

# Homeownership and Loan Financing —A Comparison of Loan Payment vs. Imputed Rent, and Outstanding Debt vs. Home Market Value

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## Introduction

According to the *Family Income and Expenditure Survey* (Ministry of Public Management, Home Affairs, Posts and Telecommunications), loan payments on housing and land purchases comprised a record 19.9% of the disposable income of homeowners with loans (employed households) in 2001. With only 80.1% of disposable income left to consume or save, these households no doubt must feel a heavy loan burden. On the other hand, loan payments do not always depress consumption because homeowners earn and consume imputed rent. When adjusted for imputed rent, the propensity to consume is not necessarily declining relative to other households. In addition, the problems derived from home loans may not be limited to the savings rate and propensity to consume.

The problems confronting homeowners with loan payments can be divided into those specific to such households, those shared by all homeowners, and those shared by all households including renters. To obtain an accurate perspective of loan problems, we must adopt a broad perspective and compare these three types of households, rather than simply focusing on loan burdens.

This paper first compares homeowners with loan payments, homeowners without loan payments, and renters with respect to income and expenditure flows, and shows that the loan payment of homeowners is not necessarily large relative to income. To do so, we estimate imputed rent, with which we adjust disposable income and savings rate. Next, we examine why the loan-to-income ratio has increased, focusing on the relationship between outstanding debt, loan payment, and annual income. We also discuss the growing availability, term, and size of loans relative to income in connection with the lending stance of financial institutions and tax incentives.

We then estimate unrealized gains or losses on the market value of properties by year of purchase, and examine the problem of the declining net worth of owned homes in light of the real increase in debt due to deflation. Finally, we present our summary and conclusions.

## 1. Homeowners with Loans

### (1) Comparison of Disposable Income with Other Households

Before examining the problems derived from home loans (including loans for land purchases), we first profile the typical homeowner household with a home loan. Since elderly households generally have little or no outstanding debt, and self-employed households often inherit their home from their parents, we focus on employed households. In fact, statistics are available only for employed households.

Employed households can be divided into three groups of roughly equal size: homeowners with loan payments, homeowners without loan payments, and renters.<sup>1</sup> Homeowners without loan payments include those who have paid off their loan, bought the home with cash, inherited it, or else received it as a gift. Renters consist of households living in private housing, public housing, and company housing, and includes households preparing to buy a home. The three household types are compared in Figure 1.

**Figure 1 Comparison of Household Types (2001)**

	Homeowner (no loan)	Homeowner (with loan)	Renter
Age of household head	52.3 years	46.1 years	40.0 years
Annual gross income	¥ 5.02 mil.	¥ 6.35 mil.	¥ 4.83 mil.
Disposable income	¥ 5.51 mil.	¥ 6.44 mil.	¥ 4.77 mil.
Propensity to consume	76%	66%	75%
Savings rate	24%	34%	25%
Loan payment for house/land purchase	¥ 0	¥ 1.28 mil.	¥ 50,000
House and land rents	¥ 10,000	¥ 10,000	¥ 540,000
Floor area of dwelling rooms (tatami mats)	39.5	38.1	21.2

Note: Disposable income, propensity to consume, and savings rate are not adjusted for imputed rent.  
Source: Ministry of Public Management, Home Affairs, Posts and Telecommunications, *Family Income and Expenditure Survey*.

For homeowners with loans, the average annual disposable income is 6.44 million yen, which is significantly higher than the 5.51 million yen (86%) for homeowners without loans, but only 5.16 million yen when 1.28 million yen in loan payments is subtracted. Even so, it is much higher than that of renters (4.77 million yen, 74%).

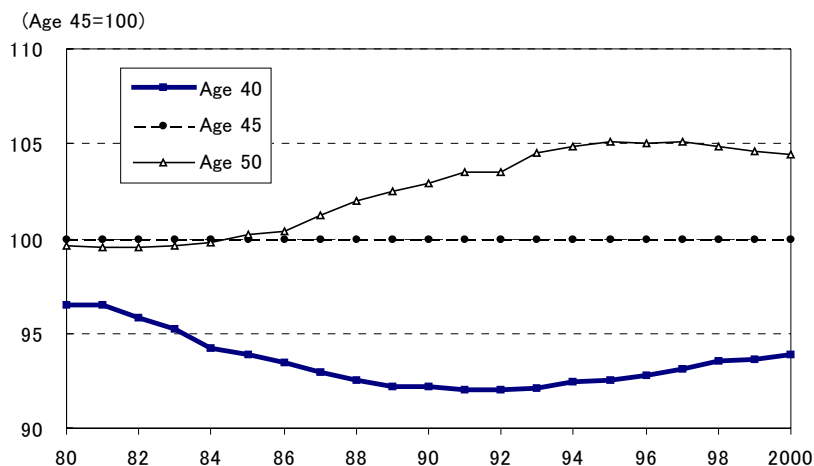
Income differences can largely be attributed to factors other than householder's age. This is

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<sup>1</sup> In the *Family Income and Expenditure Survey* sample, three-fourths are employed households, and 15% are elderly non-working households who have paid off their loans; one-person households, which include many young renters, are excluded. Thus the proportion of employed homeowner households (two-person or more) with loans is larger than on an all-household basis. In the *National Survey of Family Income and Expenditure 1999*, which includes one-person households, the aggregate results for employed, self-employed, and non-working households show that only 23.6% of all households have home loans.

because age-based differences are minor. The average age is 46 for homeowners with loan payments, 52 for homeowners without loan payments, and 40 for renters. Compared to the average wage of 45-year-old men, wages are 104% at age 50, and 94% at age 40 (Figure 2).

