. In particular, he noted that a major factor responsible for deflation was the decline in aggregate demand following the 1998 financial crisis. He recalled that there were concerns about a vicious cycle (deflationary spiral) in which rising real debt levels would lead to a further decline in aggregate demand. Although such a deflationary spiral was subsequently averted through the "Quantitative Easing Policy" and various prudential measures, he noted that since then, a mindset and practices based on the assumption that wages and prices were unlikely to rise had become the social norm. Looking back at the

[1] PowerPoint slides and videos (in Japanese) of this presentation and the presentation in Session 2 are available online at: https://www.boj.or.jp/mopo/outline/bpreview/bpr240405a.htm

[2] Bank of Japan, "Results of the Survey regarding Corporate Behavior since the Mid-1990s: Economic Activity, Prices, and Monetary Policy over the Past 25 Years from Firms' Perspective," Regional Economic Report – Annex –, June 28, 2024.

debate at that time as to whether economic stagnation or deflation came first, he said that it was clear that economic stagnation chronologically preceded deflation, and a deflationary spiral was averted, but one aspect probably was that low growth and low inflation reinforced each other and hence became entrenched.

In the 2010s, various measures were taken to put an end to the situation where low inflation expectations were entrenched under the binding effective lower bound on nominal interest rates, including "Quantitative and Qualitative Monetary Easing" (QQE) and other measures to break away from sluggish potential growth, but he recalled that the effects of these measures were not enough to change the situation. As for reasons why inflation expectations did not rise sufficiently, he cited the adaptive process of inflation expectation formation in Japan, as pointed out in the BOJ's "Comprehensive Review" in 2016, and the persistent practice of keeping prices unchanged through strategic complementarity among firms (due to the effects of the kinked demand curve). On the latter point, he noted that in the Corporate Survey, many respondents cited "price competition" as a reason for the difficulty in passing on cost increases to consumer prices. He also noted that, unlike in other countries, deflation in Japan was caused by unique features of the Japanese labor market, such as the acceptance of lower wages in order to protect employment. In the Corporate Survey, many firms pointed to the "ability to secure regular workers without wage hikes" as a reason for the stagnation of wages for regular workers. On the other hand, regarding sluggish potential growth, he pointed out that although QQE stimulated aggregate demand and contributed to economic expansion to some extent, the effects of QQE may not have extended to the supply side of the economy. He also argued that various factors since the 1990s, such as weak domestic capital investment and stagnant resource reallocation, had continued to exert downward pressure on productivity. He also mentioned the possibility that under persistently low inflation firms' innovation may have shifted to cost-cutting "process innovation" rather than demand-creating "product innovation."

Turning to signs of changes in the 2020s, he began by discussing changes in the global economic landscape, such as recent trade tensions and heightened geopolitical risks. He pointed out that despite these changes, Japan's foreign direct investment (FDI stock as a percentage of GDP) had kept growing, and that Japan's international competitiveness relative to the U.S., China, and other countries had continued to decline. On the other hand, he presented results from a time-series analysis showing that global factors, which had continuously pushed down consumer prices in Japan since the 1990s, had reversed in the 2020s and exerted significant upward pressure on prices. He also argued that such global factors provided an important impetus for the subsequent change in the inflation trend through the linkage between wages and prices.

He then cited several signs of changes in the labor market. These included (1) the limited room for additional labor supply after the rise in the labor force participation rates of women and seniors, (2) the plateauing trend of the part-time worker ratio, and (3) the active job-to-job transition of regular workers, all of which, he argued, were contributing to a shift toward a situation where wages would tend to rise. He also noted that sluggish labor productivity growth, the declining labor share, and the deteriorating terms of trade had put downward pressure on real wages so far, but there were positive signs, especially in industries with labor shortages, of efforts to raise labor productivity, such as recent progress in software investment.

Regarding changes in firms' price-setting behavior, he showed that the distribution of price changes of CPI items used to have a high peak at zero inflation, but this peak had recently collapsed, and the frequency of price increases was rapidly rising. Using these data and a model for price-setting by firms, he showed estimates of the costs associated with price revisions (menu costs) and the strength of firms' practices of keeping prices unchanged (the degree of kink in the demand curve). The results suggested that price rigidity and the practice of keeping prices unchanged, which strengthened in the late 1990s, may have weakened considerably in recent years. He also presented results from the simultaneous estimation of price markups and wage markdowns in a different model, and noted that while the former had been declining and the latter had been rising (pushing down both prices and wages) since the late 1990s, there were signs of changes in these trends in recent years.

Based on these analyses, and results from the Corporate Survey about the current phase, he argued that the mindset and practices based on the assumption that wages and prices would not rise were set to dissolve. Finally, he showed the relationship between medium-term growth expectations and inflation expectations, noting that both had declined in tandem in the 1990s and 2000s, but since the price stability target was set at 2 percent in 2013, inflation expectations had been gradually rising while growth expectations remained stagnant. He then asked participants whether the divergence between the two would continue, or whether it was conceivable that rising inflation expectations could lead to higher growth expectations.

(2) Comments from the Discussants

Discussant Hiroshi Yoshikawa argued that, given the trends in private consumption and capital investment after the introduction of QQE, monetary easing did not stimulate demand, and that there was no sufficient basis for the view that unconventional monetary policy had a notable impact. As an analogy, he said that even if a particular method of studying could raise the score of a student preparing for an entrance exam from 40 to 48, where the passing score was 70, the method would not be generally considered to have a "notable impact." He also argued that the prices of individual goods and services were not driven by expectations or sentiment, and pointed out that prices are not always rigid under a kinked demand curve in the sense that individual firms in a particular industry facing similar cost pressures will raise prices in parallel. In this regard, he noted that recent economic studies had focused too much on the micro price-setting behavior of individual firms, and that more attention should be paid to upstream-to-downstream price transmission.

