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Bank of Japan

How to detect and respond to property bubbles:
Challenges for policy-makers

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"Property Markets and Financial Stability" in Sydney*

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Let me begin by commending the impressive achievements of this BIS project, as exemplified by the presentations yesterday and this morning. In this regard, I am sure you will join me in applauding the efforts of Frank Packer and his accomplished colleagues at BIS Asia & Pacific. In spite of this impressive progress, however, I still think that we are only at the starting line: many problems remain to be solved before this project can provide guidelines for policy-making. Learned academics may be experts in “explaining” the causes and effects of past events that have shaken the world. To put it metaphorically, failures in the last war are always scrutinized thoroughly, and their lessons are presented. In contrast, we policy makers should be looking forward into the future. We should not be fighting the last war when things are changing rapidly, no matter how well we may have learned the lessons of the last war.

The two main questions from the policy maker’s point of view are: How can we detect malign property bubbles? and, How should we respond to them?

1. How to Detect Malign Bubbles

Let me start with the first question: How can we detect malign bubbles? Here we should be aware that not all property bubbles lead to financial crises, and not all financial crises are preceded by property bubbles. International panel studies have shown that two-thirds of 46 systemic banking crises were preceded by house price boom-bust patterns, while 35 out of 51 house price-bust episodes were followed by a

crisis.¹ So there are both malign bubbles and benign ones.

Then, what leads to a malign bubble? Looking back at past experience of malign bubbles, we find another factor which has not been touched upon by the presentations so far: the demographic transition from a “population dividend” to the “burden of an ageing population.”

Let us look at the charts comparing the Japanese property bubble of the 1990s, the US house price bubble of the 2000s, and the possible Chinese property bubble. In these three charts, I juxtapose, first, the ratio of working-age population to the rest (the inverse dependency ratio), second, the real property price index, and third, total loans in real terms.²

In Japan (Chart 1), we have two peaks in the working-age population ratio, accompanied by two peaks in the real property price index, which is the real land price index. Of these two, the second peak, around 1991, happened to be a malign bubble

¹ Claessens, Stijn, M. Ayhan Kose, and Marco E. Terrones, (2008), “What Happens During Recessions, Crunches and Busts?” IMF Working Paper 08/274 (Washington: International Monetary Fund) and Claessens, Stijn, Giovanni Dell’Ariccia, Deniz Igan, and Luc Laeven, (2010), “Cross-Country Experiences and Policy Implications from the Global Financial Crisis,” *Economic Policy*, Volume 25, pp. 267-293

² The ratios of working-age population to the rest (inverse dependency ratios) are taken from the homepage of the United Nations. Property prices in real terms (CPI adjusted) are: JAPAN: Total Average, Urban Land Nationwide, Urban Land Price Index, Japan Real Estate Institute, US: US 10 cities, S&P/Case-Shiller Home Price Indices, Standard & Poors, and CHINA: Zhongfang Shanghai Residential Property Index, Zhongfang Shanghai Real Estate Index Office. Loans in real terms (CPI adjusted) are JAPAN: Loans of Depository corporations, Flow of Funds, Bank of Japan, US: Loans and leases in bank credit, all commercial banks, not seasonally adjusted, Federal Reserve, and CHINA: Financial Institution Loans, People’s Bank of China.

which triggered a subsequent long period of stagnation. Then, what is the difference between the two? The volume of total loans in real terms may suggest an answer. Real loans were increasing at the time of the first peak, but their level was not as high as during the second peak.

A remarkably similar picture is found in the United States (Chart 2). We have two peaks in the working-age population ratio, though not as pronounced as in Japan. And the real property price index, which is the real house price index, seems to have two peaks, roughly coinciding with the demographic change. Again, the second peak triggered the financial crisis of 2008, though the first peak coincided with the S&L problem, which had a far less severe effect on the economy. Adding the real total loans to the chart, we find a quite similar pattern to the Japanese case. The level of the real total loans in the first peak was high, but far lower than in the second peak.

The last chart shows the figures for China (Chart 3). China has not yet peaked with respect to working-age population ratio, but it is close. The property price index was taken from the web site of a Shanghai index provider, who unfortunately and unexpectedly shut down their site and vanished about a year ago (June 2011). I tentatively use this index since it has a longer span than other indexes, although I am not entirely sure how it was constructed. The chart shows a clear upsurge in property prices up to 2010. Again the real total loan also shows a tremendous increase along with the working-age population ratio and the property price index.

