Consumer Credit Market in Korea after the Economic Crisis

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The purpose of the paper is twofold. One is to document series of events occurred during rapid growth of household credit in Korea since the economic crisis in 1997. The other is to examine the causes of credit card crisis in 2003 and evaluate the adequacy of policy responses. We argue that untimely and improper regulatory measures, at least in part, contributed to development of credit card crisis.

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1. Introduction

The purpose of the paper is twofold. One is to document the chronology of rapid growth of household credit in Korea since the foreign exchange crisis in 1997. The other is to examine the causes of credit card crisis in 2003 and evaluate the adequacy of policy responses.

Increase in household debt was primarily the result of financial de-regulation and shift of managerial principle in financial industry after the economic crisis. Financial companies started to act as profit seeking entities rather than instruments to channel credit resources into a few industries strategically chosen by the government. That almost inevitably resulted in large inflow of credit resources into household sector.

De-regulation and accompanying boom in consume credit market resulted in many changes in the financial market. Allocation of credit resources based on price signal brought about efficiency improvement and welfare gain. On the other hand, fast accumulation of household debt also brought in negative implications on the stability of financial market.

We discuss the evolution of credit card crisis in 2003 with the presumption that it was a classic example of regulatory failure. We argue that with timely and proper regulatory actions, much of difficulties credit card crisis gave rise to would have been alleviated, if not totally avoided.

The next chapter documents the series of events occurred during fast increase in household debt after the economic crisis in 1997. Chapter 3 examines the causes and consequences of rapid expansion of consumer credit market. Chapter 4 analyzes credit card crisis in 2003 and offers evaluations on the adequacy of policy measures taken to

respond to the crisis.

