Household Asset Selection and Real Estate in Japan –The Land Price Rebound's Impact from the Perspective of Regional Characteristics–
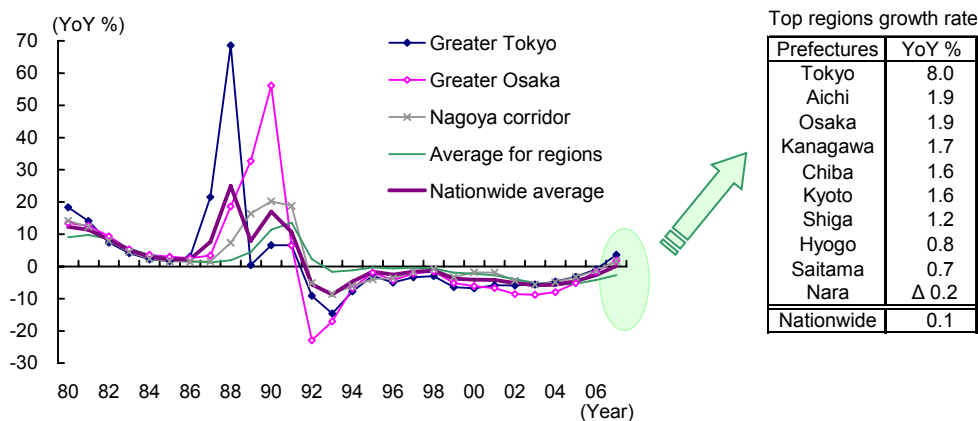
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I.   Official land prices resume climb after 16-year hiatus

Official land price data was announced on 22 March. The nationwide average (all uses) increased 0.4% YoY, and residential land rose 0.1%, the first positive increase since 1991, 16 years ago (see Figure 1). For the economy as a whole, it appears that the era of land price deflation has finally come to an end.

By region, it is primarily appreciation in the three major urban areas that has driven land prices higher. Land prices in regional areas continue to decline, and although the YoY rate of decline has slowed in many regions, in others it has actually accelerated. Overall, the data shows fairly large differences among regions in land price movements.

This rebound in land prices has likely had a considerable impact on the selection of household assets, because household balance sheets show real estate accounting for a large proportion of both assets and liabilities, and real estate is too important for households to ignore when selecting household assets. In this paper, we analyze the entire set of household assets, including real assets, as we consider households' asset selection and risk-taking behavior in the context of disappearing land price deflation.

**Figure 1: Official land prices by region**

Top regions growth rate	
Prefectures	YoY %
Tokyo	8.0
Aichi	1.9
Osaka	1.9
Kanagawa	1.7
Chiba	1.6
Kyoto	1.6
Shiga	1.2
Hyogo	0.8
Saitama	0.7
Nara	Δ 0.2
Nationwide	0.1

Source: Nomura Institute of Capital Markets Research, based on 2007 Official Land Prices from the Ministry of Land, Infrastructure, and Transport.

II. Household assets and real estate

1. Real estate is the largest household asset

We look first at the balance sheet for Japan's household. Figure 2 shows the asset composition of the average household according to data from the Ministry of Internal Affairs and Communications (MIAC). Total household assets average JPY44.7 million, and net household assets after subtracting liabilities total JPY39 million. With financial assets accounting for 34% (2% being stocks and stock investment trusts) and real assets 66% (57% being homeownership), the value of real assets is roughly double that of financial assets. In addition, the vast majority of household liabilities are in the form of residential home loans.

Figure 2: Household balance sheets
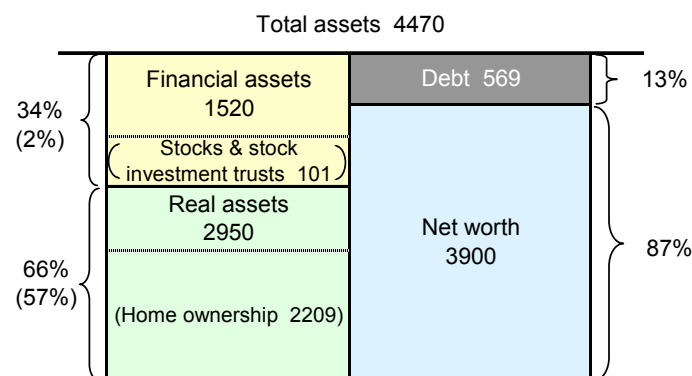
Note: Units are rounded to the nearest JPY10,000, figures in % indicate share. Survey is
          of all households, and figures are household averages.
Source: Nomura Institute of Capital Markets Research, based on the 2004 National Survey
          of Family Income and Expenditure from the Ministry of Internal Affairs and
          Communications.