Discussant Keiko Murata, argued that the presenter's view on "economic growth under a virtuous cycle of wages and prices" was somewhat optimistic. She also noted that in order to consider future trends of wages and prices, further examination was needed as to (1) whether labor shortages would change the existing tendency for wages to be suppressed and (2) whether firms' and households' medium- to long-term inflation expectations would be anchored to the price stability target of 2 percent. Next, she discussed developments in the household sector since the introduction of QQE, and judged that the effects of QQE on private consumption were generally limited because (1) the deterioration in the terms of trade due to the yen's depreciation had exerted negative pressure on household incomes, and (2) although the incomes of part-time workers, women, and seniors had increased, permanent income growth remained sluggish, as the income of household heads under the age of 54 had declined. Finally, looking back at Japan's economy over the past 25 years, she highlighted that Japan's structural problems needed to be addressed from a medium- to long-term perspective. She then argued that the price stability target of 2 percent should be treated as a medium- to long-term goal and that greater flexibility in the conduct of policy should be pursued.

(3) General Discussion

In response to discussant Yoshikawa's analogy regarding policy effects, co-presenter Yoshihiko Hogen argued that the decline in the potential growth rate and in the natural rate of interest had, to some extent, limited the effectiveness of monetary easing, including QQE. With regard to the prolonged slump in private consumption pointed out by discussants Yoshikawa and Murata, he noted that Japan's slowdown in productivity growth relative to other countries had weighed on household income through a deterioration in the terms of trade. With regard to Japan's economic growth prospects, he argued that it was important to consider whether technological innovation in the corporate sector would progress and whether inward direct investment would increase in the changing global economic landscape. In response to Murata's question on whether the tendency for wages to be suppressed would change in the face of labor shortages, he said that this might be the case if workers' wage bargaining power increased. He agreed that the upstream-to-downstream price transmission pointed out by Yoshikawa was important, noting that in the past downstream service prices had not moved much in response to fluctuations in exchange rates or oil prices due to the costs associated with price revisions, and that the recent price movements in downstream prices were largely due to the impact of higher wage growth, such as base pay increases.

From the floor, Tsutomu Watanabe said that the presentation illustrated how the norm (the mindset and practices based on the assumption that wages and prices would not rise) had evolved, and asked the presenters for their views on why the norm was formed in the late 1990s, and if it was indeed dissolving, what the reasons would be. Kotaro Tsuru argued that indicators shown in the presentation, with regard to the job-to-job transition of regular workers and labor shortages, were not necessarily evidence of structural changes pointing to greater mobility of regular workers. Regarding the perception of the norm in the labor market, Hajime Tomura asked whether the presenters' view was consistent with the fact that in the "Survey on Wage Increase" by the Ministry of Health, Labour, and Welfare the percentage of firms saying that they paid attention to "market wages" in their wage setting had remained low since the early 1990s. He also highlighted that if supply-related factors, such as the mass retirement of baby boomers, already worsened from the mid-2010s onward, pushing up wages and prices, the impact of QQE on wages and prices may have been even smaller than suggested by the presenter. Yuri Sasaki, as a reason for why wages and prices in Japan remained low, pointed out that the international adjustment of wages did not work well due to the low cross-border mobility of labor and services, partly due to differences in language and culture. Regarding fairness in pricing, Takatoshi Ito asked why it was not perceived as fair in Japan to raise prices in response to increased demand.

In response to Watanabe's question, presenter Fukunaga explained that labor market factors played an important role in both the formation and dissolution of the norm. In particular, the acceptance of lower wages and halting of base pay increases in the late 1990s to secure the employment of regular workers was one of the triggers for the formation of the norm. He also stated that the recent resumption of base pay increases and the severity of labor shortages even among regular workers have contributed to the dissolution of the norm. In addition to labor market factors, Hogen noted that the competitive environment became severer in the late 1990s and price markups began to shrink, which also contributed to the formation of the norm. Fukunaga then responded to

Tsuru's point by saying that although the mobility of regular workers could only indirectly be inferred, there was a possibility that Japanese-style employment practices would gradually change in the future as one generation, such as the generation that started working during the asset price bubble in the late 1980s, retired and was replace by another. Fukunaga responded to Tomura's question by referring to the results of the Corporate Survey and noting that some of the reasons given for curbing base pay increases -- such as the "ability to secure regular workers without wage hikes" and "potential rises in fixed costs" -- may have been related to the norm and that the frequency of the former answer had declined during the current phase while the frequency of the latter answer had not changed much. Regarding the contributions of labor shortages and QQE to wages and prices, he stated that the former, a supply factor, and the latter, a demand factor, had both contributed to the tightening of the labor market, although it was difficult to separate the contributions of these factors in the data. In response to Sasaki's point, Fukunaga noted that in addition to low international labor mobility, the effects of irreversible structural changes from the past, such as the overseas expansion of Japanese firms and the establishment of global value chains, still remained and made it difficult for Japanese exports and inward direct investment to increase even amid the yen's depreciation. In response to the question by Takatoshi Ito, Fukunaga responded that many firms and households believed that demand remained sluggish despite QQE and other demand stimulating measures, so that raising prices was not socially acceptable.

4. Session 2: Monetary Policy "Unconventional Monetary Policy and Inflation Expectations"

(1) Presentation

In light of the issues discussed at the first workshop on the Review, presenter Yuichiro Ito gave a presentation on two topics: unconventional monetary policy and inflation expectations, and the economic implications of moderate inflation.

