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Bank of Japan

Uniqueness or Similarity?

--- Japan's Post-Bubble Experience in Monetary Policy Studies ---

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I. Introduction

I am very pleased to have a chance today to address the IJCB Conference. In particular, this conference is very timely and appropriate in two aspects. First, as everybody here is well aware, this conference focuses on a very important theme for central bank policymakers in the current situation, "Monetary Policy Lessons from the Global Crisis." Second, whether intentionally or not, this conference is held in Japan, the country often quoted as a precedent on that theme.[1] In fact, we hear heated discussions in the United State as to whether the United States will fall into "deflation in the Japanese style" or the "lost decade like Japan" (Chart 1).[2]

The line of discussions generally has something in common in interpreting Japan's experience. That is, a weak economic performance is attributed mainly to the failures of Japan's policy authorities or the factors peculiar to the Japanese economy and society. I cannot completely deny Japan's uniqueness, but I should also emphasize that we can find a lot of similarities between Japan's experience and our experience in the recent global financial crisis. At various international conferences I attended in the early 2000s, I explained the Japanese situation many times, but never imagined that zero interest rates and quantitative easing would be adopted by other central banks in the advanced economies. I believe many of central bank officials thought the same way.

In short, Japan's experience provides too important and general food for thought to say that Japan is just unique. Nevertheless, I have the impression that Japan's experience is often discussed, based on casual reading of related facts. Taking this opportunity, I will articulate my thoughts on how to make use of Japan's experience since the burst of a bubble in making monetary policy studies.[3]

II. Seven Facts on Japan's Economy since the Burst of a Bubble

The Japanese economy after the burst of a bubble is often referred to as the "lost

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[1] See, for example, Ahearne *et al*. (2002), Krugman (1998), and Posen (1998).

[2] See, for example, Bullard (2010) and Rogoff (2010).

[3] In my speech today, I focus on Japan's experience after the burst of a bubble. See also Okina, Shirakawa, and Shiratsuka (2001) for discussions on the cause of the bubble since the late 1980s and its lessons for monetary policy.

decade."[4] Real GDP growth remained just 1.5 percent on average in the 1990s, which declined significantly from 4.6 percent in the 1970s and 4.4 percent in the 1980s (Chart 2).[5] CPI inflation reached its peak of 3.3 percent in January 1991 soon after the burst of a bubble, started declining shortly thereafter, and turned negative in 1998 (Chart 1, shown earlier).

Looking at policy responses, on the monetary policy front, the Bank of Japan's (BOJ's) first policy rate reduction after the burst of a bubble was carried out in July 1991, one year after the peak of land prices (Chart 3).[6] Overnight interest rates came down to 0.5 percent and virtually reached zero interest rates in 1995, four years after the BOJ started the policy rate reductions.[7] On the fiscal policy front, aggressive stimulus measures were taken in two periods: soon after the burst of a bubble and from 1998 to 1999 (Chart 4). After the introduction of the quantitative easing policy, the contributions of fiscal expenditure to real GDP growth remained negative. On the financial system policy front, capital injections into undercapitalized financial institutions started in 1998. The amount of injected public funds relative to nominal GDP finally reached 2.5 percent in Japan. Compared to the United States in the recent crisis, the amount of injected public funds was smaller in the United States, and remained 1.5 percent of nominal GDP, but the capital injections were carried out much faster in the United States.

Those are the quick summary of macroeconomic conditions and policy responses after the burst of a bubble in Japan. When making use of Japan's experience in monetary policy studies, I want to draw your attention to the following facts.

First, Japan experienced business cycle expansions and contractions three times each

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[4] With regard to the appropriateness of the phrase, "lost decade," see Shirakawa (2009).

[5] In the 2000s, the average growth rate recovered slightly, and stayed at 1.7 percent until 2007 before the collapse of Lehman Brothers.

[6] The intervals between the peak of land/housing prices and the first policy rate reduction are almost the same in Japan and the United States.

[7] Okina and Shiratsuka (2002) make an assessment on the BOJ's monetary policy actions before and after the burst of a bubble based on the Taylor rule.

since the low-growth 1990s (Chart 5).[8] That seems contrary to the impression from the phrase of the "lost decade" that Japan has remained stagnant all the time since the 1990s. Whenever some signs of recovery were observed in Japan, expectations that the economy would finally escape from stagnant conditions and enter a full-fledged recovery were rising. Based on such Japan's experience, I attempted to draw public attention to the risk of falling into false optimism by using the phrase of a "false dawn," when we saw some signs of economic recovery in advanced economies in the spring of 2009.[9]

Second, Japan did not experience a sharp and drastic economic contraction on the scale that we experienced after the failure of Lehman Brothers. Looking at Japan's real GDP trend, the largest decline was recorded in the first quarter of 1998 by –1.9 percent. That decline, however, was smaller than those in many countries, including Japan, after the failure of Lehman Brothers in the fall of 2008 (Chart 6). Even during the period from 1997 to 1998, when Japan's financial crisis was severest, the level of real GDP remained higher than the average level of 1989, when Japan was at the peak of the bubble period.

Third, Japan showed economic growth on a per worker basis comparable to the United States in the 2000s, although significantly declined from the 1980s (Chart 7). At the same time, Japan delivered a weaker performance in real GDP growth. Obviously, the differences between real GDP growth and real GDP growth per worker reflect the declines in the workforce in Japan.[10] In any event, in analyzing the Japanese economy after the burst of a bubble, it is essential to take account of changes in potential growth, which is determined by productivity growth and demographic changes.

Fourth, Japan has experienced deflation, but its severity has been contained at a mild

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[8] In Japan, the President of the Economic and Social Research Institute, Cabinet Office, decides on the reference dates of business cycles, based on the discussions in the Investigation Committee for Business Cycle.

[9] See Shirakawa (2009).

[10] That tendency becomes more evident, by comparing real GDP growth per man-hour. See Hayashi and Prescott (2002).

level. Consumer price inflation turned negative in 1998, and from 1997 to 2010 it declined by –3.3 percent on a cumulative basis, and –0.3 percent on an annualized basis (Chart 8).[11] In the meantime, long-term inflation expectations remained generally unchanged, and anchored around 1 percent (Chart 9). Japan's deflation since the second half of the 1990s is a rare experience in the post-war advanced economies, but the scale of the price decline is far smaller, compared to the period of the Great Depression when the United States registered a CPI decline of 24 percent in the 1930s (Chart 10).

Fifth, Japan has experienced deflation not only in goods prices but also in services prices. Compared with the United States, the difference in consumer price inflation is mainly attributed to services prices (Chart 11). That reflected flexible adjustments in nominal wages in Japan, since the service sector is basically labor-intensive.

Sixth, Japan has not experienced a deflationary spiral. More precisely, Japan has not experienced the phenomenon after the burst of a bubble that a decline in prices induces a decline in economic activity, thereby leading to a further decline in prices.[12] Instead, Japan has experienced the longest recovery, just in duration without considering its strength, from 2002 under mild deflation (Chart 12).

Seventh and finally, the BOJ introduced various innovative policy measures (Chart 13).[13] The zero interest rate policy was first introduced by the BOJ in 1999. The "quantitative easing policy," which set a target for money market operations on the outstanding amount of current account balances at the central bank and expanded such balances far above the required reserve levels, was also first introduced by the BOJ in 2001.

The BOJ expanded its balance sheet size considerably. From 1995 when overnight

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[11] The latest figure for the Japanese CPI is July 2010.

[12] For example, Posen (2010) noted that Japanese deflation remained stable over the course of the 1990s rather than accelerated.

[13] For the overview of empirical studies on the effects of the BOJ's monetary policy measures in the 2000s, including the quantitative easing policy, see Ugai (2007).

interest rates fell down to virtually zero, the ratio of the BOJ's balance sheet size to nominal GDP increased by more than 20 percentage points at its peak (Chart 14). That increase in the ratio for the BOJ is twice as large as that in the U.S. Federal Reserve (Fed), the European Central Bank (ECB), and the Bank of England (BOE) in the recent crisis. In addition, the level of the ratio for the BOJ is still higher than that for the Fed, the ECB, and the BOE.

As the target level of the current account balances was raised, the maturities of short-term funds-supplying operations became lengthened. In the final stage of the quantitative easing policy, the average maturities exceeded six months, and the longest one reached eleven months.

In addition, an experimental policy measure of commitment to the future course of monetary policy was first introduced by the BOJ. Under the quantitative easing policy, for example, the BOJ made a commitment to continuing with the quantitative easing policy "until core CPI inflation becomes stably zero or above."

The BOJ also adopted "credit easing" in the current terminology. The assets purchased included asset-backed securities (ABSs) and asset-backed commercial papers (ABCPs). The BOJ purchased stocks held by financial institutions to reduce market risk associated with stockholdings, which was one of the biggest risk factors in potentially destabilizing the financial system.

As I have reviewed so far, the BOJ introduced various unprecedented measures under the uncharted circumstances during the period from the late 1990s to the early 2000s. Innovative aspects of such policy measures were not well recognized at that time, but, in retrospect, such measures involved most of the elements in the unconventional policy measures taken in the recent global financial crisis.

III. Four Similarities in Economic Conditions and Policy Responses after the Burst of a Bubble

Based on the facts in Japan's experience after the burst of a bubble, I will next point out

four observations that are common to economic conditions and policy responses after the burst of a bubble in the two cases: one is the U.S. and European economies in the recent crisis and the other is the Japanese economy since the 1990s. I will also elaborate on their implications in analyzing economic conditions and monetary policy after the burst of a bubble.

Sluggish economic recovery and balance-sheet adjustment

The first similarity concerns the fact that it took fairly long before restoring the full-fledged recovery path after the burst of a bubble.[14] In Japan, it was 2003 when the economy went back to the steady recovery path, and it thus took more than ten years since the burst of a bubble. In the U.S. and European economies, the adjustment is still continuing, and the duration of the adjustment period is yet to be confirmed. However, we can safely say that it will take some time before restoring the full-fledged recovery path. That is because the balance-sheet adjustment produces significant downward pressure on the economy in the process of resolving various "excesses" accumulated during a bubble period.[15] The forms of "excesses" vary from country to country. In Japan, they were "three excesses" in the business sector: employment, production capacity, and debt (Chart 15).[16] It is essential to explicitly incorporate an adjustment mechanism of "excesses" in analyzing the economy after the burst of a bubble.

As a related issue, before the crisis it was frequently argued that a financial system with well-developed capital markets, in addition to a sturdy banking system, was more robust to a shock than a bank-centric financial system, since both the bank channel and the capital market channel worked in a complementary manner.[17] It seems, however, such a view needs to be reconsidered.