### 2. Household income and real estate

We look next at how large of a purchase that real estate represents for households. Figure 3 uses nationwide data to compare Japan with other leading countries in terms of the multiple of disposable household income that real asset holdings represent. It is clear that real assets are quite large relative to income in all of the leading countries, and that the monetary cost of owning real assets is particularly high in Japan.

The data used in Figures 2 and 3 are averages for both home-owning and non-home-owning households. Figure 4 shows data limited only to individuals who have purchased a home, and shows the value of that home as a multiple of income. Specifically, it calculates the price of a newly constructed home as a multiple of the annual income of the individual holding a home loan based on a survey of individuals who used a home loan to fund the purchase a newly constructed home. Land prices in Japan have declined consistently over the 16 years since the bursting of the economic bubble, but recent new home prices are still about 4.8x annual income. In the US and the UK, that multiple is either roughly the same as or lower that it is in Japan, despite

the continued sharp appreciation of real estate prices in those two countries.[1] When considering the differences in both economic performance and the real estate market between Japan and the US/UK, the monetary burden for purchasing real estate seems relatively higher in Japan.

This suggests that real estate is a significant portion of household balance sheets, both on the asset and liability sides.

Figure 3: What multiple of income do real assets held by households equate to?
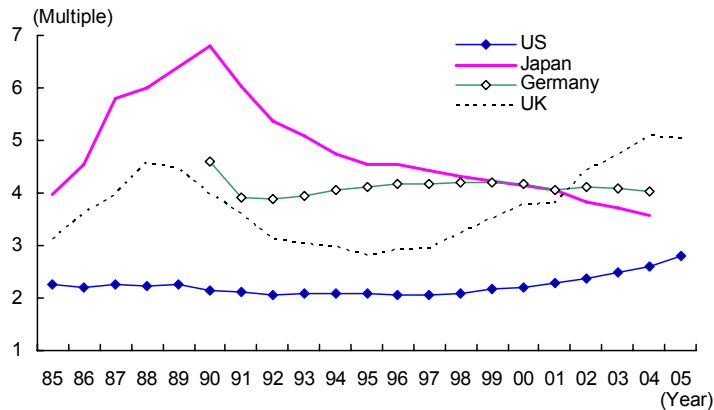
Note: Most recent data for Japan and Germany is 2004. Income is disposable income.
Source: Nomura Institute of Capital Markets Research, based on OECD

Figure 4: What multiple of borrower's income are newly constructed home prices?
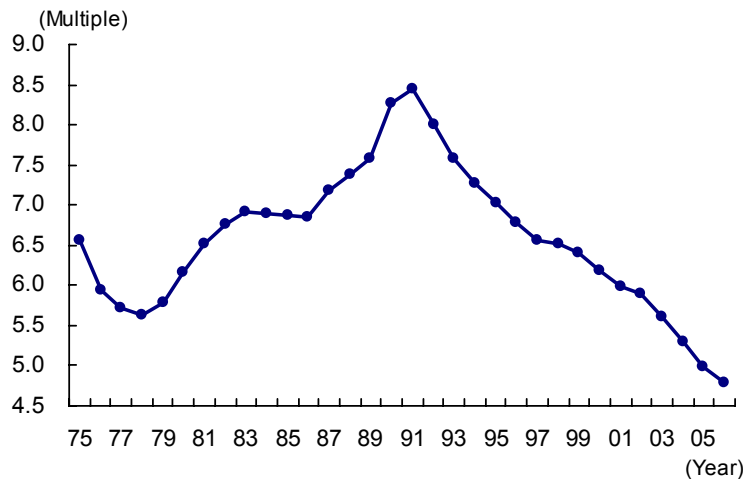
Note: According to a 2003 survey by the Government Housing Loan Corporation, newly constructed home prices were 5.6x annual income. Based on this, we estimated the trend in the ratio of new home prices to annual income using the land price index and cash compensation index for each year.
Source: Nomura Institute of Capital Markets Research, based on data from the Government Housing Loan Corporation, the Real Estate Economic Institute, and the Ministry of Health, Labor, and Welfare

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[1] According to similar surveys taken in the US and the UK (both in 2005), that multiple was 3.4x in the US and 4.1x in the UK.