(Unconventional Monetary Policy and Inflation Expectations)

He started by noting that when large-scale monetary easing was introduced in 2013, it was assumed that it would affect the economy and prices via two transmission channels; that is, in addition to the conventional channel via lower long- and short-term nominal interest rates, it was assumed that large-scale monetary easing would affect the economy and prices through the expectations channel, i.e., by raising inflation expectations and lowering real financing costs. He then pointed out that there had been some debate in the past whether monetary policy could change economic agents' expectations given the effective lower bound on interest rates, with some researchers arguing that this expectations channel would be effective and others arguing that this was unlikely.

He then provided a review of developments in medium- to long-term inflation expectations in three phases: the deflationary period since the late 1990s; the period after the introduction of QQE in 2013; and the period after the COVID-19 pandemic in 2020. He then reported the results of an empirical analysis of the impact of changes in inflation expectations on inflation dynamics in Japan. He pointed out that the analysis showed that the impact of inflation expectations on inflation dynamics in Japan had been substantial overall. He further noted that although the introduction of the "price stability target" and QQE in 2013 had been insufficient to immediately anchor inflation at 2%, they had some effects in transforming the situation that had prevailed since the late 1990s, where expectation shocks had persistently pushed prices lower.

Next, he discussed the factors that influenced the effectiveness of the expectations channel from three perspectives: (1) inflation targeting; (2) various economic circumstances; and (3) past experience and norms. With regard to inflation targeting, he noted the following. If economic agents believed that the central bank's inflation target was achievable, their inflation expectations would coincide with the central bank's inflation target. On the other hand, many researchers, he noted, held the view that the implementation of inflation targeting in a low inflation environment would not readily result in higher inflation expectations, since private agents would expect monetary policy to be constrained by the effective lower bound on interest rates, and pointed out that the number of such studies had increased in line with the accumulation of experience with unconventional monetary policy.

Regarding various economic circumstances, he first expressed the view that even after the policy interest rate reached a level close to zero, repeated negative demand shocks continued to lower inflation and inflation expectations. Second, in terms of the impact on wages and labor supply, he pointed out that the cost-reducing effects of the elastic labor supply of women and seniors may have made it difficult for workers to expect wage increases. In this regard, he added that, in recent years, the labor force participation rates of women and seniors had reached high levels, reducing the potential for additional increases in the labor supply. Third, he noted the potential impact of import price fluctuations resulting from external shocks on inflation expectations and pointed out that the recent surge in import prices and other contributing factors may have led to a "big push" that pushed up inflation expectations.

With regard to past experience and norms, he pointed out, first, that, as households increasingly prioritized lower prices, firms may have adopted a more cautious stance with regard to raising prices due to concerns that a price hike might lead to a significant decline in demand (kinked demand curve), and therefore were reluctant to raise prices. Second, he referred to studies arguing that those who had not experienced high inflation tended to anticipate low inflation. Third, he noted that previous studies had argued that economic agents were indifferent to inflation developments in a low inflation environment, so that inflation expectations tended to remain stable at low levels. However, he added that there were signs that this experience and these norms had been changing in recent years.

(Economic Implications of Moderate Price Increases)

He then highlighted that, in a survey of firms and households, a significant proportion of respondents preferred a state in which wages and prices rose moderately, and then discussed the economic implications of such a state in terms of the costs and benefits of inflation. He pointed out that in classical economics, the opportunity cost of holding money had been discussed as the cost of inflation, and then noted that with the spread of New Keynesian economics, which assumed price rigidity, the majority of studies argued that it was desirable for prices to remain unchanged. He mentioned that, in the wake of the global financial crisis, there was a growing awareness of the costs associated with the zero lower bound on interest rates, and highlighted that, amid the recent increase in research based on novel micro perspectives that had not been incorporated into conventional theory, there were some studies indicating that a positive rate of inflation might be beneficial in terms of economic welfare.

Next, he introduced theoretical studies suggesting that a positive rate of inflation was desirable in terms of economic welfare. He began by noting that the conventional argument for price rigidity was that efficient resource allocation was achieved when the general price level remained unchanged and then presented studies that theoretically showed that, when the product life cycle is assumed to be from market entry to exit, a positive rate of change in the general price level was desirable. He also mentioned theoretical studies suggesting that moderate inflation could potentially boost the economic metabolism and R&D investment. In addition, he argued that, from the perspective of labor market efficiency, wage rigidity in a low inflation environment impeded setting wages in line with productivity, and that ensuring flexibility in wage setting would enhance the signaling effect of wages and facilitate more efficient resource allocation, which would also lead to higher productivity in turn. Finally, he argued that even if unconventional monetary policy had been effective to some extent, how effective it had been remained uncertain, and there were negative side effects, so that the effective lower bound on nominal interest rates remained a significant challenge in the conduct of monetary policy.

(2) Comments from the Discussants

Discussant Etsuro Shioji began by commending the presentation for doing full justice to a "Review of Monetary Policy from a Broad Perspective" by being based on a wide range of perspectives and viewpoints, and for presenting original empirical research. He then presented four points for discussion. First, he stated that there was no consensus in the academic community on the effects through exchange rates in the expectations channel, and that further analysis was required. Second, he stated that, while the presentation proposed that in order to raise inflation expectations in a low inflation environment, it might be desirable to get economic agents to pay more attention to inflation developments, monitoring price changes itself represented a cost. He also pointed out that getting economic agents to pay sufficient attention to the price situation in order to raise inflation expectations, a substantial increase in prices might be needed. He added that in order to achieve such a situation, interest rates could be kept relatively low for an extended period of time to raise the inflation rate and then keep inflation in check by rapidly hiking interest rates. However, a concern under such a scenario was whether the central bank would be able to successfully achieve its inflation target without disrupting the financial system. He further noted that a key issue was whether the central bank would be able to avoid the suspicion that it was continuing with monetary easing for purposes other than maintaining price stability, such as influencing the exchange rate, managing its own finances, or monetary financing. Third, he noted that the argument in previous studies that it was difficult to manage the expectations of private economic agents under the effective lower bound on nominal interest rates was persuasive. Fourth, regarding the debate about the optimal inflation rate, he expressed the view that the New Keynesian argument relied on specific model characteristics, and that the classical argument based on the opportunity cost of holding money was theoretically more robust. Against this background, he stated that the argument that a moderate positive inflation rate was desirable might reflect the experience of the last decades, during which the costs associated with relative price distortions caused by price and wage rigidities had been considerable.