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[14] See Reinhart and Rogoff (2009), and Reinhart and Reinhart (2010) for the detailed discussions on recovery patterns after crises.

[15] Nakakuki, Otani, and Shiratsuka (2004) make a quantitative assessment on the effects of structural adjustments on economic growth in Japan.

[16] For the issues on the "three excesses," see the 2003-05 issues of the BOJ's *Outlook for Economic Activity and Prices*.

[17] See Greenspan (1999).

Effects of dysfunctional interbank money markets

The second similarity lies in the fact that the sharp contraction of economic activity after the burst of a bubble occurred when interbank money markets became destabilized. In Japan, as I mentioned earlier, it was the period from 1997 to 1998 when real GDP declined the most, and it was the fall of 1997 when interbank money markets became destabilized (Chart 16).[18] In the recent global financial crisis, real GDP in advanced economies, including the United States and European countries, registered the largest decline during the period from the fourth quarter of 2008 to the first quarter of 2009. Such a massive decline was attributed to the malfunction of interbank money markets, triggered by the failure of Lehman Brothers. The two cases have the common starting point of an interbank market participant default.[19]

Given the serious adverse effects of the failure of medium-sized Sanyo Securities on interbank money markets, at the time of the subsequent and larger failure of Yamaichi Securities, the BOJ committed to providing an unlimited amount of liquidity, thereby enabling its orderly resolution.[20] Such policy responses staved off a global financial crisis starting in Japan.[21]

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[18] The failure of medium-sized Sanyo Securities in 1997 led to the first default in interbank money markets in the postwar period in Japan. That triggered sudden liquidity contraction in interbank money markets, immediately spilling over to a wide-range of financial markets.

[19] See Nakaso (2001) for the details on Japan's financial crisis and the BOJ's role as the lender of last resort. When Sanyo Securities failed, the default of one billion yen in the interbank money markets occurred. Although the defaulted amount was relatively small, market participants became suddenly cautious about counterparty risk.

[20] Due to such policy actions, the liabilities owned by Yamaichi Securities were replaced by those for the BOJ. Of course, an international spillover of the shock could have occurred, if complex securitization schemes had been extensively used at that time.

[21] Yamaichi Securities played an important role as one of the four big securities companies in Japan and actively conducted overseas businesses. Due to massive off-the-book liabilities, so-called stock shuffle (loss compensation), Yamaichi's funding became increasingly tight both at home and abroad. Yamaichi finally decided to go into the voluntary closure of its securities business in November 1997. When Yamaichi failed, the BOJ extended uncollateralized lending in order to support the orderly wind-down of its transactions, some of which turned out to be irrecoverable at the conclusion of Yamaichi's bankruptcy procedures in January 2005.

A series of observations, just I mentioned, show that ensuring funding liquidity is one of the most important prerequisites for achieving stable economic activity, and, to that end, it is crucial to stave off the malfunction of interbank money markets. In addition, I emphasize the importance of differentiating two things in analyzing the economy after the burst of a bubble: the phase of "acute pains" arising from the malfunctioning interbank money markets and the phase of "chronic illnesses" from balance-sheet adjustments.

Weakened credit channel

The third similarity can be found in the fact that the transmission channels of conventional monetary policy, explained in standard textbooks, did not seem to work well after the burst of a bubble. A typical example can be found in the credit channel. In Japan, the growth in bank lending decelerated rapidly after the burst of the bubble, and continued to remain stagnant for a long time (Chart 17). The growth in bank lending finally turned positive in 2005. Looking at the United States and European countries, the growth in bank lending is still continuing to decline, and the pace of the decline is much faster than that in Japan after the burst of the bubble. In addition, the expansions in the monetary base did not induce an increase in money supply nor bank lending (Chart 18).

Before the outbreak of the recent global financial crisis, quantitative easing was frequently proposed as a measure against deflation. Nevertheless, we hardly observe the fact that massive expansions in central bank balance sheets result in an increase in inflation in advanced economies.[22] Such fact suggests that conventional monetary policy becomes substantially constrained under the economic circumstances with zero interest rates and on-going balance-sheet adjustments.

The effectiveness of unconventional policy measures under the dysfunctional financial system

The fourth similarity is related to the fact that various unconventional measures taken

[22] Posen (2009), using the inflation data in the G7 countries, noted that the only periods where excessive monetary growth led to sustained rises in inflation were during the early and mid-1970s.

by central banks in a crisis produced significant effects on stabilizing the financial system, and thus contributed to minimizing the economic downturn.[23] In particular, such unconventional measures were the most effective in the situation that the overall function of the financial system, including credit markets, deteriorated due to the malfunction of interbank money markets. The success of such measures is essentially due to central banks' undertaking of counterparty risk and credit risk. Such central banks' risk-taking is certainly crucial in the phase of "acute pains." Thus, when examining the effectiveness of monetary policy, or more broadly central bank policy in general, it is crucial to make a clear distinction between the phase of "acute pains" and the phase of "chronic illnesses."

IV. Things to Remember in Interpreting Japan's Experience

So far I have discussed the common factors in economic conditions after the burst of a bubble. At the same time, there exist some factors peculiar to Japan's experience. In monetary policy studies, we need to interpret Japan's experience with consideration for some differences.

Differences in the phase of adopting unconventional measures

First, we need to take account of the differences in the phase of adopting unconventional measures. In the malfunction of interbank money markets, unconventional measures were proven effective by Japan's experience as well as the global financial crisis this time.[24] The real issue here is whether unconventional measures, especially quantitative easing or credit easing, are effective in the phase of "chronic illnesses" after such crisis subsides.

Empirical studies on Japan mostly show that quantitative easing produced significant effects on stabilizing the financial system, while it had limited effects on stimulating

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[23] Bernanke (2009) emphasizes that point.

[24] See Ugai (2007) for comprehensive survey on empirical studies on the effects of the quantitative easing policy in Japan. See also, for example, Gagnon *et al*. (2010) and Joyce *et al*. (2010) for empirical studies on the recent experience in the United States and the United Kingdom, respectively. Bean *et al*. (2010) also provide a broader review of monetary policy responses in the recent global financial crisis.

economic activity and prices. Such empirical analyses on the United States and the United Kingdom seem yet to be available at this moment.[25] But it seems very difficult to differentiate between the effects from the conventional interest rate channel and those from unconventional measures. That is because such unconventional measures were introduced in the phase of "acute pains" with considerably higher nominal interest rates and credit spreads than those in Japan. By contrast, Japan virtually faced the zero lower bound of nominal interest rates in the second half of 1995, and thus stimulative effects from the conventional interest rate channel were exhausted before the introduction of the zero interest rate policy in February 1999.

The effects of demographic changes and productivity declines

Second, we need to consider developments on the supply side and the potential growth rate. As standard macroeconomic theory emphasizes, long-term growth is determined by labor force growth and productivity growth.

In Japan, labor force growth peaked in the mid-1970s, decelerated thereafter, and turned negative in the mid-1990s (Chart 19). When assessing the factors behind the long-lasting economic stagnation over one or two decades, it is important to focus more on analysis of the real side of the economy.[26]

Such decline in the potential growth rate, and associated downward revision of the public expectations about the future growth rate, seem to produce downward pressure on prices.[27] In fact, there exists a significantly positive correlation between the potential growth rate and long-term expectations about inflation in Japan, in contrast to other advance countries (Chart 20). Several interpretations are possible on that observation. For example, it can be considered that a decline in the potential growth rate induces a persistent and significant decline in the natural rate of interest, thus

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[25] Ugai (2007) concludes that effect of expanding the monetary base and altering the composition of the BOJ's balance sheet, if any, is generally smaller than that stemming from the policy commitment.

[26] Hayashi and Prescott (2002) argue that growth theory, treating the economic productivity as exogenous, accounts well for the Japanese lost decade, and call for the analysis about policy change that allows productivity to grow rapidly. See also Rogoff (2010).

[27] See Kimura *et al*. (2010) and Fujiwara, Hirose, and Shintani (2008).

making it difficult for monetary policy to produce sufficient easing effects. Alternatively, economic growth expectations are revised downward, reflecting a decline in the potential growth rate, and a subsequent increase in the discounted present value of future net tax burden and debt-repayment burden to the private sector are likely to restrain private expenditure.

Differences in labor practice

Third, we also need to pay attention to the differences in labor practice. Japan's labor practice has a general feature that the dismissal of regular workers is relatively difficult, compared to the U.S. labor practice. As a result, labor costs of regular workers entail the nature of quasi-fixed costs. Under such circumstances, firms have an incentive to cover the fixed costs by lowering sales prices. Price declines in the early stage of the post-bubble period are partly explained by such mechanism.[28]

As disinflation progressed, Japan tended to set wages in a more flexible manner. Such flexibility in wage setting was attained not only through a reduction in bonus payments and an increase in the number of non-regular workers, but also the downward revision of fixed compensation for regular workers (Chart 21). As mentioned earlier, compared to the United States, price declines in Japan were attributed mostly to declines in services prices. That reflected flexible downward revisions of nominal wages.

The propensity to consume in Japan's household sector increased even under deflation, partly owing to the fact that price declines were driven by unstorable services prices (Chart 22).[29] The difference in labor practice is one factor behind the observation that deflation was the severest in Japan among major countries, but never turned into a deflationary spiral.

Although ultimately labor practice is determined endogenously, we need to incorporate the differences in labor practice in analyzing the short- to medium-term developments in deflation.

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[28] See Kuroda and Yamamoto (2005).

[29] The increasing trend in the propensity to consume is also influenced by the aging population.

Developments in external demand

Fourth, we need to take account of an increase in external demand as one of the driving forces behind Japan's recovery (Chart 23). As I mentioned earlier, the Japanese economy needed the resolution of "three excesses" in the business sector before restoring the full-fledged recovery path. In addition, such recovery in the Japanese economy was also attributed to the increase in external demand since 2003, which was supported by high growth in the global economy under the global credit bubble as well as the depreciation of the Japanese yen. Under the current circumstances, advanced economies need to gain momentum for recovery without relying on the "external" demand, since many economies are affected by the burst of a bubble.

In that sense, we need further analysis with considering the differences in the recovery mechanism after the burst of a bubble, depending on whether one country experiences a bubble or many countries in the world experience a bubble.

V. Future Research Challenges

To conclude my speech today, I will touch upon the challenges to monetary policy studies based on our experience of the financial crisis.[30] That said, we are fully aware that many issues have been already raised on various occasions. I thus focus on some relevant, but often missing items in the research agenda related to both conventional and unconventional monetary policies.