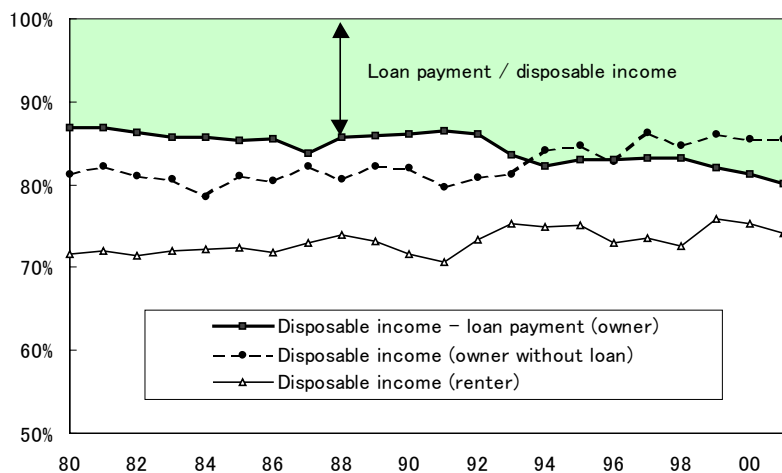
**Figure 2 Relative Wage of Men by Age (40, 45, and 50)**



Note: Age 40 shows the average is of age groups 35-39 and 40-44. Same for age 45 and 50.  
 Source: Ministry of Health Labor and Welfare, *Basic Survey on Wage Structure*.

Since loan financing is predicated on the ability to pay, households with loans have relatively high incomes. Figure 3 tracks the relative disposable income (unadjusted for imputed rent) of households from 1980. While homeowners with loans had more disposable income than other homeowners up to 1993, growing loan payments reversed the situation in 1997.

**Figure 3 Disposable Income by Household Type**

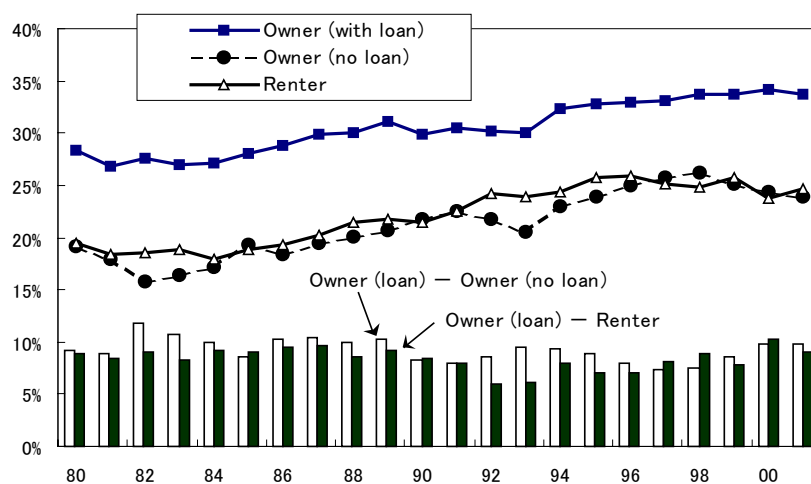


Note: Disposable income is standardized to homeowners with loans; unadjusted for imputed rent.  
 Source: MPMHAPT, *Family Income and Expenditure Survey*.

In addition, the unadjusted savings rates have been trending upward for all households since the mid 1980s. Due to loan payments—a form of compulsory savings—homeowners with loans have a savings rate approximately 10% higher than other households, reaching 34% in 2001 (Figure 4).

What emerges from the above is that as the relative burden of loan payments has grown, homeowners with loans can spend or save with less freedom. However, for a more objective assessment of loan payments, we must also take into account the imputed rent that derives from ownership, and adjust the savings rate accordingly.

**Figure 4 Unadjusted Savings Rate by Household Type**



Source: MPMHAPT, *Annual Report on the Family Income and Expenditure Survey*.