III. Real estate's impact on households' asset selection

1. Real estate as an asset versus financial assets

What sort of impact would real estate have on a household's selection of assets? There is normally a fairly large difference between a household's ownership of a home and other real estate and its ownership of financial assets. For example, with the former, despite the huge amount involved it is impossible to split the purchase into several transactions, huge transaction costs are incurred, and buying and selling within a short time frame is not always possible. The larger price fluctuations for real estate compared with financial assets also seem to make real estate a fairly risky asset for households.

2. Differences in the significance of owning real estate brought by differences among real estate markets

There are substantial differences in the real estate markets of Japan and Europe/US. Specific differences with Japan include (1) in Europe/US, there are master plans for land use as well as strict rules on usage, (2) in the US, market transparency is maintained through the disclosure of transaction and other data, and this allows for the rational formation of land prices based on the use of cap rates, and (3) in Europe and the US, it is generally understood that maintenance expenditures help maintain the value of existing buildings, a feature that has created a huge market for a large-scale renovations and refurbishments. In addition, the development of the market for asset-backed securities (ABS) is making it possible to treat real estate in a similar way as financial assets from the standpoint of preserving value and producing income (generating cash).

In contrast, in Japan the value of the home itself declines, and the expenditure of money through either purchasing a home or expanding and renovating it is viewed by households as an expense rather than an investment. The significance of real estate ownership for Japanese households can therefore be viewed as somewhat different than that for households in Europe and the US.

3. Real estate ownership and household asset selection

The following are two conceivable ways in which real estate ownership could affect asset selection. First, on the asset side, is the wealth effect produced by fluctuations in real estate prices. Even with no change in a household's risk tolerance, changes in the value of assets can change the amount of risk assets that a household is able to own. Second, on the liability side, the loan that funds the real estate purchase acts as a constraint on asset selection. If a household's debt ratio moves higher, it makes sense that its risk tolerance would decline.

In fact, as shown in Figure 5, there is clearly a difference in asset composition between home-owning households and renting households, while among home-owning households there is a difference in the percentage of assets invested in securities between households that have a home loan and households that do not. In addition, Figure 6, which has data broken down by prefecture, confirms that higher debt ratios are associated with a lower percentage of household assets invested in risky financial assets, namely stocks and stock investment trusts. This relationship has held both recently (2004) and during the bubble (1989).

Real estate ownership therefore has a substantial impact on a household's selection of assets.

Figure 5: Household asset selection depending on presence of a home loan

(¥millions)

	Home-owning households				Rent-paying households (private-sector)		Average for all households	
	With a home loan		Without a home loan					
Total assets	45.76	(100%)	57.69	(100%)	9.67	(100%)	44.70	(100%)
Financial assets	10.76	(24%)	21.09	(37%)	6.39	(66%)	15.20	(34%)
Securities	0.86	(2%)	2.60	(5%)	0.46	(5%)	1.66	(4%)
Real assets	35.00	(76%)	36.60	(63%)	3.28	(34%)	29.50	(66%)
Debt	-16.44	-(36%)	-0.72	-(1%)	-1.34	-(14%)	-5.69	-(13%)

Note: For households with at least two people. Figures in parentheses are share of total.
Source: Nomura Institute of Capital Markets Research, based on the 2004 National Survey of Family Income and Expenditure from the Ministry of Internal Affairs and Communications.

Figure 6: Relationship between household debt ratios and the risk financial asset share of total
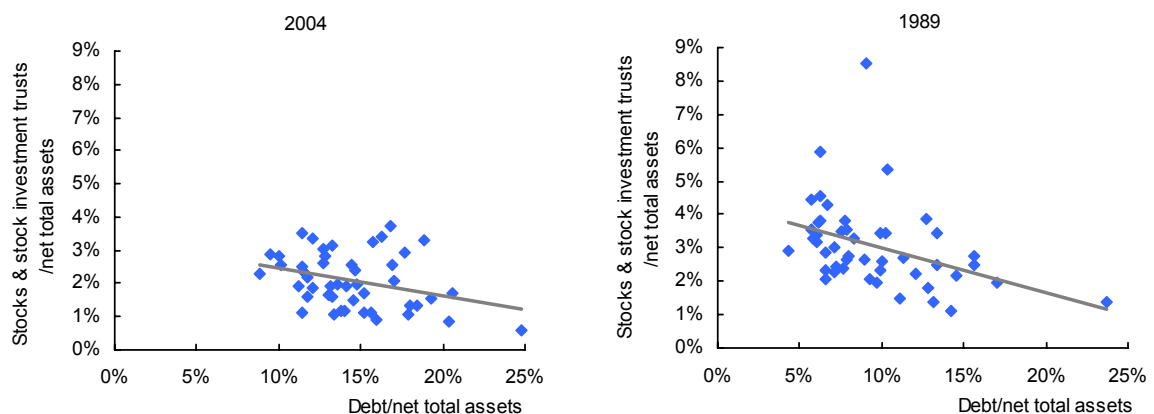
Note: Plots are of household assets for 47 prefectures, for households with at least two people.
Source: Nomura Institute of Capital Markets Research, based on the 1989 and 2004 National Survey of Family Income and Expenditure from the Ministry of Internal Affairs and Communications.