Speaking of conventional monetary policy, I stress the importance of deepening our understanding about the effectiveness of aggressive policy rate reductions after the burst of a bubble. Before the burst of the bubble this time, the majority view was that aggressive policy rate reductions enabled us to stave off a sharp and serious economic contraction.[31] Such optimistic view was challenged by a severe economic contraction in the recent global financial crisis. Such aggressive policy rate reductions are

[30] For the importance of revisiting the philosophy behind central bank policy and independence of a central bank in democratic society, not just for monetary policy making, see Shirakawa (2010a, b).

[31] See Greenspan (2002), and Mishkin (2007).

certainly needed to mitigate the economic downturn. Still, we need to recognize some facts in an extremely low interest rate environment.

First, when short-term nominal interest rates come down to an extraordinarily low level, the smooth functioning of interbank money markets is undermined and the margin for financial institutions is also reduced. As a result, incentives to extend loans at financial institutions are weakened, resulting in the diminished monetary easing effects.[32]

Second, protracted low interest rates play an important role in preventing an economic downturn, but, at the same time, they tend to delay adjustment in excesses accumulated during the period of bubble expansion. In addition, they also tend to delay the rejuvenation of businesses.[33]

Third, expectations about the continuation of low interest rates for a considerable period into future are a necessary condition for a bubble. A bubble does not emerge just from easy monetary policy alone, and, at the same time, it does not emerge without expectations about the continuation of easy monetary policy.

In any event, the productivity trend after the burst of a bubble is one of the key factors in defining the macroeconomic performance. If a shock hitting the economy is huge, but temporary, and the natural rate of interest does not decline so much, policy commitment to continuing low interest rates produce certain easing effects through intertemporal substitutions. But, otherwise, policy commitment cannot be effective enough.

The comments just I made do not deny the necessity of aggressive policy rate reductions after the burst of a bubble at all. My main point here is that we need to pay more attention to the effects of financial market dynamics caused by behavioral economics elements of market participants.

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[32] See Bernanke (2010), and BOE (2009).

[33] BIS (2010) points out such possibility. See also Rajan (2010).

Let me turn to another line of research I think important, that is, unconventional monetary policy. As I discussed earlier, unconventional monetary policy was highly effective against the "acute pains" in the recent financial crisis. We invented various unconventional policy measures out of necessity. Nevertheless, it is difficult to say that we have a reliable theoretical basis for such policy. We had no choice to "think while running" in formulating such unconventional policy measures. In that sense, I have the impression that it is the translation of accumulated "tacit knowledge" within central banks into practice.[34] Central banks thus need to make efforts to transform their "tacit knowledge" into "explicit knowledge."

Through the experience of the recent crisis, I fully recognize that liquidity and counterparty risk are the two most important concepts in conducting a study on unconventional monetary policy. In the recent crisis, various unconventional measures, such as dollar funds-supplying operations and outright purchase of CPs, produced substantial effects. That suggests the necessity of further deepening our understanding of liquidity and counterparty risks. In particular, we need to explore the essential conditions for the smooth functioning of financial markets, especially short-term money markets and foreign exchange markets, with consideration of the behavioral characteristics of market participants and the market microstructure. We thus need to make use of such studies in various activities of central banking, ranging from daily operations to system designs for money market operations, payment and settlement systems, and financial regulation.

In closing, I am sure discussions at this conference will be constructive and meaningful. Thank you.

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[34] For example, Saito, Suzuki, and Yamada (2010) show that markets are able to create collateral assets (relatively safe bonds) in a crisis endogenously by using a model in which a country-specific catastrophic shock was shared between two countries in the presence of solvency constraints. They then discuss a possibility that such endogenous creation of collateral assets in a crisis can be interpreted as a central bank intervention against a crisis.

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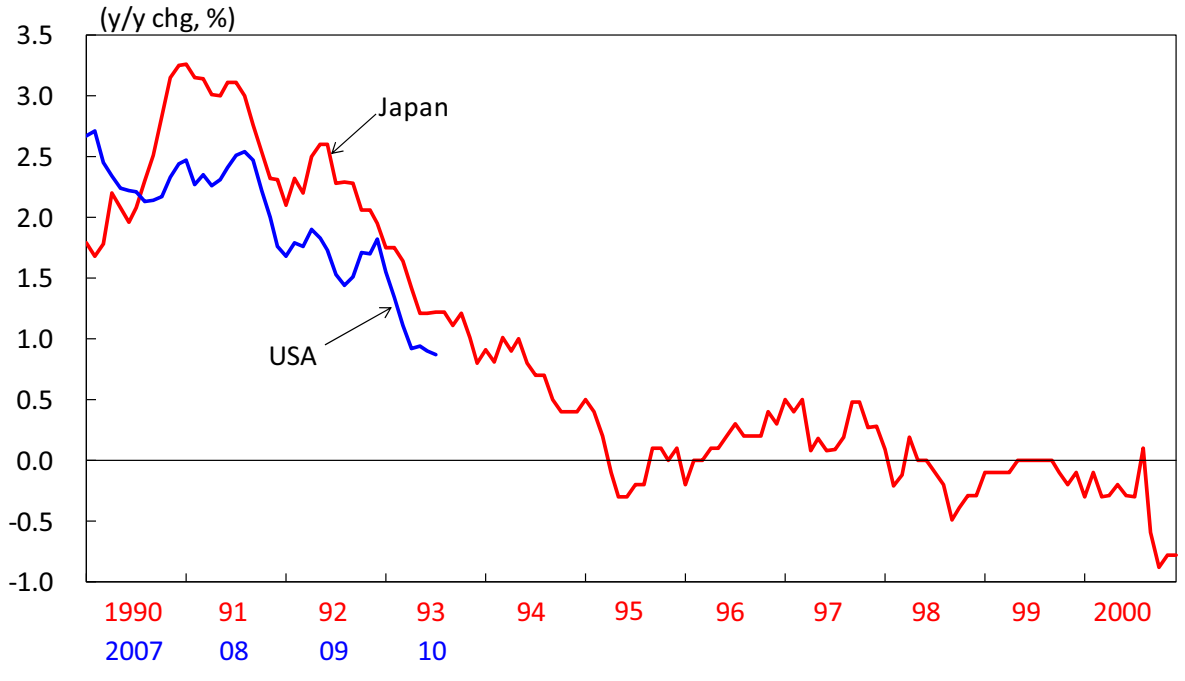
Chart 1

Core CPI Inflation

Inflation developments after the bubble burst look similar so far.



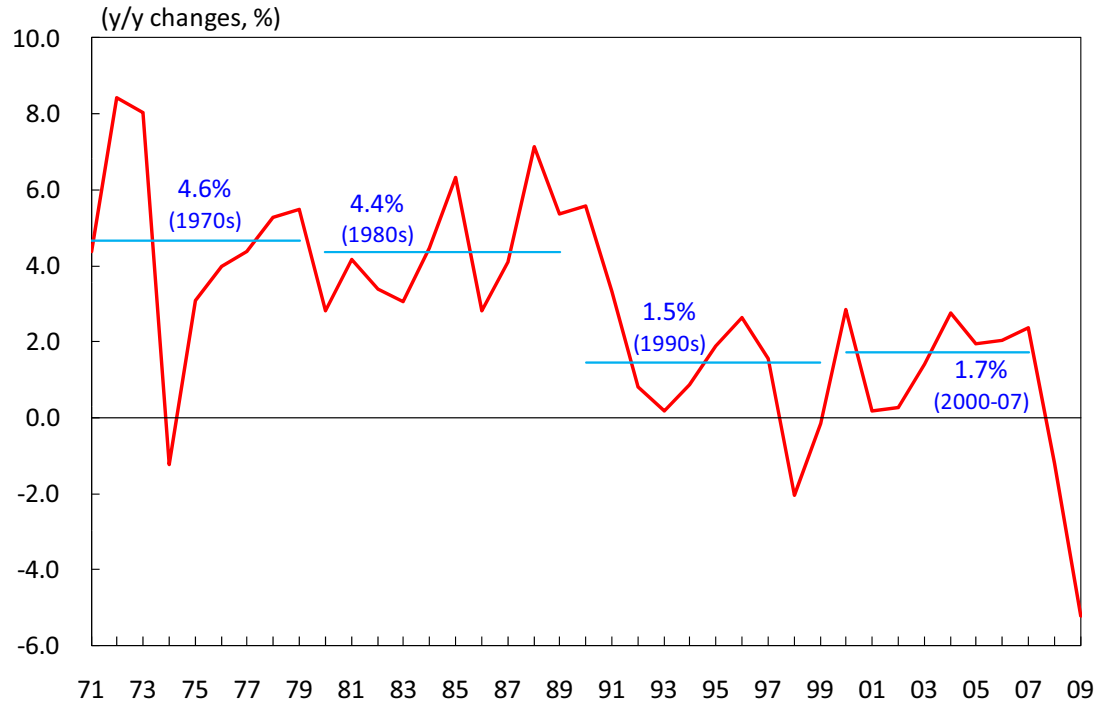
Notes: Core CPI in Japan is computed by excluding perishables from headline CPI. Figures for Japan are adjusted for the changes in the consumption tax rate from 3 to 5 percent in April 1997. US data start from January 2007.

Sources: Ministry of Internal Affairs and Communications, *Consumer Price Index*; Bureau of Labor Statistics, *Consumer Price Index*.

Chart 2

Japan's Economic Growth

Economic growth decelerated significantly in the 1990s, called "Lost Decade."

