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Recent Changes in Korean Households' Indebtedness and Debt Service Capacity

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Abstract

After the 1997 financial crisis in Korea, household debts have rapidly expanded. This paper evaluates the current status of Korea's household debts with a focus on household debt service capacity using micro data sets collected by Korea National Statistical Office between 2000 and 2006. The most distinctive feature of household debts is that the consumer loans were mostly distributed among the higher income and the wealthy households.

During 2000-2006, given the fact that consumer loans were relatively concentrated on the high-income class, the price of real estate steadily increased adding to the wealth of the riches that resulted in the worsening of wealth distribution.

The fact that the high-income class borrowed more consumer loans in recent years means that the household sector in Korea is relatively less vulnerable to the changes in market interest rates, downturn of the economy, and consequent increase in the rate of unemployment. This is contrast to the case in the US where sub-prime mortgage loan was largely extended to low-income class. Overall, the mortgage loan stabilization seen in Korea recently is greatly attributed by both LTV and DTI regulations as well as the multiple mortgage loans regulations.

However, the proportion of real estate asset out of the total asset for household is much greater in Korea than other countries taking up 83% of total asset in 2006. In general, given the fact that the growth of household income, which is the fundamental source for debt service capacity, has been sluggish for the recent years, if the market value of real estate declines due to the global economic crisis then Korea will become more vulnerable to external shock.

If the recent global financial crisis continues to bring further negative impacts to Korea leading to asset deflation in the real estate sector, the households' debt service capacity will deteriorate, further reducing private consumption and aggregate demand which in turn further magnifying asset deflation and fueling the vicious circle.

Key words: Korea, Household Indebtedness, Mortgages, Debt service capacity, Wealth Distribution, Mortgage loan regulation policy

JEL classification: D1, G21

1. Introduction

After the 1997 financial crisis in Korea, household debts have rapidly increased. As the default risk on corporate loans (especially those for *chaebols*) were perceived to be high, financial institutions were not willing to increase their corporate lending. Instead, financial institutions dramatically increased their lending to consumers, as they were believed to be less risky. Another important factor behind the increased household indebtedness in Korea was the lowered interest rates that had been adopted to boost sagging economy after the onset of the 1997 financial crisis.

About a half of the increase in the loans to the household sector took the form of mortgage lending. Mortgage lending boom was fueled by (and also fueled) the housing price boom. From 2001 to 2006, the housing price in Seoul on average increased by 11% per year.

The recent global financial crisis due to US sub-prime mortgage insolvencies brought concerns over the Korean banking sector that has a great number of outstanding mortgage loans to households. The growing household debt expansion over the years will surely become a critical factor if the global financial crisis continues.

This paper will evaluate and put into perspective the current status of Korea's household debt. First, by using macro data this study will look into the trends of overall debt service capacity by looking at household debt level, household income and financial assets. Second, by using micro data this study will look closely at household debt service capacity in order to evaluate the underlying risk in household debt.

2. Trends of Household Debt: Macro Data Analysis

During the "Credit Card Loan Bubble" period in 2001~02, consumer loans expanded with annual increase of 28%, however, after the collapse of the bubble in 2003~04, the rate of growth of consumer loans slowed drastically to yearly increase rate of 4%. After 2005 the annual rate increased again to 10% up to recently. In particular, in 2001~02, credit card loans as well as mortgage loans from banks skyrocketed simultaneously.

<Table 1> Consumer Loans by Financial Institutions in Korea

(Outstanding volume at the end of year, Trillion won, %)