IV. Regional characteristics of household assets

1. Results of 2004 analysis

What sort of impact is the recent rebound in land prices likely to have on a household's selection of assets? Any consideration of the impact that a change in real estate asset values may have on households' asset selection should rightly require an examination of the asset composition and characteristics of each household. With this in mind we analyze the status of household assets by region.

When comparing household assets across regions, the difficulty lies in having to wade through the huge volume of information available on household assets and income to determine which indicators shed the most light on regional differences in asset characteristics. In this paper, we use principal component analysis to extract from data on assets and income by prefecture[2] those components that best express regional characteristics.

The results of our analysis are shown in Figure 7. Based on their coefficients, the first principal component can be interpreted as representing the degree of wealth and the second as representing the degree of liquidity.

In Figure 8, we place these two characteristics (principal components) on the axes to show the relative position of each prefecture based on a scoring system. The first remarkable point is that while most regions are clustered around the center of the graph, Tokyo and Okinawa lie a good distance from the center. This probably suggests that these two prefectures have asset characteristics that differ substantially from those of other prefectures.

The 47 prefectures can be divided into four groups based on these two characteristics. Specifically, (1) a group with both high wealth and high liquidity (10 prefectures in quadrant 1), (2) a group with low wealth but high liquidity (nine prefectures in quadrant 2), (3) a group with low wealth and low liquidity (15 prefectures in quadrant 3), and (4) a group with high wealth and low liquidity (13 prefectures in quadrant 4).

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[2]   Data on household assets is extremely limited in Japan, but we chose to use the Ministry of Internal Affairs and Communications' National Survey of Family Income and Expenditure, which offers detailed data from a relatively broad survey base. This survey is taken every five years, with the last one taken in 2004.

Figure 7: Results of 2004 analysis

PCA factor loadings (2004)

	First principal component	Second principal component
x(1) Annual income	0.84	0.30
x(2) Safe financial assets	0.78	0.57
x(3) Equity assets	0.87	0.19
x(4) Debt	-0.71	0.58
x(5) Home and residential land currently residing in	0.93	-0.20
x(6) Home and residential land not currently residing in	0.85	-0.31
Cumulative contribution	69.66	85.24

Note: The data underlying the calculations uses negative numbers to represent debt.
Source: Nomura Institute of Capital Markets Research, based on the 2004 National Survey of Family Income and Expenditure from the Ministry of Internal Affairs and Communications.

Figure 8: Regional characteristics of household assets in 2004
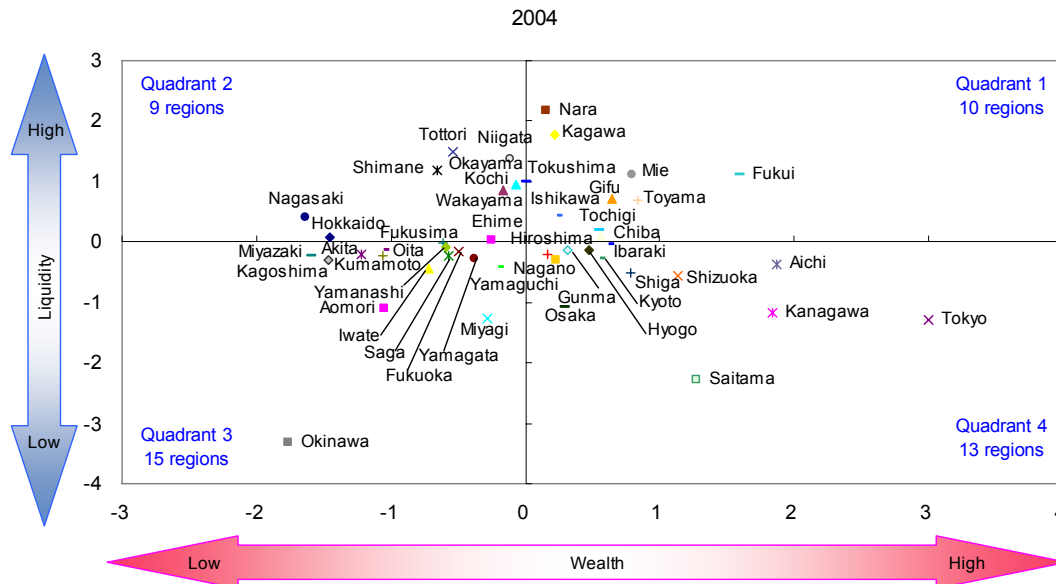
Note: Indicates principal component score for each prefecture.
Source: Nomura Institute of Capital Markets Research, based on the 2004 National Survey of Family Income and Expenditure from the Ministry of Internal Affairs and Communications.

