Household Debt in Korea: Causes and Policy Responses

2016. 7. 10.

Chang-Gyun Park (Chung-Ang University)

Introduction

- Household debt is regarded as one of the most serious risk factors that can threaten the stability of financial system.
  - started to increase from early 2000's after the foreign exchange crisis in 1997.
  - showed explosive growth between 2000 and 2002 with average annual growth rate of 25%.
  - stabilized after "credit card crisis" in 2002/03 with average annual growth rate of 7.8%, still higher than growth rate of income.
- The concern on household debt emerged as the primary policy concern after the global financial crisis in 2007/08.
  - Korean household sector was able to avert a serious turbulence through the crisis.
  - became the center of attention as prolonged recession and stagnant real estate market after the crisis.

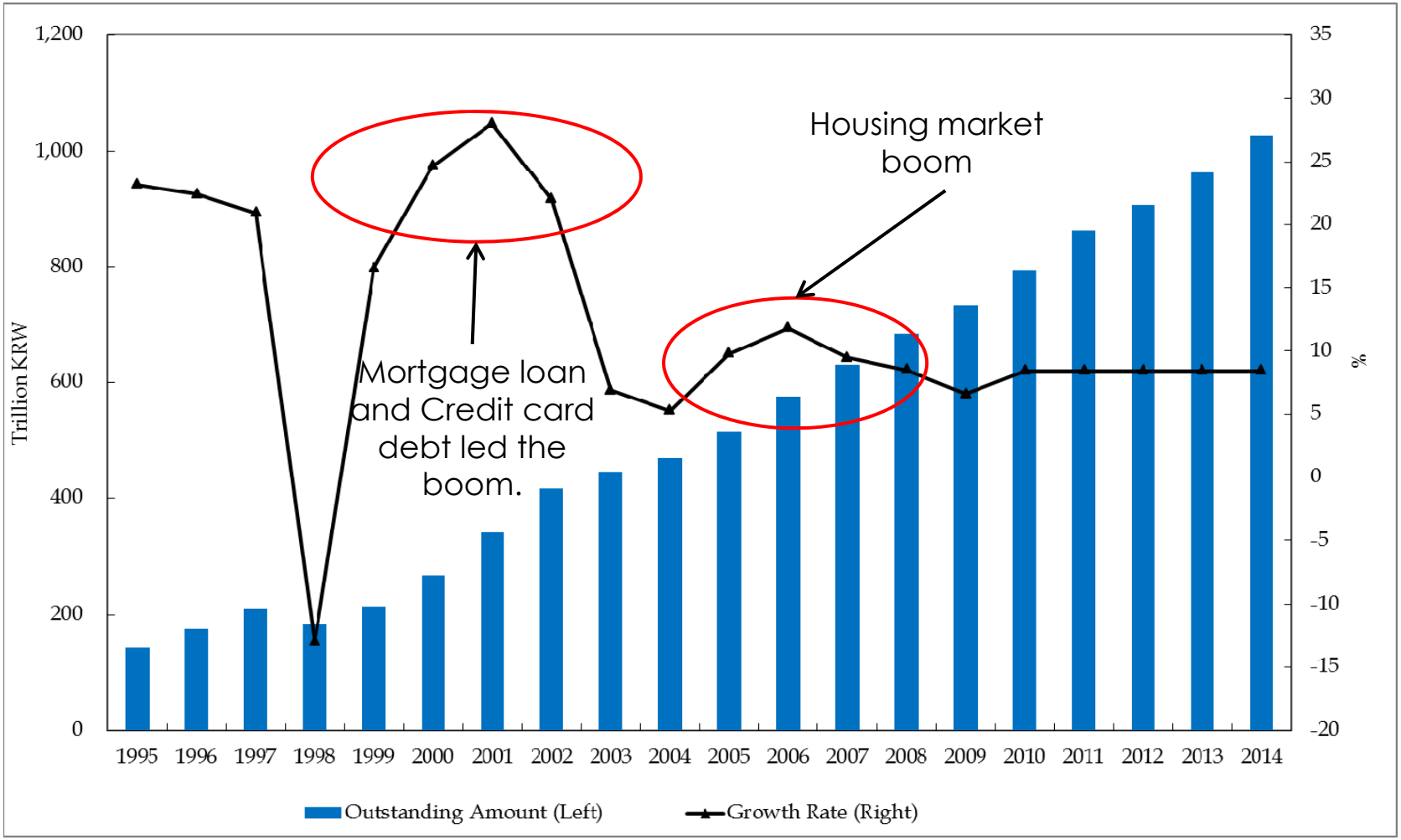
Introduction

- Two episodes: credit card crisis and accumulation of mortgage loan
  - Credit card crisis: textbook example of regulatory failure
    - Outstanding credit card debt: 13.6 trill.('99) → 50.6 trill.('02) → 17.6 trill. ('05)
    - Violent crash lending in 2002/03
  - Accumulation of mortgage loan: risk factor but managed
    - Mortgage loan accounts for almost 50% of total household debt and majority(70%) stays in the balance sheets of commercial banks.
    - Short term adjustable rate baloon loan takes up more than 70% of total mortgage loan balance.
    - The structure is very vulnerable to external shocks, especially housing price shock.
    - Policy efforts focuses on restructuring the mortgage loan structure replacing baloon loans with long term fixed rate amortizing loans.

Household Debt in Korea

- Three phases in growth of household debt
  - 1st phase(1997~1999): slump after the FX crisis in 1997
    - outstanding balance: 211 trill.('97) → 184 trill.('98) → 214 trill.('99)
    - The FX crisis was followed by tumultuous restructuring of financial market and the recession largely induced by tight monetary policy to defend balance of payment.
  - 2nd phase (2000~2002): fast accumulation of debt
    - outstanding balance: 267. till.('00) → 342. till.('01) → 417 trill.('02)
    - Restructuring of financial sector enabled banks to enter consumer credit market and large scale de-regulation allowed financial institutions to take excessive.
    - Mortgage loan by bank and credit card loan led the explosive debt accumulation.
  - 3rd phase (2003~): steady increase of debt burden
    - Average annual growth rate '03~'13: 7.8%
    - Boom in housing market drove debt growth rate up to 10% between 2005 and 2008.

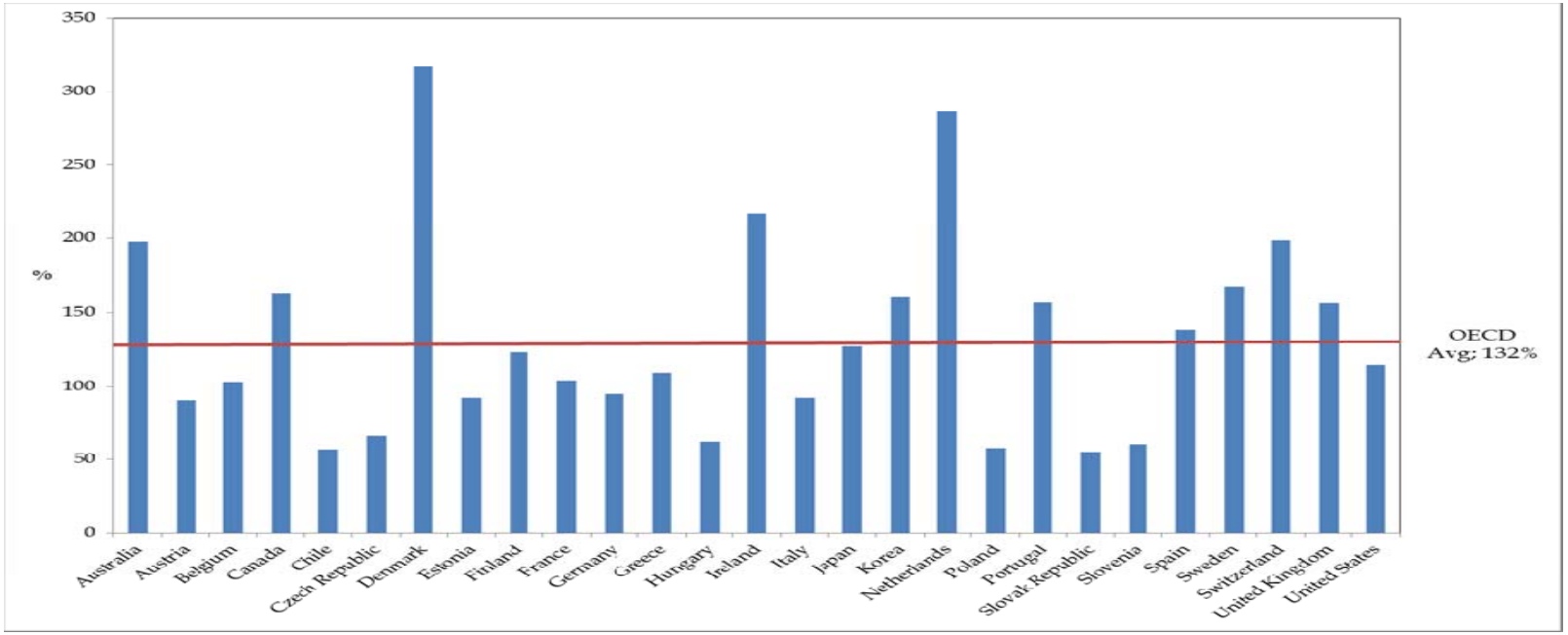
Trend in Household Debt



Source: Bank of Korea

Debt Burden

- Debt burden is already relatively heavy.
  - Debt-to-(net) disposable income ratio was 160% in 2012.
  - Ranked 8th among 27 OECD countries and far higher than OECD average of 132%.