Discussant Yosuke Takeda presented three arguments as reasons why it was difficult for unconventional monetary policy to raise inflation expectations. First, he noted, while a key characteristic of inflation expectations was that they were heterogeneous across economic agents, when the economy was in a liquidity trap, what Keynes called "bearishness" came to dominate, leading to homogeneous inflation expectations, so that expectations formation in a liquidity trap might differ from that during normal times. As an illustration of such a mechanism, he pointed to the "information effect," a phenomenon in which monetary easing had the opposite of the intended effect, reducing its capacity to influence expectations.[3] Second, he noted that firms had not fully passed cost increases. He highlighted that the DI of output and input prices for large firms in the *Tankan* (Short-Term Economic Survey of Enterprises in Japan) indicated that both manufacturing and non-manufacturing firms had been unable to pass on higher purchase prices to output prices. The reason for this, he argued, was that it was possible for an equilibrium in which prices remained unchanged to exist: with firms aware that they faced a kinked demand curve, they did not pass on cost increases unless their marginal costs increased substantially. Third, he pointed out that it was likely that the price and wage formation mechanisms somehow became disconnected. He highlighted the existence of downward rigidity in wages, which meant that once wages had been raised, it was difficult to lower them even in the event of an economic downturn, and noted that norms other than those with regard to prices could also have a significant impact on the wage formation process.

(3) General Discussion

In response to the comment by discussant Shioji that the expectations channel through exchange rates should be explored in depth, presenter Yuichiro Ito noted that although the effects of exchange rate fluctuations on economic activity and prices had been examined in previous studies conducted by the BOJ, there were few studies on the effects of exchange rate fluctuations on medium- to long-term inflation expectations, and this was an important topic for further discussion. In response to Shioji's comment regarding the viability of the expectations channel in the context of the effective lower bound on interest rates and to discussant Takeda's comment that information effects might have impeded the ability to affect expectations, he stated that these issues were closely related to the discussion on the effectiveness of unconventional monetary policy measures. Moreover, he stated that while unconventional monetary policy measures turned out to be effective to some extent, they had also been associated with substantial side effects and uncertainty, and the problem of the effective lower bound on nominal interest rates remained significant. In addition, in response to Takeda's comment that the disconnection between the price and wage formation mechanisms had weakened the effect of the expectations channel, he expressed the view that it was crucial to elucidate the wage determination mechanism as well. Further, in response to Shioji's concerns regarding the management

[3] The information effect is a phenomenon in which unanticipated monetary easing is interpreted by private entities as a signal that economic conditions are deteriorating, so that private entities become more cautious in their economic activities, and this, in turn, exerts downward pressure on the economy.

of expectations, he cited previous studies showing that it was necessary for central banks to enhance their communication strategy, and noted that it was necessary to continue to deepen discussions on this issue. Finally, in response to Shioji's comment on the optimal inflation rate, he stated that this debate was not yet sufficiently mature to warrant a conclusion and that it was necessary to deepen the discussion in the future.

With regard to Shioji's comment that, from the perspective of information processing costs, the inflation rate should be maintained at a low level so that economic agents did not need to pay attention to inflation, and Takeda's comment that, assuming a kinked demand curve, there could be an equilibrium in which prices remained unchanged, co-presenter Sohei Kaihatsu noted that while they had discussed these issues in the context of the expectations channel, they were also closely related to discussions on the costs and benefits of inflation. He then added that when evaluating these issues, it was essential to take into account that the cost of the effective lower bound on interest rates increased in a low inflation environment.

Regarding the issue of unconventional monetary policy and inflation expectations, Yoshiyuki Nakazono and Kimie Harada from the floor offered the view that the impact of the exchange rate on inflation expectations should be further analyzed, while Nakazono added that a more profound examination of the relationship between inflation expectations and the behavior of economic agents was necessary. Yasushi Iwamoto, Shigenori Shiratsuka, and Mototsugu Shintani expressed their doubt whether the expectation shocks in the vector auto-regression (VAR) model in the presentation, since they were identified as independent shocks, could be regarded as the effect of monetary policy transmitted through changes in expectations. In response, Kaihatsu noted that while it was correct that expectation shocks were not identified as monetary policy effects, it was possible to provide an interpretation of expectation shocks based on time-series information, such as the introduction of the "price stability target" in 2013. Shiratsuka expressed the view that the framework for managing inflation expectations to stabilize the price level at a target level after an inflation overshoot had previously been discussed as price-level targeting. Iwamoto added that in order to proceed with the Review, it was essential to distinguish between ex ante and ex post discussions on the policies.

Regarding the economic implications of moderate price increases, Yoshikawa pointed out that during the period of rapid economic growth, producer prices exhibited zero inflation, while consumer prices exhibited moderate price increases, and then asked how to reconcile the fact that vigorous innovation occurred in the manufacturing sector in the face of zero inflation with the theoretical argument in the presentation that modest price increases could potentially facilitate innovation. In response, Kaihatsu noted that the innovation mechanism could not be explained solely by the theory introduced, and that there was still much room for development in this area of research, including the accumulation of empirical analysis. Shin-ichi Fukuda noted that in past discussions of the optimal inflation rate, measurement error in price indices was a major issue, and pointed out that with new technologies being developed all the time such measurement error could be expected to persist in the future. In response, Kaihatsu stated that the Review project would address a wide range of issues, including recent discussions on measurement error in price indices. Watanabe, noting that his study using point-of-sale data for Japan showed that during periods with deflation the prices of newly introduced products tended to fall, while during periods with inflation the prices of such products remained unchanged, highlighted that further investigation into the relationship between the product life cycle and inflation dynamics was needed. In addition, regarding the costs and benefits of inflation, he stated that firms and labor unions, which had kept prices and wages unchanged for a prolonged period, had lost the "know-how" to change prices and wages, and that this, in turn, had increased the costs associated with price and wage revisions.