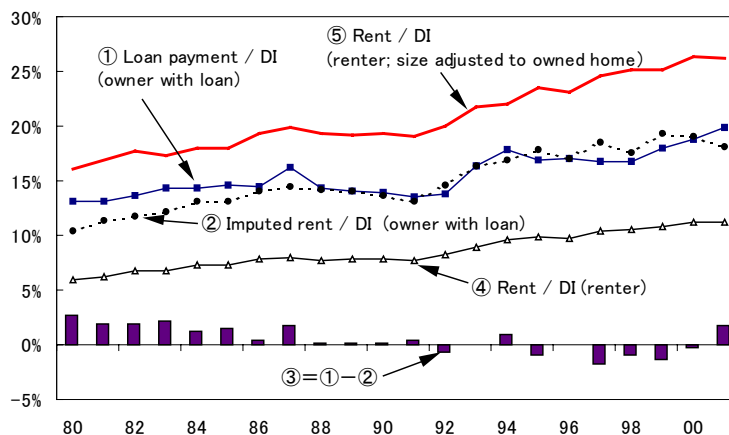
## (2) Loan Payments and Imputed Rent

As of 2001, the average floor area of dwelling rooms for homeowners with loans is approximately 38 mats (63 square meters). The weighted-average annual rent of private and public housing is 30,572 yen per mat. Leaving aside the neglected issue of housing quality, homeowners earn and consume the equivalent of 1.17 million yen per year (18% of disposable income), which is only 110,000 yen (2% of disposable income) less than their annual loan payment of 1.28 million yen. Thus the loan burden is not that great, considering that for only 110,000 yen more than the equivalent rent, homeowners will eventually own their home outright after they fully amortize the loan in several years. We should also note that since the interest portion of loan payments is small under current economic conditions, the net imputed rent, defined as gross imputed rent minus interest payment, is very large.

Based on annual data on floor area of dwelling rooms and market rents from the *Family Income and Expenditure Survey*, we calculated an imputed rent time series for homeowners

with loans (Figure 5). As the figure shows, the imputed rent almost equals the loan payment, and has exceeded the loan payment more than half of the time since the 1990s.

**Figure 5 Loan Payment, Imputed Rent, and Market Rent (as Ratio to Disposable Income)**



Note: For employed households. DI is disposable income.  
 Source: MPMHAPT, *Annual Report on the Family Income and Expenditure Survey*; Cabinet Office, *Annual Report on National Accounts*.

We can surmise that the appeal of avoiding large rent expenses encourages many people to purchase a home as soon as a loan can be arranged. As for renters, rent payments amount to only 11% of disposable income because the average floor area of dwelling rooms is only 21 mats (35 square meters) for renters, or 55% that of homeowners.<sup>2</sup> If rented homes were as large as owned homes, rent expense would comprise 26% of disposable income.<sup>3</sup>

### (3) Savings Rate and Propensity to Consume Adjusted for Imputed Rent

As a real asset, homes generate gross income equivalent to imputed rent (net operating surplus is defined as imputed rent minus maintenance cost, property tax, and depreciation). Since the amount is rather significant, a fair comparison of savings rates with renters must reflect this income in consumption and disposable income.<sup>4</sup>

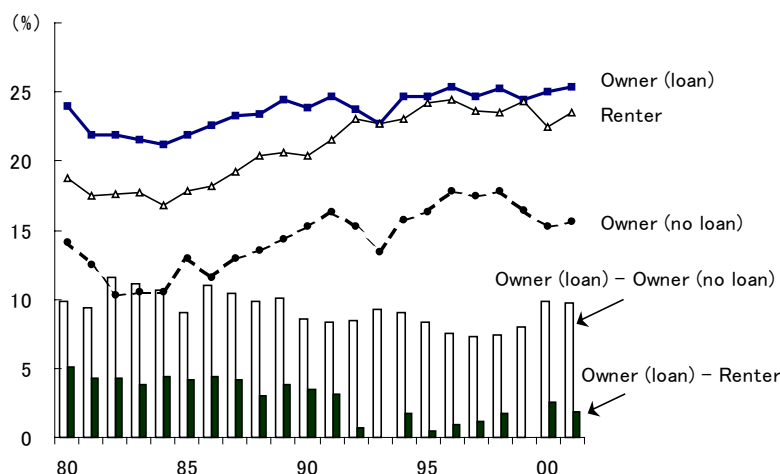
<sup>2</sup> According to the *Housing and Land Survey (1998)*, which draws from a large and comprehensive sample, the floor area of dwelling rooms is 41 mats (68 sq. meters) for owned homes, and 17 mats (27 sq. meters) for rented homes. The total floor area is 123 sq. meters for owned homes, and 45 sq. meters for rented homes.

<sup>3</sup> Like homeowners, renters are also seeing a long-term increase in the floor area of dwelling rooms. This means that the real consumption of housing services is increasing. Since rising rent payments contain an inflation component and increase in real housing service consumption, and it is inappropriate to regard the rent payment simply as a burden.

<sup>4</sup> Adjusted disposable income (*Family Income and Expenditure Survey*) = Unadjusted DI (*Family Survey*) + Imputed rent of owned home (*Family Survey*) × Operating surplus of owned home (SNA) ÷ Imputed rent of owned home (SNA). The same revision is done for company housing: since the rent per mat is significantly below the market rent (private and public housing), the difference is attributed to imputed rent and gross income.