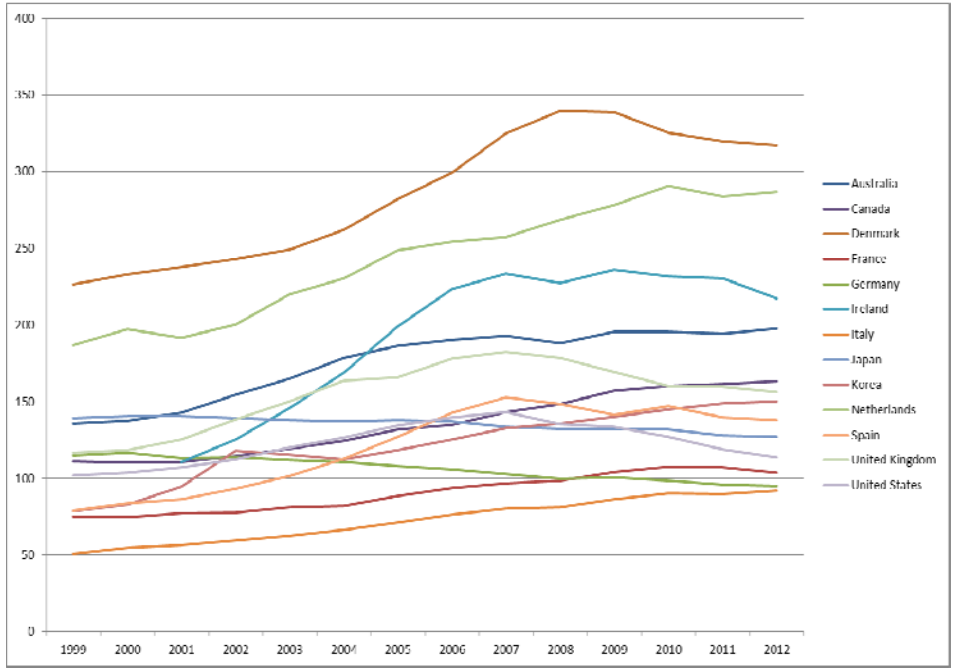


Source: OECD

Debt Burden

- Debt-to-income ratio was low in early 2000's relative to other OECD countries.
  - Debt-to-disposable income: 81%('99) → 120%('03) → 139%('07) → 151%('10) → 160%('12)
  - started the new millennium with relatively low debt burden
  - steady increase in debt burden – debt accumulation has been consistently faster than increase in disposable income.
  - became one of the most indebted countries among OECD members

Trend in Debt-to-Disposable Income among Selected OECD Countries



Source: OECD

Debt Distribution: Probability of Debt Holding

- Probability of debt holding across age and income
  - Probability of debt holding is highest among people of age 40-49, recorded the largest increase among people of age 50-59.
  - Probability of debt holding is positively correlated with income and so is the increase in the probability of debt holding.

Age	-29	30-39	40-49	50-59	60-	Total
2001	0.3338	0.5683	0.5655	0.4460	0.2418	0.4664
2013	0.5562	0.7369	0.7704	0.7363	0.4499	0.6507
Difference	0.2224	0.1686	0.2049	**0.2903**	0.2081	0.1843

Income Quintile	1	2	3	4	5	Total
2001	0.2720	0.4402	0.5142	0.5756	0.5307	0.4664
2013	0.3077	0.6075	0.7325	0.7921	0.8172	0.6507
Difference	0.0356	0.1673	0.2182	0.2165	**0.2865**	0.1843

Debt Distribution: Debt Burden

- Debt-to-disposable income ratio distribution across age and income.
  - Debt burden reached the peak at the 40's and is negatively correlated with income level.
  - Increase in debt burden is conspicuous among old/low income household.

Age	-29	30-39	40-49	50-59	60-	Total
2001	0.1693	0.4387	0.6272	0.5329	0.4010	0.4775
2013	0.6815	1.0635	1.5207	1.4279	1.3885	1.6071
Difference	0.5122	0.6248	0.8936	0.8950	**0.9875**	1.1296

Income Quintile	1	2	3	4	5	Total
2001	0.9603	0.4062	0.3884	0.3490	0.2840	0.4775
2013	3.0652	1.3643	1.1242	1.1770	1.2509	1.6071
Difference	**2.1049**	0.9581	0.7748	0.8280	0.9670	1.1296

Debt Distribution: Solvency

- Debt-to-financial asset ratio distribution across age and income.
  - On average, accumulate financial assets are not enough to pay out debt.
  - Inadequate liquidity/solvency is negatively correlated with income and solvency deteriorated most among the 50's and lowest income quintile families.

Age	-29	30-39	40-49	50-59	60-	Total
2001	0.7332	1.1319	1.1935	0.8230	0.9158	1.2336
2013	0.4364	1.0149	1.0180	1.2655	1.0532	1.0702
Difference	-0.2968	-0.1170	-0.9171	**0.4425**	0.1374	-0.1634

Income Quintile	1	2	3	4	5	Total
2001	2.0931	1.9935	1.7082	0.2732	0.1760	1.2336
2013	3.8272	2.4904	0.3433	0.2147	0.1891	1.0702
Difference	**1.7341**	-1.2506	-1.3650	-0.0585	0.0132	-0.1634

Determinant of Debt Holding/Burden

- Heckman selection model
  - Debt holding equation:
    - Dependent variable: dummy for debt holding
    - Explanatory variables: log(income), family size, marriage, education, age, self-employed, homeownership + net financial asset
  - Debt burden equation: log(income), family size, marriage, education, age, self-employed, homeownership
    - Dependent variable: debt/disposable income
    - Explanatory variables: log(income), family size, marriage, education, age, self-employed, homeownership
  - Household Finance and Welfare Survey 2006, 8275 observations, ML estimation

Determinant of Debt Holding/Burden

Debt holding equation

Ex. Var	Coefficient (S.E.)
log(income)	0.182*** (0.004)
log(Net Asset)	0.001*** (0.0002)
Family size	0.007*** (0.001)
Marriage (married=1)	0.014*** (0.003)
Education 1 (high school =1)	0.015*** (0.003)
Education2 (college=1)	0.016*** (0.003)
Age(45-54)	-0.005 (0.003)
Age(55-64)	-0.012 (0.004)
Age (65-)	-0.047*** (0.005)
Self Employed	0.017*** (0.004)
Unemployed	0.003 (0.004)
Home ownership	0.053*** (0.004)

Debt burden equation

Ex. Var	Coefficient (S.E.)
log(income)	1.113*** (0.082)
Family size	0.095*** (0.007)
Marriage (married=1)	0.134*** (0.018)
Education 1 (high school =1)	0.161*** (0.018)
Education2 (college=1)	0.171*** (0.020)
Age(45-54)	-0.056*** (0.023)
Age(55-64)	-0.154** (0.026)
Age (65-)	-0.515*** (0.029)
Self Employed	0.180*** (0.022)
Unemployed	0.012 (0.022)
Home ownership	0.588*** (0.014)