In light of the discussion of relative price distortions, Toshitaka Sekine asked about the shape of the item-level price change distribution that would be expected under an inflation rate anchored at 2%. Specifically, he asked whether changes in prices for most items would be near 2%, or whether there would be variation in changes in prices across items. In response, Kaihatsu expressed his view that the shape of the price change distribution likely would exhibit a shape in line with the heterogeneity in the characteristics of individual goods and services, with an average of 2%. Ryo Jinnai asked how the argument that a positive inflation rate was desirable could be reconciled with the current situation in which real wages were declining due to price increases. In response, Kaihatsu noted that the presentation indicated that stable positive inflation could enhance the efficiency of resource allocation in the long run, and that recent changes in real wages in the context of cost-push inflation should be analyzed separately in a different setting. In addition, Kenichi Ueda pointed out that the consensus was that monetary aspects did not influence long-term economic growth trends, and that a widely shared view was that excessively high inflation had a detrimental effect on the economic growth trend. He further added that from the perspective of growth theory the fact that the BOJ over the past 30 years had managed to keep inflation stable at a low rate was to be commended.

5. Session 3: Panel Discussion

Moderator: Tsutomu Watanabe (The University of Tokyo)
Panelists: Takatoshi Ito (Columbia University)
Kotaro Tsuru (Keio University)
Shin-ichi Fukuda (The University of Tokyo)
Shinichi Uchida (Bank of Japan)

5.1 Panel Presentations

Moderator Watanabe began by presenting the following discussion points with regard to the behavior and mindset -- the norm -- based on the assumption that wages and prices would not change: (1) Why was the norm formed and how did it affect firms, consumers, and workers? (2) What sort of impact did the norm have in terms of economic welfare? And (3) had the norm recently been changing or not? Each panelist presented their views on these issues.

(1) Takatoshi Ito (Columbia University)

Panelist Takatoshi Ito stated that while inflation rates, inflation expectations, and wage growth rates in Japan were at a "0, 0, and 0%" equilibrium until 2012, they were currently shifting to a "2, 2, and 2%" equilibrium in response to the increase in firms' costs triggered by the rise in import prices. In addition, he expressed his view that it was important whether they would shift to a "2, 2, and 3%" equilibrium, where wage growth rates exceeded inflation rates, through firms' productivity growth going forward.

He then noted that the most important reason why Japan had fallen into a deflationary equilibrium was the decline in prices and inflation expectations led by the collapse of the asset price bubble. He stated that while the BOJ had been implementing policies to influence inflation expectations since 2013, the effect of these policies had been smaller than he had previously argued. He added that this was because inflation expectations in Japan were to a large extent formed in an adaptive manner. He also discussed the reasons why wage growth rates had fallen to zero. Specifically, he noted that during Japan's financial crisis in the late 1990s workers and labor unions witnessed the collapse of and layoffs by large firms, and this experience led them to change their behavior and come to prioritize job security over wage increases.

On the costs of deflation, he expressed the view that if changes in prices of individual goods and services were concentrated near zero, relative prices would remain unchanged and the allocation of resources would be inefficient. With regard to wages, he argued that if wage growth rates were concentrated near zero, wages in sectors facing labor shortages would not increase, leading to a decline in the quality of services and the failure of labor appropriately being allocated to high-productivity sectors.

(2) Kotaro Tsuru (Keio University)

Panelist Tsuru, using the framework of game theory, argued that the norm represented a stable equilibrium formed under a repeated game in which firms and households acted taking the norm as given. He went on to observe that although, as a result, it was not easy to change the equilibrium, the equilibrium could change if the assumptions of the game changed or there was a large exogenous shock.

He then stated that the fundamental reason why the norm was formed was the labor market situation in the late 1990s. That is, the main reason was that during that period both employees and employers prioritized maintaining the employment of full-time workers and accepted stagnating wages in a situation where excess employment increased. With regard to the price-setting behavior of firms during the period, he pointed out that a "coordination failure" may have led to a vicious cycle of intensifying price competition and cost reductions. In addition, he noted that firms' emphasis on earning a reputation as "firms that do not raise prices" in their long-term relationship with consumers was also a factor. Furthermore, regarding the impact of the norm on economic welfare, he pointed out that one possible interpretation was that stagnant prices under the severe price competition generated a surplus for consumers in a form that was not captured in statistics such as GDP data.

In addition, he stated that, in terms of game theory, for the norm to change, it was necessary to achieve a situation where the assumptions of the game were perceived to have changed permanently. He then argued that it was unlikely that during the current phase the labor market, the competitive environment, and firms' behavior were changing in a structural manner and that it was therefore optimistic to think that the norm was changing.

(3) Shin-ichi Fukuda (The University of Tokyo)

Panelist Fukuda pointed out that although it was obvious that the behavior and mindset based on the assumption that wages and prices would not change had been dominant in Japan for a long time, it was not obvious whether they were the cause or the result of the stagnation of wages and prices. He then noted that if such behavior and mindset were the cause of the stagnation of wages and prices, a virtuous cycle could be expected to be achieved by changing expectations only. On the other hand, if they were the result of the stagnation of wages and prices, no virtuous cycle would be achieved by forcibly trying to change expectations. He then suggested that the latter view might be correct, taking into consideration that inflation expectations and real GDP growth temporarily increased from 2013 to 2014 but that this did not persist. He then argued that the fundamental reason why wages and prices did not increase in Japan was the decline in the growth potential of the economy and the lack of the structural conditions for a persistent increase in prices.