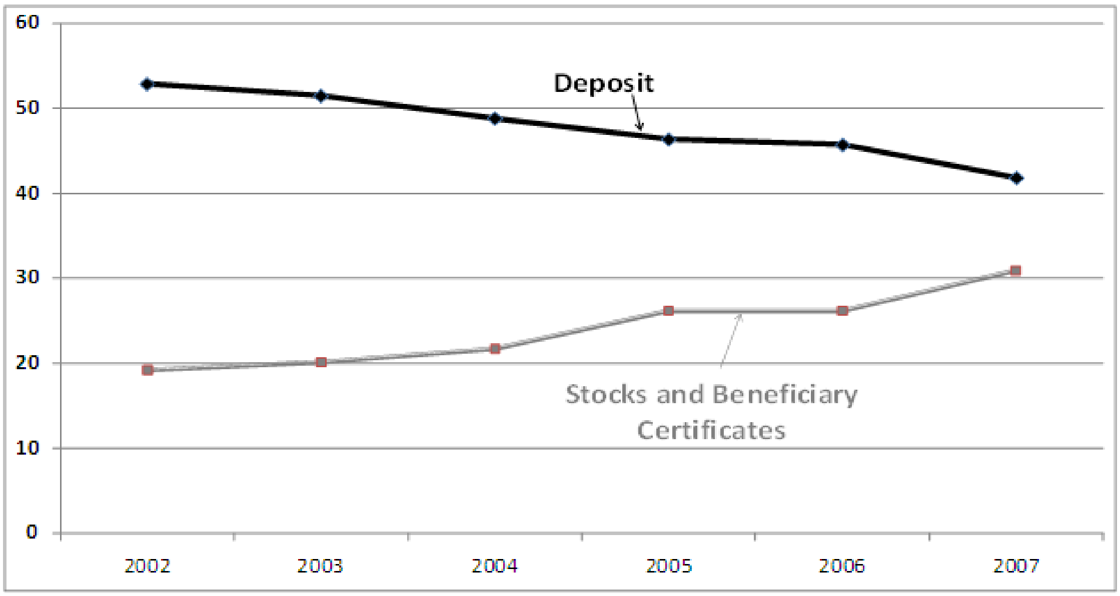
	2000	2001	2002	2003	2004	2005	2006	2007
Mortgage by DMB[1]	54.2 (..)	86.5 (59.4)	132.0 (52.7)	153.3 (16.1)	169.7 (10.7)	190.3 (12.1)	217.0 (14.0)	221.6 (2.1)
Consumer loans by CSFBCs[2]	59.4 (55.2)	81.8 (37.7)	105.0 (28.4)	64.0 (-39.1)	51.8 (-19.0)	51.8 (0.0)	56.8 (9.7)	66.0 (16.2)
Others	153.3 (..)	173.4 (13.1)	202.0 (16.5)	230.3 (14.0)	253.2 (9.9)	279.4 (10.4)	308.2 (10.3)	343.1 (11.3)
Total	266.9 (24.7)	341.7 (28.0)	439.1 (28.5)	447.6 (1.9)	474.7 (6.1)	521.5 (9.9)	582.0 (11.6)	630.7 (8.4)

Note: 1) DMB denotes deposit money banks
2) Sum of card loans, cash advance and merchandise credits by credit card companies and installment financing companies in CSFBCs (Credit Specialized Financial Business Companies)
3) Figures in ( ) are year-on-year growth rate
Source: Bank of Korea, *Statistics of Money and Finance*

Although household debts increased continuously, so did the household assets hence the ratio of debt to financial asset (capital gearing ratio) was stable at a little below 50% level for the past several years. According to the Bank of Korea's Flow of Funds data, after 2005, although financial debt increased with yearly 10% but, financial asset increased faster overtaking the debt growth recording 46% of the ratio of debt to financial asset in 2007 declining by 3% from 49% in 2002.   This phenomenon can be attributed to the sharp increase in households' investment into the stock market that has been booming since 2003.   In actuality, the proportion of stock and beneficiary certificate investment out of the total household asset was 19% in 2002 which increased to 31% in 2007. On the other hand, the deposit which was a main instrument of savings for Korean households decreased to 43% in 2007 from 54% in 2002 (See Chart 1).

<Chart 1> Share of Deposits, Stocks and Beneficiary Certificates of Household Total Assets

(unit: trillion won, %)



Source: Bank of Korea, Flow of Funds

<Table 2> Financial Debts, Financial Assets, and Income by Personal Sector

(unit: trillion won, %)

	Flow of Funds (Personal sector)			National Account (Personal sector)			
	Financial Debts (A)	Financial Assets (B)	(A/B)	GNI (C)	(A/C)	GDI (D)	(A/D)
2002	535	1,085	49.3	685	78.1	414	129.3
2003	561	1,171	47.9	725	77.4	433	129.6
2004	585	1,247	46.9	781	74.9	458	127.7
2005	647	1,415	45.7	809	80.0	476	135.8
2006	716	1,532	46.8	849	84.3	502	142.7
2007	790	1,717	46.0	903	87.5	532	148.4

Source: Bank of Korea, National Account and Flow of Funds.

The aggregate household debt ratio compared to GNI and GDI recorded 78% and 129% in 2002 then steadily increased to 88% and 148% in 2007, respectively. (The personal sector in National Account and Flow of Funds include household, private non-financial self-employed, non-profit organizations that support households.)

Rising aggregate household debt ratio may imply that the household debt service capacity is deteriorating. The next section, by using micro data will show more detailed and concrete picture of household financial soundness.

3. Explanation for Micro Data Set and Interpretation Caveat

In order to assess the underlying risks in the household debt, we rely on two sets of data -- the National Survey of Household Income and Expenditure (NSHIE 2001) and the Survey on Household Wealth (SHW) for 2006, both of which were collected by the

Korea National Statistical Office. NSHIE which began in 1991 was conducted with intervals of five years and the last Survey was taken in 2001 (the 2001 Survey was conducted in May 2001 hence using the yearly income of 2000). SHW was first conducted in 2006 with a five year interval. The data for assets and liabilities recorded in SHW was at the end of May 2006, while the yearly income data of SHW was through 2005.

Although the two data are separate, their wide-range of sample coverage is similar in that they include both one-person household to all household in the nation. The data may be different but we can compare and identify how the trends of household financial structure have changed over the period of 2000 to 2006.