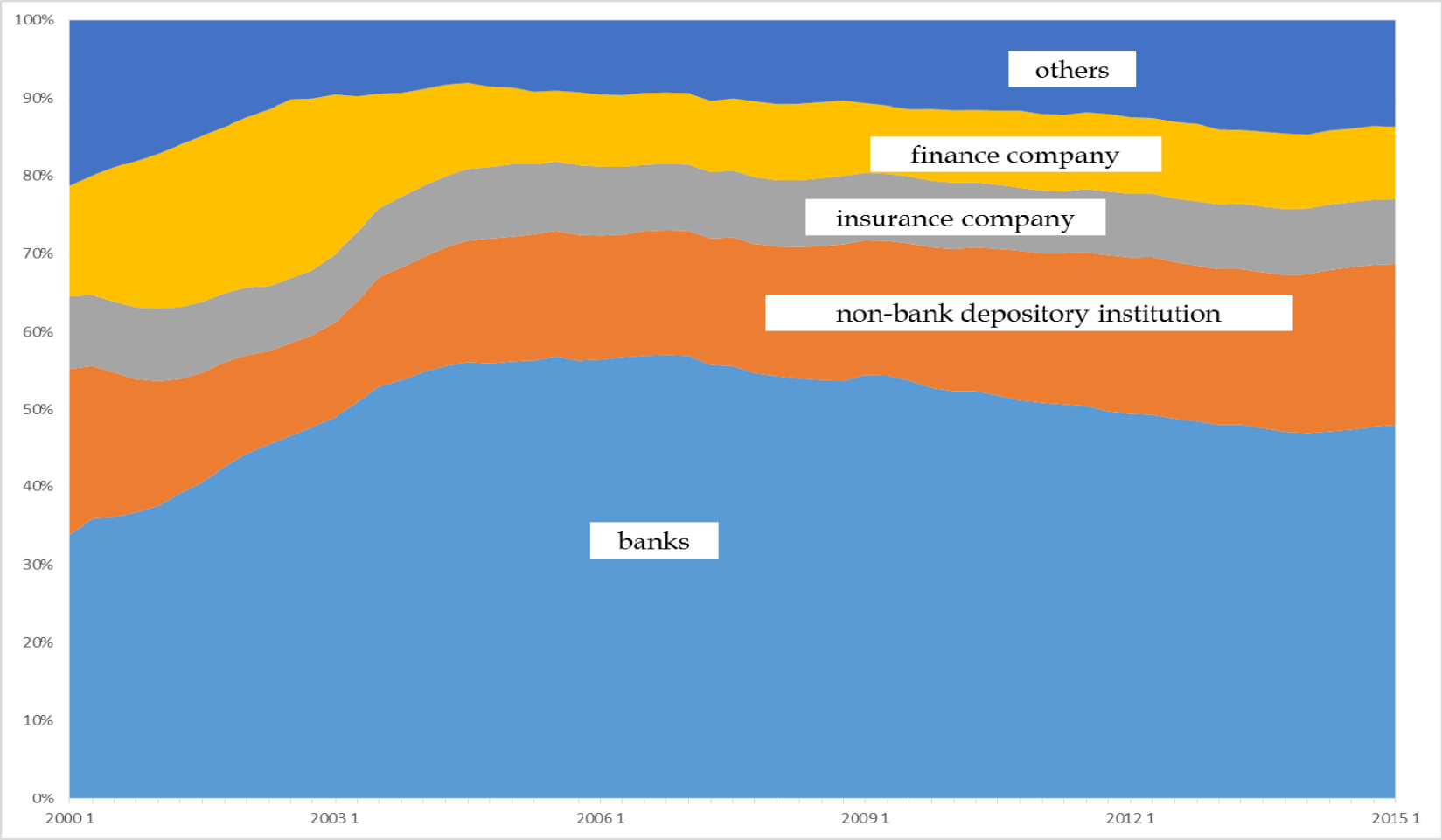
Composition of Debt Suppliers

- Banks have been the biggest credit supplier to the household sector and their market share had increased up until mid-2000's.
  - Before 2000, non-bank deposit taking institutions (NBDI) such as savings banks, credit unions, and cooperatives were the biggest lender in consumer credit market.
    - NBDIs were hit hard by the FX crisis in 1997 and subsequent restructuring of financial sector.
    - NBDIs' role in consumer credit market started to increase only after mid-2000's when restructuring of the sector was in most part completed.
  - The increase in banks' market share was mostly due to growth of mortgage loans.
    - The proportion of mortgage loan in total bank loans to the household sector was 47.8 percent at the end of 2000, it had continuously risen to reach 62.4 percent in 2005.
    - From 2001 to 2005, 71% of consumer credit increase provided by banks was attributable to increases in mortgage loans.

Composition of Debt Suppliers

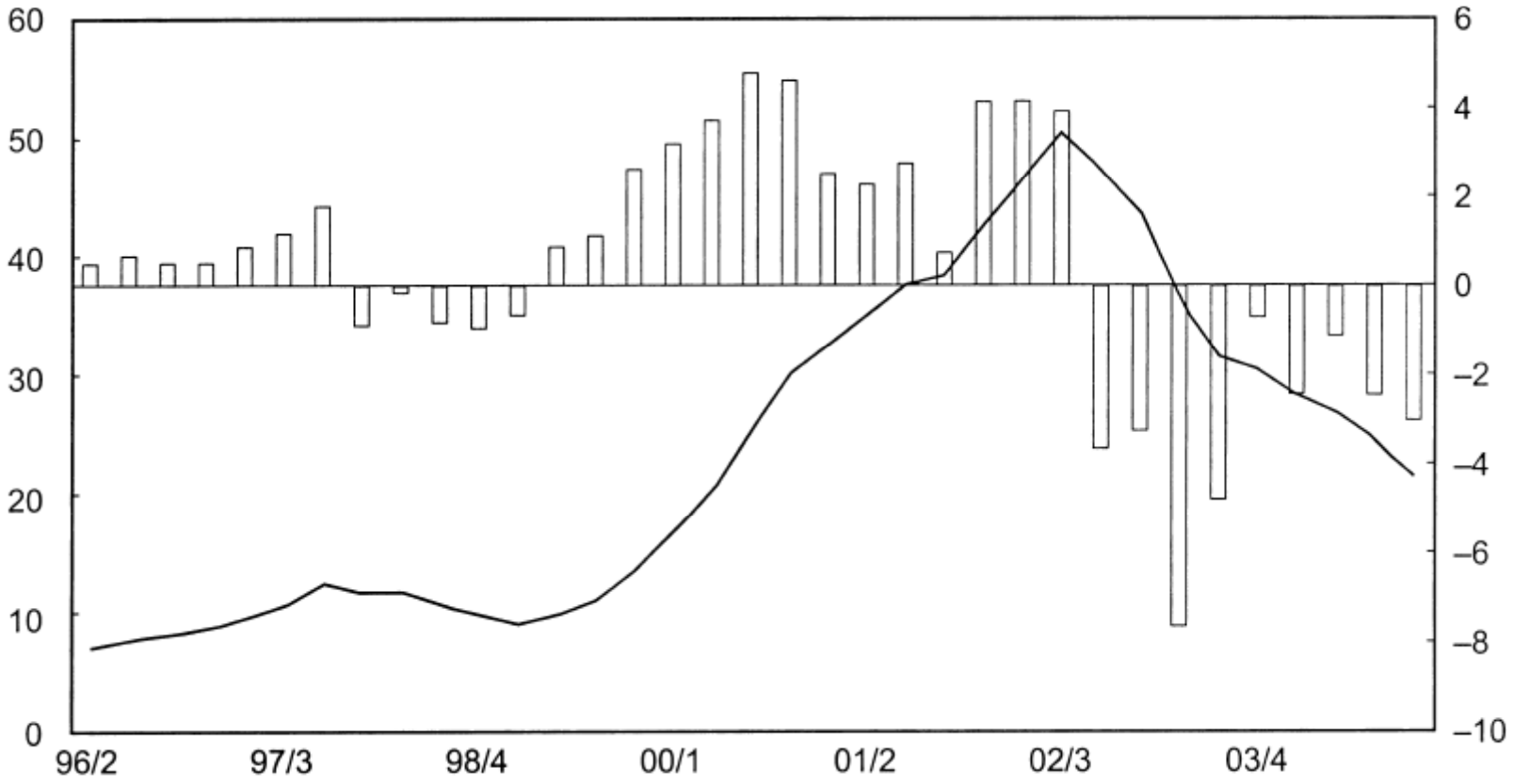
- Another major contributor to consumer credit increase after 1999 was credit card companies.
  - Credit card companies were subsidiaries of commercial banks or big industrial conglomerates.
  - Ill-advised de-regulation and lack of risk management system caused credit card companies to get involved in reckless competition to secure larger market share.
  - Credit card debt increased by 270% from 1999 to 2002.
  - Regulatory intervention to curb explosive increase of credit card debt exposed structural weakness of the industry and the market contracted even faster than the speed it expanded.
  - By the third quarter of 2005, the outstanding balance of credit card debt reached the level in 1999.

Composition of Debt Suppliers



Source: BOK

Credit Card Debts



Source: Financial Supervisory Service.
Notes: The bar chart indicates quarter-to-quarter change in outstanding balance and should be read by the scale on the right-hand side. Scale is in trillion Korean Won. The line graph indicates the outstanding balance at the end of each quarter and should be read by the scale on the left-hand side. Scale is in percentage.

Cause 1: Deregulation of Financial Sector

- FX crisis in 1997 changed the way financial institutions, especially commercial banks, were operated in a fundamental way.
  - Under the old regime, banks were regarded as instrumental agents to mobilize savings and channel them to strategically selected industries and profitability of individual banks was not a primary concern as long as banks served to meet the policy goals set by the government.
  - Under the new regime, efficiency in the allocation of credit resources became the primary concern of financial regulation, and price mechanism replaced the government as the main player in credit resource allocation.
    - Implicit but strong restrictions on interest rate and service fees were abolished, Foreign banks were allowed to enter the market. Financial Holding Company Act was legislated to promote competition.
- Banks were set free to enter consumer credit market and led the market as the largest supplier.