2. Household Debt in Korea after the Economic Crisis

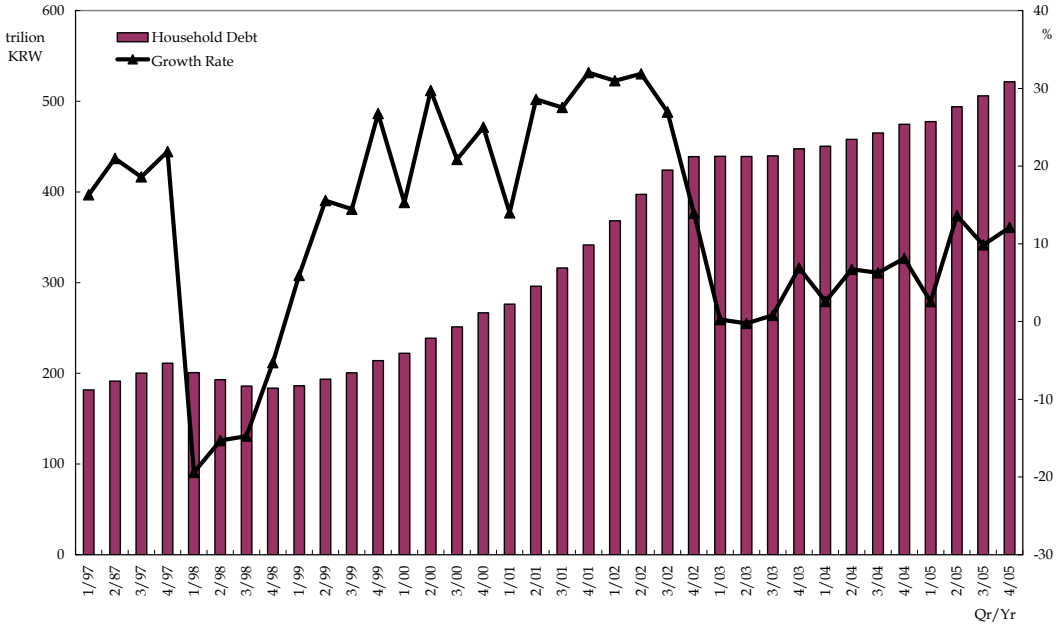
2.1. Increase in Household Debt

While showing a sign of stabilization recently, household debt in Korea has grown in a spectacular pace since the economic crisis of 1997. [Figure 1] illustrates the development in household debt market after the crisis. Household debt market seems to have gone through three distinguished phases since 1997. The first phase covers the period between 1997 and 1999 when household debt fell into a severe slump mainly due to the economic crisis and subsequent recession that was induced in most part by high interest rate policy to restore stability in the foreign exchange market. Household debt decreased by 13% in 1998 when the slumping household debt reached the lowest level. It was not until the year 2000 that household debt recovered the pre-crisis level and gained a momentum for rapid growth observed in the three subsequent years, which constitutes the second phase. Household debt increased by 120% from 2000 to 2002 while disposable income increased by 15.5% for the same period. As a consequence, debt burden soared and households' ability-to-repay deteriorated considerably. For example, debt-to-income ratio[1], a main aggregate indicator for households' ability-to-repay, dropped by 49.3% points from 63.8% at the end of 1999 to 113.3% in 2002. Moreover, an indicator for debt burden, debt-to-asset ratio[2] rose by 11.7% points from 40.1% in 1999 to 51.8% in 2002.

[1] The measure is defined as the ratio between total household debt and disposable income for households and private unincorporated enterprises.

[2] It is defined as the ratio between total individual debt and total individual asset in Flow of Funds table published by the Bank of Korea. The individual sector in the table includes private unincorporated enterprises and various non-profit organizations as well as households. Therefore, household debt in [Figure 1] does not coincide with individual debt in Flow of Funds table. The change of basis is unavoidable since information on aggregate asset holdings by households is not available.

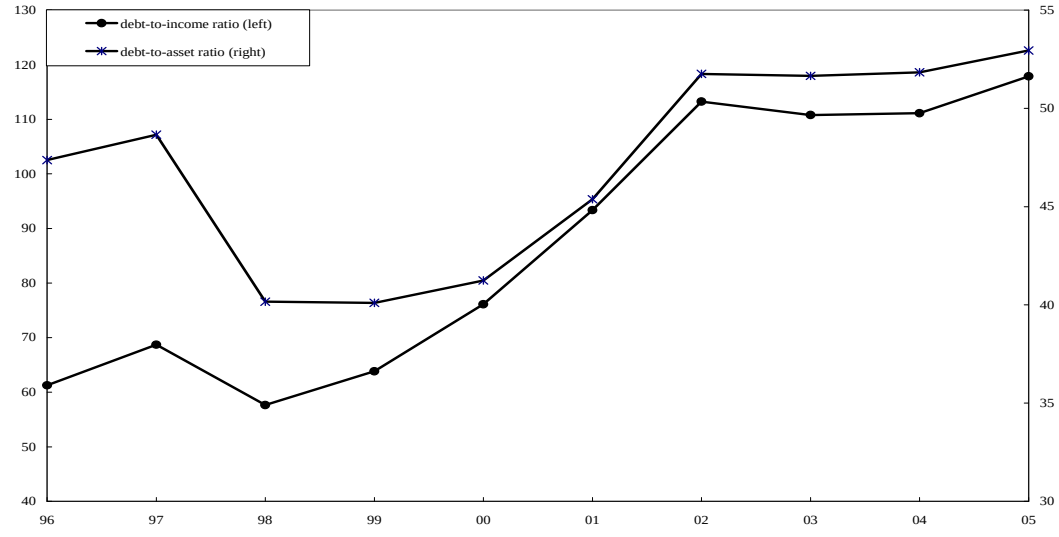
[Figure 1] Household Debt in Korea: 1997~2005



1. Growth rate is the annualized quarterly growth rate..

Source: Bank of Korea

[Figure 2] Trend in Ability-to-repay Indicators



1. Debt-to-income ratio is the ratio between household debt and household disposable income.

2. Debt-to-asset ratio is the ratio between individual debt and asset in Flow of Funds Table.

Source: Bank of Korea

Rapid accumulation of household debt invited serious concerns from regulatory authority as well as credit providers. Alarmed with the unprecedented speed with which household debt accumulated, banks and credit card companies, two major credit providers to households, started to tighten credit provision to household sector and the regulatory authority also took various measures to curb the explosive growth of household debt. Annual growth rate dropped to around 10% that is believed to be sustainable level considering long term trend of aggregate income growth. However, the economy paid dear for rapid accumulation of household debt. The biggest credit card company in Korea was forced to resort to emergency loan by lenders in order to avoid bankruptcy and financial market underwent a couple of turbulent episodes in 2003 and 2004. The third phase started in 2003. Seemingly uncontrollable accumulation of household debt came to a halt and cautious atmosphere replaced feverish race to extend lending toward household sector. While the speed of credit expansion was slowed down and the market regained sense of stability, financial companies in consumer credit market were forced to undergo turbulent restructuring process to cope with serious degradation in quality of consumer loan portfolio they possess.