What lessons can we learn from this rather cursory examination of the recent history of two advanced economies and the present situation of one emerging economy? It is clear that not every bubble-bust episode leads to a financial crisis. However, if a demographic change, a property price bubble, and a steep increase in loans coincide, then a financial crisis seems more likely. And China is now entering the “danger zone.”

Although demographic factors are not the subject of the studies in this conference, there is a growing body of cross-national evidence that compositional change in population has a significant effect on property prices (especially the land component).³ This comes as no surprise since, in the population dividend phase, young baby boomers want to buy more land and save more real money for their retirement. Since the supply of land is physically limited, the real price of land will go up. Similarly, if nominal money supply is held constant, the “price” of real money holdings, which is the inverse of the price level, should also go up, implying deflation. Being mandated to maintain price stability, the central bank is then likely to increase nominal money to keep prices stable. The result is an increase in property prices while general price levels remain stable.⁴

³ See, for example, Takáts, Ellőd (2012): “Aging and house prices”, *Journal of Housing Economics*, vol 21, no 2, June, pp 131–41, and Nishimura, Kiyohiko G. (2011): “Population ageing, macroeconomic crisis, and policy challenges”, Panel discussion at the 75th Anniversary Conference of Keynes’ General Theory, University of Cambridge, 19–21 June 2011.

⁴ See Nishimura and Takáts, “Ageing, Property Prices, and Money Demand” work in progress, which includes both theory and empirical analysis of a panel of 22 advanced economies.

However, this raises the problem of quantitative significance. Though this hypothesis can explain “correlation” qualitatively, it is not sufficient to explain these malign property price bubbles quantitatively. The magnitude of these bubbles is simply mind-boggling. Also, not every country experiencing this sort of demographic change has a malign property bubble and a financial crisis. Therefore, we should not think of this strong positive correlation between demographic factors and malign bubbles as a strict causal relationship. Rather we should regard the demographic conditions of population dividend as “fertile ground” for malign property bubbles.

In the final analysis, malign property bubbles can be considered a manifestation of overly optimistic expectations at their extreme.⁵ Since the financial crisis, many attempts have been made in the economic profession to explain malign bubbles as the consequences of rational economic agents acting under circumstances of asymmetric information and certain not-so-efficient regulatory conditions. These explanations are quite ingenious, using arrays of sophisticated neoclassical apparatus. However, from the practitioner’s viewpoint, it is more helpful simply to admit the frailties of human nature whereby we are so prone to be overly optimistic in some cases (and overly pessimistic in others), and our decisions are so easily influenced by other people’s opinions, especially the opinions of those in the higher realms of policy making. I will

⁵ From this perspective, both the malign property bubbles of Japan and the United States, and the European sovereign crisis have a similar origin: overly optimistic expectations of the future in the population dividend phase.

come back to this point later.

2. How to Respond to a Malign Bubble

Let me now turn to the second issue, which is how we should respond to a malign bubble. Fundamentally, we should distinguish two stages in the history of a malign bubble. The first is the early or prevention stage of the bubble, while the second is the late or collapsing stage.

When considering our response to the early or prevention stage of a bubble, a consensus seems to have emerged in favor of the so-called BIS view. First, use various macro-prudential policies to rein in overly optimistic expectations in the market. Second, if the bubble is truly malign, we should not hesitate to use monetary policy as well. Third, in using macro-prudential measures we should be aware of their long-run consequence of distortion in resource allocation.

However, in practice, I have strong reservations over the effectiveness of some macro-prudential measures in a malign bubble. Take the loan to value (LTV) ratio as an example. In the heyday of a ballooning bubble, the denominator of the LTV, i.e., the market value of property, goes up higher and higher. Thus, the LTV that seemed sufficient to cap the loan volume becomes grossly insufficient in a few months or even weeks. The same is true for quantitative constraints on loans, since instruments bypassing the constraints emerge, as exemplified in the experience of the Japanese

property bubble of the 90s.⁶ Moreover, macro-prudential measures are sometime used to halt the advance of a bubble only temporarily, which eventually comes to the surface again later with greater force than before. So an apparent success in the present may be an omen of failure in the future.