Cause 2: Profitability of Household Loans

- Free from government intervention, commercial bank concentrated on household loans that brought higher interest rate and lower default rate than corporate loans

Household Loan vs. Corporate Loan

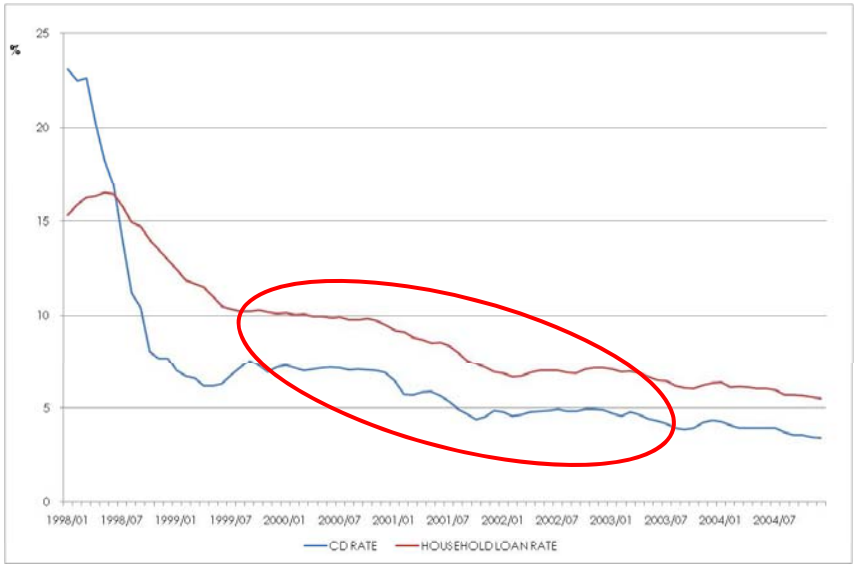
Year	Household Loan		Corporate Loan	
	Interest rate	Default rate	Interest rate	Default rate
1999	10.85	3.2	8.91	4.4
2000	9.88	2.4	8.18	3.4
2001	8.20	1.3	7.49	2.1
2002	6.92	1.5	6.50	2.0
2003	6.50	1.8	6.17	2.1
2004	5.88	1.8	5.92	2.1
2005	5.49	1.2	5.65	1.5

- Financial institutions including banks among themselves were involved in ever escalating competition to acquire size advantage by accumulating more assets.
  - In the absence of properly working risk management system, lenders are likely to ask enough collaterals, which mortgage borrowers are ready to comply.

Cause 3: Low Interest Rate and increasing Housing Price

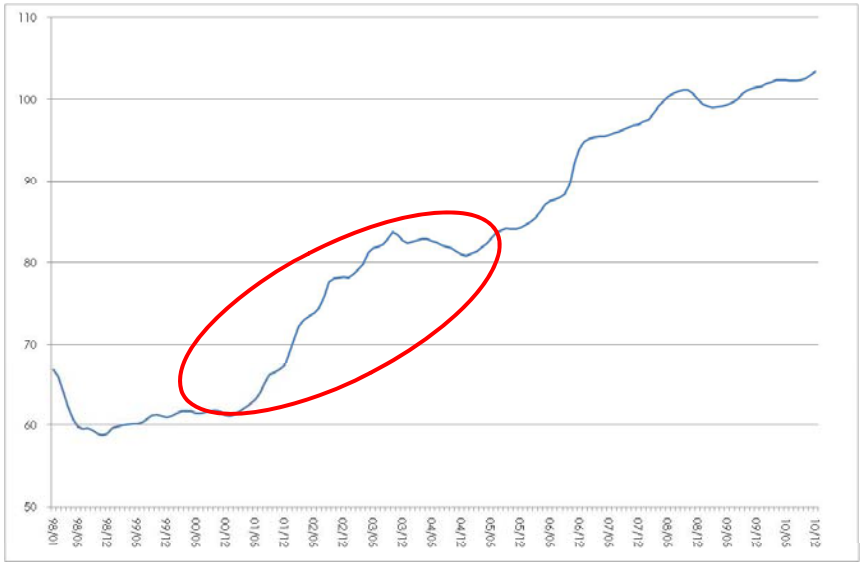
- Low interest rate stimulated asset price and offers favorable environments for borrowers.

Trend in Interest Rates during 2000's



- Increase in housing prices spurred expectation on capital gains and boosted home purchase

Housing Price Index



Cause 4: Diminished Loan Demand from Corporate Sector

- Free from government intervention, commercial bank concentrated on household loans that brought higher interest rate and lower default rate than corporate loans

Household Loan vs. Corporate Loan

Year	Household Loan		Corporate Loan	
	Interest rate	Default rate	Interest rate	Default rate
1999	10.85	3.2	8.91	4.4
2000	9.88	2.4	8.18	3.4
2001	8.20	1.3	7.49	2.1
2002	6.92	1.5	6.50	2.0
2003	6.50	1.8	6.17	2.1
2004	5.88	1.8	5.92	2.1
2005	5.49	1.2	5.65	1.5

- Financial institutions including banks among themselves were involved in ever escalating competition to acquire size advantage by accumulating more assets.
  - In the absence of properly working risk management system, lenders are likely to ask enough collaterals, which mortgage borrowers are ready to comply.

Cause 4: Diminished Loan Demand from Corporate Sector

- Financing pattern of the (large) corporate sector changed in a fundamental way.
  - Before FX crisis, large conglomerates largely relied on bank loans rather then capital market instruments in securing investment capital.
- The structural fragility of the debt-driven development became obvious when sudden and massive capital outflow forced large conglomerates to declare bankruptcy or resort to restructuring procedures to survive.
- Policy makers accepted the reality by requiring the corporate sector to strengthen the financial structure by reducing debt and injecting more equity capital.
- The largest demander for bank loan, large conglomerates, suddenly disappeared.

An Analysis

- VAR analysis of four-variable system;
  - average consumer loan rate, housing(apartment) price growth rate, GDP growth rate, growth rate of household debt
  - All variables are in real terms and quarterly data from 2000 to 2013.