Figure 6 compares savings rates for the three household types after adjusting for imputed rent. Savings rates rise for all households from the mid 1980s. Compared to unadjusted savings rates, the gap between homeowners with loans and renters is smaller. In fact, since 1992, the gap has remained at 3% or less.

**Figure 6 Comparison of Savings Rates Adjusted for Imputed Rent**



Note: Imputed rent for owned home and operating surplus have been posted in consumption and disposable income for homeowners and renters in company housing.  
Sources: MPMHAPT, *Annual Report on the Family Income and Expenditure Survey*; Cabinet Office, *Annual Report on National Accounts*.

Since higher savings rates (or declining propensity to consume) are common to all households, we can infer that consumer confidence is weak across the board, and is caused by factors held in common. At the very least, these trends are stronger among renters than homeowners with loans. However, this does not imply that homeowners with loans have fewer problems; it only means that little more can be said from a perspective limited to flow variables such as loan payments, savings rate and propensity to consume.

To delve further into the problems of homeowners with loans, we need to look next at their balance sheet problems—first their liabilities, and then their assets.

## 2. Relationship Between Loan Payment, Outstanding Debt, and Income

### (1) Ratio of Loan Payment to Outstanding Debt, and of Outstanding Debt to Income

The ratio of loan payment to income can be restated as follows:

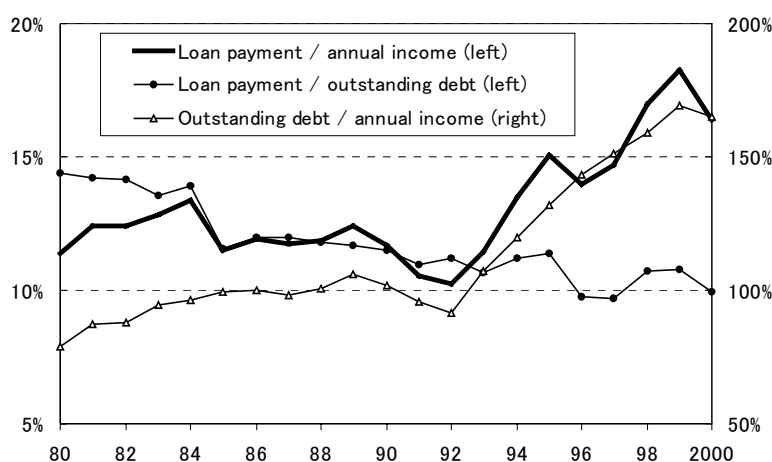
$$\frac{\text{Loan payment}}{\text{Outstanding debt}} \times \frac{\text{Outstanding debt}}{\text{Income}}$$

Since many households choose a level payment method with a fixed interest rate, supposing

that no more new loans occurred and loan payments proceeded smoothly throughout the economy, the overall outstanding debt would decrease, causing the first term above to increase and the second term to decrease.

But according to the *Family Savings Survey* by the Ministry of Public Management, Home Affairs, Posts and Telecommunications, the opposite is happening among households with loans for the purchase of housing and land—loan payments are declining relative to outstanding debt (Figure 7). In addition, the loan-to-income ratio (the ratio of outstanding debt to income) has surged since 1993 in concert with the ratio of loan payment to income.

**Figure 7 Loan Payment, Income, and Outstanding Debt (All Loans)**



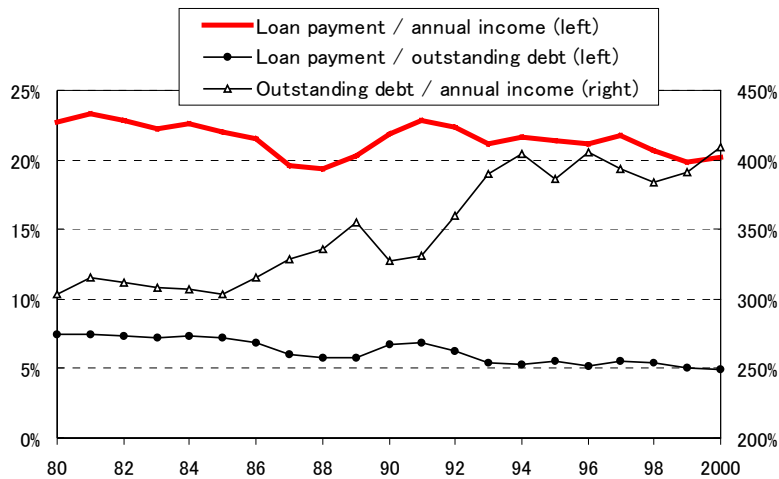
Note: Shows employed households with loans for purchase of housing and land.  
Source: MPMHAPT, *Family Savings Survey*.

This implies that households with new loans are increasing. To measure this effect, we need to know more about these households.

According to the Government Housing Loan Corporation’s *Survey Report of New Loan Users for the Purchase of Built-for-Sale Housing*, the loan-to-income ratio has risen sharply since 1992.<sup>5</sup> Thus the increase for all households with loans can be attributed to the effect of the households with new loans (Figure 8).