There is another issue which has been unfortunately overlooked in the discussion of dealing with a bubble, but is potentially most problematic of all: communication with the public. How can policy makers convince the public that we are facing a ballooning malign bubble when there is no apparently imminent threat to the system? It is extremely difficult to persuade people who (want to) believe “this time is different” and are convinced they are now on the foothills of eternal prosperity, just as long as their path is not blocked by some stupid policy maker. In retrospect, I have to point out sadly that the public sector is often partly responsible for nourishing such overly optimistic expectations in the public.⁷

Although I have expressed some reservations so far about the emerging policy consensus in the early or prevention stage of a malign bubble, these problems are almost trifling in comparison to the daunting policy difficulties faced in the late or collapsing stage. To my disappointment, there has been little discussion dealing squarely with

⁶ For more detailed discussion on macro-prudential policies in the case of the Japanese property bubble, see Nishimura, Kiyohiko G. (2011) “Macroprudential Lessons from the Financial Crisis: A Practitioner’s View,” in: Kawai, Masahiro. and Eswar Prasad (eds.) *Asian Perspectives on Financial Sector Reforms and Regulation*: Washington, D.C., Brookings Institution Press, 180-195.

⁷ See Nishimura (ibid.) about the report of one Japanese government agency which became foundation of overly optimistic view about the office-space demand in Tokyo in the late 80s.

these difficulties.

In the late stage of a bubble, there is, on the one hand, a danger of restraining policy being “too little, too late”, and just postponing the collapse until a later stage and on a larger scale. On the other hand however, there is also the danger of too bold a policy leading to an “over-kill” of the economy.

Most difficult, however, is the appropriate response during the collapsing stage of malign bubbles. First, the magnitude of the collapse is mind-boggling. Chart 4 shows first the real property price movement of Japan. Here I use the RRPI index for greater Tokyo (roughly 10% of the total population), which is the quality-adjusted condominium price index. Then I have added the US real property price movement of 10 cities (again roughly 10% of the total population), which is based on the S&P Case-Shiller index. The magnitude of the price decline is clear: Japanese real residential property prices at their lowest point are only one third of their peak. In the United States, real residential property prices are currently more than 40% lower than their peak. At this moment, it is not clear whether US prices have hit the bottom. In any case, a decline of this magnitude implies a severe balance-sheet adjustment for the economy.

Moreover, this severe balance-sheet adjustment, which is necessary for sustained recovery, is taking place when demographic factors are changing from positive

(population dividend) to negative (burden of an ageing population) in Japan and the United States, as already shown in Charts 1 and 2. A severe balance-sheet adjustment under population ageing hampers the effectiveness of conventional policy tools. Moreover, seemingly overly pessimistic expectations aggravate the problem of policy effectiveness.

The disturbing fact is that little is known about the appropriate policy for the late or collapsing stage of a malign bubble. What tools are available? What are the pros and cons of their use? These are the most pressing challenges for policy makers, and they should form the research agenda of the immediate future.

So in conclusion, I'd like to reiterate again that we are still only at the starting line.

Thank you for your kind attention.