However, the two data is different in terms of mode of questioning so therefore, when comparing the two data sets, careful interpretation is needed. For instance, the total income presented in both dataset is gross income including tax and social contribution. In 2000, the ratio of household financial debt to total income was 32% while the same for 2006 was 84% as can be seen in Table 3. In 2006 SHW, the ratio of household financial debt to total income of micro data was 84% as is in 2006 macro data (that used income of personal sector's GNI from the National Account). So, we can safely say the household debt ratio of SHW represents the overall macro status of debt leverage of household. However, in the 2001 NSHIE the household debt ratio was only 32% hence, there is a possibility that this micro dataset was under-reported.

Despite the above-mentioned problem, when the two dataset from 2000 and 2006 are compared, there are some valuable information such as the changes in financial debt of households that can be gained by this study.

<Table 3> Income, Asset, and Debts of Households in 2000 and 2006

(unit, 10 thousand won, %)

	2000 (A)	2006 (B)	B/A
Gross Income	2,747	3,420	125
Total Assets	11,249	27,344	243
Financial Assets	2,166	4,569	211
Physical Assets	9,084	22,775	251
House owned	6,048	12,754	211
Land owned	1,281	6,953	543
Building owned	727	1,554	213
Monthly rent and *Chonsei*	946	1,175	124
Physical Assets/Total Assets	80.8	83.2	
Total Liabilities	1,693	3,947	233
Financial debts	877	2,881	329
Net worth (= Total assets – Total liabilities)	9,557	22,396	234
Financial debts/Gross income	31.9	84.2	
Financial debts/Physical assets	9.7	12.6	
Financial debts/Financial assets	40.5	63.1	
Financial debts/Total assets	7.8	10.5	
Share of households with financial debts	47.2	87.6	
Share of households with house ownership	53.1	67.5	

<Table 4> Income, Assets, Debts of Households by Income Category

(unit: 10 thousand won, %)

	2000					2006				
	1	2	3	4	5	1	2	3	4	5
Gross Income	682	1,510	2,224	3,109	6,211	949 [139]	2,035 [135]	2,974 [134]	4,033 [130]	7,112 [115]
Total Assets	4,813	5,900	8,457	12,161	24,916	12,803 [266]	17,586 [298]	19,636 [232]	28,404 [234]	58,309 [234]
Financial Assets	628	1,002	1,665	2,369	5,164	1,917 [305]	2,744 [274]	3,638 [218]	4,801 [203]	9,748 [189]
Physical Assets	4,185	4,898	6,791	9,792	19,752	10,886 [260]	14,842 [303]	15,998 [236]	23,603 [241]	48,561 [246]
Financial Debts	391	624	817	1,072	1,482	1,007 [258]	1,726 [277]	2,308 [283]	3,591 [335]	5,772 [390]

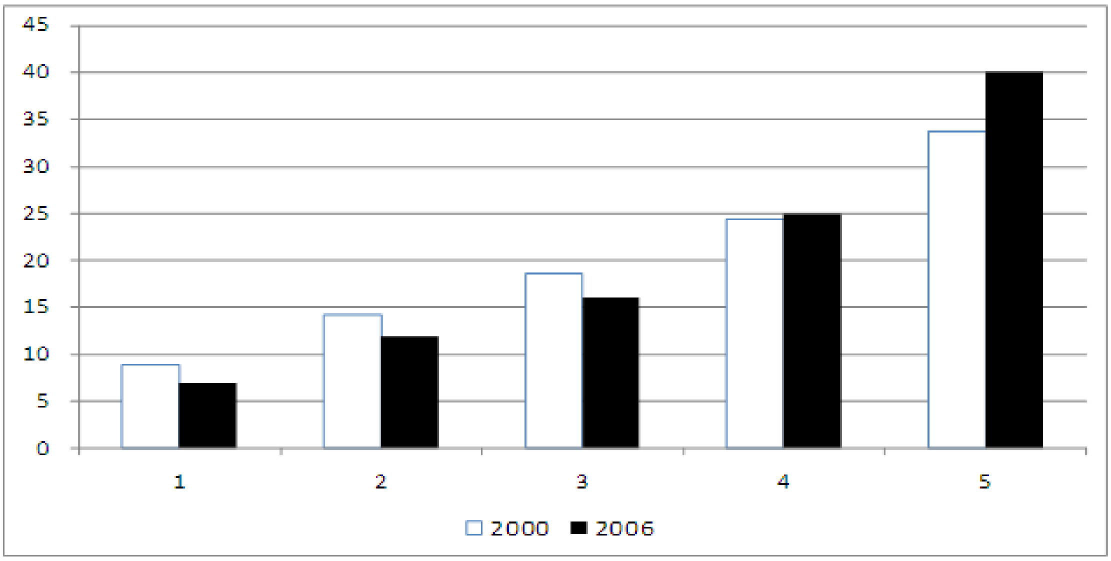
Note: 1) Figures in [ ] is growth rate between 2000 and 2006.
2) Income category 1 is the poorest income class and income category 5 is the richest income class

