

# Housing and Monetary Policy in Japan

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## **Housing and Measurement of Inflation Rate**

There are four approaches to the treatment of housing, including owner-occupied housing, in the consumer price index, depending on whether the goods or services are “used,” “consumed,” “paid” or “acquired,” namely (1) user cost, (2) rental equivalent, (3) payments and (4) net acquisition methods.

The first two methods seem appropriate for the measuring of the “cost of living,” as they cover the consumption of the service produced by housing. The payments method reflects the actual outlay for owning a dwelling for shelter purposes; it can be regarded as a simplified version of the user cost method. The user cost method, as adopted by Canada and Sweden, includes the opportunity cost of owning a dwelling (the interest rate) and expected changes in house prices, in addition to relative price of houses, depreciation, tax, repairs and maintenance.<sup>1</sup> There is an issue as to whether we should include the price of the land in the calculation of user cost, an issue which has important policy implications for the transmission mechanism of monetary policy in the case of Japan.

On the other hand, if we want “household monetary expenditure” to be reflected in the CPI, then the net acquisition method (in the sense of excluding the transaction of existing dwellings) may be preferred, since this treats the purchase of housing the same as for durable consumer goods. This method also may involve including the asset component in the CPI, of particular relevance if the land is included (Eiglsperger 2006).

In Japan, we adopt the rental equivalent method in the measurement of inflation rate, as is the case in the U.S. and five of the EU countries. The rental equivalent method estimates the costs for owner-occupied housing services with reference to rental payments for similar rental houses. There remains an issue as to whether the paid rent is considered fully representative of the imputed rent, because of the difference in quality and floor-size distribution.<sup>2</sup>

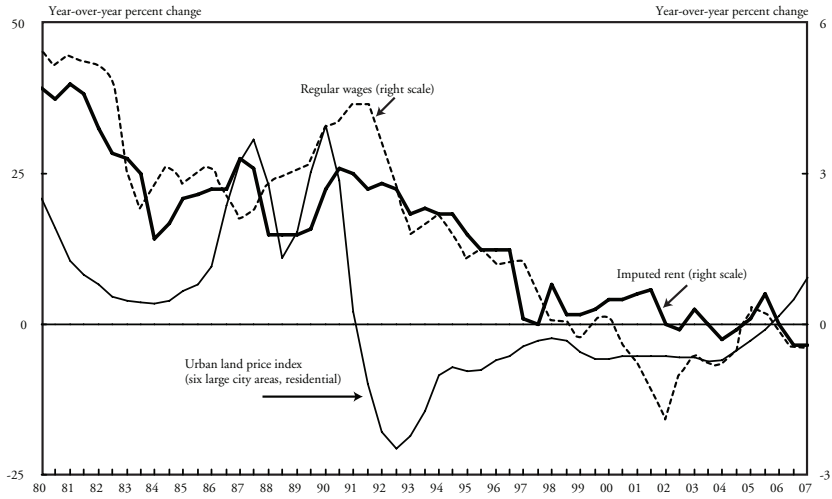
Equivalent rent has continued to decline in recent months, despite the recovery in land prices. The movement in housing rent seems to be associated more with sticky wages than with land prices, which show large swings (Chart 1). This may reflect a stable share of shelter costs in the household budget. Due to the large share of housing services in the consumer price index (17%), as well as the weak development in wages since the end of 2006 (Chart 2), service prices have moved around zero, in sharp contrast with other developed economies where they hover around 3-4%.<sup>3</sup>

### **Asset Price Aspect: Future Price Index or Wealth Price Index**

Housing has two aspects for consumers; it renders housing services like other durable goods, and at the same time, houses for rent or owner-occupied houses are held as assets. These two aspects provide us with an interesting insight into current and future price indexes.