He also pointed out that deflation was undesirable in terms of economic welfare, given that there were few cases of high economic growth under deflation. He noted that, however, there were also situations, such as stagflation, in which inflation was not accompanied by real economic growth, and it was therefore better to recognize that inflation was a necessary but not sufficient condition for sustainable growth. Regarding the costs of deflation, he noted that nominal wage and price rigidities could prevent the adjustment of real wages and relative prices, blocking the economic metabolism and leading to sluggish productivity growth. He then expressed the view that in order to create a virtuous cycle in the economy, it was desirable that wages and prices increased gradually, not uniformly, accompanied by the adjustment of relative prices and a boost to the economic metabolism as a result of such adjustment.

He then noted that, currently, the situation that prices did not change was changing, since firms had been forced to raise prices in response to exogenous shocks that were larger than those in 2013. However, he also highlighted that in the *Tankan*, (1) the share of firms that answered "Don't know" with regard to the outlook for future output prices had increased, i.e., the uncertainty about future prices had increased, and (2) the outlook for output prices over the next three and five years was lower than the outlook for general prices, which he flagged up as negative factors for economic activity.

(4) Shinichi Uchida (Bank of Japan)

Panelist Uchida pointed out that, from the perspective of standard economics, the reasons why Japan fell into deflation could be summarized as follows: (1) the collapse of the asset price bubble and subsequent financial instability, the sluggish adaptation to globalization, and the declining birthrate and aging population led to a decline in the growth trend and a chronic demand shortage; and (2) the zero lower bound on nominal interest rates meant that the accommodative effects of monetary policy were insufficient, resulting in a failure to raise inflation rates and inflation expectations. He argued that, under these circumstances, partly due to the emergence of a strong consensus that employment should be protected as much as possible while unemployment rates and corporate bankruptcies were kept in check, the social norm formed in which, given severe competition, it was difficult for firms to raise prices and wage were also suppressed.

He then went on to discuss the reasons why it took a long time for the situation surrounding wages and prices to change despite the implementation of large-scale monetary easing since 2013. In particular, in addition to uncertainty surrounding the effects of unconventional monetary policy, he highlighted the larger-than-expected slack in the labor market, resulting in more than 5 million new jobs being filled by women and seniors. He also expressed the view that, recently, triggered by global inflation, wages had been rising as a result of diminishing slack and growing labor shortages in the labor market.

He further noted that, under these circumstances, it was also true that it remained uncertain whether the deflationary norm would be dissolved, given that the mindset based on the assumption that wages and prices would not increase easily had been built into various institutions and business practices, as well as people's mind. However, he went on to argue, if the slack in labor markets was the starting point and the core of the issues surrounding the norm, then recent changes in the labor market would be a reason for the norm to dissolve and the recent behavior of firms suggests that this in fact may be the case.

5.2 Discussion

Following the panelists' presentations, floor participants joined in the discussion.

(On similarities and differences between the current phase of rising prices and that in 2013-2014)

Following the presentations by the panelists, moderator Watanabe provided a summary of the panelists' positions with regard to two key issues: (i) whether there was a single price equilibrium or multiple price equilibria, and (ii) whether the recent increase in inflation was persistent or temporary. He then asked whether the increase in inflation this time was different from that in 2013-2014.

Panelist Takatoshi Ito, reviewing the phase in 2013-2014, noted that while inflation rose to around 1.5%, the economy subsequently failed to reach an equilibrium in which prices and wages rose stably due to a number of factors, including a decline in energy prices and a decrease in private consumption following the implementation of the consumption tax hike. He then pointed out that the current phase differed significantly from the previous one in that no such impeding factors were present. In this context, he added that attention needed to be paid to developments in energy prices.

Panelist Tsuru expressed the view that, as shown by the experience in 2013-2014, the potential rate of inflation in Japan might be around 1%. He then added that a 2% price stability target was somewhat challenging for Japan, given the structural differences between Japan's economy and the economies of the United States and other countries.

Panelist Fukuda argued that the reason why the price increases in 2013-2014 were not sustained was that, despite various initiatives, they ultimately failed to improve the structure of the Japanese economy, so that Japan's potential growth rate, including total factor productivity, actually fell. He then noted that to achieve price increases in a stable and sustainable manner, sustained productivity growth was necessary, and added that it was difficult to believe that prices would continue to rise without it.

Panelist Uchida stated that a clear distinction between the current phase and the 2013-2014 phase was the limited scope for additional labor supply. He also noted that the labor market was undergoing structural changes as a consequence of the high-pressure economic strategy involving a prolonged period of monetary easing.

In light of Uchida's comments, Watanabe asked Tsuru what his view was on the difference between the two phases in terms of labor market slack. In response, Tsuru pointed out that the current price increases were due to major external shocks and that, in terms of policy evaluation, a clear distinction should be made between policy effects and external factors. He then highlighted that although the exchange rate and stock prices fluctuated substantially during the 2013-2014 phase, the impact of the increase in inflation was limited because the structural factors underlying the norm had not changed very much, and added that the experience of that period might be useful in assessing the current situation.

(On labor markets and the formation of the norm)

From the floor, Takeo Hoshi stated that, with regard to the distinction suggested by moderator Watanabe, it might be more appropriate to assume multiple equilibria for inflation expectations and a single equilibrium for the labor and goods markets. Moreover, he agreed with Tsuru and Uchida's view that the labor market was the primary reason that the norm was formed, and pointed out that, given the recent shift in labor market conditions toward labor shortages, it should be assumed that the norm was exhibiting signs of change, as suggested by Uchida.