4. The Distribution of Household Debts by Income Category: Comparison of 2000 and 2006

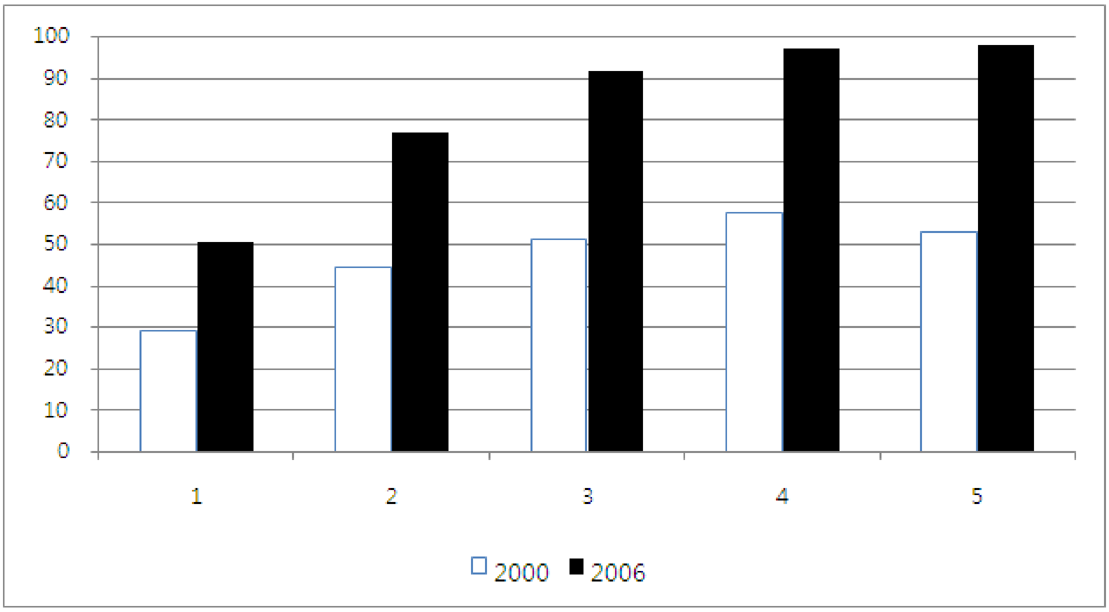
Out of the total number of households, the proportion of a household with debt in 2000 was 47% while sharply increasing to 88% in 2006 reflecting the rapid expansion of consumer loans between the period of 2000 and 2006. (See Table 3.)

Between the same period, the consumer loans relatively concentrated in the high-income category, in particular, centering on the purchase of real estates. The share of total financial debt by income category in 2006 shows that the first three low-income categories had all decreased their debt share compared to the debt share in 2000 while the debt share of the highest income class (5th decile) increased from 34% in 2000 to 40% in 2006. As can be seen in Chart 3, The share of household holding financial debts has sharply increased in high income categories: it has increased from 53% in 2000 to 98% in 2006 in the highest income category

<Chart 2> Share of Total Financial Debt of Households by Income Category (%)



<Chart 3> Share of Household with Financial Debts by Income Category (%)



Two-thirds of household debts are related to the purchase of real estate. As can be seen in Table 5, the higher the income category, the proportion of loan spent on real estate was higher and this implies that high-income class borrowed loans to finance their purchase of real estates.

<Table 5> Amount of Household Debt distributed by Purpose of Debt: 2006

(10 thousand won, %)

	1	2	3	4	5	Total
To purchase real estate (house, building, and land)	548 (54.4)	971 (56.2)	1,484 (64.3)	2,532 (70.5)	4,374 (75.8)	1,982 (68.8)
To pay for monthly rent or *Chonsei*	53 (5.2)	140 (8.1)	160 (6.9)	208 (5.8)	181 (3.1)	148 (5.1)
To repay for debts	73 (7.3)	155 (9.0)	147 (6.4)	160 (4.4)	233 (4.0)	153 (5.3)
To finance living expenses	166 (16.4)	232 (13.5)	273 (11.8)	373 (10.4)	531 (9.2)	315 (10.9)
Others	167 (16.6)	229 (13.1)	244 (10.5)	319 (9.0)	453 (7.8)	282 (9.8)
Total	1,007 (100)	1,726 (100)	2,308 (100)	3,591 (100)	5,772 (100)	2,881 (100)