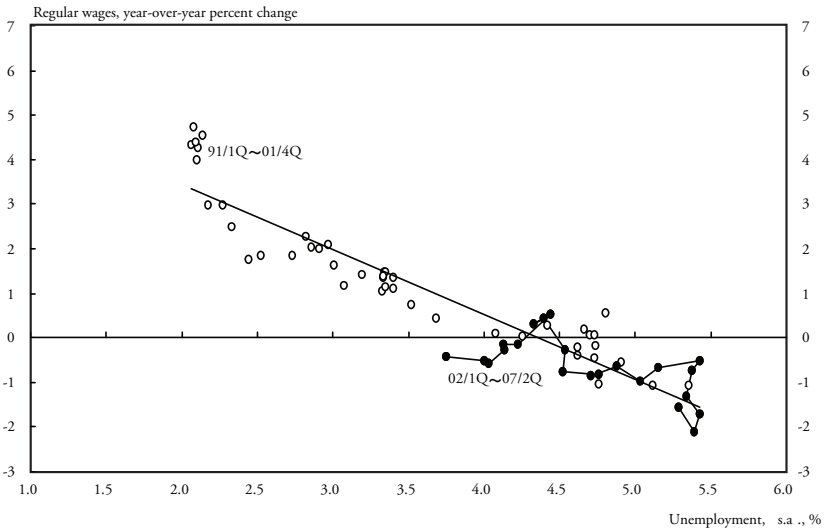
Housing as an asset produces housing service for the future. Moreover, the fundamental price of housing is equal to the present value of future housing service stream. If we attach importance to the asset aspect of housing, it seems natural to ask whether we can extract a signal or guide to future price developments from the movement of asset prices.

Chart 1



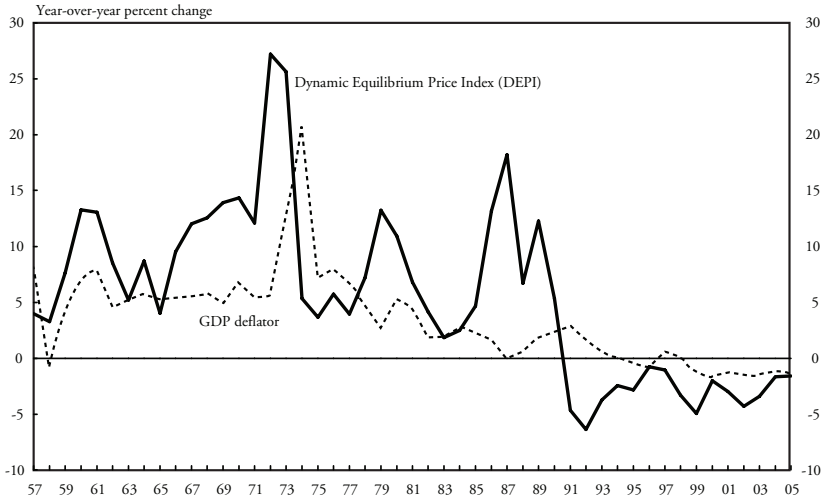
Sources: Japan Real Estate Institute, "Urban Land Price Index."  
 Ministry of Internal Affairs and Communications, "Consumer Price Index."  
 Ministry of Health, Labour and Welfare, "Monthly Labour Survey."

Chart 2



Sources: Ministry of Health, Labour and Welfare, "Monthly Labour Survey."  
 Ministry of Internal Affairs and Communications, "Labour Force Survey."

Chart 3



Note: For details on the calculation method for DEPI, see Shibuya (1992).  
 Source: Cabinet Office, "National Accounts."

Alchian and Klein (1973) proposed the construction of an "inter-temporal cost of living index," under the constant utility level, based on individuals' intertemporal optimization behavior, by using the data on all tangible and non-tangible assets in the economy. This idea of an intertemporal cost of living index, or "wealth price index," can be traced back to I. Fisher (1906).

Shibuya (1992) attempted to calculate just such a wealth price index. He named it the "dynamic equilibrium price index," based on the assumption that the economy moves along a balanced growth path (the "modified golden rule path"). After constructing the wealth price index as the weighted geometric mean of current product price inflation (GDP deflator) and future price changes represented by aggregate asset price of the national wealth in the national accounts, he argued that the BOJ could have envisaged future inflation if the wealth price index had been employed in the mid-1980s, in addition to the conventional CPI (Chart 3).

Shiratsuka (1999) carried out the Granger causality test and confirmed the result of the potential usefulness of the aggregate asset

price index as an information variable, although he also reported that its usefulness depends on the sources of asset price changes and the macroeconomic environment.

There are, however, a number of shortcomings with the dynamic equilibrium price index if we want to employ it as one of the important information variables in conducting monetary policy.

First, human wealth is omitted in the calculation of total assets, despite the fact that, in Japan, the total value of human capital is about three times larger than that of non-human capital in the household sector's wealth (Iwata 1992).