2. Results of 1989 analysis

What was the composition of household assets by region during the bubble era? Exhibit 9 shows the results based on 1989 data[3] and Exhibit 10 shows the relative position of each prefecture (based on a scoring system).

Just as in 2004, in 1989 the characteristics of Tokyo and Okinawa differed substantially from the other regions.

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3 The reason why we chose to use 1989 data here is that 1989 was the first year that the Family Income and Expenditure Survey included real assets.

Additionally, when classifying the 47 prefectures into four groups based on the two characteristics of wealth and liquidity, as we did for 2004, there were 12 prefectures in quadrant 1, 13 prefectures in quadrant 2, 14 prefectures in quadrant 3, and eight prefectures in quadrant 4.

Figure 9: Results of 1989 principal component analysis

PCA factor loadings (1989)

	First principal component	Second principal component
x(1) Annual income	0.85	0.37
x(2) Safe financial assets	0.74	0.64
x(3) Equity assets	0.88	0.12
x(4) Debt	-0.73	0.60
x(5) Home and residential land currently residing in	0.92	-0.25
x(6) Home and residential land not currently residing in	0.92	-0.24
Cumulative contribution	71.22	88.69

Note: The data underlying the calculations uses negative numbers to represent debt.
Source: Nomura Institute of Capital Markets Research, based on the 1989 National Survey of Family Income and Expenditure from the Ministry of Internal Affairs and Communications.

Figure 10: Regional characteristics of household assets in 1989
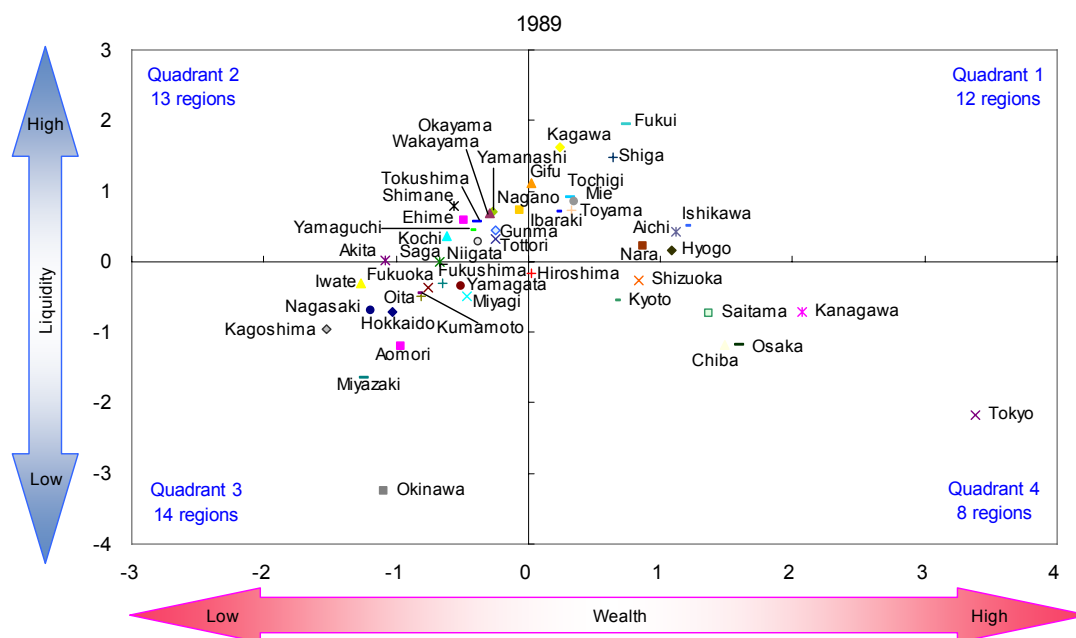
Note: Indicates principal component score for each prefecture.
Source: Nomura Institute of Capital Markets Research, based on the 1989 National Survey of Family Income and Expenditure from the Ministry of Internal Affairs and Communications.