<sup>5</sup> To examine the effect of declining land prices in the next section, we used data from the GHLC survey on loans for purchase of built-for-sale housing, which is comprised of housing with land.

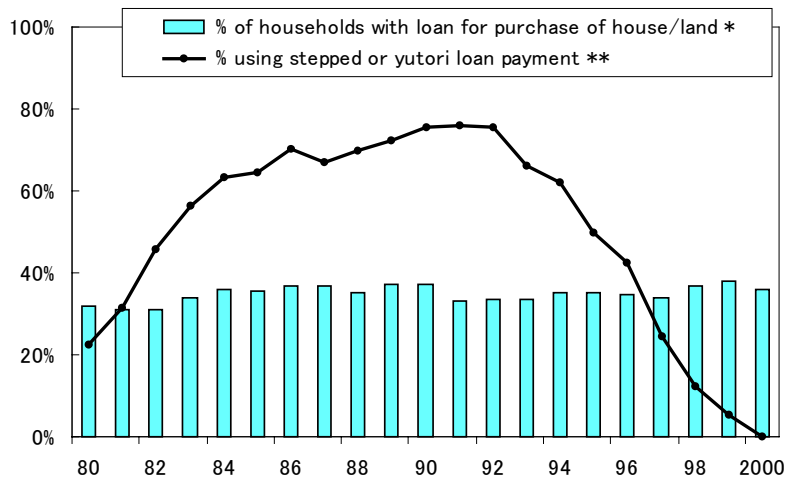
**Figure 8 Loan Payment, Income, and Outstanding Debt (New Loans)**



Note: Samples are different from those in Figure 7.  
 Source: Government Housing Loan Corporation, *Survey Report of New Loan Users for the Purchase of Built-for-Sale Housing*.

However, for households with new loans, the ratio of loan payment to income has not changed significantly over the past two decades.<sup>6</sup> If more households with new loans enter the statistical sample than households with completed loan payments are subtracted, the aggregate ratio shown in Figure 7 should increase. However, since there was no sharp increase since the 1990s in employed households with loans for the purchase of housing and land, households with new loans do not account for the increase in ratio of loan payment to income.

**Figure 9 Indicators Related to Home Loan Payment**



Sources: \* MPMHAPT, *Family Savings Survey* (employed households) \*\* GHLC, *Survey Report of New Loan Users for the Purchase of Built-for-Sale Housing*.

<sup>6</sup> The ratio of loan payment to income exceeds 20% in most years for households with new loans (GHLC survey), considerably higher than for households with existing loans (*Family Savings Survey*). However, simple comparisons cannot be made due to survey differences.



Thus a relative increase apparently occurred in loan payments of households with existing loans. One possibility is the effect of the GHLC's stepped loan payment plan (with low payments in the first five years as if amortizing at a fixed rate for a 50-year loan; converted to *yutori* payment in fiscal 1993) and *yutori* loan payment (same as stepped loan, but amortized at a fixed rate for a 75-year loan; ended in fiscal 2000). The usage rate of stepped loan payments surged in the mid 1980s, and a scheduled payment increase in the sixth year of these loans occurred in the 1990s. In addition, the GHLC's level loan payments also rose because of a scheduled interest rate increase in the eleventh year of the loans.

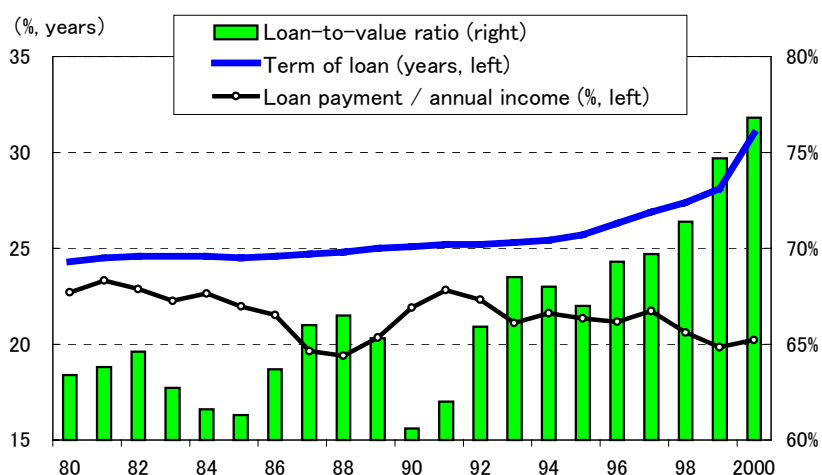
As long as wages continued to grow, loan payments could grow without changing the ratio of loan payment to income. But in the mid 1990s, this structure also broke down because nominal wages stopped growing.

**(2) Sluggish Income Growth and Longer Loan Terms**

As mentioned earlier, the loan-to-income ratio of households with new loans has increased sharply from 1992, while the ratio of loan payment to income has gradually declined. At the same time, loan terms have also grown (Figure 10).