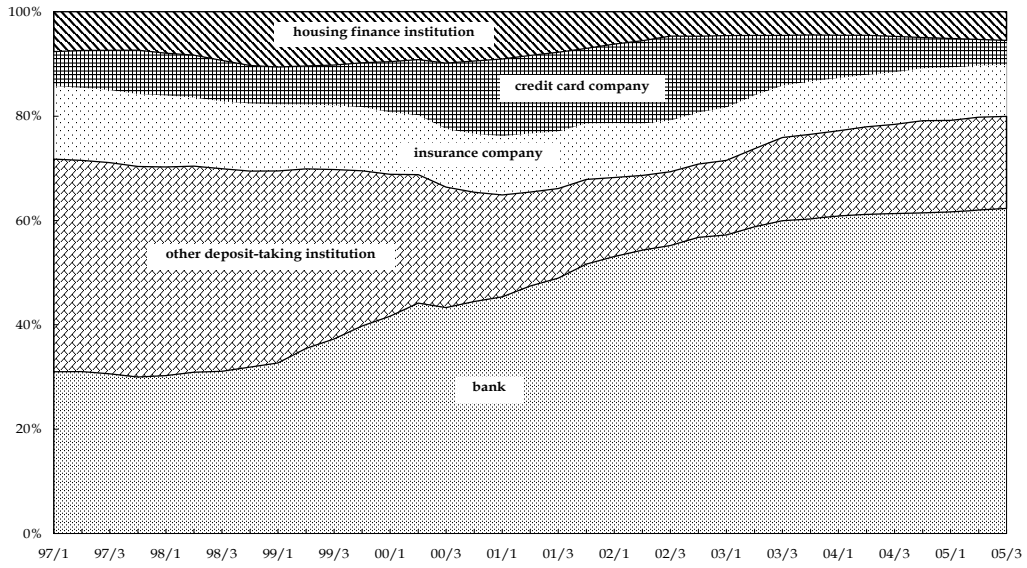
2.2. Household debt by lender type

2.2.1. Banks

Banks and credit card companies played the crucial role in increasing household debt. Bank was not the biggest lender to household sector until the second quarter of 1999 when the bank loans to household sector overtook loans provided by other deposit taking institutions such as savings banks, credit unions and mutual saving cooperatives. Increase in bank's share in consumer credit market from 1997 to 1999 was

mainly due to contraction of non-bank deposit taking institutions. They were hit especially hard by the economic crisis in 1997 and subsequent restructuring of financial industry. Banks were also seriously affected by the economic crisis but the outstanding stock of loan households borrowed from banks has steadily increased except for the second half of 1998 when the economy was in deep recession triggered by the economic crisis and high interest rate policy pursued by the Korean government. The status of banks as the biggest lender to household sector was further solidified between 2000and 2002 and 56.7% of total debt owed by household sector was financed by banks in 2003.