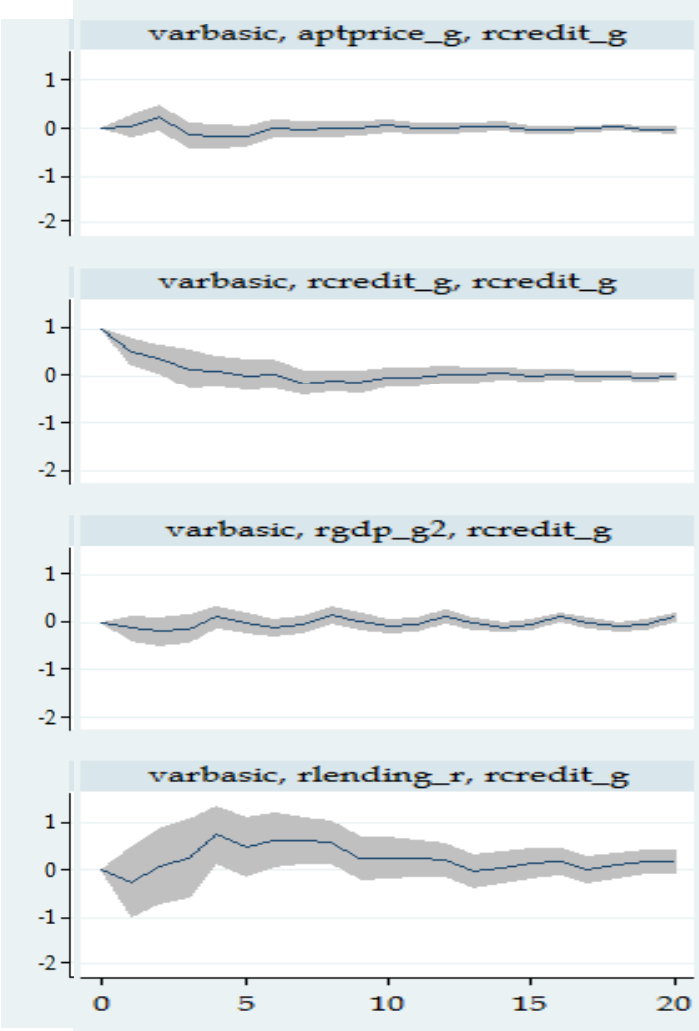
IRF and FEVD

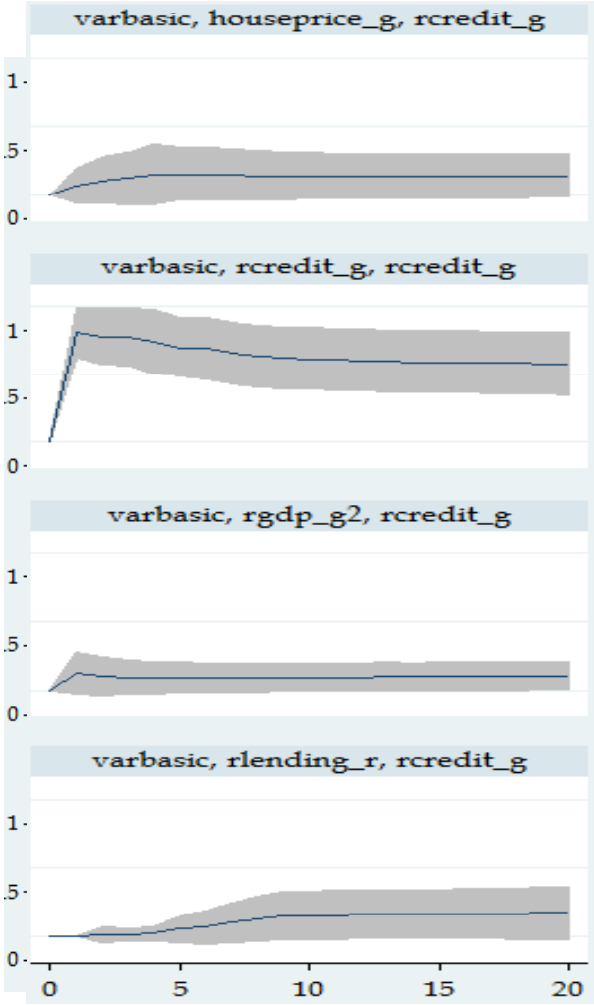
Housing price → credit growth

credit growth → credit growth

GDP growth → credit growth

Interest rate → credit growth





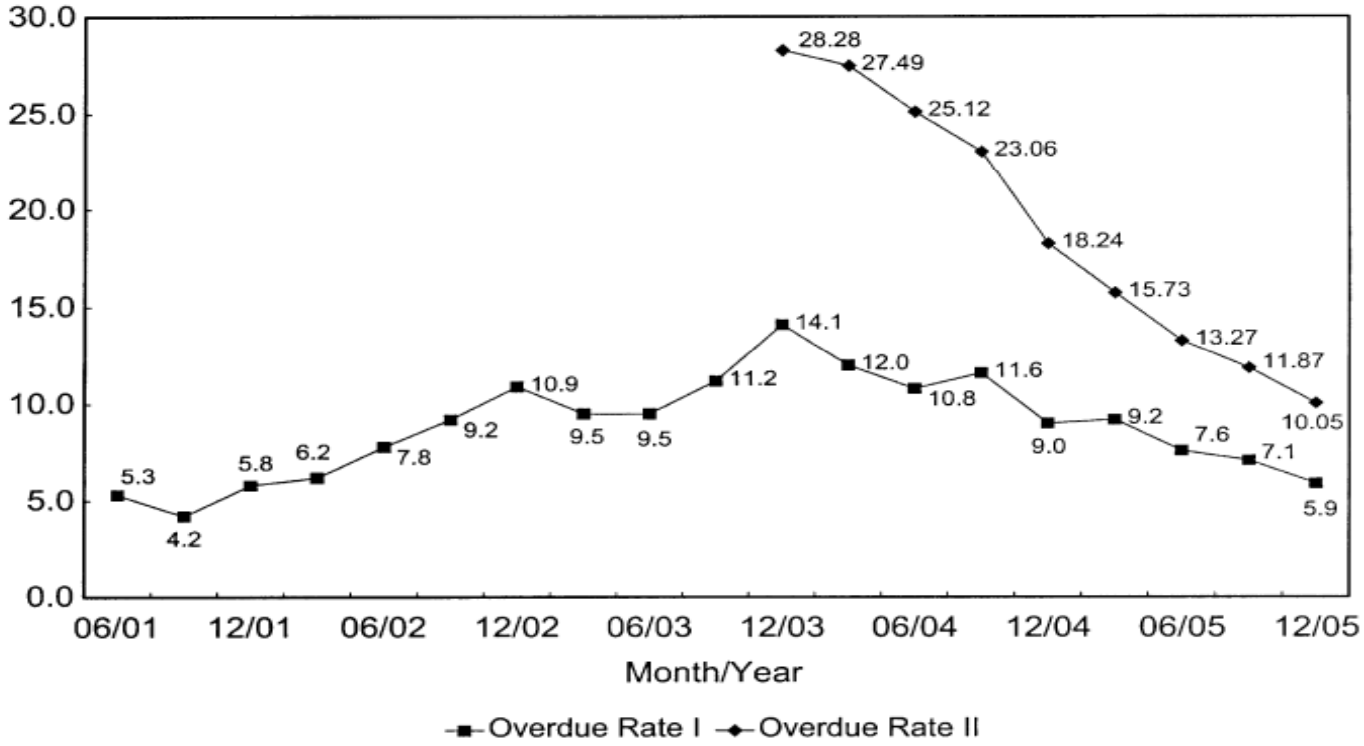
Development of Credit Card Crisis

- Spectacular growth of credit card use and debt
  - The number of merchants accepting credit cards was less than one million in 1992, and increased to 17 million in 2003.
  - credit cards per person: 1('93) → 2('98) → 4.6('02)
  - private consumption paid by credit cards: 15.5%('99) → 51%('02)
  - Outstanding credit card debt: 13.6 trill.('99) → 50.6 trill.('02) → 17.6 trill. ('05)

Fast Deterioration of Loan Quality

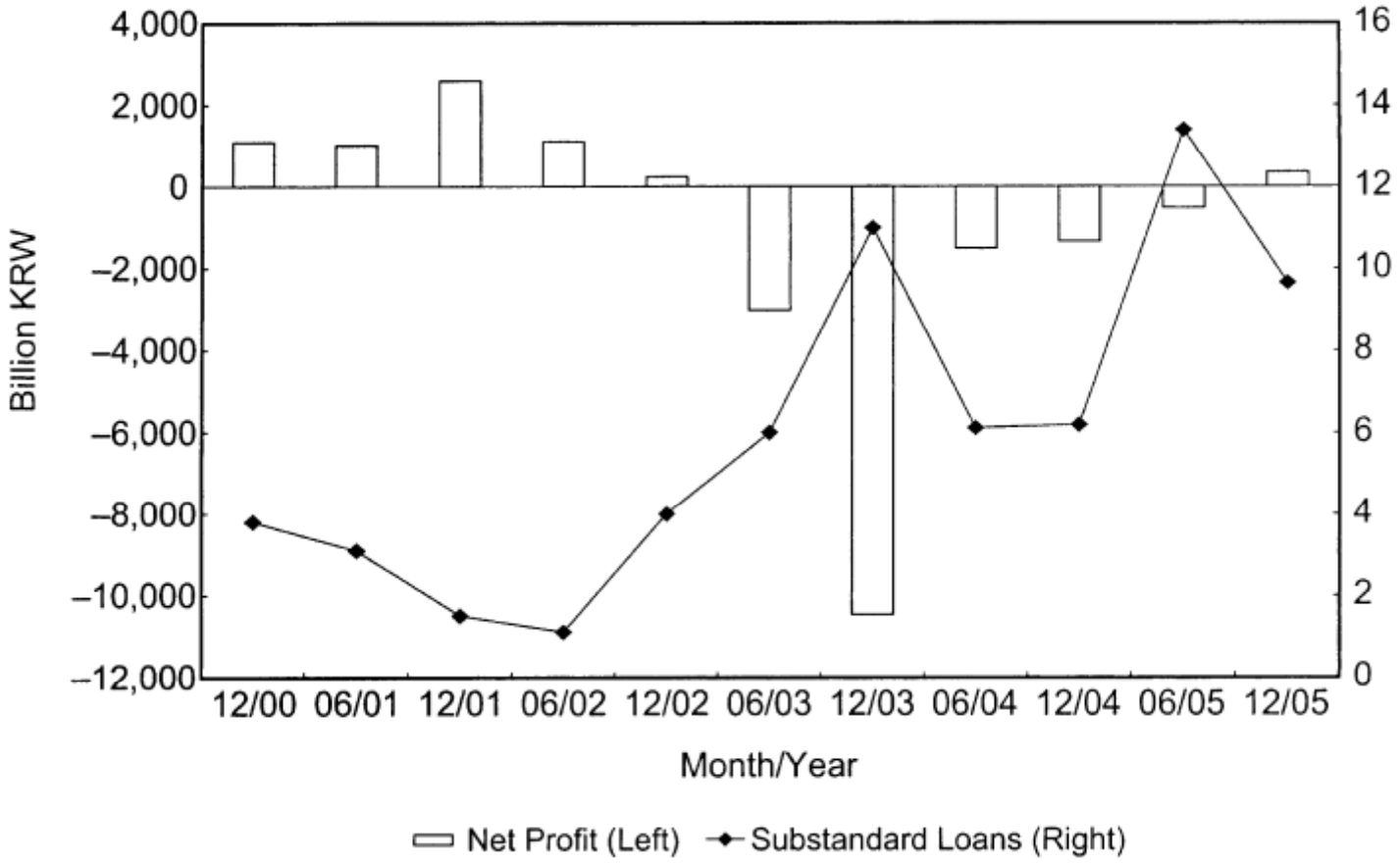
- The overdue loan rate started to crawl up in the second half of 2001 recording 10.9% at the end of 2002.
  - It seemed that the steep increase in the overdue rate was temporarily halted during the first half of 2003, which was seriously misleading.
  - Confronted with mounting overdue loans, credit card companies tried to window-dress the quality of their loan portfolios by replacing overdue loans with additional credit to debtors in serious arrears.
  - Classifying replaced loans as overdue ones, the actual overdue rate was twice as high as the rate excluding replacing loans.
- Profitability and quality of loan portfolios by credit card companies sent strong warning signs from the second half of 2002.