These facts imply that under the sluggish income environment, new home buyers have taken out larger loans with longer terms, thereby increasing the loan-to-income ratio while decreasing the ratio of loan payment to income.

**Figure 10 Loan to Value Ratio and Term of New Home Loans**

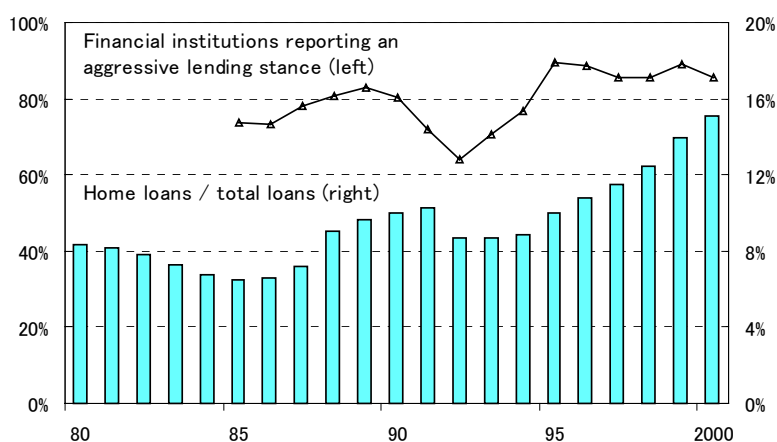


Note: Loan payment and debt also include all loans not from the GHLC.  
 Source: GHLC, *Survey Report of New Loan Users for the Purchase of Built-for-Sale Housing*.

### (3) Lending Stance of Financial Institutions and Tax Credits

Of course, home loans do not come into existence simply at the whim of borrowers. Three factors enabled home loans to grow in size during the 1990s. The first factor was low interests rates. Second, private financial institutions focused on home loans. Due to an aggressive lending stance, the proportion of home loans in total loans actually increased (Figure 11).

**Figure 11 Stance of Financial Institutions Toward Home Loans**



Note: Questions related to the stance of financial institutions toward home loans were significantly altered in 1995.

Sources: Bank of Japan, *Financial and Economic Statistics Monthly*; GHLC, *Survey of Trends in Housing Finance*, and *Survey Report on Private Sector Home Loans*.

The third factor is national income tax credits for home purchases. Maximum amounts and durations of tax breaks for home loans have been repeatedly expanded (Figure 12).

Thus we cannot say that household behavior is irrational or that the size of outstanding debt with respect to income is a problem in itself. Under ordinary circumstances, readily available financing and decreasing costs for owner-occupied housing would be a welcome situation, leaving aside issues of its status relative to rental housing.

The concern, of course, is the ability to keep making loan payments. Besides the longer loan term, households with loans are worried most about income and employment. While all employed households including renters share such concerns, what is important to households with loans is the relationship between the home's market value and outstanding debt. If they should ever become unemployed or default on the loan, could they cover the debt by selling the home, or be saddled with excess liabilities?

**Figure 12 Tax Credit on Home Purchases (National Income Tax)**

Year	Proportion of outstanding loan (L)		Max. tax credit	Years in effect	Effect of full use *	Floor area (㎡)
86	1.0% of half of total loan (private + public), up to ¥20 mil.		¥200,000	3	3.00%	40-200
87	" "		"	5	5.00%	"
88-89	1.0% of loan up to ¥20 million		"	"	5.00%	40-
90	" "		"	6	6.00%	"
91-92	¥0~20 mil.: (1.0% × L) ¥20+~30 mil.: (0.5% × L) + ¥100,000 Over ¥30 mil.: ¥250,000		¥250,000	"	5.00%	40-220
93-96	1st~2nd year	¥0~10 mil.: (1.5% × L) ¥10+~20 mil.: (1.0% × L) + ¥50,000 ¥20+~30 mil.: (0.5% × L) + ¥150,000 Over ¥30 mil.: ¥300,000	¥300,000	"	5.33%	50-240
	3rd~6th year	¥0~20 mil.: (1.0% × L) ¥20+~30 mil.: (0.5% × L) + ¥100,000 Over ¥30 mil.: ¥250,000	¥250,000			
97-98	1st~3rd year	¥0~10 mil.: (2.0% × L) ¥10+~20 mil.: (1.0% × L) + ¥100,000 ¥20+~30 mil.: (0.5% × L) + ¥200,000 Over ¥30 mil.: ¥350,000	¥350,000	"	6.00%	"
	4th~6th year	¥0~20 mil.: (1.0% × L) ¥20+~30 mil.: (0.5% × L) + ¥100,000 Over ¥30 mil.: ¥250,000	¥250,000			
99-00	1st~6th year	1.0% of loan up to ¥50 mil.	¥500,000	15	11.75%	50-
	7th~11th year	0.75% of loan up to ¥50 mil.	¥375,000			
	12th~15th year	0.5% of loan up to ¥50 mil.	¥250,000			
2001	1.0% of loan up to ¥50 mil.		¥500,000	10	10.00%	"

Note: \* Assumes a 100% loan to home value ratio. Expressed as the proportion of present value of cost savings to purchase price (discount rate 0%).