Comparing the distribution across groups in 1989 with that of 2004, the former had a greater amount of disparity in the number of prefectures assigned to each group. Looking at the degree of liquidity on the horizontal axis, in 2004 there were 19 regions on the positive side (quadrants 1 and 2 with high liquidity). Although this is greater than the number of regions on the negative side, it is much less than the 25 positive regions in 1989.

Although real estate prices rose sharply during the bubble era, interest rates were also high as were share prices, such that household financial assets also increased and debt was relatively low. Amid the sharp rise in real estate prices, households made an effort to sell their land and homes. For example, during the five-year period from 1985 until 1990, we estimate there were JPY948 trillion in capital gains on all the real estate owned by households, and it appears that of this amount households actually pocketed JPY58 trillion in property sale gains.[4] We therefore think that only a relatively small number of households suffered from substantial liquidity restraints despite their ownership of real estate. Subsequently, however, an increasing number of households became bound by a liquidity constraint in the context of sustained declines in real estate prices, and the change in distribution between 1989 and 2004 can be seen as a result of this.[5]

3. How have the characteristics of household assets in each region changed in comparison with the bubble era.

By examining the data trend in each region during the period between 1989 and 2004, it is possible to further examine how each prefecture's characteristics changed.[6]

Figures 11 and 12 shows how the characteristics of each prefecture belonging to Greater Tokyo, Greater Nagoya, and Greater Osaka have changed. Prefectures that appear to have moved a relatively large distance in the graph and undergone a change in characteristics are Tokyo, Saitama, Chiba, Gunma, and Nagano in Greater Tokyo, Aichi and Gifu in Greater Nagoya, and Osaka, Nara, Shiga, and Hyogo in Greater Osaka. The remaining prefectures, which moved only a short distance on the graph, have probably not experienced much change in their regional characteristics since the bubble era.

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[4] The gain on sale is the total amount of income subject to tax declaration that is deemed income from the transfer of real estate. Household capital gains are based on the SNA data, and estimated to be 2.3x corporate capital gains. For details, see Sachiko Miyamoto, "The bubble era and the lost decade," *Nomura Securities Co Ltd, Tokyo Economic Research Paper*, 5 July 2006.

[5] In addition to the impact from changes in asset prices, bequests also plays a big role. For details, see Sachiko Miyamoto, "Bequests and Household Assets," *Nomura Capital Market Review,* Winter 2006, Vo. 9, No.4.

[6] It is normally difficult to make time series comparisons in a principal component analysis, but given the similarity between 1989 and 2004 in the principal component load factors and percentage contributions, there should be no problem with a direct comparison.

There was also a fairly large change from the bubble era in terms of how the three major urban areas compare with each other. Whereas all of the prefectures in Greater Nagoya, led by Aichi, underwent an increase in wealth, overall there were more prefectures that showed the opposite in Greater Tokyo and Greater Osaka. Evidence of Greater Nagoya's relatively stronger economic performance can also be found in this trend in household assets.