Second, there is the problem of sizable observation errors with the aggregate asset price, as compared with the CPI or the GDP deflator, in addition to the two-year delay in the availability of data.

Third, the wealth price index is constructed based on two assumptions, namely that the asset price is equal to the fundamental price on a balanced growth path and that the marginal productivity of aggregate asset remains constant, disregarding the composition change in the national wealth. If these two assumptions are untenable, then the index derived may fail to provide useful information on future price developments. We cannot escape from the identification problem associated with asset price bubbles.

If we look at the calculated DEPI, we find that it is strongly influenced by movements in the price of land, because of the large weight of land value in the national wealth; it is about half of national wealth, and the proportion of land value for residential use is about four times larger than the value of residential structures in 2005.

Despite these shortcomings, it may be useful to carry out a model simulation of the balanced path to show the deviation of the observed DEPI from the model simulation outcome. Furthermore, it seems to be important to observe directly the price of land, and examine the factors and sources of price movements, to draw useful information for monetary policy implementation, because land price plays an important role in the transmission mechanism of monetary policy in Japan.

## Land as Collateral

One of the important differences between housing and other durable goods is that the use of land is essential for producing housing services. In the case of Japan, the value of land accounts for a larger share in residential property and the national wealth than in other advanced economies.

Land has been employed as the most important collateral for bank lending. It also constitutes one of the most popular properties for inheritance, due to the lower effective tax rate applied to land holdings than to other assets.

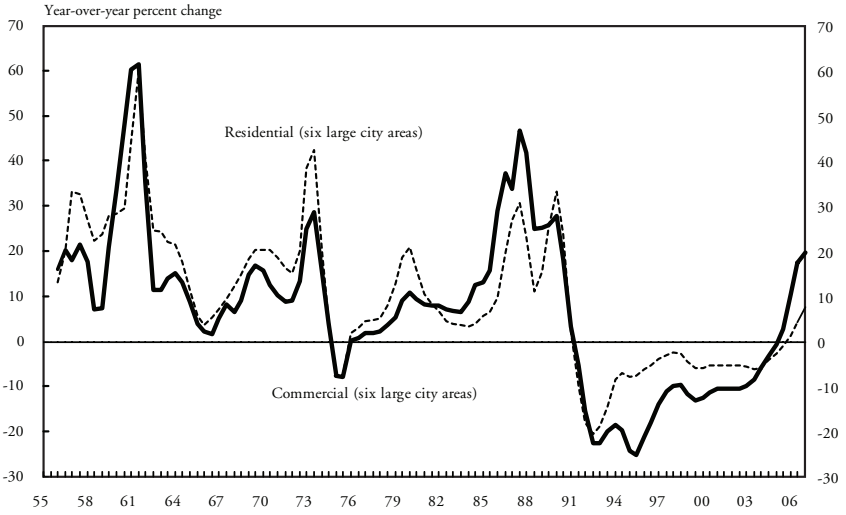
Some economists have argued that the Japanese bank-dominated financial system was based on the “land standard” during the “high growth era,” because of the importance of land as collateral. The price of land in Japan had increased persistently in the period from the 1950s to the bursting of the land-price bubble in the early 1990s, with a short interruption in the mid-1970s (Chart 4). The price of land has often deviated from the fundamental price, due to the lack of information, high transaction costs and the mistaken perception of land as an asset of ever-increasing value.

The total land value became five times larger than nominal GDP at the peak of the bubble period (Chart 5), despite the fact that the historical average of the ratio is about 2. In addition, the insight derived from the neoclassical growth model, including land as a production factor, indicates a much lower ratio. According to my own estimates, it ranges from 1.4 to 2 as Japan experiences an aging and decline in its population (Iwata and Hattori 2003).<sup>4</sup>