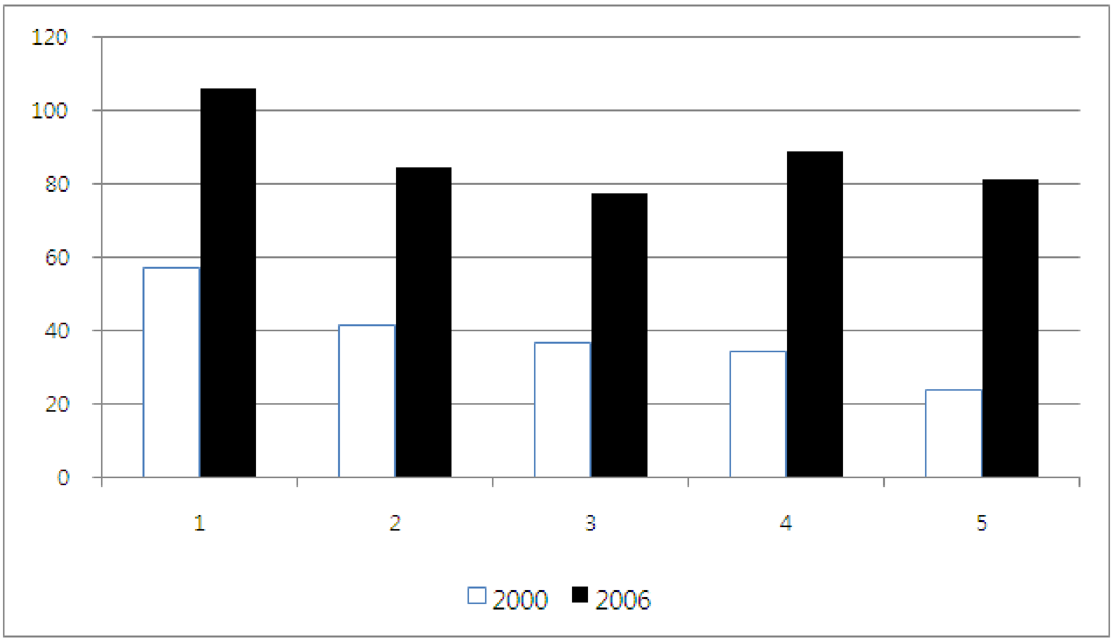
Note: 1) Figures in ( ) are shares

During 2000-2006, given the fact that consumer loans were relatively concentrated on the high-income class, the price of real estate steadily increased adding to the wealth of the riches that resulted in the worsening of wealth distribution. Indeed, GINI Coefficient for real asset increased from 0.63 in 2000 to 0.67 in 2006 that contributed to the deterioration of total asset distribution (GINI Coefficient for total asset: 0.60 in 2000 → 0.64 in 2006, GINI Coefficient for financial asset: 0.70 in 2000 → 0.66 in 2006).

5. Debt Service Capacity of Households

Between 2000 and 2006, the household debt ratio (household debt as a share of income) increased sharply among the 4th and 5th deciles. In 2000, the lower the income class the higher the debt ratio and in 2006, excluding the lowest income category the rest categories all increased up to 80%.

<Chart 4> Household Debt/Gross Income by Income Category (%)



The fact that the high-income category received most of the consumer loans implies that overall debt service capacity seems viable. The proportion of household number with debt-income ratio of 3-fold (according to the current 60% DTI regulation, these households may have problems in their debt repayment1) increased from 1.9% in 2000 to 5.8% in 2006. In terms of financial debt, the proportion of households with debt-income ratio of 3-fold in 2000 was 16.8% while increasing to 26.1% in 2006. As can be seen in Table 6, the proportion of household number with debt-income ratio of 3-fold has largely increased in the lowest-income category, while in terms of financial debt the middle- and high-income categories showed most tangible increases.

<Table 6> Distribution of Share of Households in Debt/Gross Income Ratio (%)

Income category	0~100%		100~200%		200~300%		Greater than 300%	
	2000	2006	2000	2006	2000	2006	2000	2006
1	17.1 [1.3]	15.1 [0.6]	1.3 [1.7]	1.5 [0.8]	0.5 [1.0]	1.1 [0.9]	1.0 [4.2]	2.3 [4.6]
2	17.5 [4.6]	14.4 [2.3]	1.7 [4.1]	3.0 [3.0]	0.4 [1.7]	1.5 [2.6]	0.4 [3.8]	1.0 [4.1]
3	17.9 [8.3]	14.7 [4.4]	1.4 [4.8]	3.5 [4.8]	0.5 [2.8]	0.8 [1.9]	0.2 [2.8]	1.1 [5.0]
4	18.3 [13.3]	13.6 [6.9]	1.3 [6.1]	4.4 [8.4]	0.4 [3.3]	1.2 [3.9]	0.1 [1.8]	0.8 [5.7]
5	18.7 [18.8]	14.2 [12.9]	0.9 [7.6]	4.2 [14.0]	0.2 [3.2]	1.1 [6.4]	0.1 [4.1]	0.6 [6.7]
subtotal	89.5 [46.3]	72.0 [27.0]	6.6 [24.2]	16.6 [31.1]	2.0 [12.0]	5.6 [15.8]	1.9 [16.8]	5.8 [26.1]

Note: Figures in [ ] are shares of total financial debts

1) When under the loan condition of 10% annual interest rate, 10-year maturity, and 10% principle repayment, the debt-income ratio of 3-fold will almost equal to 60% DTI (repayment of principle plus interest over income).

The proportion of household number with the financial debt to real asset ratio greater than 60% (over-borrowed households in LTV perspective) increased from 7.8% in 2000 to 10.4% in 2006. In terms of financial debt, the proportion of households with the financial debt to real asset ratio greater than 60% in 2000 was 27.8% while decreasing to 17.8% in 2006. In terms of financial debt, the proportion of households with debt of over 60% decreased between 2000 and 2006 for all income class implying that the LTV regulation has had a great impact on the lending practice in Korea. (※ In the viewpoint of the financial institutions, depreciation of market price of house may not hurt the repayment of the loan under the 60% LTV regulation because the real asset itself can be enough collateral for the repayment of the loan.)