[Figure 3] Household Debt by Lender Type

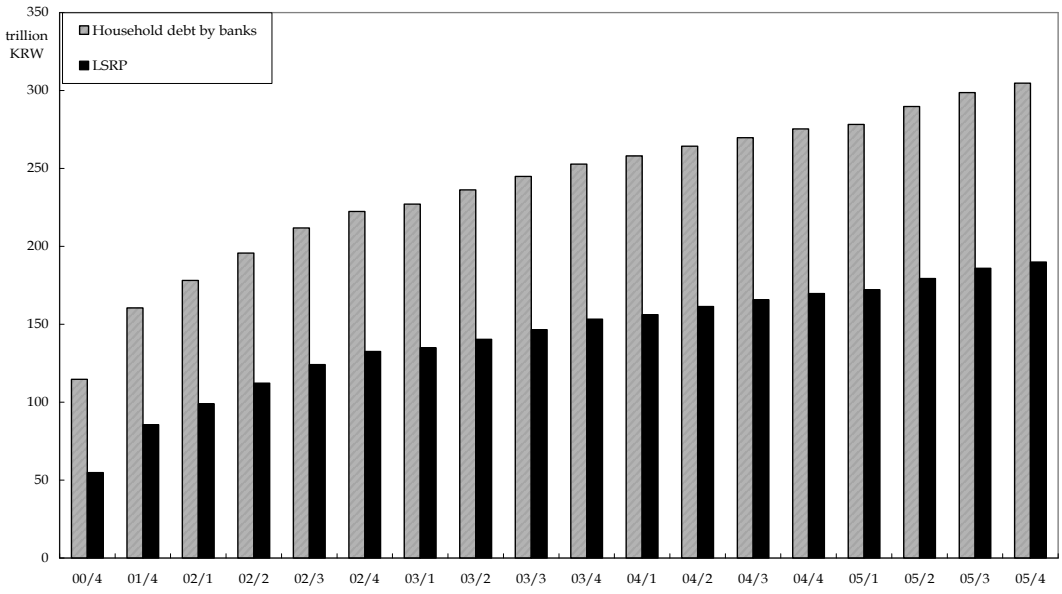


1. Housing finance institution includes Korea Housing Finance Corporation and National Housing Fund.
2. Other deposit-taking institution includes savings bank, credit unions and mutual saving cooperatives.
Source: Bank of Korea

As shown in [Figure 4], the biggest share of bank loans to household sector was taken

up by loans to households secured by residential properties (LSRP)[3]. While the proportion of LSRP in total bank loans to household sector was 47.8% at the end of 2000, it had continuously risen to reach 62.4% in 5 years. During the five-year span from 2001 to 2005, 71% of increase in household debt provided by banks was attributable to increase in LSRP. As discussed later, LSRP in Korea has very unique contract structure and many commentators pointed out that the unique aspects of the loan contracts, especially short maturity and amortization scheme, could have some serious implications on stability of financial system.

[Figure 4] Bank Loans to Household



1. LSRP is the loans to household secured by residential properties.
2. Note that end-of-the-year balances are presented for 2000 and 2001 due to lack of data.
Source: Bank of Korea

[3] Except for the National Housing Fund, long-term mortgage market had not existed in Korea until the Korea Housing Finance Cooperation was established in 2004. Since the target of the National Housing Fund was limited to low and middle income households, most of the mortgage financing was intermediated through short-term bank loans collateralized by residential properties (LSRP). LSRP in Korea has several distinguished features different from the traditional long-term mortgage product in terms of maturity, repayment method, and loan decision criteria, etc. It is called bullet mortgage due to these special aspects of loan contract. We discuss the detail later.

2.2.2. Credit card companies

Another major contributor to the growth of consumer credit after the economic crisis in 1997 was credit card companies. The financial law[4] in Korea allows financial institutions other than banks to issue credit cards and provide various supplementary services such as cash advances. Sensing lucrative profit opportunity in consumer credit market, several big non-financial companies[5] affiliated with big industrial conglomerates enter credit card industry in late 1980's and banks[6] also established credit card companies as independent business to bypass restrictive regulations on banking sector[7].

Starting from 2000, credit card companies led early stage in expansion of consumer credit. Credit card debt increased by 270% from 13.6 trillion Korea Won at the end of 1999 to 50.6 trillion KRW in the third quarter of 2002. Loans by credit card companies constituted only 8.4% of the total household debt at the end of 1999. However, the proportion of credit card debt doubled in 3 years and it peaked at 16.2% in the third quarter of 2002. The explosive growth of credit card debt came to a sudden halt in the fourth quarter of 2002 mainly due to increasing concern on the sustainability of credit card industry and various regulatory measures to restrain the expansion of credit card debt. Contraction of credit card debt stock was so spectacular that outstanding debt stock reached 17.6 trillion KRW in the third quarter of 2005[8].

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[4] In Korea, credit card companies are treated as financial institutions and regulated by financial regulator. The law regulating the industry is "Credit-specialized financial company law".