Figure 11: Changes in household asset characteristics for Greater Tokyo (from 1989 to 2004)
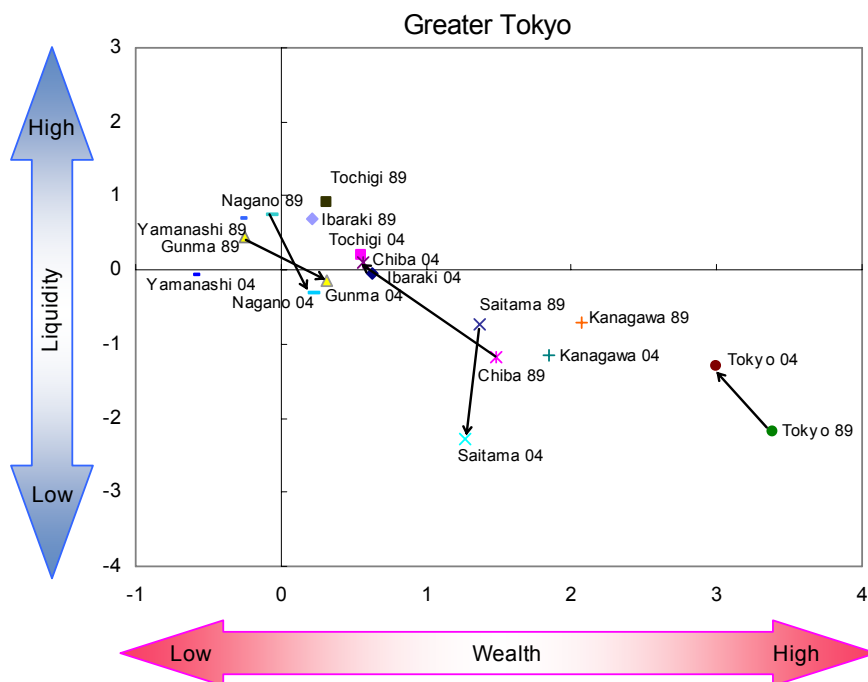
Note: Indicates principal component score for each prefecture. Arrows point to regions with a relatively large change.
Source: Nomura Institute of Capital Markets Research, based on the 1989 and 2004 National Survey of Family Income and Expenditure from the Ministry of Internal Affairs and Communications.

Figure 12: Changes in household asset characteristics for Greater Nagoya and Greater Osaka (from 1989 to 2004)
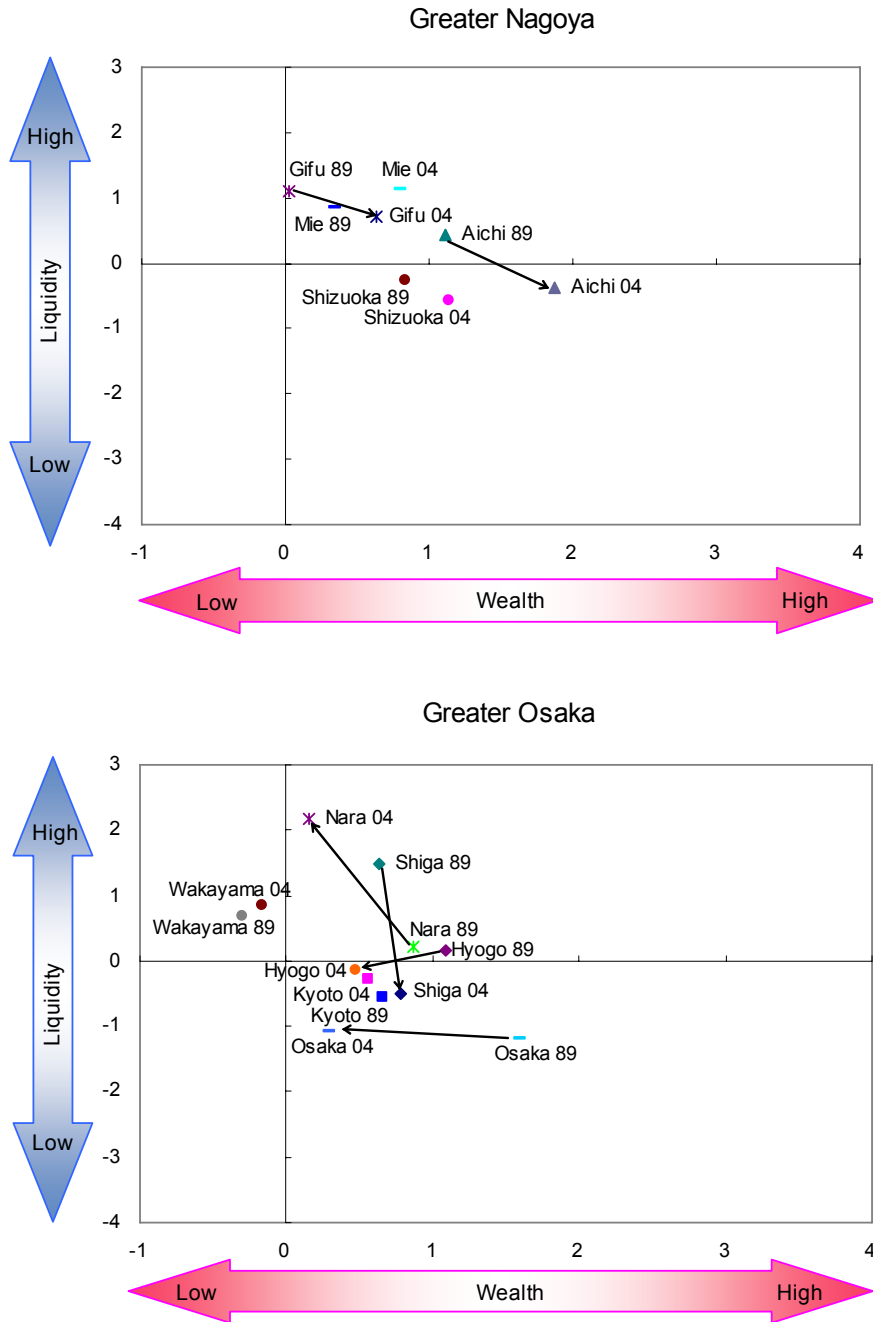
Greater Nagoya