<Table 7> Distribution of Share of Households in Debt/Physical Asset Ratio (%)

Income category	0~20%		20~40%		40~60%		Greater than 60%	
	2000	2006	2000	2006	2000	2006	2000	2006
1	14.2 [1.8]	13.8 [2.6]	1.2 [1.7]	1.4 [1.7]	0.4 [0.8]	0.7 [0.9]	1.5 [3.9]	1.7 [1.4]
2	13.4 [2.6]	12.0 [4.0]	1.9 [3.2]	2.7 [2.9]	1.0 [2.2]	1.4 [1.9]	2.0 [5.2]	2.3 [2.9]
3	13.6 [3.8]	11.5 [4.8]	2.4 [4.9]	3.3 [3.9]	1.2 [3.3]	1.8 [2.7]	1.8 [5.9]	2.5 [4.3]
4	13.7 [6.7]	10.4 [8.5]	3.0 [7.0]	4.7 [8.0]	1.3 [4.5]	2.1 [3.9]	1.4 [5.9]	2.4 [4.4]
5	15.4 [11.6]	12.3 [17.8]	2.3 [9.5]	4.2 [12.4]	0.8 [5.5]	1.7 [4.8]	1.1 [6.8]	1.5 [4.7]
subtotal	70.2 [26.6]	60.0 [37.7]	10.9 [26.3]	16.2 [28.9]	4.7 [16.4]	7.7 [14.2]	7.8 [27.8]	10.4 [17.8]

Note : Figures in [ ] are shares of total financial debts

<Table 8> Distribution of Households in Debt/Income ratio and Debt/Physical asset Ratio (%)

2000

		Financial debts/Gross income						
		0-100%	100-200%	200-300%	300-400%	Greater than 400%	income=0	subtotal
Financial debts/Physical asset	0-20%	68.5 [19.4]	1.2 [3.9]	0.3 [1.3]	0.1 [0.9]	0.1 [1.1]	0.0 [0.0]	70.2 [26.6]
	20-40%	8.3 [14.2]	1.7 [6.2]	0.5 [3.1]	0.1 [1.1]	0.2 [1.7]	0.0 [0.0]	10.9 [26.3]
	40-60%	2.8 [5.5]	1.2 [4.9]	0.4 [2.7]	0.1 [0.9]	0.2 [2.5]	0.0 [0.0]	4.7 [16.4]
	60-80%	1.0 [2.0]	0.6 [2.6]	0.2 [1.1]	0.1 [0.7]	0.1 [1.1]	0.0 [0.0]	2.0 [7.5]
	80-100%	0.9 [1.3]	0.5 [1.9]	0.2 [1.0]	0.0 [0.3]	0.1 [0.4]	0.0 [0.0]	1.6 [4.9]
	Greater than 100%	2.0 [3.0]	1.1 [4.1]	0.4 [2.5]	0.2 [1.6]	0.4 [3.5]	0.0 [0.7]	4.2 [15.4]
	Physical Asset = 0	6.0 [1.0]	0.3 [0.7]	0.1 [0.3]	0.0 [0.2]	0.1 [0.8]	0.0 [0.0]	6.4 [3.0]
	Subtotal	89.5 [46.3]	6.6 [24.2]	2.0 [12.0]	0.7 [5,7]	1.2 [11.1]	0.1 [0.7]	100 [100]