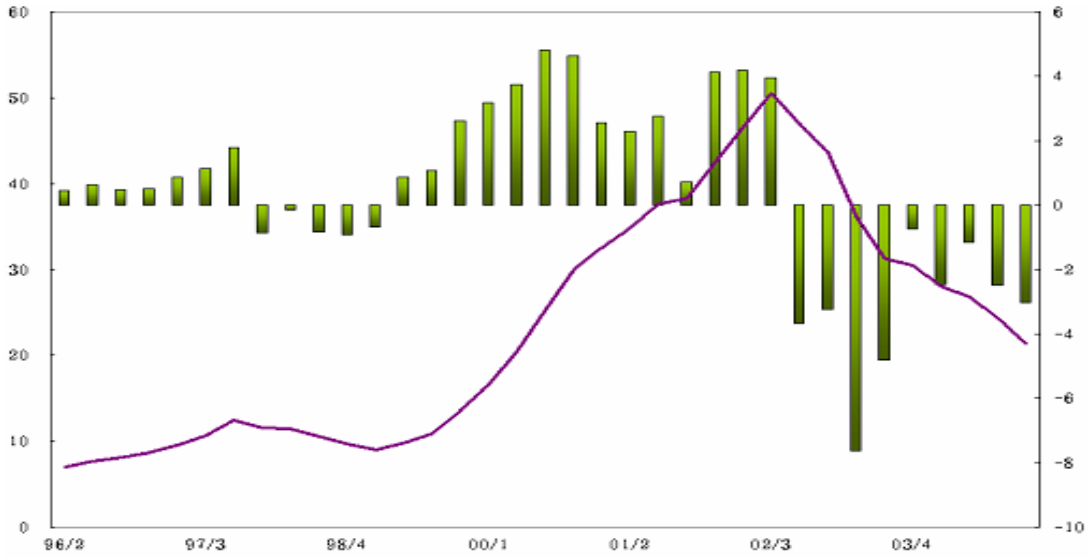
[5] Samsumg Card and LG Card were two notable examples.

[6], Kookmin bank, the largest commercial bank in Korea and Korea Exchange Bank were two examples.

[7] There were also banks that maintained credit card business as business unit inside. Most of the banks internalizing credit card business participated in the market through a credit card association, BC Card.

[8] That is, the size of outstanding credit card debt reduced by a third in 3 years.

[Figure 5] Trend in Credit Card Debt

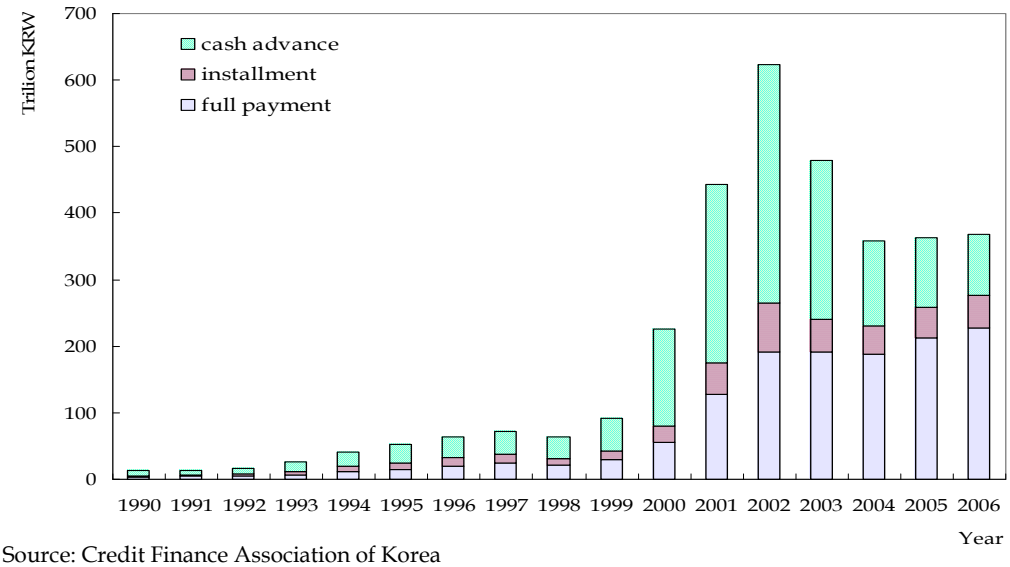


1. The bar chart indicates quarter-to-quarter change in outstanding balance and should be read by the scale in the right hand side. Scale is in trillion Korean Won.
2. The line graph indicates the outstanding balance at the end of each quarter and should be read by the scale in the left hand side. Scale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

Credit cards typically provide three types of financial services to cardholders; full payment, installment, cash advance services. [Figure 6] illustrates the trend in the volume of transactions intermediated by three categories of services. One noticeable feature we can point out from the figure is that the accumulation of credit card debt was primarily driven by cash advance services[9]. It is a widely accepted conventional wisdom in credit card industry that cash advance service is more vulnerable to credit risk than other forms of services. Loans initiated through case advance should bring to borrowers high enough marginal utility that can justify very high interest rate and consequently have much larger exposure to credit risks than other forms of services. During the period between 2000 and 2002, the transactions initiated by cash advance service occupied more than half of total transaction intermediated by credit cards. That was a unmistakable foreboding of troublesome events to follow in 2 or 3 years.