## Asset Price Bubble and Option Theory

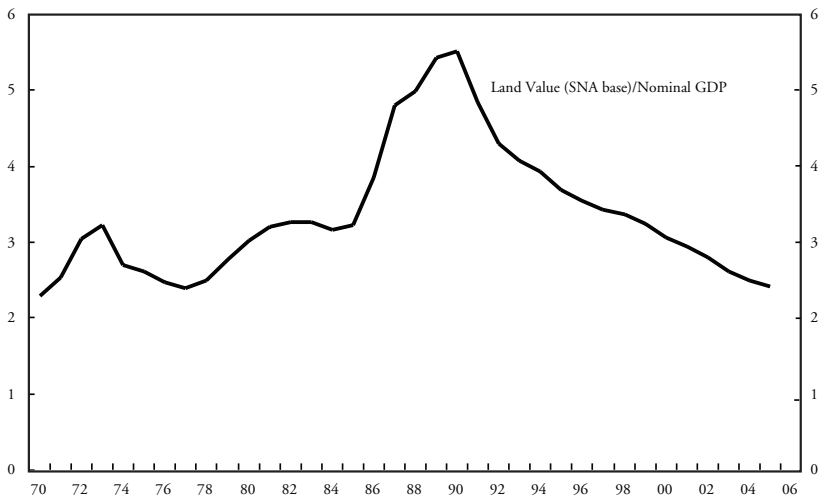
An asset price bubble will emerge through the financial accelerator mechanism based on various frictions and the incompleteness on the financial market, combined with the excessive provision of liquidity and the euphoria brought about by expectations of higher growth. In addition, the mispricing of option values attached to land and mortgage loans may lead to an asset price bubble and aggravate the effect of an asset price bubble burst.

Chart 4



Source: Japan Real Estate Institute, "Urban Land Price Index."

Chart 5



Source: Cabinet Office, "National Accounts."

Land itself can be put to many different uses, such as residential, non-residential and commercial use. Lax zoning regulation creates the possibility of land being converted to more intensive and profitable use. In this case, the price of land consists of the fundamental price and the option value of conversion to more profitable use. The option value resembles a convertible bond (Kanoh and Murase 1999). If the option premium is overpriced under the perception of ever-rising land value, the option value for convertible use of land may give rise to accelerated land prices; it has, in fact, been observed that residential land prices follow the acceleration of commercial use land prices. The price of commercial land in Japan's major cities has risen more than 10% recently.

From the perspective of option theory, housing loans are more complicated financial instruments than at first might appear. They incorporate call options in the case of prepayment (to buy the asset), as well as put options in the case of bankruptcy (to sell the asset).<sup>5</sup>

Profs. Pavlov and Wachter (2006) have pointed out the possibility of the underpricing of default risk in all non-recourse asset-backed mortgage loans, due to inappropriate deposit insurance schemes and the asymmetry of information. The underpricing of default risk or distorted put option values may lead to inflated asset prices and cause far deeper asset market crashes. Moreover, default risk is easily underestimated against a backdrop of rising house prices.

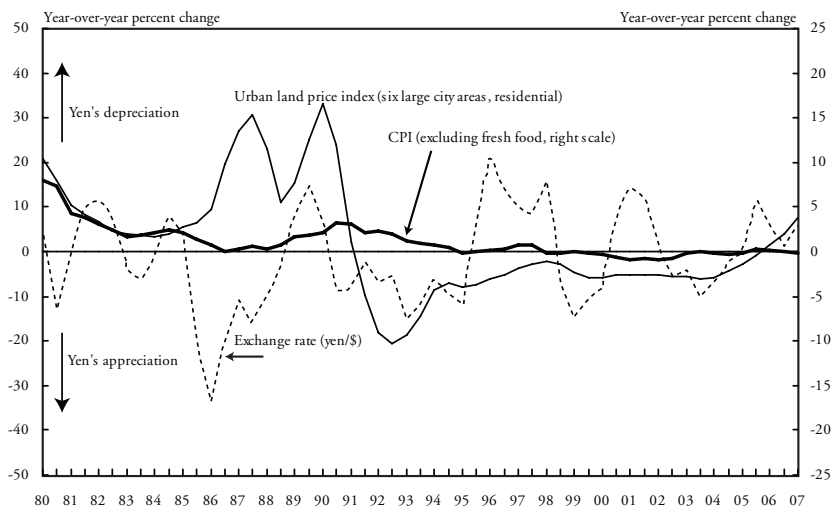
In addition, there is a risk that in the process of securitizing mortgage loans such as CDOs, the default risk can be further underpriced by rating agencies in the assessment of correlation of default risks among the bundle of different mortgage loans. The use of mark-to-model instead of mark-to-market in complex structured products may also lead to the wide-scale underpricing.