Source: Ministry of Finance, *Statistics Monthly*, and *Special Taxation Issue*.

### 3. Change in Home Value by Year of Purchase

#### (1) Decline in Real Land Prices Since 1990, and Deflation Since 1995

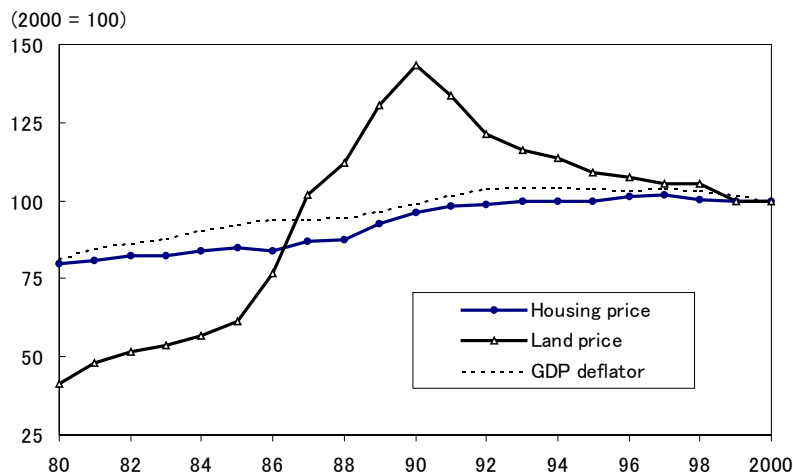
Land prices have consistently declined since 1990, causing many households to suffer an assessed loss depending on the time of purchase. While declining land prices also affect homeowners without loans, households with loans also suffer from deflation because the real value of their debt grows.

The present decline in land prices is a combination of a decline in real land prices—that is, land prices declining relative to the general price level—as well as a decline in the general price level. While only real land prices declined from 1990 to 1995, from 1995 the price level began to decline; meanwhile, land prices have been flat since 1998.

The purchasing power of assets lies in their real value. Since households without debt may also benefit from deflation due to declining prices of goods and services, only the effect of the decline in real land prices is important. On the other hand, households with debt are also

significantly affected by the decline in nominal land prices, particularly since general price deflation increases the real value of debt.

**Figure 13 Market Value of Housing and Land**



Note: Based on net fixed asset deflator for housing, and balance sheet account and reconciliation account for land. 68 SNA series data (to 1990) is joined to 93 SNA series data (from 1991). Source: Cabinet Office, *Annual Report on National Accounts*.

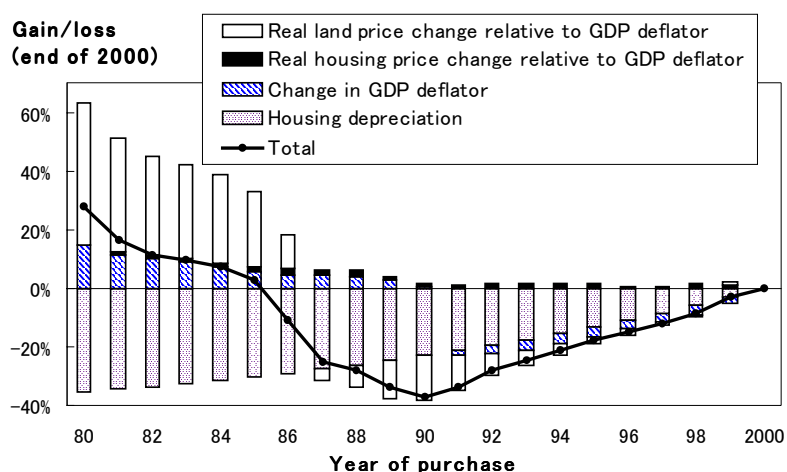
## (2) Home Value by Year of Purchase

Using data from the *Annual Report on National Accounts* (Cabinet Office), we calculated home values at the end of 2000. Then for each year of purchase, we broke down the assessed gain or loss into the effects of changes in the GDP deflator, real land price, and real housing price, and housing depreciation (Figure 14).<sup>7</sup> The results represent weighted national averages for all households.

As the figure shows, homes purchased up to 1985 have increased in value, even after housing depreciation. These homes have benefited from both a real land price increase and real debt reduction cause by inflation, in sharp contrast with homes purchased from 1990 and after. Clearly, the year of purchase affects net worth results more than whether or not homeowners have loans.

<sup>7</sup> Assuming that the house and land each comprise half of the purchase price in year  $t$ , the ratio of market value in 2000 to purchase price in year  $t$  can be expressed as:  $0.5 (L_{2000} / L_t) + 0.5 (H_{2000} / H_t) (1 - \delta)^{2000-t}$ . Here,  $L$  is the nominal land price,  $H$  is the nominal housing stock price, and  $\delta$  is the depreciation rate (6%).