Overdue Rate of Credit Card Debt



Source: Financial Supervisory Service.
Notes: Overdue rate I indicates the overdue loan rate excluding replacement loans.
Overdue rate II indicates the overdue loan rate including replacement loans.

Profit and Substandard Loans of Credit Card Companies



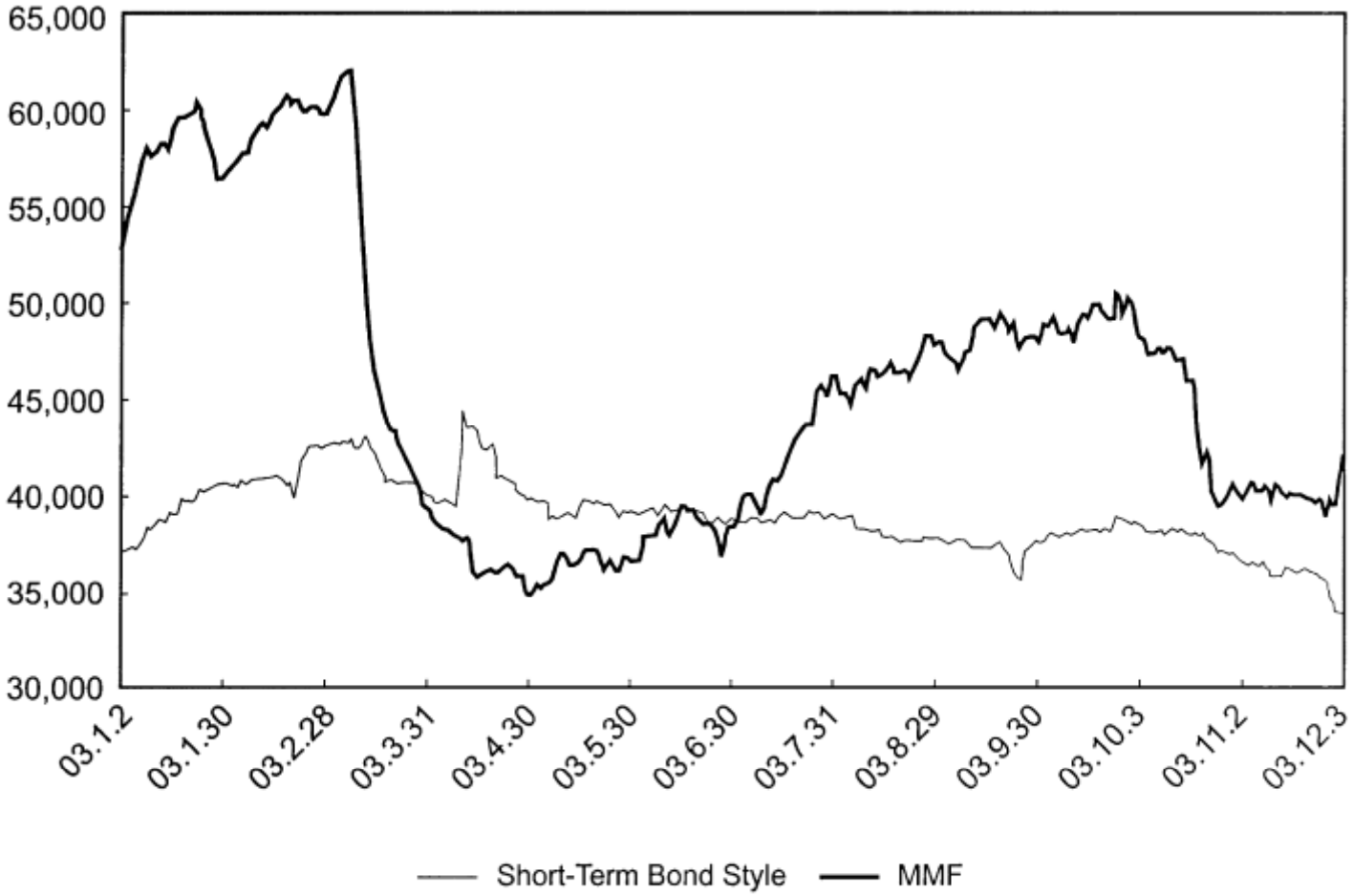
Source: Financial Supervisory Service.
Note: Substandard loans indicate the proportion of loans classified as substandard or below.

Ignition of credit Card Crisis

- The accounting fraud committed by SK Global Corporation was uncovered in March 2003, which sparked the spread of a pessimistic pressure across financial market.
  - Virtually all imaginable kinds of accounting irregularities were utilized to camouflage the deterioration of the balance sheet of SK Global. Liability was undervalued, while asset was grossly overvalued.
- Short term liquidity in capital market suddenly dropped to the alarming level due to the scandal and credit card companies were not able to raise the liquidity necessary to survive.
  - Investors holding bonds issued by credit card companies rushed to dump them.

SK Global Scandal and Short term Capital Market

Outstanding Stock of MMF and Short-term bonds



Further Development and Crash

- Alarmed by the possibility that the problem would spread to other sectors, especially banking sector, the financial regulator intervened to mediate debt rescheduling negotiations between credit card companies and lending financial institutions.
  - Stability was restored after the agreement between credit card companies and lending institutions in April 2003.

Lenders of Credit Card Companies (trillion KRW)

	Investment Trust	Banks	Insurance Company	Security Company	Pension Fund	Total
Amount	25.5	21.7	12.7	2.1	8.0	89.4

Note: The table illustrates the position at the end of 2003.

Further Development and Crash

- Then the largest credit card company, LG Card, reported seriously deteriorating performance in spite of the debt relief agreement.
  - A group of large shareholders sold their shares in a discrete manner, which caused another round of massive and sudden evaporation of short term liquidity.
  - The lending institutions took over the operation of LG Card in December 2003.

Regulatory Failure

- First misstep: comprehensive deregulation in 1999
  - The uniform ceiling on the cash advance service was removed as a part of comprehensive financial deregulation in 1999.
  - In the absence of credit scoring system, the regulation played an important role in checking credit card companies not to be involved in excessive risk taking.
- Second misstep: failure to intervene pre-emptively in 2001.
  - Financial regulator should have intervened in 2001 when massive amount of capital was offered to credit card industry by the financial institutions that are closely related to system risk – banks and insurance companies.
  - Low overdue rate was maintained by the opportunity that debtors already in deep trouble in repayment were able to borrow from another credit card company to pay overdue loans.