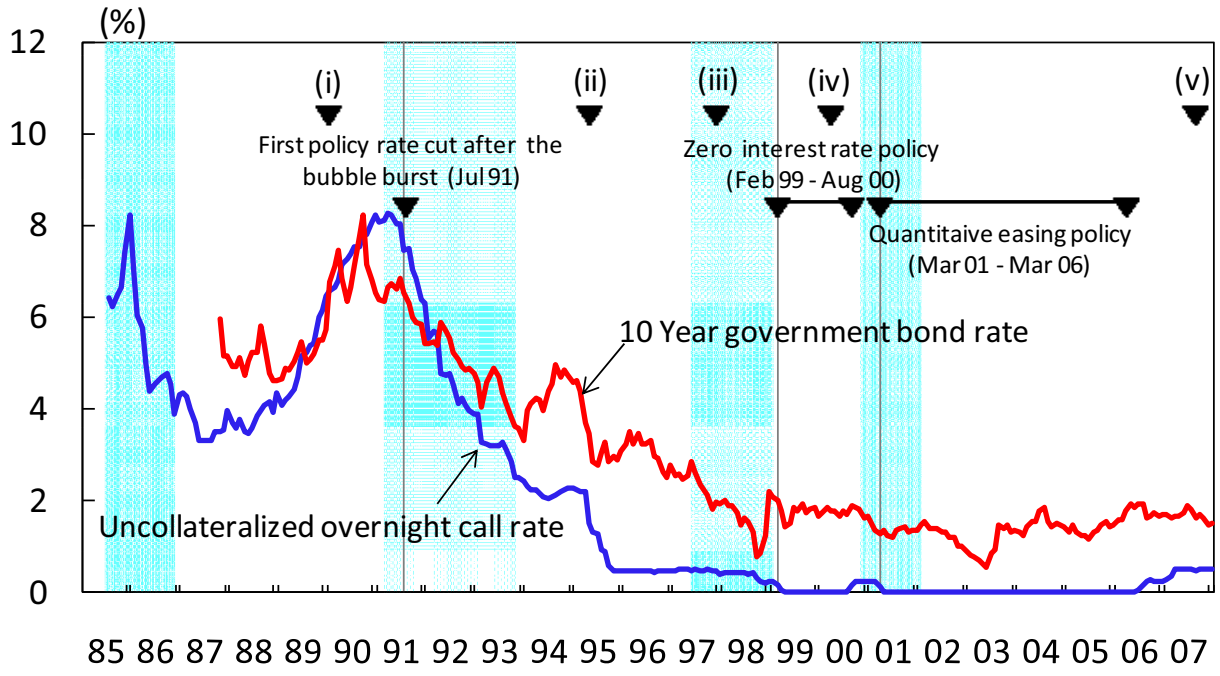


Source: Cabinet Office, *Annual Report on National Accounts*.

Chart 3

Monetary Policy Developments

O/N call rate has continued to stay at an extremely low level since the late-1995.

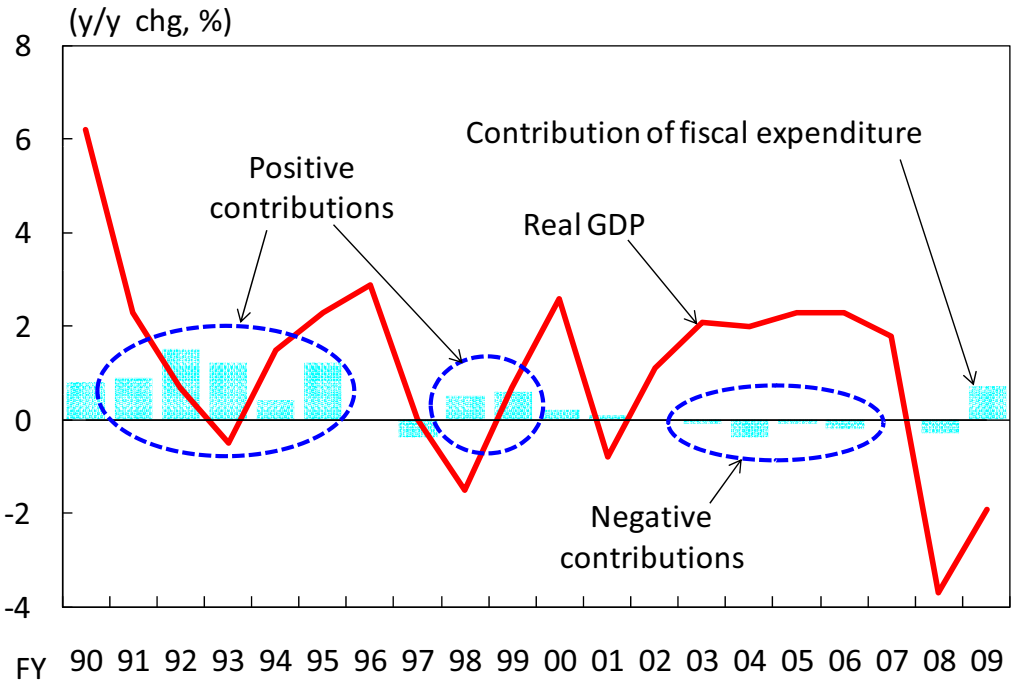


Notes: 1. (i) Peak of Nikkei 225 (Dec.89), (ii) Peak of Yen/Dollar rate (Apr.95), (iii) Collapse of Yamaichi Securities (Nov.97), (iv) Peak of NASDAQ (Mar.00), (v) BNP Paribas shock (Aug.07).
2. Shaded areas indicate business cycle contraction periods.

Sources: Bloomberg; Bank of Japan, *Financial and Economic Statistics Monthly*.

Chart 4

Fiscal Policy Developments

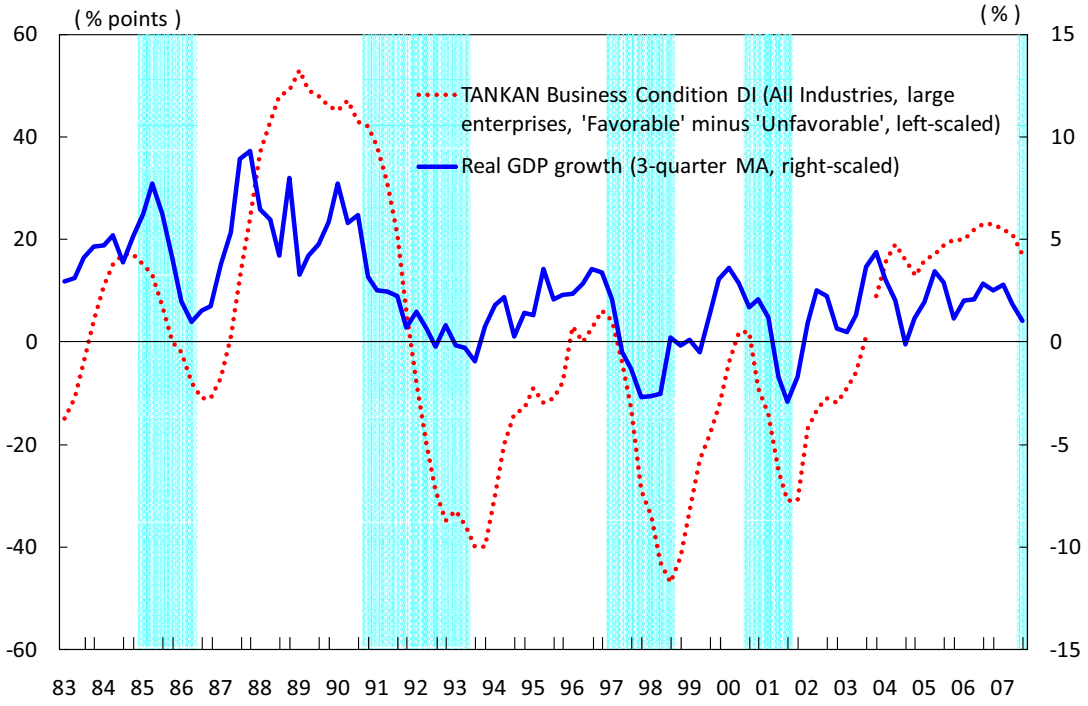


Source: Cabinet Office, *Annual Report on National Accounts*.

Chart 5

Business Cycles in Japan

Some business cycles before entering the full-fledged recovery.

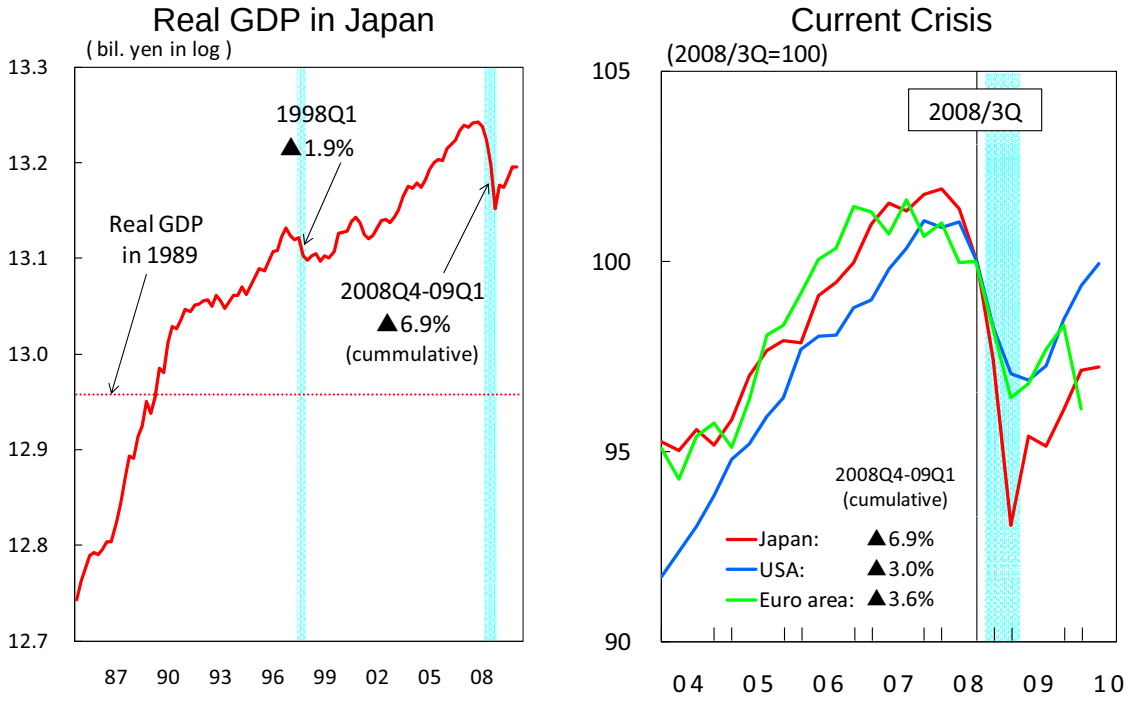


Note: Shaded areas indicate business cycle contraction periods.
Sources: Cabinet Office, *Annual Report on National Accounts*; Bank of Japan, *TANKAN* (*Short-Term Economic Survey of Enterprises in Japan*).

Chart 6

Japan's Output Declines after Crises

Output decline after the financial crisis in Japan (1997-98) is smaller than that after the current global financial crisis.