2006

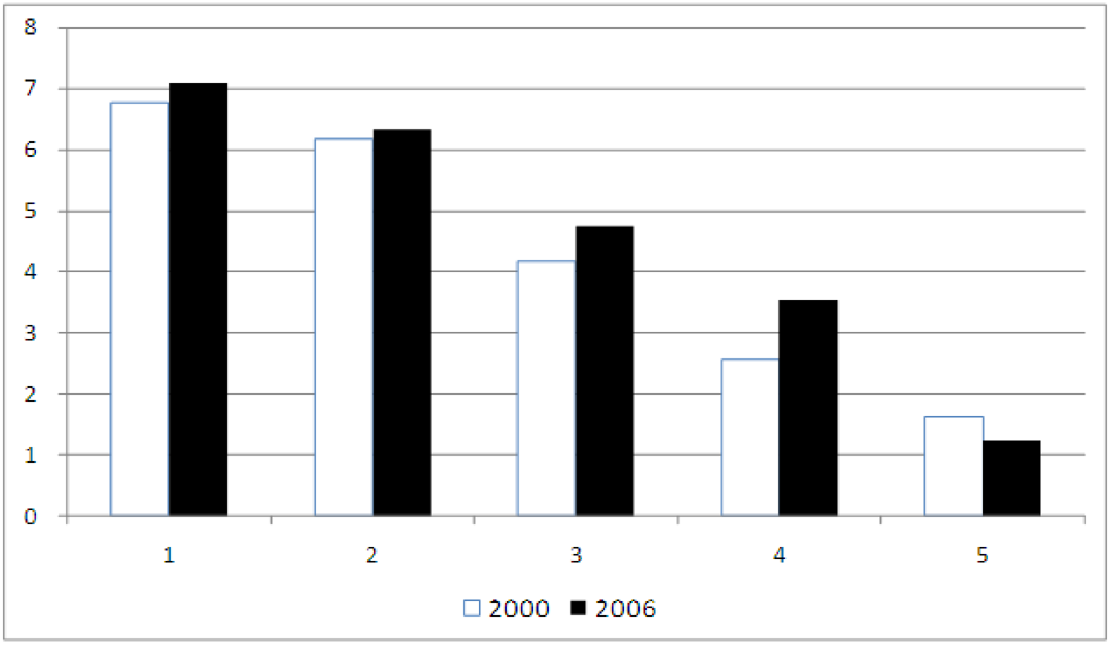
		Financial debts/Gross income						
		0-100%	100-200%	200-300%	300-400%	Greater than 400%	income=0	subtotal
Financial debts/Physical asset	0-20%	48.8 [12.6]	7.8 [14.9]	1.7 [4.6]	0.7 [2.0]	1.0 [3.5]	0.0 [0.0]	60.0 [37.7]
	20-40%	9.1 [7.9]	4.2 [7.8]	1.5 [5.2]	0.6 [2.2]	0.8 [5.8]	0.0 [0.0]	16.2 [28.9]
	40-60%	3.9 [3.1]	2.0 [3.9]	0.8 [2.6]	0.4 [1.3]	0.5 [3.3]	0.0 [0.0]	7.7 [14.2]
	60-80%	1.7 [1.1]	1.0 [2.0]	0.5 [1.2]	0.3 [1.2]	0.4 [2.1]	0.0 [0.0]	3.9 [7.6]
	80-100%	0.7 [0.5]	0.5 [0.7]	0.2 [0.5]	0.0 [0.1]	0.2 [0.8]	0.0 [0.0]	1.6 [2.6]
	Greater than 100%	2.7 [1.4]	0.9 [1.4]	0.7 [1.5]	0.2 [0.5]	0.5 [2.8]	0.0 [0.0]	5.0 [7.6]
	Physical Asset = 0	5.2 [0.5]	0.3 [0.3]	0.2 [0.2]	0.0 [0.1]	0.1 [0.4]	0.0 [0.0]	5.7 [1.5]
	Subtotal	72.0 [27.0]	16.6 [31.1]	5.6 [15.8]	2.3 [7.4]	3.4 [18.7]	0.0 [0.0]	100 [100]

Note : Figures in [ ] are shares of total financial debts

The proportion of household number with debt-income ratio of 3-fold with the financial debt to real asset ratio greater than 60% increased from 1.0% in 2000 to 1.7% in 2006. In terms of financial debts, such households under these conditions have rather decreased from 9.3% in 2000 to 8.0% in 2006. (See Table 8)

Furthermore, the proportion of household number with the negative net worth was higher in the low-income category while lower in the high-income category. It is noteworthy that between 2000 and 2006 all categories showed increase in the proportion except the highest income class. Despite the fact that the highest-income class borrowed the most loans, their share of household with negative net worth rather decreased between 2000 and 2006, implying that their increased value of asset attributed by asset price increase was enough to cover their debt.

<Chart 5> Share of Household with a Negative Net Worth (%)



6. Mortgage Loan Regulation Policy in Korea

The Korean government has undertaken various measures to curb the rapid growth of mortgage loans of domestic financial institutions as a way to strengthen risk management of housing finance.

6.1 LTV Regulation

The Korean government set up a ceiling with Loan-to-Value ratio (LTV) for mortgage loans in order to constrain the mortgage loan supply according to the ratio. Under this regulation, even when the prices of housing fall, the risk of loan reimbursement can be reduced from bank institutions' perspective.

Starting September 2002, the Korean government has begun to tighten the LTV Regulation around the apartments priced over 600 million Korean won in the "speculative areas." In the case of banks and insurance companies, all forms of housing will be applied with the 60% ceiling but in apartment in the "speculative areas" will be applied with differentiated between 40%~60% according to the length of loans maturity and the value of collateral. (See Table 9). In non-bank financial institutions (NBFIs) such as mutual finance, mutual savings banks, and Credit Specialized Financial Business Companies depending on the types of housing and location, 50~70% ceiling has been applied.

In advanced OECD member countries, the normal LTV ratio ranges between 55~90% but some can range from 80~115% (OECD 2007). Compared to this Korea has a stricter LTV regulation.