[9] We treat card loan as a form of cash advance service.

[Figure 6] Credit Card Transaction Volumes by Service Type



Source: Credit Finance Association of Korea

2.3. Distribution of household debt: analysis of micro data

In this section we briefly present a set of micro-level analyses in order to investigate the distributional aspects of increase in household debt. Korea Labor institute has maintained a panel of representative households dating back to 1998. The annual survey, Korea Labor and Income Panel Study (KLIPS), mainly focuses on labor-related issues but it also provides information on various financial transactions. Among seven waves of surveys that are currently available for public use, we drop the first wave for compatibility reason and employ data from 1998 to 2002 for the analyses. The time span covered by our data set coincides with the first and the second phases in development of consumer credit market after the economic crisis.

[Table 1] reports the distribution of average debt holdings classified by the age of household head. The overall pattern generally conforms to the trend we observe in aggregate level data. After sluggish swing in 1998 and 1999, household debt started to increase in a considerable speed from 2000. Average debt holding per household

increased by 40% from 17.3 million KRW in 1999 to 24.2 million in 2002. Even though household debt increased in all age groups, households with heads in 50's experienced the fastest accumulation of debt. The average debt for the age group doubled between 1999 and 2002. Households whose heads aged below 30 also experienced a significant jump in debt holdings. Their average debt increased by 75% during the same period.

[Table 1] Average Household Debt by Age: 1998~2002

(Thousand KRW)

Year	Age Group					Total
	29 and below	30~39	40~49	50~59	60 and higher	
1998	5,540	15,198	24,718	18,836	11,598	17,301
1999	3,963	13,690	22,892	19,965	12,000	16,592
2000	4,442	13,833	25,385	20,962	11,151	17,406
2001	8,896	16,576	26,585	29,480	13,659	20,669
2002	9,217	18,533	31,811	37,759	13,972	24,226

1. Age group is classified by age of household head.
2. The surveys were conducted from 1999 to 2003.

[Table 2] reports the average debt holdings by income percentiles. We can point out that low and middle income households experienced relatively faster growth of outstanding debt stock compared to high income group. Households belonging to 21%-40% income group had seen their average debt ballooned by 41% from 11.8 million KRW in 1998 to 16.7 million KRW in 2002. Households belonging to 41%-60% income group also experienced significant increase in average debt holdings. However, it is interesting to note that debt holdings by the highest income group did not go through considerable fluctuations and their average debt actually decreased different

from other income group.

[Table 2] Average Household Debt by Income Groups: 1998~2002

(Thousand KRW)

		1998	1999	2000	2001	2002
Income percentile	81%-100%	44,210	39,730	33,724	35200	41316
	61%-80%	22,131	18,711	18,105	19943	23369
	41%-60%	12,934	13,057	15,544	14831	17035
	21%-40%	11,789	12,260	13,148	20425	16647
	≤ 20%	8,808	7,853	9,686	6793	9760
Total		17,301	16,592	17406	20,669	24,226

1. The surveys were conducted from 1999 to 2003.

We can interpret the results in [table 2] from two different perspectives. First of all, we can argue that the results provide an indirect evidence for alleviation of credit constraints in consumer credit market. The fact that lower income households experienced faster debt accumulation may imply alleviation of severe liquidity constraint placed on them under the practices prevailed in financial market before the economic crisis. Before the economic crisis, direction intervention of the government in credit allocation was a common practice. Korean government pursued the development policy to channel disproportionately large amount of credit resources into a small group of targeted industries to promote faster growth. It was not rare that households were not able to borrow even though they did possess enough assets to offer as collaterals in some cases, let alone borrowings without collaterals. After the economic crisis in 1997, Korean government gave up the traditional interventionalist approach and let the market determine resource allocation in credit market. It was then possible for financial institutions to increase credit supply to household sector with less

concern on non-entrepreneurial factors.