### **Inflation and Asset Price Bubble**

On the relationship between the inflation rate and asset prices, the above-trend rise in land value relative to nominal GDP indicated clearly the emergence of a bubble after 1987. The weak corporate



Chart 6



Sources: Japan Real Estate Institute, "Urban Land Price Index."  
Ministry of Internal Affairs and Communications, "Consumer Price Index."

governance of borrowing firms, coupled with a weakening of the monitoring function of main banks, which were relying on land as collateral, gave rise to a positive association of asset price rise with higher leverage ratio.

Yet at that time, core CPI (excluding fresh food) was close to zero. This is partly due to the sharp appreciation of the yen rate after the Plaza Accord in 1985, coupled with the oil price decline (Chart 6). Further, the October crash in 1987 reinforced the need for international cooperation on the provision of liquidity for Japan as the largest creditor country.

On the excessive provision of liquidity, we can say that the sustained deviation of actual real money stock from the equilibrium real money stock (real money gap) after the mid-1980s, created the circumstances where the asset price bubble could easily emerge (Iwata 2006).

In addition, real estate-related loans by unsupervised non-banks (the special housing finance companies) increased massively. It seems noteworthy that the policy measure limiting real estate-related loans in 1990 ultimately put an end to the land price bubble.

At this Jackson Hole conference in 1999, Chairman Bernanke and Prof. Gertler argued that the adoption of a “flexible inflation targeting” policy may have prevented both the emergence of the asset price bubble at an early stage and the financial instability at a later stage, even though the monetary policy had not directly targeted asset prices. Former Deputy Governor Yamaguchi (1999) commented on their paper, saying that, “I don’t see how a central bank can increase interest to 8 or 10% when we don’t have inflation at all.”

Giavazzi and Mishkin (2006) also pointed out that, “the serious mistake that a central bank makes is not failing to stop a bubble, but is rather not responding fast enough after a bubble bursts.”<sup>6</sup>

I feel inclined towards the indirect approach to asset prices; namely that monetary policy should be oriented toward enhancing price stability and smoothing fluctuations in GDP gap, while refraining from targeting asset prices directly, given the limited knowledge to correctly detect fundamental asset prices.

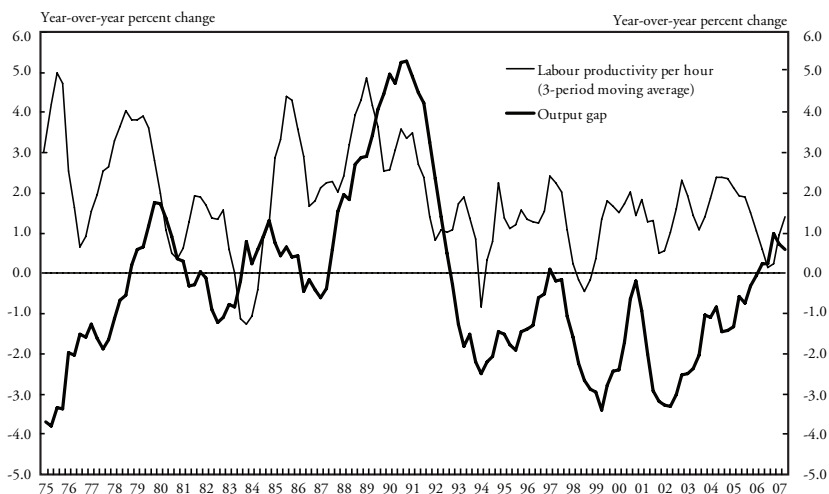
There are a number of hurdles before a direct or preemptive approach can be adopted. These include the identification of a bubble, serious macroeconomic consequences (such as a severe financial crisis after the bubble bursts), the adequacy of using interest rate policy to deflate the bubble, and public support. However, I am not yet fully convinced by the argument that all the problems Japan faced at that time would have been solved alone by the adoption of a flexible inflation targeting policy.

### **Lessons from the Asset Price Bubble of the 1980s**

Now let me draw several lessons from the boom and bust of asset prices in the latter half of the 1980s.

First, we should give priority to price stability as a policy objective over the apprehension of exchange rate fluctuations and the external imbalance. At that time, Japan’s current account surplus, coupled with the U.S. deficit, was perceived to be one of the major macroeconomic policy issues, although the theoretical underpinning for rectifying the external imbalance was not solid enough.<sup>7</sup> Moreover, a

Chart 7



Sources: Ministry of Health, Labour and Welfare, "Monthly Labour Survey."