<Table 9> LTV Regulation in Banks and Insurance Companies

(unit: %)

		"Speculative Area"		"Less Speculative Area"	General Area
		Apartment	Other type	All type of houses	All types of houses
Less than 3 year of maturity		40	50	50	60
3 years ~10 years		40	60	60	60
Over 10 years	(Collateral value of more than 600 million won)	40	60	60	60
	(Collateral value of less than 600 million won)	60	60	60	60
Over 10 years, installment repayment		70	70	70	70

6.2 DTI Regulation

Debt-to-Income ratio (principal and interest payments on total loans over income) was also introduced based on the incomes of borrowers to reduce the possible default risk. Starting August 2005, 40% DTI Regulation was applied among apartments valued over 600 million Korean won in the "speculative areas."

<Table 10> Cases for the Application of 40% DTI Regulation

① 2005. 8.30	- A married borrower who applies for a mortgage loan for an apartment in the "speculative area" whose spouse already has at least one mortgage loan - An unmarried borrower under the age of 30 who applies for a mortgage loan for an apartment in the "speculative area "
② 2006. 3.30	- Apartments valued over 600 million Korean won in the "speculative area" (New mortgage applicants)
③ 2006.11.15	- Apartments valued over 600 million Korean won around the metropolitan "less-speculative areas." (New mortgage applicants)

6.3 Multiple Loan Regulation

For borrowers who already own a housing unit while in search of a new housing, mortgage credit has been allowed with the condition that the old housing unit be sold within a year. (May 2005) Moreover, for borrowers with three or more mortgages in speculative areas, only two mortgage loans are allowed under the regulation.

6.4 Policy Outcome

With the introduction of LTV Regulation in 2002, Korea has seen great improvement in risks associated with mortgage loans. The 2001~2002 mortgage loan growth rate of more than 50% has sharply dropped to the 10% level in the 2003~2006 period. In addition, with the introduction of DTI Regulation in 2006, this rate drops even further to 2.1% in 2007 (See Table 1). According to the report made by the Office of National Tax Administration in 2005, among 26,821 cases of completed mortgage purchases in Kangnam area between 2000 and 2007, 15,761 owners already owned 3 or more houses. With the introductions of Multiple Loan Regulation with strengthened LTV and DTI Regulations, these multiple-house owners were faced with difficulty in borrowing mortgage loans from financial institutions pushing the growth rate to 2% level in 2007.

Finally, the last but not least, the effects of DTI regulation had a tremendous impact on the length of maturity of mortgage loans (Hur, 2008). The lower ceiling imposed by DTI induced financial institutions to choose longer period of maturity on mortgage loans. Hence, after the introduction of DTI Regulation after 2006, the share of long-term mortgage loans with more than 10-year maturity has sharply increased to 58%

at the end of 2007 from 34% at the end of 2005. As the maturity of mortgage loans become lengthened, not only did the debt service capacity of individual households improve immensely but also, for overall financial system in Korea a buffer was created that can absorb unexpected shocks such as sudden changes in market interest rates.

<Table 11> Maturity of Mortgage Loans (%)

	less than 3 years			3-5 years	5-10 years	over 10 years	outstanding volume (trillion won)
		less than 1 year	1-3 years				
At the end of 2004	60.1	12.2	47.9	15.7	3.5	20.7	169.8
At the end of 2005	43.9	15.4	28.5	16.7	5.1	34.4	190.2
At the end of 2006	30.0	11.1	18.9	12.6	6.4	51.0	217.0
At the end of 2007	24.6	8.6	16.1	10.2	7.2	58.0	221.6

Source: Financial Supervisory Service, Cited in Hur (2008)

7. Conclusion

As can be seen in the comparison between the 2000 NSHIE and 2006 SHW the most distinctive features of household debt is that the consumer loans were mostly distributed among the higher income and the wealthy households. The fact that the high-income class borrowed more consumer loans in recent years means that the household sector in Korea is relatively less vulnerable to the changes in market interest rates, downturn of the economy, and consequent increase in the rate of unemployment. This is contrast to the case in the US where sub-prime mortgage loan was largely extended to low-income class. Overall, the mortgage loan stabilization seen in Korea recently is greatly attributed by both LTV and DTI Regulations as well as the Multiple Mortgage Loans Regulations.

However, the proportion of real estate asset out of the total asset for household is much greater in Korea than other countries taking up 83% of total asset in 2006. In general, given the fact that the growth of household income, which is the fundamental source for debt service capacity, has been sluggish for the recent years, if the market value of real estate declines due to the global economic crisis then Korea will become more vulnerable to external shock.

If the recent global financial crisis continues to bring further negative impacts to Korea leading to asset deflation in the real estate sector, the households' debt service capacity will deteriorate, further reducing private consumption and aggregate demand which in turn further magnifying asset deflation and fueling the vicious circle.

<Table 12> Composition of Financial Asset and Physical Asset for Household Total Asset (%)

	US (2000)	Japan (2000)	Canada (2000)	Germany (2000)	China (2000)	India (2000)	Indonesia (2000)	Korea	
								(2000)	(2006)
Physical Asset	58	70	71	76	78	95	97	81	83
Financial Asset	42	30	29	24	22	5	3	19	17
Total Asset	100	100	100	100	100	100	100	100	100

Source: Davies, Sandstrom, Shorrocks and Wolff. "The World Distribution of Household Wealth" (2006), Figures for Korea calculated by author.

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