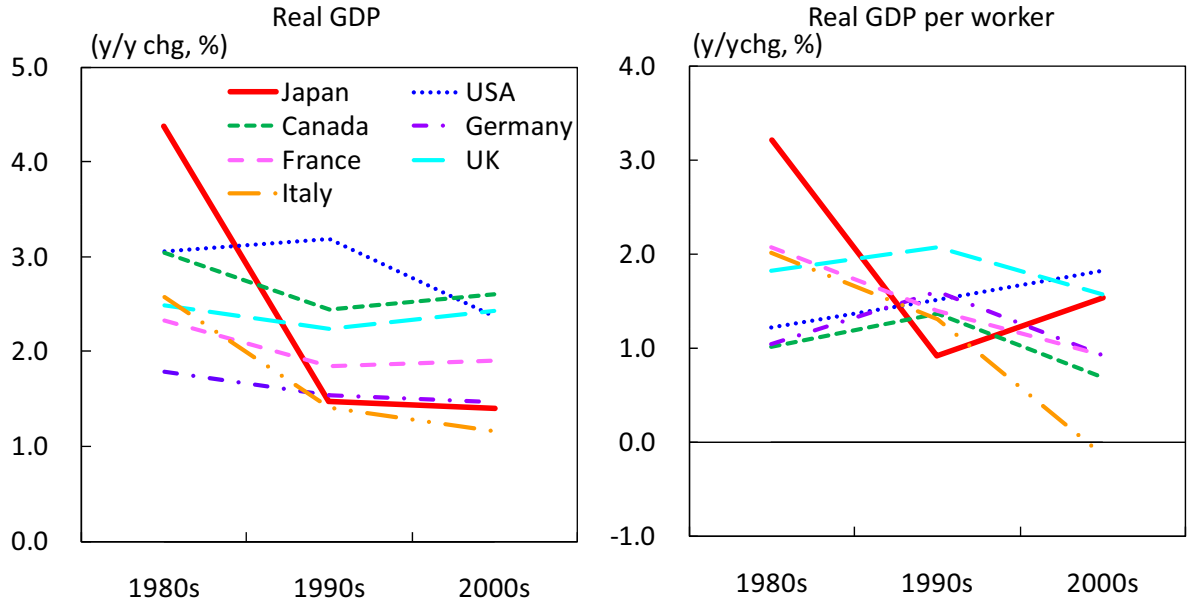


Sources: Cabinet Office, *Annual Report on National Accounts*; US Bureau of Economic Analysis, *National Economic Accounts*; Eurostat, *National Accounts*.

Chart 7

Economic Growth in G-7 Countries

In real GDP growth, Japan slipped down to a lower-class in G-7 in the 1990s. Nevertheless, in real GDP growth per worker, Japan shows comparable performance to the US, even decelerated rapidly in the 1990s.



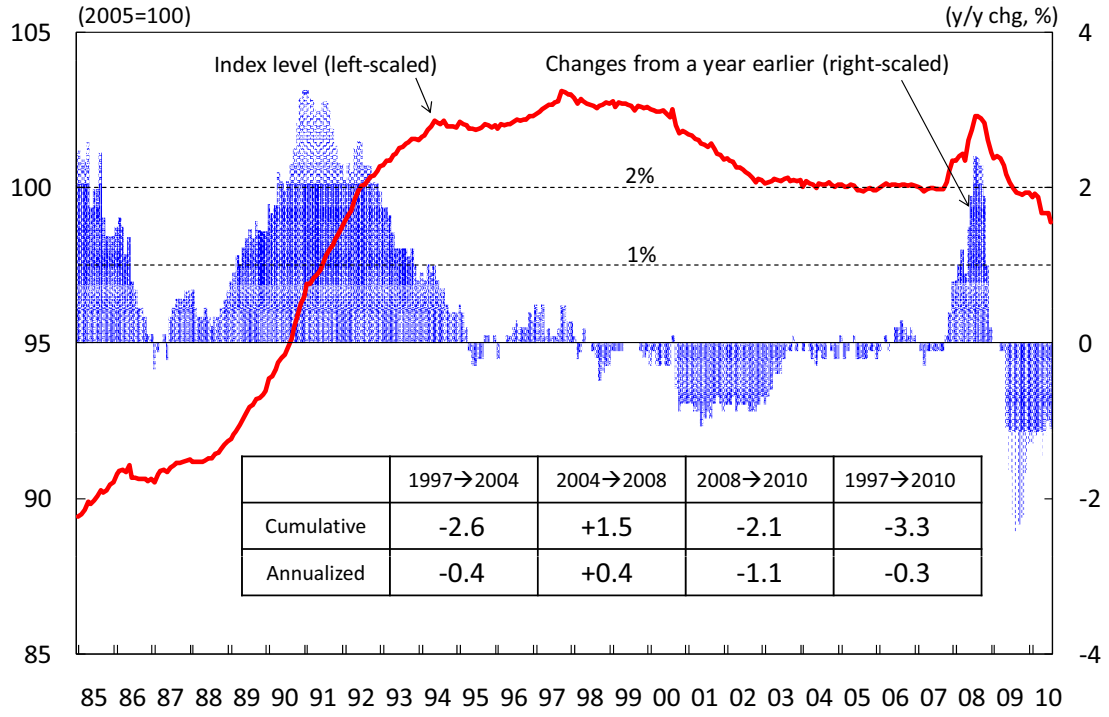
Notes: 1. The figures for Germany for the 1980s are West Germany. The figures for Germany for the 1990s are the average from 1992 to 1999.
2. The figures for the period since 2000 are from 2000 through 2008.

Sources: Organisation for Economic Co-operation and Development, *OEDC.Stat* and other governmental sources.

Chart 8

Consumer Prices

Japan experienced mild deflation from 1998.



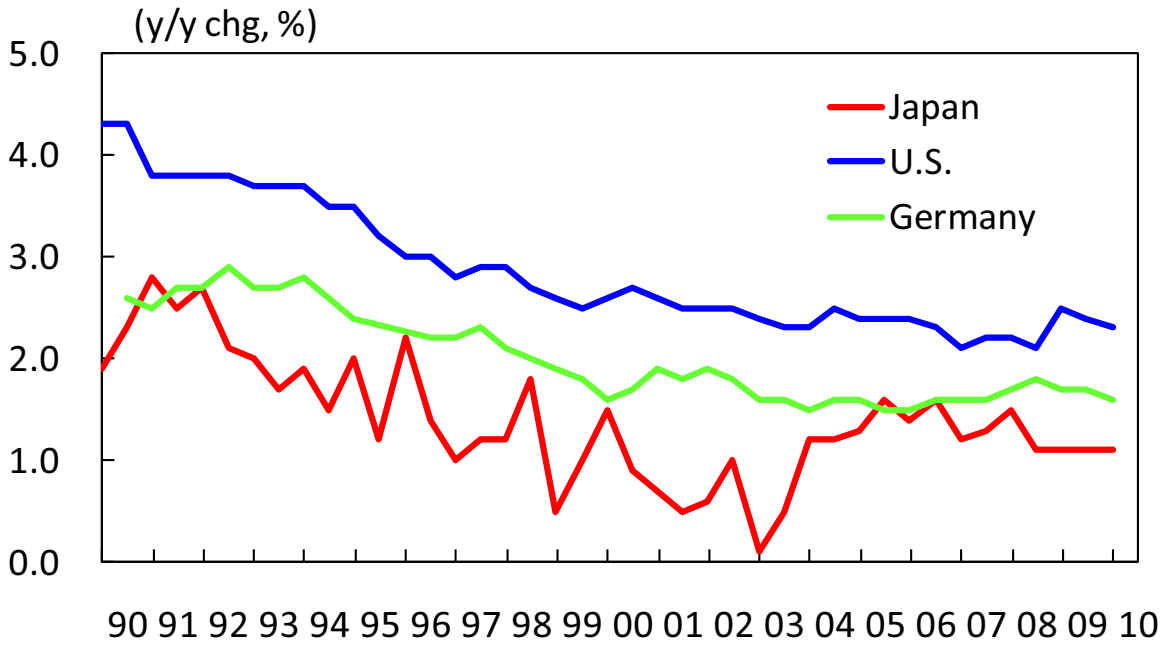
	1997→2004	2004→2008	2008→2010	1997→2010
Cumulative	-2.6	+1.5	-2.1	-3.3
Annualized	-0.4	+0.4	-1.1	-0.3

Note: Figures are adjusted for the impact of consumption tax, which introduce at 3 percent in 1989, and raised to 5 percent in 1997.
Source: Ministry of Internal Affairs and Communications, *Consumer Price Index*.

Chart 9

Long-term Inflation Expectations

Long-term inflation expectations by market economists declined significantly in the late 1990s to the early 2000s in Japan, but anchored around 1% thereafter.



Notes: Long-term forecasts are figures for six to ten years ahead.
Source: www.consensuseconomics.com <http://www.consensuseconomics.com/>.

Chart 10

Japan's Deflation in Historical Context

Current deflation in Japan is less severe than that in the Great Depression.

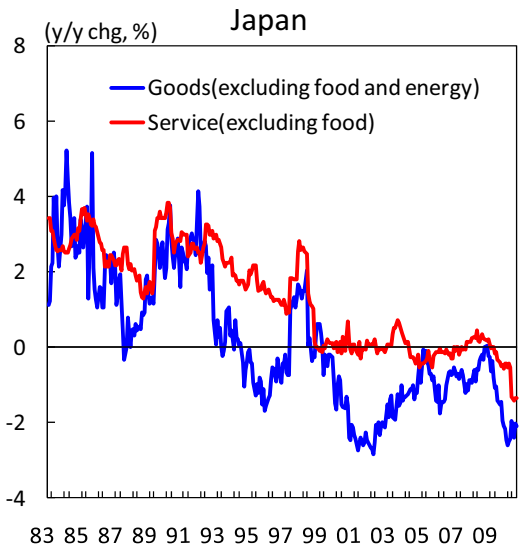
Period	Country	Cumulative (%)	Annualized (%)
1929-1933	USA	-24.4	-6.7
	UK	-15.0	-4.0
	Germany	-23.0	-6.3
	France	-15.0	-4.0
	Japan	-17.2	-4.6
1997-2010	Japan	-3.3	-0.3

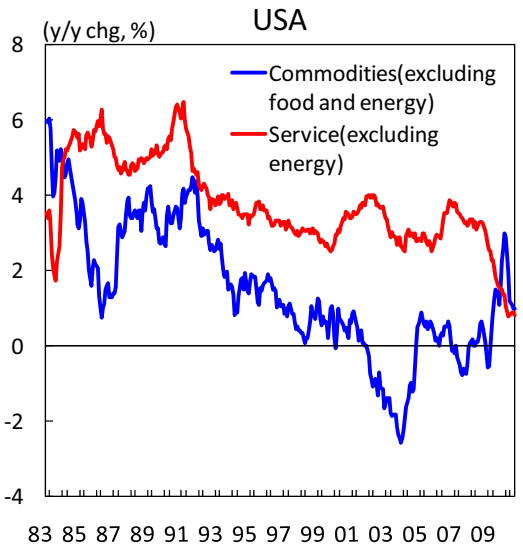
Chart 11

CPI for Goods and Services

CPI inflation differential between Japan and USA is explained mostly by decline in service prices in Japan.