Ministry of Internal Affairs and Communications, "Labour Force Survey."

Cabinet Office, "National Accounts."

Bank of Japan

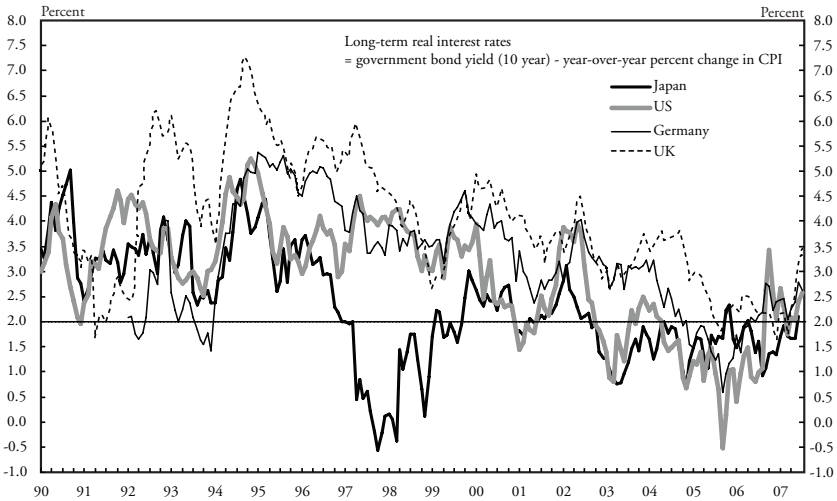
proposal on targeting the exchange rate was seriously debated in an attempt to solve the current account imbalance.<sup>8</sup>

Second, we should put emphasis on the need to deal with the euphoria brought about by higher expected growth and the sharp drop in "finance premium" during the bubble period. The increasing collateral value compressed the finance premium for real estate and corporate borrowing. The aggressive risk-taking was facilitated by financial deregulation and the higher than expected growth rate under price stability, in part due to mistaken perceptions of future technological progress (Chart 7).

Today, we see a similar problem with low term- and risk premia, which constitute one of the causes of the "conundrum of global low long-term interest rates." We observe that the real long-term interest rate among major advanced economies has tended recently to converge at around 2% (Chart 8).

Given the low term- and risk premia across various financial markets, the low real long-term rate implies that any country which has a higher than expected growth rate, significantly above 2%, is liable to register the acceleration of asset prices.<sup>9</sup>

Chart 8



Source: Bloomberg

Third, it may be useful to extract a signal or guide to future price developments from asset price changes by examining the factors and the sources of asset bubbles, to the extent that there exist various distortions and imperfections in financial markets. Although it may be desirable to have an intertemporal cost of living index, this might not help us in the near future. It is possible instead to show the likely consequence of deviation of asset price from the historical trend or the simulated fundamental price based on models. It is interesting to note that the OECD (2005, 2006) identified the deviation of the actual rent-to-price ratio from the fundamental ratio based on the long-term historical average ratio, employing the inverse of user cost as a proxy to the price-to-rent ratio, as the user cost equates the expected cost of owning a house with the cost of renting. Further, the OECD estimated the nearing of a peak to real house prices, if interest rates were to rise further.<sup>10</sup>

Fourth, prudential policy is an essential policy tool in order to avoid the financial instability arising from a boom and bust in asset prices. Such policy can contribute to preventing excessive risk-taking by financial institutions; it may be appropriate to strengthen the monitoring of unsupervised non-banks. In the case of subprime

loans in the U.S., more than half of the loans were provided by un-supervised mortgage companies.

The stress test on the above-trend rise in land prices and the decline to the trend can be used to indicate future damage to the financial system. By using the data available at the end of March 1990, the credit risk was estimated to amount to about ¥22.8 trillion under the assumption of a bursting bubble and a deterioration in the credit situation of the related industries (Shimizu and Shiratsuka 2000). The publication of “Financial System Report” may serve to send warning signals on excessive risk-taking by financial institutions.