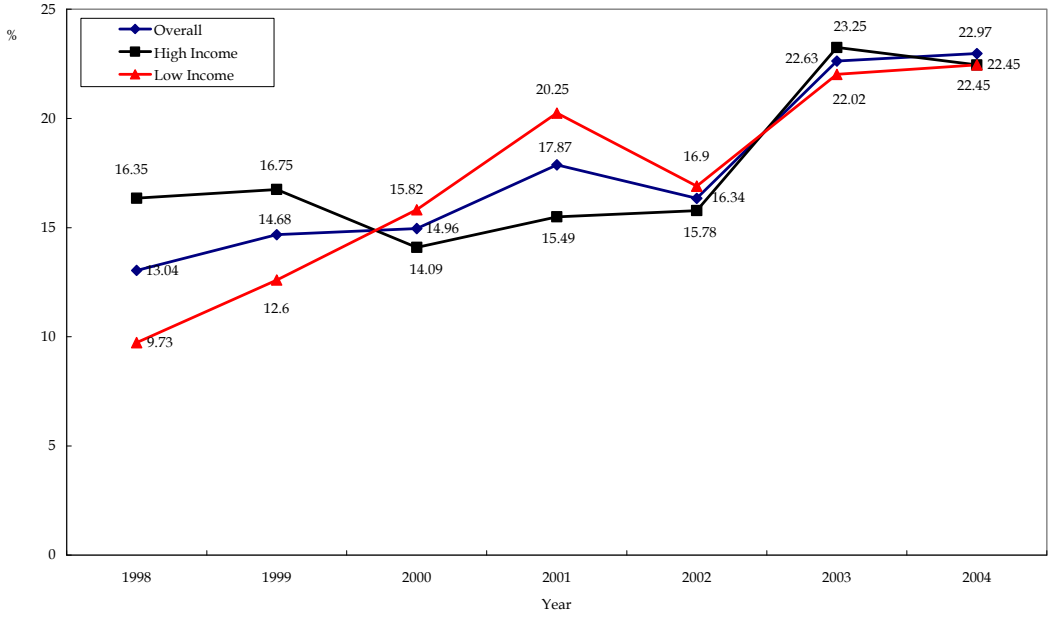
While increase of credit provision to household sector could be utilized as an evidence for lessening credit constraints, some critics pay particular attention to the fact that low income households were provided credit in such a scale in such a short span of time. They argue that considering the speed and distributional feature of consumer credit expansion it is quite difficult to justify without assuming some forms of negligence from credit providers. Until recently, banks in Korea had relied on old-fashioned judgmental method in credit evaluation and not been equipped with formal credit risk management methods such as credit scoring system. Moreover, credit card companies used to issue credit cards to consumers without proper checks on the ability to repay. They argue that the expansion of consumer credit after the economic crisis was at least partly attributable to inadequate risk management system and the seeds for turmoil in Korean financial market in 2003 and 2004 already started to germinate.

We can also find an evidence for mounting debt burden on households in micro data. [Figure 7] summarizes change in average debt service ratio (DSR)[10] from 1998 to 2004. DSR reported in [Figure 7] was calculated based on Survey of Household Income and Expenditure (SHIE), an annual survey by Korea National Statistical Office. SHIE provides vast amounts of detailed information on household expenditure and income that KLIPS does not report. The proportion of income dedicated to pay interest and principals, if not rolled over, had been consistently increased from 13.04% in 1998 to 22.97% in 2004. Even under persistently low interest rate and generous rollover policy, repayment burden measured in DSR almost doubled just in 6 years. Low income families were affected more by increased debt burden than high income families,

[10] Debt service ratio is defined as the ratio between the amounts used to pay interest and principal, if any, to income.

which is in line with the result in [Table 2] where low income families were the main beneficiaries of extended credit opportunities.

[Figure 7] Debt Service Ratio



1. High (low) income indicates the average DSR of households belonging to upper (lower) 50% of income distribution.
2. All figures are in percentile.