Cumulative changes from 1998 to 2007			
	Japan(a)	USA(b)	(a)-(b)
CPI	-4.2	+21.5	-25.7
Goods	-4.1	-0.7	-3.4
Services	-0.1	+22.2	**-22.3**



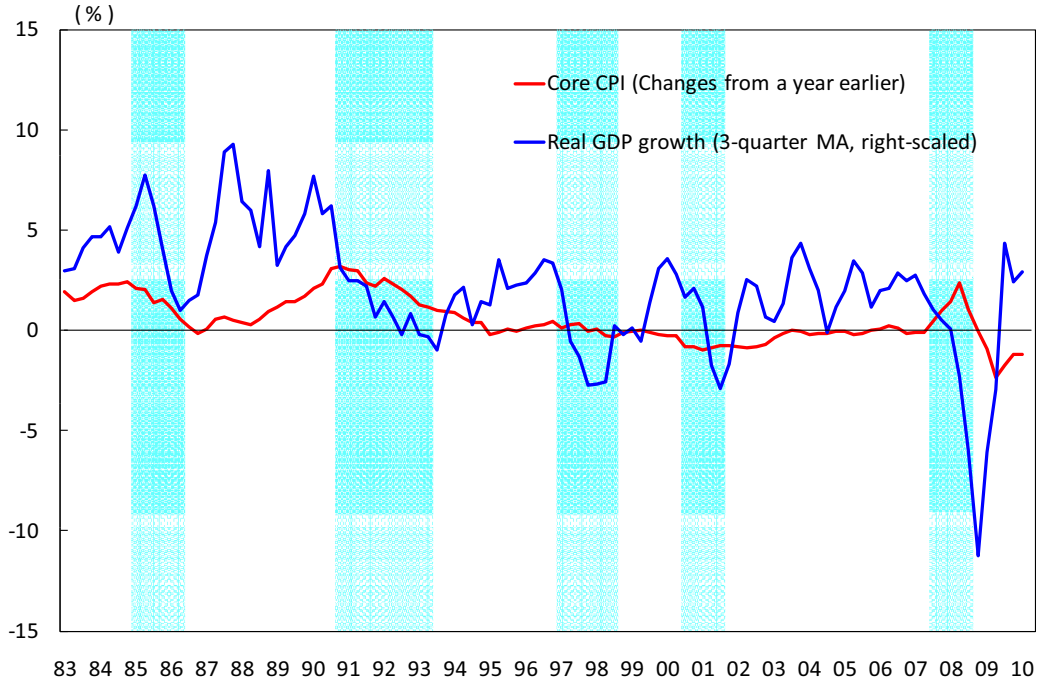


Sources: Ministry of Internal Affairs and Communications, *Consumer Price Index*; Bureau of Labor Statistics, *Consumer Price Index*.

Chart 12

Economic Growth and Consumer Prices

In spite of mild deflation, Japan registered a mild recovery with the longest duration from 2002 to 2007.



Note: Figures for CPI are adjusted for the impact of consumption tax, which introduced at 3 percent in 1989, and raised to 5 percent in 1997. : Shaded areas indicate business cycle contraction periods.

Sources: Cabinet Office, *Annual Report on National Accounts*; Ministry of Internal Affairs and Communications, *Consumer Price Index*.

Chart 13

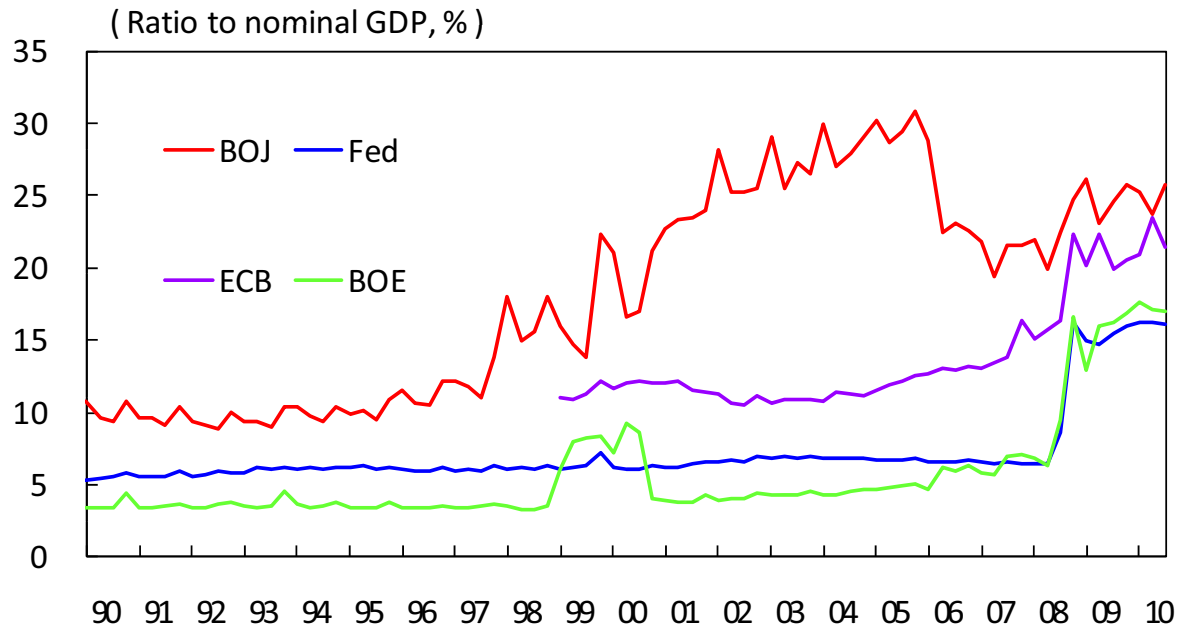
Policy Measures Taken by the BOJ

- Monetary Policy Framework:
  - Zero interest rate policy (Feb 1999-Aug 2000)
    - Guiding O/N call rates down to virtually zero
    - Commit to zero rate until deflationary concerns are dispelled
  - Quantitative easing policy (Mar 2001-Mar 2006)
    - Shifting operational target from O/N call rate to reserves
    - Commit to reserve targeting until CPI inflation becomes stably zero or above
- Financial Assets Purchased:
  - Outright purchase of JGBs (Cumulative amount during the QEP, 13% of GDP; Outstanding amount at Mar 10, 2006, 13% of GDP)
  - Credit Easing
    - Outright purchase of ABCPs and ABSs
    - Equity purchase from financial institutions
    - CP repos

Chart 14

Central Bank Balance Sheet Size

Relative size of central bank balance sheet to nominal GDP expanded most significantly in Japan from 1995 to 2006.



Notes: 1. The latest figures are the ratio of balance sheet size at the end of August, 2010 to nominal GDP for the second quarter of 2010.

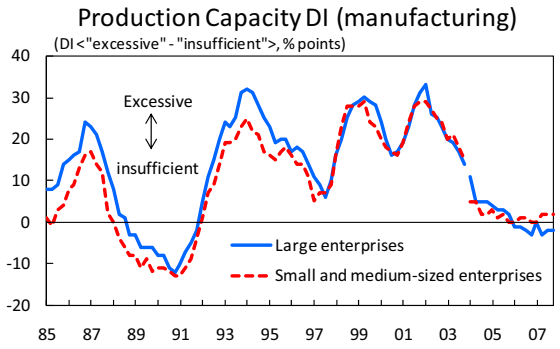
2. The BOE's balance sheet increased temporarily from 1999 to 2000 reflecting a technical factor associated with the BOE's participation to the TARGET system, the settlement and clearing system for euro.

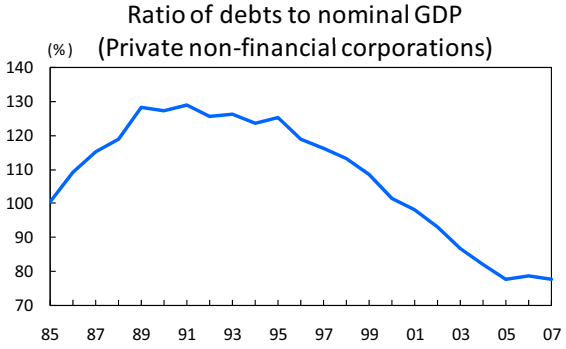
Sources: Bank of Japan, Board of Governors of the Federal Reserve System, European Central Bank, Bank of England.

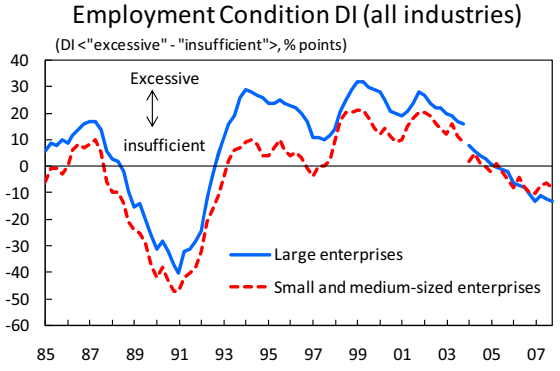
Chart 15

"Three Excesses"

Resolution of "three excesses" came before the full-fledged recovery.







Notes: 1. The Tankan has been revised from the March 2004 survey. Figures up to the December 2003 survey are based on the previous data sets. Figures from the December 2003 survey are on a new basis.