## **Conclusion**

Given the asset price boom and bust in the latter half of the 1980s, and the subsequent persistent deflation after 1998, the “new policy framework for the conduct of monetary policy” was announced in March 2006. Aside from the first perspective, which examines the likely development within forecast period, the new policy framework incorporated as a second perspective an examination of potential risks beyond the forecast period. Today, we observe that land prices have bottomed out with the significant rise in the price of commercial land, while the core CPI hovers around zero against a background of rising utilization ratio and a tightening of labor market conditions. We must recall that behind the aggressive risk-taking in the latter half of the 1980s there was the market perception of long-sustained low interest rates for the future under price stability. It may be useful to carry out an exercise to demonstrate the consequences of long-sustained low interest rates and the financial imbalance on the future development of economic activity and prices. This may further clarify the role and merits of the two perspectives under price stability on a longer time horizon than the forecast period.

## Endnotes

<sup>1</sup>The user cost of housing can be derived from the intertemporal maximization of utility function by households, whereby, the utility function comprises various goods and services, including housing services. However, it is somewhat uncomfortable for central bankers to include the real market interest rate in the measurement of inflation rate, as is the case of mortgage interest payment in the payments method. Further, the possibility of reselling houses makes the calculation of the user costs of housing capital more complicated, because it involves the issue of the optimal choice of timing of reselling under the diversified tax system on capital gains.

<sup>2</sup>In addition, due to regulations and the different tax treatments for rental and owner-occupied houses, there is a selection bias in measuring the implicit rent of owner-occupied houses.

<sup>3</sup>The weak development of wages in recent months can be attributed to the retirement of the first baby boomers, who number about 8 million and who are being replaced by young workers or reemployed as part-time workers; public sector wage cuts introduced to consolidate the budget balance; and the restructuring at smaller, non-manufacturing firms with low productivity. The final factor is related to the distortion of relative wages, which Hayek (1975) described as “one of the basic elementary connections between wages and investment wholly overlooked in Keynesian economics.”

<sup>4</sup>The steady state ratio of total land value to nominal GDP can be expressed as the product of the time preference rate, the expected population growth rate and the share of land rent in national income. Given the values of 3% for the time preference, 1% growth rate for population and 5% land rent share, the steady state ratio is 2.5. A much lower ratio is suggested for aging and declining populations, when compared with high growth periods (Iwata and Hattori 2003).

<sup>5</sup>The housing loans provided by the Public Housing Finance Corporation (PHFC) suffered losses due to massive prepayment during the periods of declining interest rates. Iwata and Hattori (1999) estimated prepayment costs amounting to ¥215 billion, based on the model of the call option premium attached to housing loans provided by the PHFC. Now the risk of prepayment is borne by investors, instead of taxpayers, through securitizing the housing loan by the new corporation after the abolition of the PHFC.

<sup>6</sup>Giavazzi and Mishkin further mentioned, as the second lesson, the procrastination on the part of the Japanese government in restoring the health of the financial system after the bubble burst.

<sup>7</sup>Iwata (1991) carried out a simulation exercise on the future development of the U.S.-Japan external imbalance based on the overlapping generations model in an open economy. The simulation results showed the possibility of long-sustained imbalance until the mid-2020s, mainly reflecting economic fundamentals such as

the difference between the two countries in saving ratio, productivity and population growth rate.

<sup>8</sup>According to Prof. Taylor (2007), the exchange rate policy of the U.S. government is today guided by several principles: (1) it must be supported by sound domestic policies, (2) it should rely on markets with a minimum of intervention, (3) it should minimize verbal intervention, (4) there is a need for a financial diplomacy strategy, and (5) it should take due account of international political and security issues. These principles, notably the second principle, seem to be different from the exchange rate targeting proposal. Prof. McCallum (2007) regards the separation by government of exchange rate policy and monetary policy as an anachronism, because of the linkage of exchange rate and interest rates within the general equilibrium framework.

<sup>9</sup>An alternative explanation of the conundrum attributes it to the “global saving glut.” The real long-term interest rate largely reflects the global saving-investment balance. This begs the following question: To what extent does the saving-investment balance deviate from the equilibrium balance? For instance, corporate managers in advanced economies behave rather cautiously on the expansion of business investment despite ample corporate savings. China seems to expand fixed investment in an excessive manner, yet domestic savings exceed domestic investments. In both cases it seems difficult to identify the degree of excess saving.

<sup>10</sup>On the relationship between real economic activity and asset prices, there is a tendency for the boom and bust in business fixed investment to be associated with boom and bust in land prices. Actually, the elasticity of substitution of capital for land is greater than one in postwar Japan. Yet the movements in land prices explain little in the movements of business fixed investment (Kiyotaki and West 2004).

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