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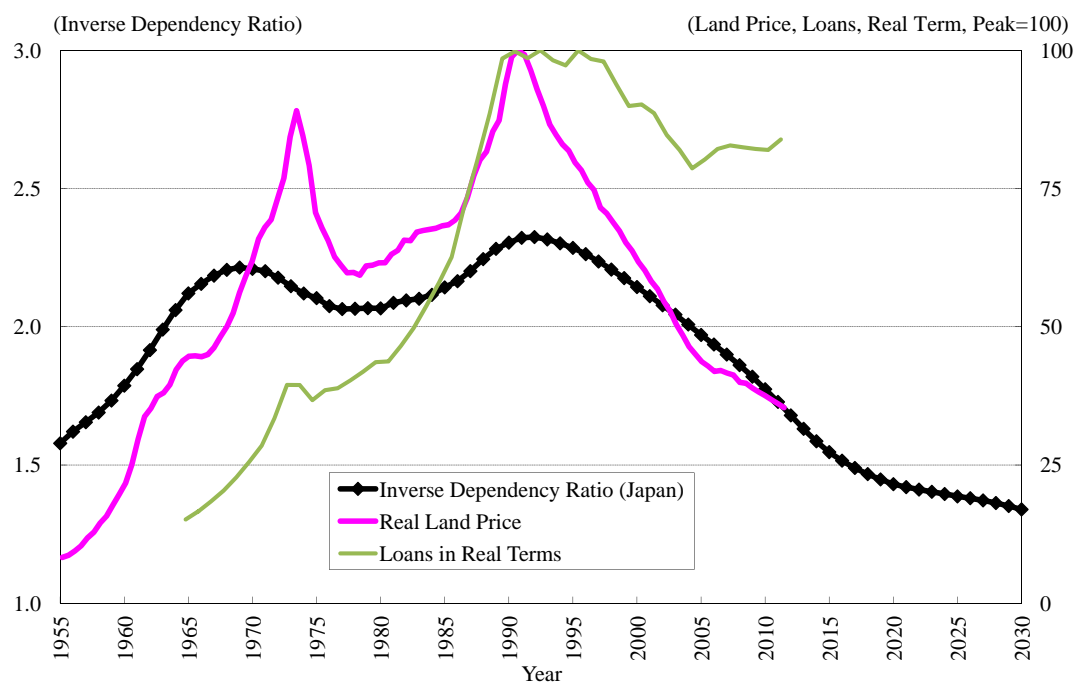
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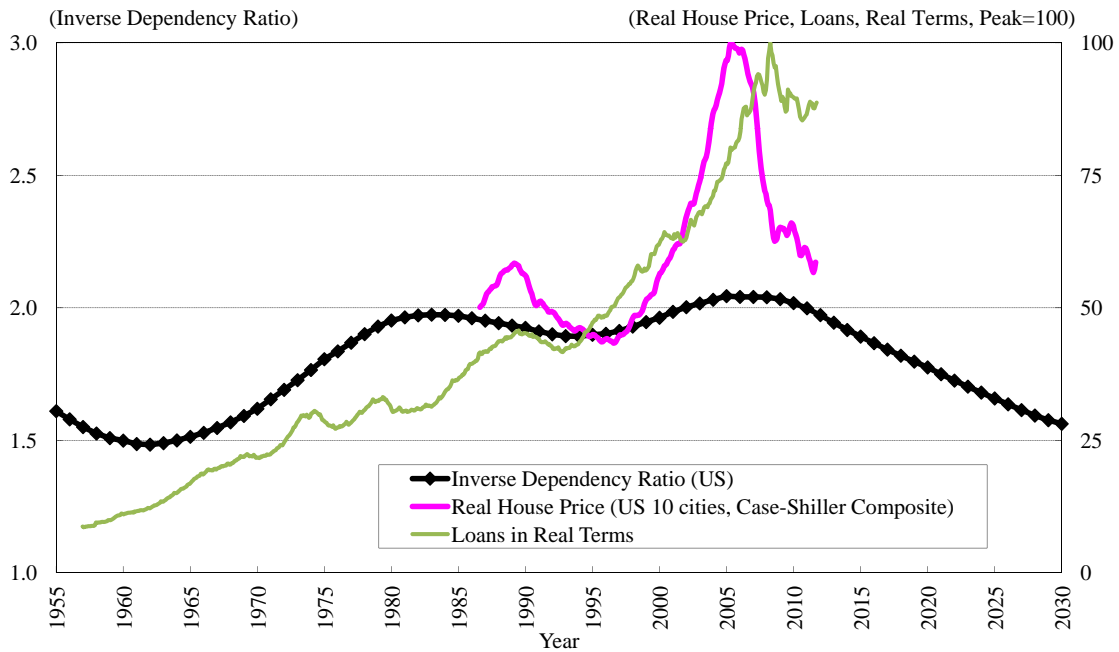
(Chart 1)

Population Change, Credit Expansion and Asset Price: Japan



(Chart 2)

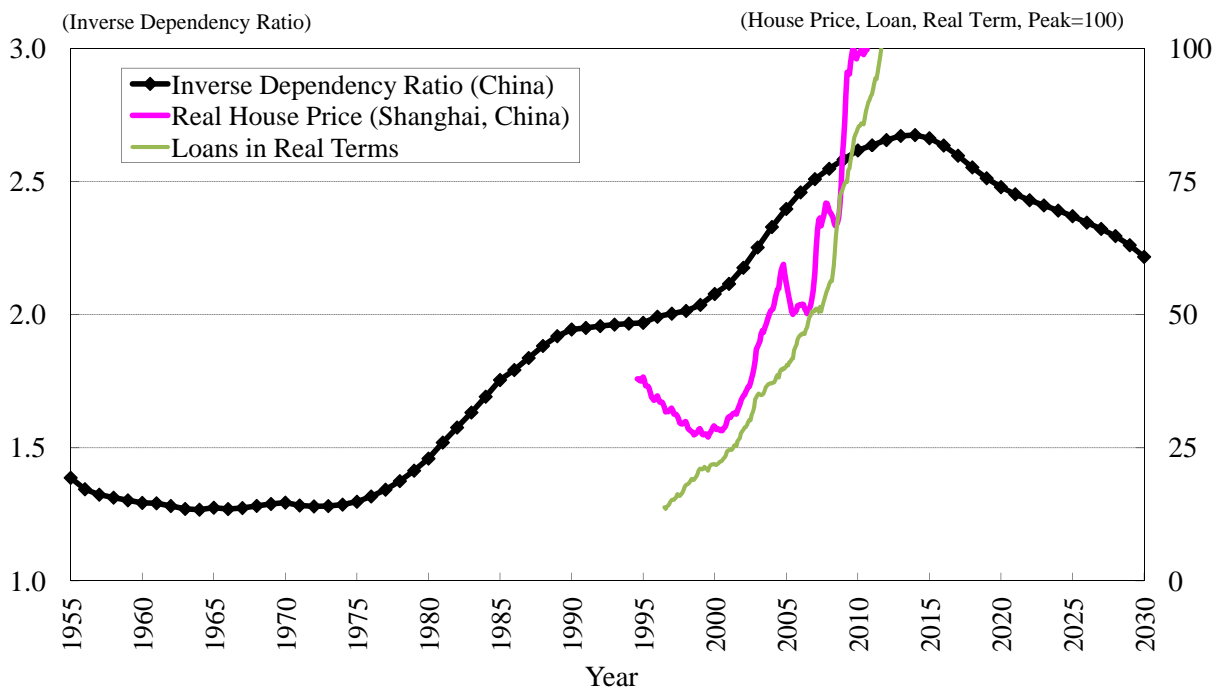
Population Change, Credit Expansion and Asset Price: US