In response, Tsuru pointed out that excess employment among full-time employees was an especially important factor when considering the norm, and noted that there had been no significant change in the basic stance of labor unions, which emphasized maintaining employment, and the situation where tight labor market conditions did not lead to higher wages. In response, Hoshi noted that at least in certain sectors, wages might be on the rise, reflecting labor shortages.

In this context, panelist Fukuda highlighted the need to distinguish between labor market condition at the macro level and the issue of labor shortages at the micro level, and argued that, while labor mobility within the same industry was becoming more prevalent, labor mobility across industries remained inadequate, impeding efficient resource allocation in Japan. Panelist Takatoshi Ito pointed to price controls in the nursing care sector and other sectors as examples of how optimal resource allocation was impeded, such as the inability to set prices in accordance with supply and demand. Noriyuki Yanagawa noted that the discussion had shown once again that when considering macroeconomic policies, paying attention to microdata to identify the heterogeneity among industries and other factors was essential.

Kentaro Iwatsubo asked whether it would be feasible to transition to an equilibrium that would permit modest price and wage increases, given the emphasis in the Japanese labor market on maintaining employment. In response, Takatoshi Ito pointed out that in the labor market in Japan, there had been a decline in part-time workers and an increase in the share of full-time female workers, and that in the new graduate recruitment market, there had been shifts in students' attitudes, including an increase in entrepreneurialism and employment with foreign-affiliated firms. He observed that, given these points, the labor market had substantially changed, and a shift in the equilibrium might be possible.

Online participant Kenji Nishizaki asked panelists for their views on the role of real wages in the context of changes in the norm. Uchida pointed out that, if real wages were essentially determined by labor productivity, it was unclear whether growth in labor productivity was necessary for a change in the norm, which is based on nominal terms. He added that, for the norm to change and this change to take root, it was crucial that it was based on a process in which nominal wages grew as a result of a tight labor market.

(On the role of the norm)

Yanagawa pointed out that if monetary policy was discussed using this idea that such a norm had taken hold in society, there was a risk of overlooking a crucial aspect; namely, even if there were multiple equilibria, using this idea of a norm in considering the transition from one equilibrium to another might obscure the underlying mechanisms. He then asked the panelists for their views on the role of the norm in the context of policy discussions. In response, panelist Uchida stated that in the process of anchoring inflation expectations at 2%, an important factor, in addition to the credibility of the central bank, was changes in social practices and rules regarding wages and prices, that is, changes in the norm. Moderator Watanabe noted that the importance of norms in determining wages and prices had long been highlighted in economics, and that over the past 30 years, the trend in macroeconomics had been to replace norms with the concept of expectations. That said, he added, previous discussions by Okun and others had emphasized that norms changed autonomously in response to various factors, such as institutions and policies, and could not be artificially manipulated. He then stated that it was inappropriate to argue that changing the norm would be a panacea.

Yoshikawa highlighted that QQE was based on the argument that, since deflation was the cause of Japan's economic slump and deflation was a monetary phenomenon, increasing the quantity of money would solve the problem. He then added that instead of assessing the validity of this argument in the Review, they were discussing norms -- a factor outside monetary policy -- as the reason why inflation had not increased to 2%, and although there was nothing wrong with the substance of the discussion, it did not quite sit right in terms of the BOJ's external communication.

In response, Uchida stated that he fully understood the comment regarding the BOJ's communication. He further noted that it had taken longer than expected to achieve the price stability target of 2% and that, in addition to the difficulty of predicting the impact of policy changes and the significant amount of slack in the labor market, the norm may have played a role in this. He added that, in order to achieve the price stability target of 2% in a sustainable and stable manner in the future, it was important to deepen the understanding of the role of norms. He argued, moreover, that it was important to comprehensively analyze and understand the deflationary norm that had taken hold in Japan -- a phenomenon unique to the Japanese economy -- in order to determine the most appropriate policy conduct and the most effective policy options in the event of a similar situation in the future, not only in Japan but also elsewhere. In response, panelist Fukuda argued that the price stability target of 2% was closely related to the Joint Statement of the Government and the BOJ released in January 2013, and added that any evaluation of large-scale monetary easing and the price stability target of 2% should be based on a comprehensive assessment, including an evaluation of the progress being made with respect to the other measures set forth in the Joint Statement.

(On the output gap and potential growth)

Kozo Ueda asked panelist Uchida whether the unexpected rise in labor supply by women and seniors as a result of QQE indicated that the previously-held views on the output gap and potential growth rate in 2013 had been inaccurate, and whether, going forward, the potential growth rate and natural rate of interest were expected to decline given that the room for further additions to the labor supply was shrinking. Uchida noted the significant discrepancy between the slack implied by the *Tankan*'s production capacity DI and the employment conditions DI on the one hand and the output gap estimated by the Cabinet Office and the BOJ on the other hand, and pointed out that there might be a fair degree of measurement error in the output gap. He also noted that there was a considerable degree of uncertainty regarding the future dynamics of the natural rate of interest, and that the diminished room for additional labor supply from women and seniors did not necessarily imply a decline in the per capita growth rate.

Linked to this, online participant Katsuhiro Oshima asked the panelists for their views on the relationship between the norm that prices and wages would not rise and the output gap. Uchida pointed out that the norm related to the intercept of Phillips curve, that is, the rate of inflation when the output gap is zero, and stated that in terms of policy conduct, the output gap was regarded as one of the channels through which underlying inflation and inflation expectations could be raised.

5.3 Summaries from Panelists

Finally, the panelists provided a summary of the lessons to be learned from the past 25 years of monetary policy.

Takatoshi Ito expressed the view that the effective lower bound on interest rates represented a significant challenge given the experience of the past 25 years, and that it was very important to set the price stability target at 2% rather than 0% to avoid that the lower bound becomes binding. He then stated that unconventional monetary policy had been successful in pushing up the output gap to a positive level and therefore could be evaluated to have been effective. He added that, unlike other countries, Japan, however, still faced the challenge of a persistent deflationary norm.