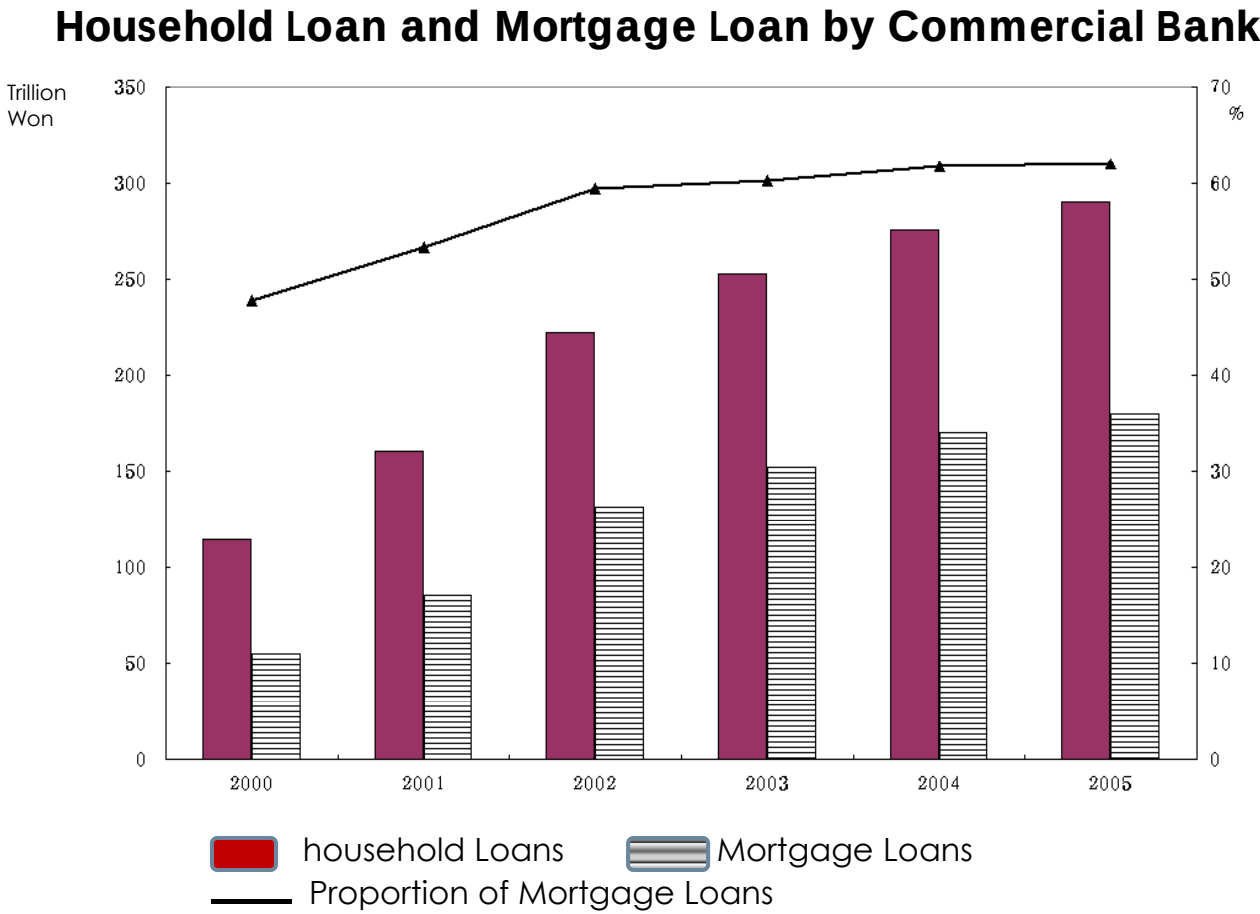
Regulatory Failure

- Third misstep: sudden switch of policy stance in 2002
  - Around the end of 2002, the financial regulator suddenly changed the policy stance toward credit card market and imposed several very strong policy restrictions to restore financial strength of credit card companies.
    - ceiling on cash advance service (loan without necessary credit check), stronger provision requirement for problem loans
  - Sudden strengthening of regulatory measures forced credit card companies to tighten credit screening standard and become very conservative in loan decision, which resulted in a rapid increase in delay or failure to repay.

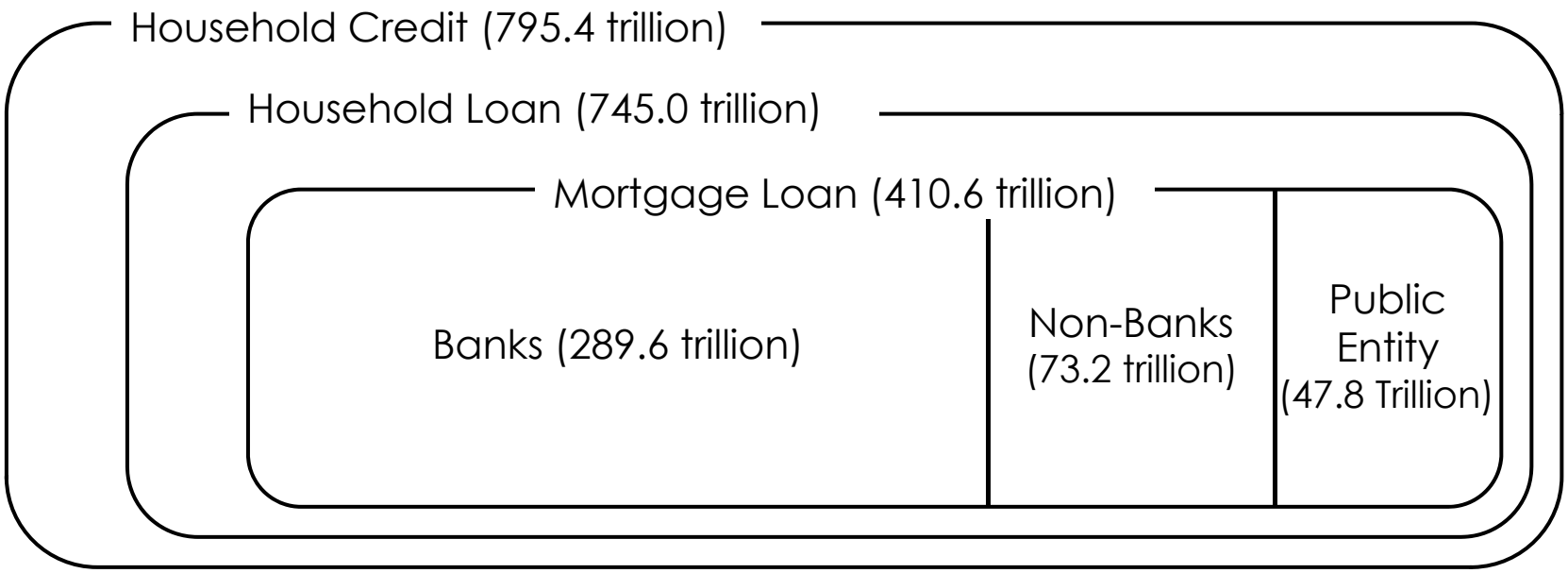
Mortgage Market in Korea After the FX Crisis

- Commercial banks enter the residential mortgage market to take over the leading role from the public sector after the foreign exchange crisis in 1997.
  - Government intervention in credit market had been receding.
  - Banks are allowed to make independent decisions in credit allocation following market mechanism – profitability and riskiness.
  - Household loans had been more profitable and les risky than corporate loans, especially to SMEs.
    - Mortgage loans were especially attractive for commercial banks.

Growth of Residential Mortgage Loan



Residential Mortgage Market in 2010



Non-banks indicate non-banking deposit taking institutions.
Public entity consists of KHFC and NHF.

- 51.6% of total household debt is estimated to be related to mortgage debts.
- Mortgage related debts by household sector are estimated to reach 64% of disposable income in 2010.

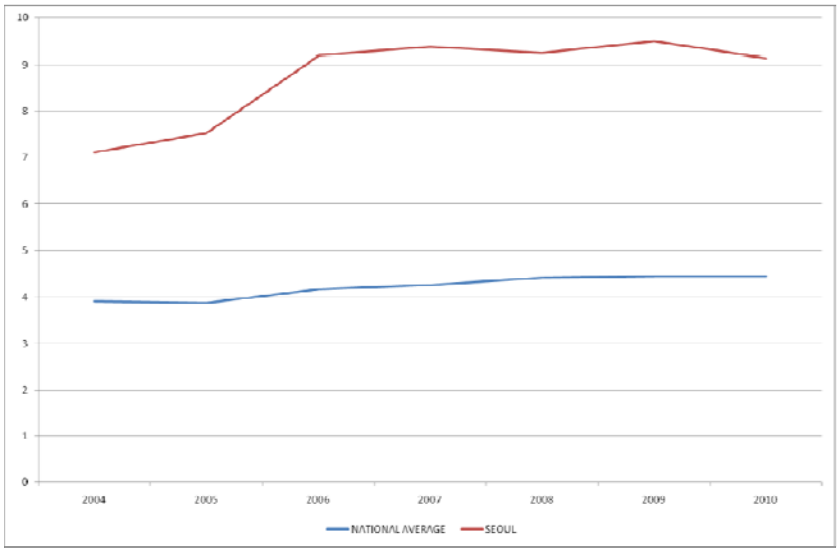
Mortgage Contracts

- Dominant majority of mortgage contracts in Korea are written as short-term adjustable rate bullet form.
  - Typical maturity used to be no longer than 3 years.
    - New regulation on mortgage loan help increase contracts with longer maturity.
    - Average maturity of new mortgage loans reached 13 years in 2010 due to the regulation on mortgage loans.
  - More than 90% are adjustable rate loans.
    - The proportion of adjustable rate loans: 92.3%(07) → 92.7%(08) → 93.2%(09)
    - Interest rates are revised very frequently, typically every three months.
  - Almost 80% of mortgage borrowers are paying interests only.
    - 40% are pure bullet type loans.
    - The other 40% are mortgage loans with amortization but still in grace period, most of which are expected to be refinanced when the grace period expires.

Bullet Mortgage in Korea, Why?

- Borrower side story
  - Expectations on large capital gains led borrowers to rely on appreciating housing prices rather than expected income as the primary source of repayments.
  - High housing price relative to income made very hard for most middle and low income families to purchase home based on future income stream.

Price-to-Income Ratio



Bullet Mortgage in Korea, Why?

- Lender side story
  - In the absence of well-functioning securitization market for long-term mortgage debts, banks are naturally led to rely on short-term loans.
  - Short maturity makes it impossible to design amortizing loans considering high housing prices relative to income.
  - Banks are easily trapped into "the fallacy of composition".
    - Individual banks think that mortgage loans they sold are safe due to very low LTV.
    - What if all banks and borrowers are forced to sell the mortgaged houses?

Balloon Mortgage: A Lesson from History

- Short-term balloon mortgage may pose a serious threat to financial stability.
- One important lesson from history: housing finance market in US before the Great Depression

Before the Great Depression, the single-family home mortgage was a very different instrument. Until the 1930s, residential mortgages in the United States were available only for a short term (typically 5–10 years) and featured "bullet" payments of principal at term. Unless borrowers could find means to refinance these loans when they came due, they would have to pay off the outstanding loan balance. In addition, most loans carried a variable rate of interest. Bartlett (1989) presents a fine historical overview of the origins of the modern U.S. mortgage.