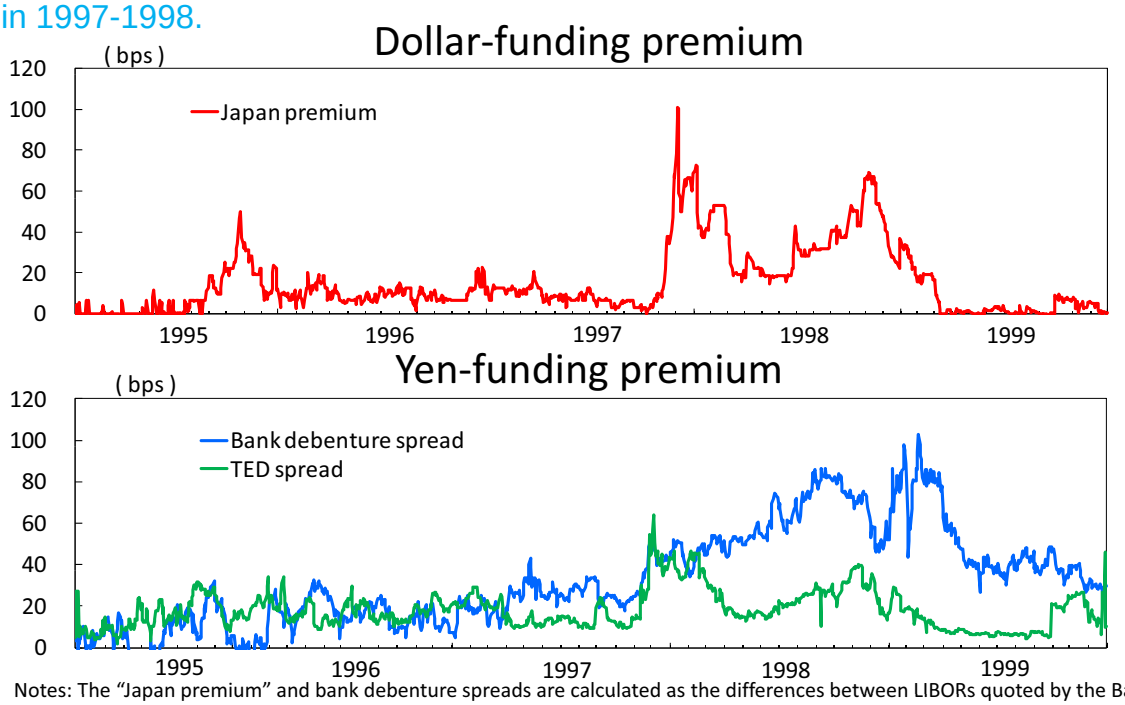
2. Debts is the sum of loans and securities (other than equities) in private non-financial corporations.

Sources: Cabinet Office, *Annual Report on National Accounts*; Bank of Japan, Bank of Japan, *Tankan , Short-Term Economic Survey of Enterprises in Japan*, *Flow of Funds*.

Chart 16

Spreads in Interbank Markets

Japanese interbank money markets became destabilized and malfunctioned in 1997-1998.



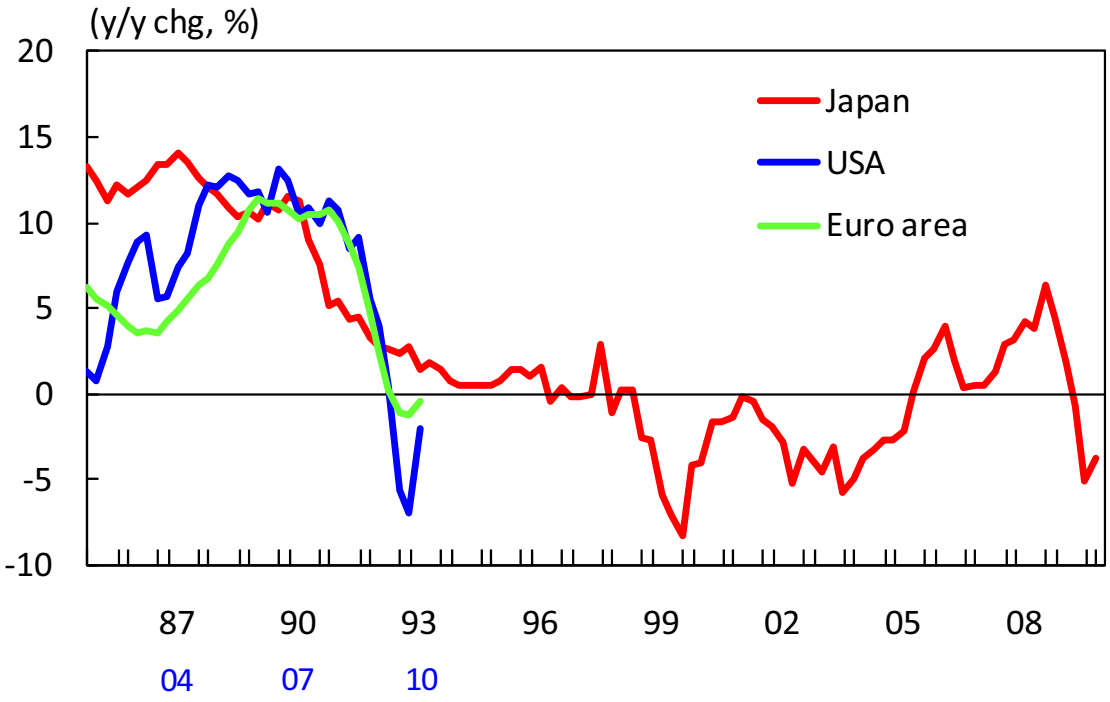
Notes: The "Japan premium" and bank debenture spreads are calculated as the differences between LIBORs quoted by the Bank of Tokyo-Mitsubishi (currently the Bank of Tokyo-Mitsubishi UFJ) and the average of those quoted by Non-Japanese Banks, and those between 5-year bank debenture rates issued by the Industrial Bank of Japan (currently Mizuho Corporate Bank) and the corresponding JGB rates, respectively.

Source: Bloomberg.

Chart 17

Bank Loans

Bank loans declined significantly after the bubble burst, and remained stagnant thereafter for a long period of time.

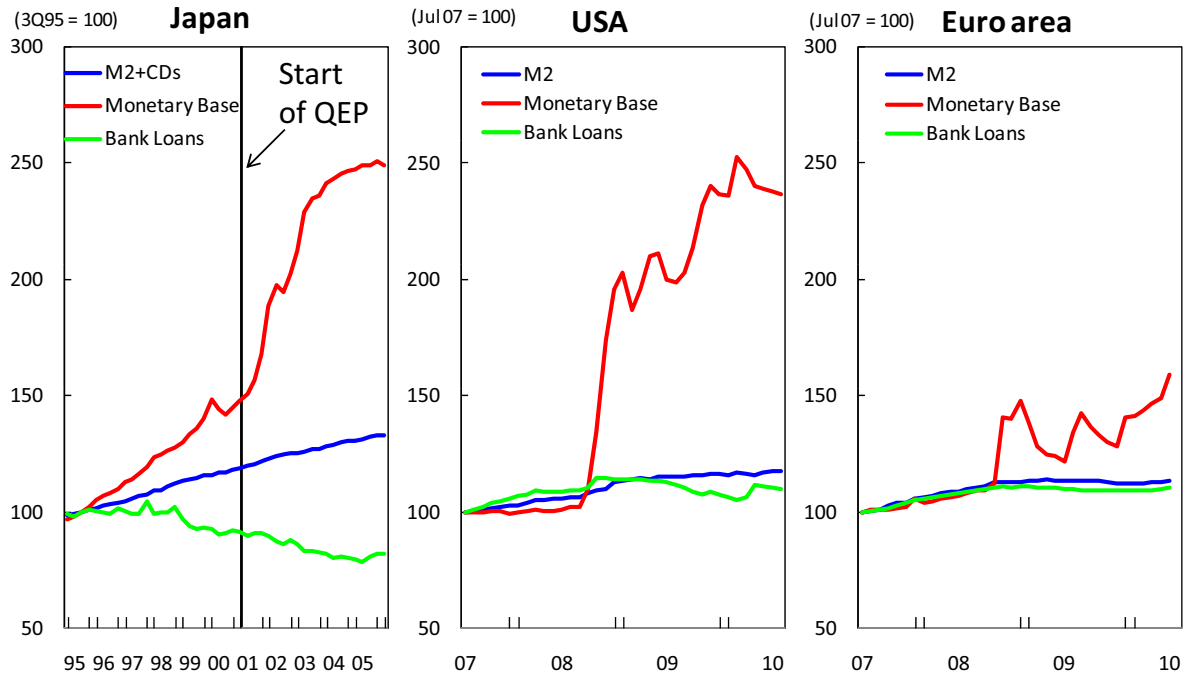


Sources: Bank of Japan, Board of Governors of the Federal Reserve System, European Central Bank

Chart 18

Monetary Base & Broad Money

An increase in the monetary base did not induce an increase in broad money and bank loans.

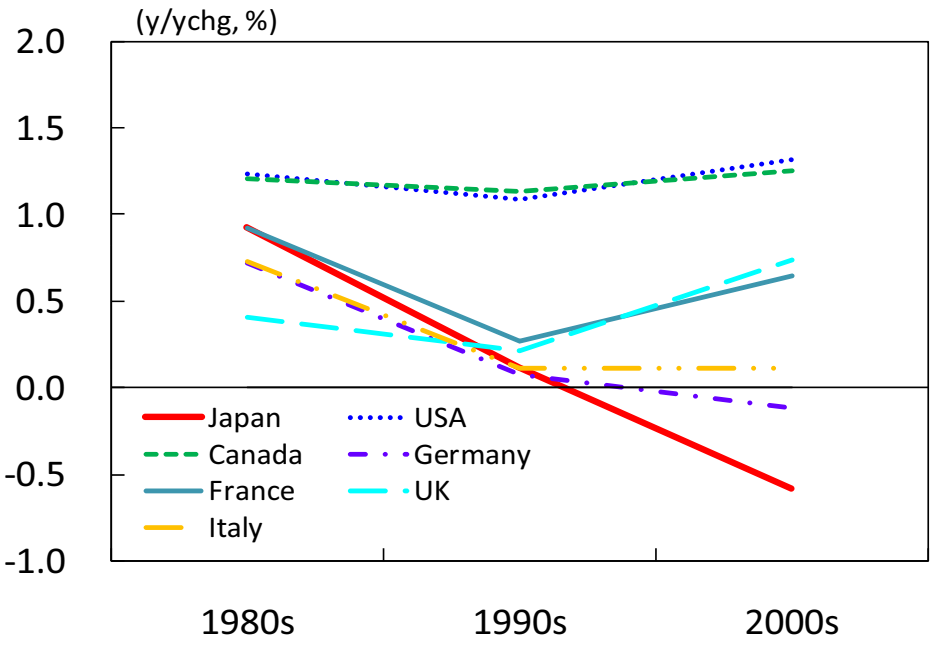


Sources: Bank of Japan, Board of Governors of the Federal Reserve System, European Central Bank

Chart 19

Labor Force Growth

Japan's declining trend in labor force growth is significant among G-7 countries.