Tsuru stated that the recent experience provided a number of lessons. First, it had proven more difficult for policymakers to change the expectations of private agents than suggested by standard macroeconomics, which was evidenced by the fact that the idea of a norm was such a hotly debated issue. Second, the conventional spillover channel of unconventional monetary policy -- stimulating capital investment through increased bank lending -- had been found to be ineffective. The third lesson, he argued, was that the response of prices and wages in Japan to the global price hikes in the wake of the COVID-19 pandemic was more subdued than in the U.S. and Europe, and that future considerations of monetary policy conduct might need to take this fact into account.

Fukuda pointed out that while unconventional monetary policy did not sufficiently increase inflation during this period, it could be considered to have improved the output gap to some extent. He also noted that, on the other hand, prolonged monetary easing may have had a negative impact on productivity and other factors. He then stated that the objective of the BOJ was to facilitate the sound development of the Japanese economy through a commitment to price stability, and that a comprehensive assessment of the past 25 years should be conducted with this objective in mind.

Uchida offered the view that the price stability target of 2% had not yet been achieved, and that monetary policy should be conducted to achieve the target. He then pointed out that since the global financial crisis of 2008 many countries had employed unconventional monetary policies in the face of the effective lower bound on interest rates, and that therefore a global perspective, including how policies compare to those of central banks in other countries, should be taken into account when evaluating such policies.

6. Closing Remarks

In closing, Uchida thanked participants for the wide range of discussions on economic activity, prices, and monetary policy over the past 25 years and noted that the discussions provided very important suggestions for the BOJ's monetary policy conduct.

He then stated that the continuous pressure on the economy of the large-scale monetary easing so far had finally led to changes in the labor market recently, so that the prospect of inflation and inflation expectations being pushed up through these changes had come in sight. Against this background, he stated that he would like to review past developments, including the role of the norm, which was a major focus of the discussions today, and to consider these issues in the conduct of monetary policy in the future.

Moreover, he highlighted the importance of sharing the results of the Review with the outside world. He stated that the prolonged mild deflation experienced by Japan was a phenomenon that had not been widely assumed in economics, and that highlighting the implications for the economy and the conduct of macroeconomic policy could provide new perspectives for the field of economics.

Finally, he concluded the workshop by thanking the participants, stating that today's discussions at the workshop provided an opportunity to further deepen the understanding of monetary policy.

(Appendix 1)

Economic Activity, Prices, and Monetary Policy over the Past 25 Years
The Second Workshop on the "Review of Monetary Policy from a Broad Perspective"

Workshop Date: Tuesday, May 21, 2024

Venue: Conference Room A, 9F, Bank of Japan

Program			
13:30- 13:40	Opening Remarks	Ryozo Himino	Bank of Japan
Session 1 Economic Activity and Prices			
13:40-14:45	Moderator	Takeo Hoshi	The University of Tokyo
	Presenters	Ichiro Fukunaga	Bank of Japan
		Yoshihiko Hogen	Bank of Japan
	Discussants	Hiroshi Yoshikawa	The University of Tokyo
		Keiko Murata	Rissho University
14:45-15:00	Coffee Break		
Session 2 Monetary Policy			
15:00-16:05	Moderator	Tokuo Iwaisako	Hitotsubashi University
	Presenters	Yuichiro Ito	Bank of Japan
		Sohei Kaihatsu	Bank of Japan
	Discussants	Etsuro Shioji	Chuo University
		Yosuke Takeda	Aichi University
16:05-16:25	Coffee Break		
Session 3 Panel Discussion			
16:25-18:05	Moderator	Tsutomu Watanabe	The University of Tokyo
	Panelists	Takatoshi Ito	Columbia University
		Kotaro Tsuru	Keio University
		Shin-ichi Fukuda	The University of Tokyo
		Shinichi Uchida	Bank of Japan
18:05-18:10	Closing Remarks	Shinichi Uchida	Bank of Japan
18:30-	Reception and Dinner		

(Appendix 2)

List of Speakers, Etc.

(in alphabetical order, titles omitted, affiliations as of the date of the workshop)

Name	Affiliation
Shin-ichi Fukuda	The University of Tokyo
Ichiro Fukunaga	Bank of Japan
Kimie Harada	Chuo University
Ryozo Himino	Bank of Japan
Yoshihiko Hogen	Bank of Japan
Takeo Hoshi	The University of Tokyo
Takatoshi Ito	Columbia University
Yuichiro Ito	Bank of Japan
Tokuo Iwaisako	Hitotsubashi University
Yasushi Iwamoto	The University of Tokyo
Kentaro Iwatsubo	Kobe University
Ryo Jinnai	Hitotsubashi University
Sohei Kaihatsu	Bank of Japan
Keiko Murata	Rissho University
Teppei Nagano	Bank of Japan
Yoshiyuki Nakazono	Yokohama City University
Kenji Nishizaki	Musashino University
Katsuhiro Oshima	Mitsubishi UFJ Morgan Stanley Securities
Yuri Sasaki	Meiji Gakuin University
Toshitaka Sekine	Hitotsubashi University
Mototsugu Shintani	The University of Tokyo
Etsuro Shioji	Chuo University
Shigenori Shiratsuka	Keio University
Yosuke Takeda	Aichi University
Hajime Tomura	Waseda University
Kotaro Tsuru	Keio University
Shinichi Uchida	Bank of Japan
Kenichi Ueda	The University of Tokyo
Kozo Ueda	Waseda University
Tsutomu Watanabe	The University of Tokyo
Noriyuki Yanagawa	The University of Tokyo
Hiroshi Yoshikawa	The University of Tokyo