**Figure 14 Assessed Gain or Loss by Year of Home Purchase (2000)**



Notes: 1. Calculated from net fixed asset deflator for housing, balance sheet and adjustment account of households for land, and GDP deflator. 2. Expressed as percentage to purchase price.

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

The assessed loss is greatest for purchases made in 1990, with homes losing 37% of their value.<sup>8</sup> However, this means that the other 63% of the purchase price can still be recovered by selling. If the loan covers 61% of the purchase price (the average loan-to-value ratio for 1990), then barring the highly improbable case in which no loan payments have been made, the homeowner will be able to successfully retire the debt by selling the home. Of course, here we are comparing the debt against the overall home value including the self-financed portion. Under different conditions, such as a combination of an LTV near 100%, ultra-long loan term, and graduated loan payment method, the debt might exceed the home value.

### (3) Possibility of Negative Net Worth in Areas with Large Land Price Decline

As with the year of purchase, results can vary considerably depending on local land price fluctuations. We thus examined land price changes at the prefectural level. According to the *Prefectural Land Price Survey* (Ministry of Land, Infrastructure and Transport), since 1990 land prices have declined the most in the Tokyo and Osaka areas.

Figure 15 shows calculation results for the ten prefectures with the largest declines in nominal land price. Even though price declines some areas exceed the national average by as much as 20%, excessive debt will not occur within the scope of this data. Of course, while excessive debt can be avoided, homeowners certainly suffer from the effect of the decline in asset prices.

<sup>8</sup> The calculation includes only stock and omits the flow of imputed rent over the ten-year period to 2000. If we include this flow, the homeowner will break even (except for interest payments) as long as the imputed rent is 3.7% or more of the purchase price.

**Figure 15 Assessed Gain or Loss of Built-for-Sale Homes Purchased in 1990  
(in areas with large land price decline)**

	①	②	③	④	2001
Prefecture	Cumulative decline in land price	Land value as % of property value	Purchase price (¥ mil.)	Loan to value ratio	Assessed gain/loss
Osaka	-63%	56%	44.80	47%	-57%
Chiba	-58%	58%	40.53	55%	-54%
Tokyo	-54%	67%	53.20	55%	-52%
Kyoto	-44%	42%	32.36	52%	-47%
Saitama	-43%	62%	44.16	52%	-46%
Nara	-42%	55%	40.21	50%	-45%
Kanagawa	-37%	73%	62.17	50%	-40%
Hyogo	-29%	54%	36.93	54%	-39%
Shiga	-29%	50%	36.05	54%	-39%
Aichi	-25%	52%	35.83	58%	-37%

Sources: Ministry of Land, Infrastructure and Transport, *Prefectural Land Price Survey*; and GHLC, *Survey Report of New Loan Users for the Purchase of Built-for-Sale Housing*. Others are estimated by the author.

## Conclusion

From the perspective of adjusted cash flow, loan payments of homeowners are not a large burden relative to other households when we consider income level and imputed rent. And when the savings rate is adjusted for imputed rent, the difference between homeowners with loans and renters is small; in fact, the savings rate of renters has actually grown by more in recent years than that of homeowners with loans.

On the other hand, from the perspective of stock, homes purchased in the Tokyo and Osaka areas since 1990 have declined in asset value.

In addition, while home loans are more readily available than in the past, the worsening employment environment has increased the risk of using large home loans. The important point is whether employment and income conditions will enable households to continue making loan payments. In this respect, as long as they can keep their jobs, it is difficult to imagine that the average household will become unable to make loan payments even if income does not increase.

However, there are inevitably some households struggling to make loan payments. The problem is that they may fall into distress if they are unable to sell the home and settle their debt. This problem is tied to the problems of financial institutions extending loans and of illiquidity in the real estate market.

There are some good signs on the part of financial institutions in the private sector. According to the *Survey of Housing Finance Trends* by GHLC, the number of financial institutions offering loans that also cover insufficient collateral is steadily growing. In 2000, 23% of financial institutions offered such loans for moving to another owned home (35% including those planning to offer), and 64% offered roll-over loans that have been recalculated (71% including those planning to offer). With regard to taxes, measures include a special exemption from the capital gains tax when people buy another home, and an income tax deduction (with carryover) for capital loss on the sale of a loan-financed home.

Meanwhile, the existing housing market remains inactive, and needs much improvement to sell the present home and buy a cheaper home. In addition, people are discouraged from moving from an owned home to a rented home because of the absolute shortage of spacious rental housing suited for families. Investment in rental housing and growth of rental housing stock are both sluggish, and as a result the real rent per floor area remains high.

To alleviate the problems of homeowners with home loans, the best thing would be an increase in nominal wages. Even if this does not happen, there is something society can do to help households struggling with loan payments before they fall into distress—enable them to move to more moderately priced homes or rental housing. For this, policies should focus on promoting the development of the rental and existing home markets.