Home mortgages typically had very low loan-to-value ratios of 50 percent or less and thus did not, by themselves, place substantial stress on lenders, because when borrowers were short of cash, their property could be sold if necessary to redeem their loan. But during the Great Depression in the early 1930s, property values in the United States declined by 50 percent relative to peak values. Holders of these mortgages, knowing their positions were insecure, refused to refinance loans that came due; as a result, borrowers defaulted, having neither the cash nor the home equity necessary to pay the loans back. A wave of foreclosures resulted—typically 250,000 per year between 1931 and 1935. At the worst of the Depression, nearly 10 percent of homes were in foreclosure. Financial institutions would in turn attempt to resell the properties that they repossessed, which placed even further downward pressure on the housing market.

Green and Wachter(2006)

Theoretical Explanations

- Several important theoretical works show that market value of illiquid assets such as residential housing are vulnerable to the possibility of self-enforcing downward spiral – For example, Cifuentes, Ferruci, and Shin(2005)
  - The key elements of the models includes "marketing-to-market of illiquid assets, loss-cut sales rule in asset management, massive dumping of de-valued assets.
  - Strict adherence on LTV may result in disastrous shock amplifying cycle in housing market.

Mortgage Contracts around the World

Contract features in selected mortgage systems

Country	Usual length of contract (years)	Estimated average LTV ratio (new loans)	% of owner-occupiers with mortgages
Australia	25	60-70%	45
Belgium	20	80-100%	56
Canada	25	75-95%[1]	54
France	15-20	78%	37.5
Germany	20-30	80-100%; 60% for Pfandbrief	na
Italy	5-20	80%	na
Korea	3-20	56.4%; max 70%	na
Japan	20-30	na[2]	na
Luxembourg	20-25	80%	na
Mexico	10-15	80-100%	na
Netherlands	30	87%; max 125%	85
Spain	15-20	70-80%	na
Sweden	30-45	80-95%	na
Switzerland	15-20	Max 80%; 65% for Pfandbrief issuance	na
United Kingdom	25	70%	60
United States	30	Typically about 85%	65.1[3]

[1] 75% for conventional (non-insured) mortgage loans and 95% for insured mortgage loans. [2] The Government Housing Loan Corporation discloses the average LTV ratio for the underlying mortgages of its MBSs. The ratio has been around 70-80% from the first issue in March 2001 to date. [3] 2001 Survey of Consumer Finances, Board of Governors of the Federal Reserve System.

Sources: ECB (2003); national authorities.

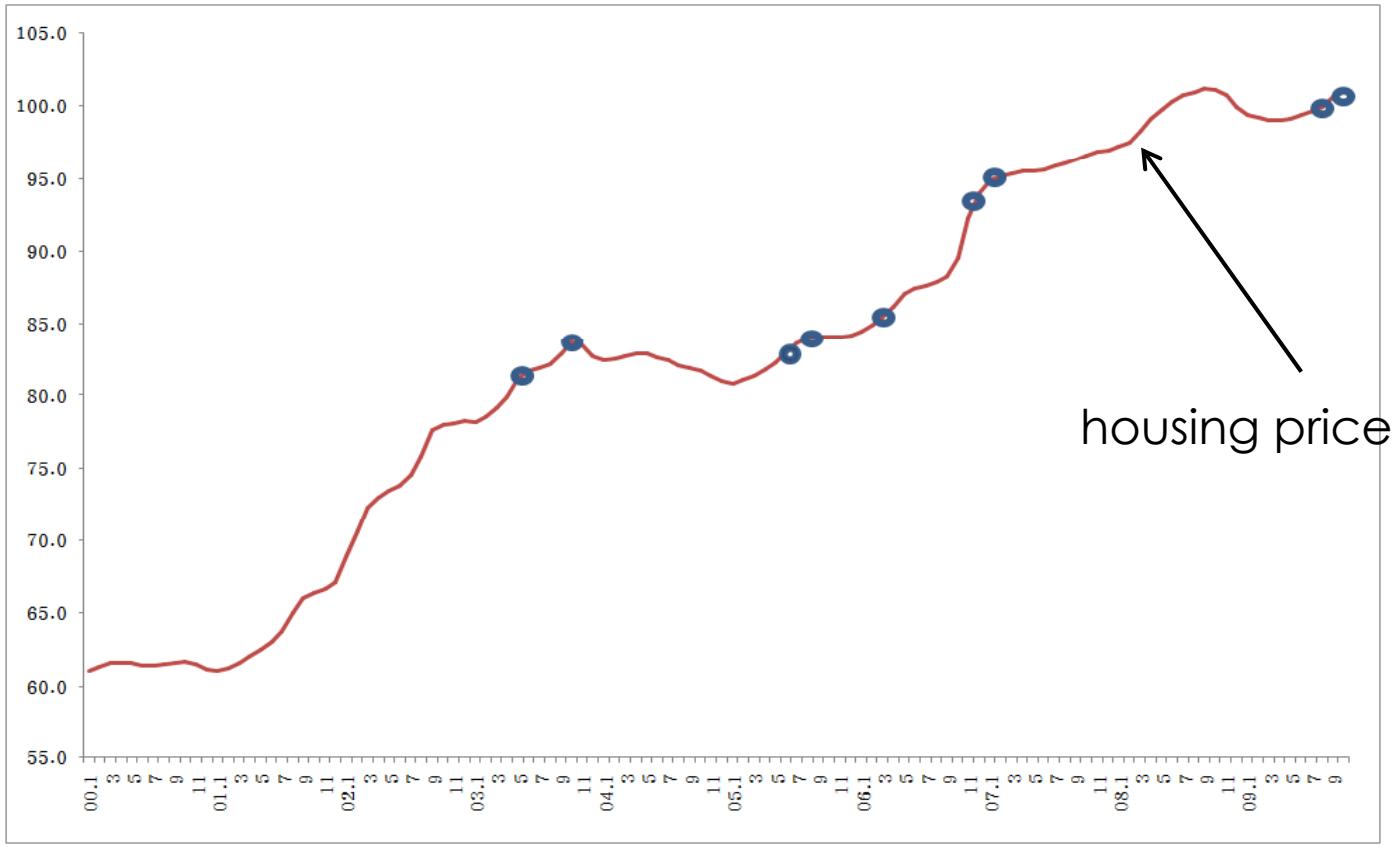
Regulatory Response to Mortgage Loan Increase

- Regulatory authority started to take measures in 2002 to respond to fast increase in mortgage loans propelled by booms in housing market.
  - At least 10 sets of policy measures were taken between 2002 and 2009.
  - Focused on tightening LTV and DTI(debt-to-income) ratio
- Not so successful in curbing increase in mortgage debt
  - Policy measures were successful in neither controlling growth of mortgage loans nor restoring stability in housing market.
  - Important financial regulatory measures such as LTV and DTI were mainly used to respond to excessive boom in housing market.

Regulatory Response to Mortgage Loan Increase

	Policy Measures
2002	- Set ceiling on LTV for residential building at 60% for mortgage loans by banks - Set higher BIS risk weight for mortgage loans - Recommending stronger credit screening for mortgage loans
May 2003	- Set ceiling on LTV for residential building in special area designated based on big jump in housing price at 50% for bank mortgage loan with maturity less than 3 years
October 2003	- Set ceiling on LTV for residential building in special area designated based on big jump in housing price at 40% for bank mortgage loan with maturity less than 10 years
June 2005	- Prohibition of mortgage loan on apartment building in special area designated based on big jump in housing price - Set ceiling on mortgage loans by saving banks at 60%
August 2005	- Prohibition on mortgage loans to under-aged borrowers - Set ceiling on DTI at 30% for mortgage loans to borrower younger than 30years old
March 2006	- Set the ceiling on DTI at 40% for apartment building in special area designated based on big jump in housing price exceeding 600 million KRW
November 2006	- Abolition of all exceptions in LTV regulation for banks and insurance companies - Set the ceiling on DTI at 40% for apartment building in special area designated based on big jump in housing pricc - Set the ceiling on LTV at 60% for mortgage loans by non-banking financial institutions
January 2007	- Strengthening credit screening process for mortgage borrowers
July 2009	- Set the ceiling on LTV at 50% on all mortgage loans in Seoul metropolitan area
September 2009	- Set the ceiling on DTI at 40% on all mortgage loans in Seoul metropolitan area

Housing Market and Financial regulation



The circles indicate the points when policy measures were taken for mortgage loans

DTI Regulation and Maturity Structure of Mortgage Loan

- DTI regulation was highly effective in strengthening maturity structure of mortgage loans.

	Shorter than 3 years	Shorter than 1 year	1~3 years	3~5 years	Longer than 5 years	5 ~ 10 years	Longer than 10 years
'03	77.7%	27.7%	50.0%	9.1%	13.1%	-	-
'04	70.8%	41.7%	29.1%	6.5%	22.7%	-	-
'05	57.1%	35.2%	21.9%	9.1%	34.6%	8.9%	24.9%
'06	41.7%	23.9%	17.8%	7.4%	50.9%	11.5%	39.4%
'07	37.8%	21.0%	16.7%	6.9%	55.3%	14.4%	40.9%
'08.6	35.6%	20.1%	15.6%	6.5%	57.9%	13.4%	44.5%