Greater Osaka

Note: Indicates principal component score for each prefecture. Arrows point to regions with a relatively large change.

Source: Nomura Institute of Capital Markets Research, based on the 1989 and 2004 National Survey of Family Income and Expenditure from the Ministry of Internal Affairs and Communications.

V. The land price rebound's impact from the perspective of regional characteristics

1. The land price rebound's impact on households' asset selection

Based on the above analysis, we would not expect the land price rebound's impact on households' selection of assets to be uniform across regions. We see three possible reasons for this.

First, there are wide differences among regions in the rate of change in land prices. All of the regions with substantial land price appreciation are part of the three major urbanizations, as shown in Figure 1, and of these the only prefecture with two consecutive years of positive growth is Tokyo.

Second, because the characteristics of household assets differ across prefectures, households' asset selection behavior would not necessarily be equal even if the rate of land price appreciation were the same. Based on the results in the previous chapter, the regions where we expect rising land prices to have a relatively large impact on households' asset selection behavior are those in quadrant 4 of Figure 8. In these regions, liquidity is relatively low while wealth is high. Because an increase in land prices would be expected to alleviate household liquidity constraints to a greater degree in regions with lower liquidity, it follows that such increase would enable a riskier selection of assets. Additionally, because wealth is high, we would expect changes in asset selection to result in the movement of a large amount of funds.

Third, because there are also regions that have undergone a change in characteristics since the last time that land prices rose during the bubble era, households are not necessarily going to make the same asset selections as they did before. The comparison of regional characteristics between now and the bubble era shown in Figures 11 and 12 is important in that it better clarifies regional conditions.

2. The impact on households' selection of assets in major urban areas

What has the specific impact been on households' asset selection in the major urbanizations where land prices have started climbing? Our analysis thus far points to the following.

In Greater Tokyo, the impact appears to be large in Tokyo, Kanagawa, and Saitama. Because liquidity in these prefectures is low, rising land prices would be expected to have a powerful moderating impact on the liquidity constraint. Wealth, although having declined somewhat, is still higher than in other regions, and thus we would expect a relatively large amount of funds to be available for taking risk in step with changes in asset selection behavior. In Saitama, the liquidity constraint was considerably more binding in 2004 than in 1989, and thus any moderation of the constaint from rising land prices would be expected to be large. This is in contrast with Chiba, where liquidity in 2004 had already improved relative to 1989, such that any further improvement in liquidity from rising land prices would likely have a

relatively small impact. Wealth in Chiba also declined, making it likely that the amount of funds available for taking risk would not be as high as it was.

In Greater Nagoya, the prefecture expected to see the biggest impact from rising land prices is Aichi. Because wealth in Aichi has risen relative to 1989, it is likely that the amount of funds made available for taking risk by changes in asset selection behavior would be relatively large.

In Greater Osaka, Osaka has the lowest liquidity, and thus was likely impacted relatively more by rising land prices. Osaka's liquidity has not changed much from 1989, however, and its wealth has declined, making it likely that funds available for taking risk have become relatively smaller. In Shiga, meanwhile, liquidity in 2004 was down substantially from 1989. Because of this, the moderating impact on the liquidity constraint from rising land prices would be expected to be larger than before. In Nara, liquidity was considerably higher in 2004 than in 1989, but wealth declined, making it likely that the amount of funds available for taking risk is small.

3. Conclusion

This paper has examined households' asset selection behavior during the exit from land price deflation from the perspective of regional characteristics. Our results suggest that the impact on household's asset selection is not uniform across regions, and that even within the major urban areas where land prices are rising, impact will differ owing to the characteristics of household assets in each region. This should make it increasingly important for financial institutions to match their strategies and product development to each region's household asset characteristics.