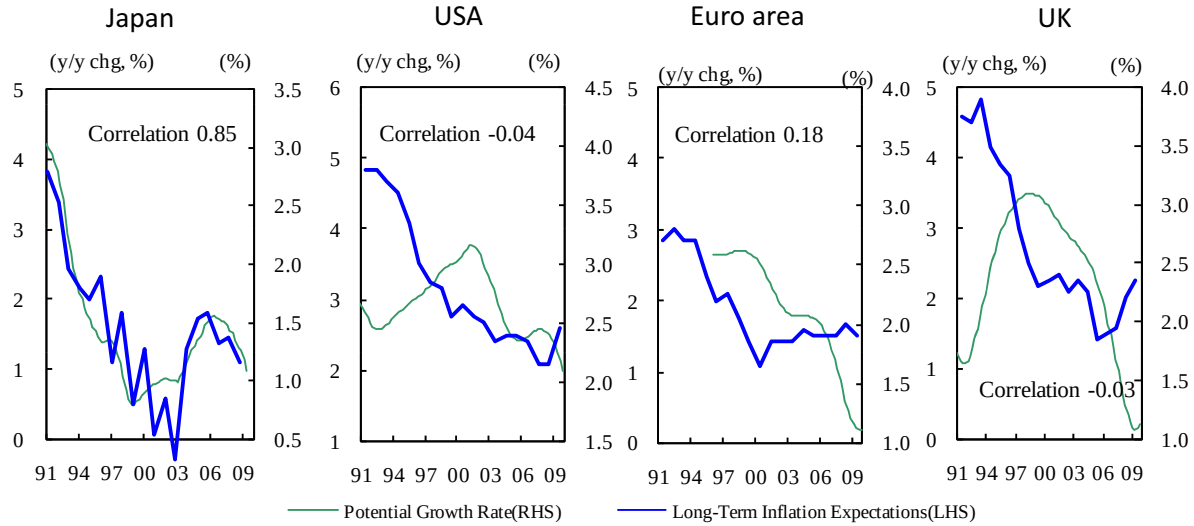


Source: Organisation for Economic Co-operation and Development, *OEDC.Stat*.

Chart 20

Potential Growth & Long-Term Inflation Expectations

A significantly positive correlation between the potential growth rate and long-term inflation expectations is observed only in Japan



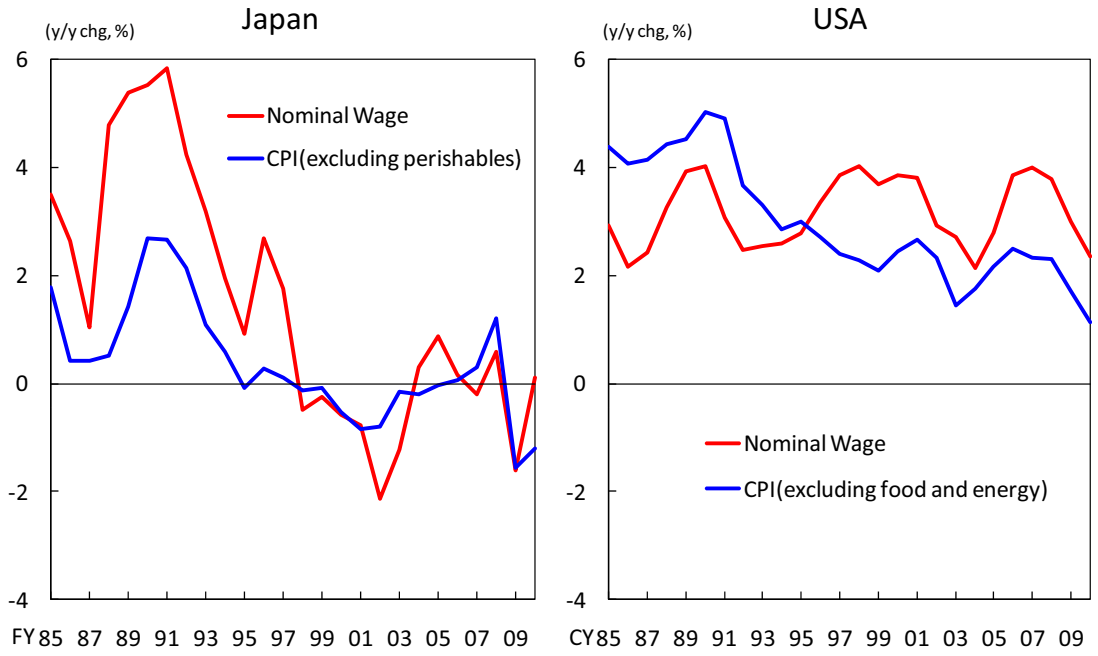
Notes: 1. Long-term Inflation expectations for each year are 5-10 years ahead projections, averaged on April and October survey results of private research institutions. Potential output growth rates are measured by BOJ for Japan, CBO for US, and the Hodrick-Prescott filter of real GDP for the euro area and the UK, respectively.
2. German data are used for inflation expectations up to 2002 in the euro area.
3. Correlation coefficients are calculated for the 1991-2009 sample period.

Sources. Kimura *et al*. (2010).

Chart 21

Consumer Prices and Nominal Wages

Downward rigidity in nominal wages disappeared in the late 1990s in Japan.



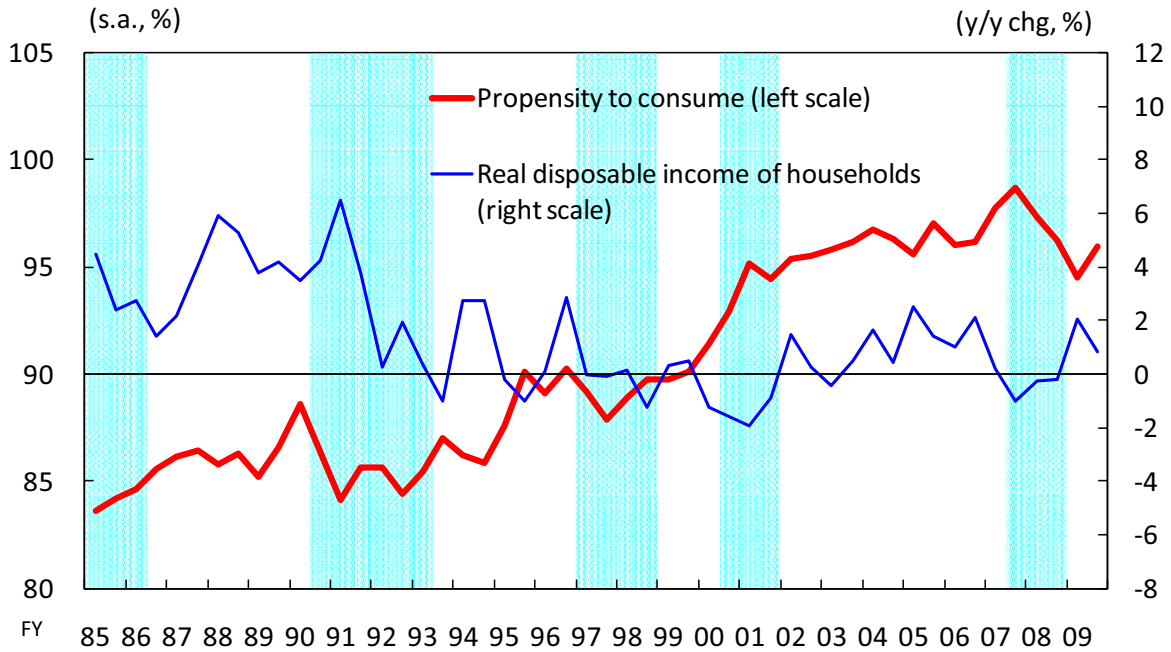
Notes: Figures of nominal wages are on a per hour basis. Figures for CPI in Japan are adjusted for the impact of consumption tax, introduced at 3 percent in 1989, and raised to 5 percent in 1997.

Sources: Ministry of Internal Affairs and Communications, *Consumer Price Index*; Ministry of Health, Labour and Welfare, *Monthly Labour Survey*; US Bureau of Labor Statistics, *Consumer Price Index*, and *Average Hourly Earnings*.

Chart 22

Propensity to Consume

The propensity to consume actually increased under mild deflation.



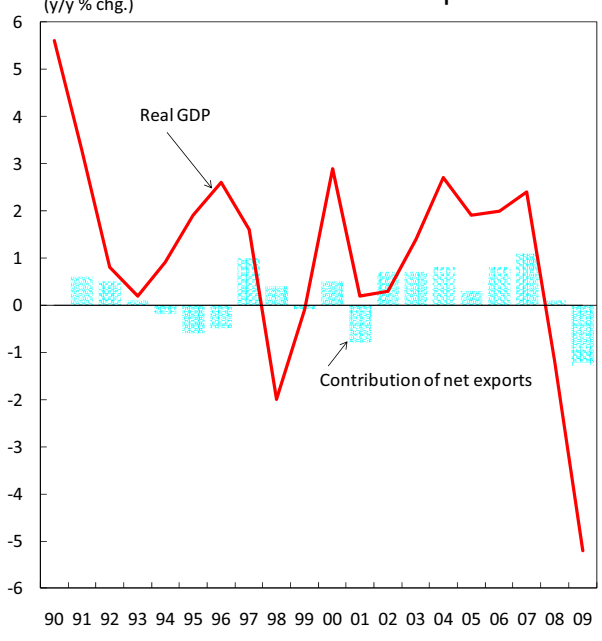
Notes: Shaded areas indicate business cycle contraction periods.
Source: BOJ, *Outlook for Economic Activity and Prices*, April 2010 (Figure 44).

Chart 23

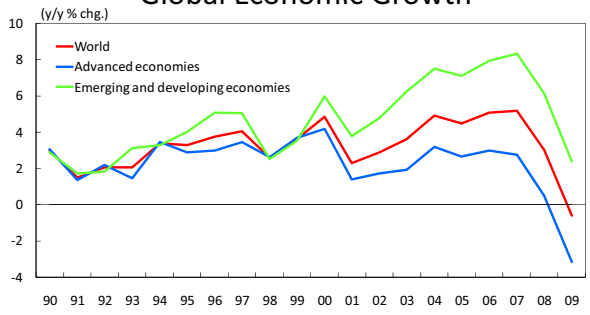
Global Economy and Japan

Japan's recovery was attributed to the increase in external demand, supported by high global economic growth and the yen's depreciation.

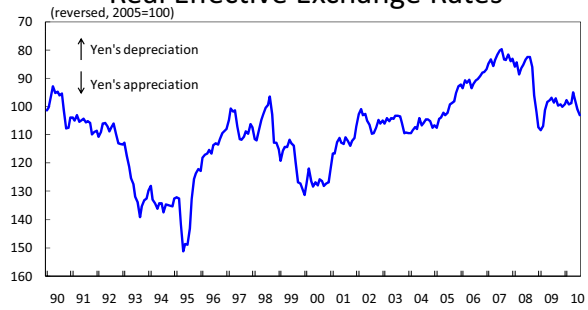
Economic Growth in Japan



Global Economic Growth



Real Effective Exchange Rates



Note: The effective exchange rates are based on the broad indices of the BIS effective exchange rate.
Sources: International Monetary Fund, World Economic Outlook Database; Cabinet Office, Annual Report on National Accounts; Bank of Japan, *Financial and Economic Statistics Monthly*.