Source: United Nations; Standard and Poor's; U.S. Bureau of Labor Statistics; Federal Reserve

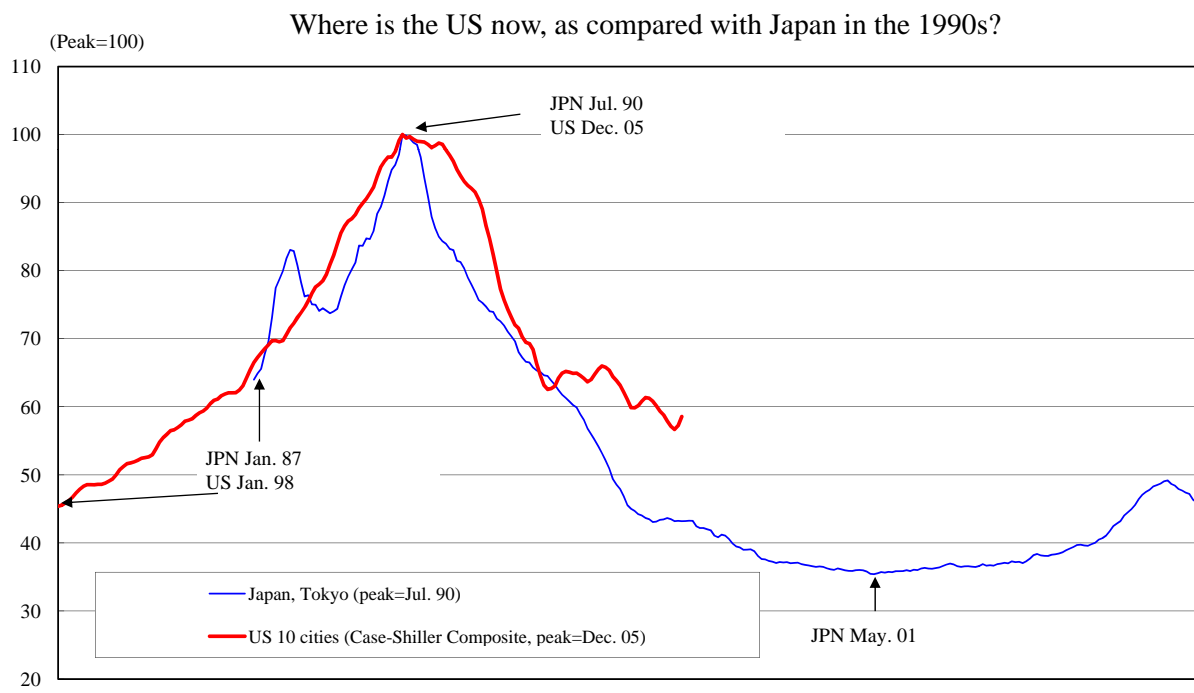
(Chart 3)

Population Change, Credit Expansion and Asset Price: China



Source: United Nations; Zhongfang Shanghai Real Estate Index Office, National Bureau of Statistics, People's Bank of China

(Chart 4) Collapsing Stage in US and Japan



Data: Tokyo, from Jan. 87 to Dec. 08. US 10 cities, from Jan.98 to May. 12.