In order to investigate the distributional aspects of debt accumulation by households in a more formal manner, we estimate the following empirical model[11] with KLIPS panel data;

$$y_{iy}^{*} 1_{[y_{it}^{*}>0]} = \beta' x_{it} + \mu_i + \varepsilon_{it}$$

where y_{it}^{*} is the difference between supply of debt and desired level by household i, x_{it} is a vector of explanatory variables, μ_i is the individual fixed effect, and ε_{it} is

[11] For theoretical background of the empirical model, see Crook(2001)

error term. Econometricians are able to observe the amount of debt held by a household only if the desired level is lower than the level to which lenders are willing to provide credit. We have a fixed-effect panel specification with censored dependent variable and estimate the model using trimmed least squares (TLS) estimator proposed by Honoré(1992)[12] after imposing the usual i.i.d. normality assumption on the error term. The explanatory variables included in the regression are all frequently cited variables in the literature[13]. Income, amount of asset holding, family size, dummies for household head's age, educational attainment, homeownership and dummy for type of employment are included. The estimation result is reported in [Table 3].

The estimation result conforms to previous researches done in other countries[14]. Income, asset holding, family size, education attainment, and homeownership are all significantly and positively related to debt holding. On the other hand, wage earners and the unemployed are likely to hold smaller debt stocks. Other socio-demographic variables such as marriage and sex do not seem to be important factors in determination of household demand for debt. Income elasticity of debt demand is consistently estimated to be around 0.2, which is much larger than (net) asset elasticity of debt demand. Unlike the findings for other countries in Crook (2006) that reports a concave function of income, demand for debt holding is a convex function of income in the data range.

The pattern of debt accumulation along the life cycle closely follows that of income, increasing in 30's and 40's and reaching the maximum at mid-fifties then decreasing

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[12] Precisely peaking, the estimator is $\hat{\beta}_4$ in the original paper and it is obtained by optimizing the loss function defined as $T_n(b)$.

[13] See Bertola *et. al.* (2006)

[14] See Crook (2006)

afterward. The pattern is quite different from those typically found in other countries.

[Table 3] Determinants of Debt Holdings

	Model I	Model II	Model III	Model IV
Income	0.2106*** (0.0219)	0.2134*** (0.02194)	0.2167*** (0.0218)	-0.4299*** (0.1140)
Income squared				0.0471*** (0.0081)
Net asset	0.0793*** (0.0096)	0.0776*** (0.0096)	0.0453*** (0.0100)	0.0471*** (0.0100)
Family size	0.0933*** (0.0189)	0.0892*** (0.0188)	0.0841*** (0.0187)	0.0785*** (0.0186)
Marriage (married = 1)	0.0071 (0.1235)	0.0082 (0.1229)	0.0151 (0.1218)	0.0183 (0.1212)
Education 1 (high school=1)	0.2196*** (0.0668)	0.2176*** (0.0663)	0.2269*** (0.0658)	0.2111*** (0.0655)
Education 2 (college=1)	0.2522*** (0.0534)	0.2841*** (0.0533)	0.2959*** (0.0529)	0.2639*** (0.0529)
Age 1 (35 ≤ age < 45)	0.2015*** (0.0663)	0.1698*** (0.0626)	0.1396** (0.0678)	0.1320*** (0.0667)
Age 2 (45 ≤ age < 55)	0.4247 (1.4157)	0.3694 (1.3682)	0.2982 (0.9320)	0.2818 (1.0437)
Age 3 (55 ≤ age < 65)	0.5305* (0.3031)	0.4698* (0.2847)	0.3870 (0.2513)	0.3699 (0.2531)
Age 4 (65 ≤ age)	0.2111*** (0.0198)	0.1416*** (0.0578)	0.0417*** (0.0151)	0.0004*** (0.0001)
Type of employment (self employed =1)		0.3224*** (0.0455)	0.3383*** (0.0452)	0.3332*** (0.0450)
Unemployed (unemployed =1)		-0.1139** (0.0558)	-0.1053* (.00553)	-0.1021** (0.0552)
Homeownership (Homeowner = 1)			0.3571*** (0.0335)	0.3554*** (0.0436)
Number of observations	6,114	6,114	6,114	6,114
Wald	615.07*** (10)	672.49*** (12)	793.27*** (13)	833.27*** (14)

1. The dependent variable is in log and income, net asset are also in log.
2. Quadratic loss function is minimized for fixed effect Tobit model as suggested by Honoré(1992).
3. Standard errors are in parentheses.
4. Wald statistic is the test statistic for the joint significance of all explanatory variables except for the intercept. Degrees of freedom are in parentheses under the test statistics.
5. *: significant at 10% level, **: significant at 5% level, ***; significant at 1% level

In most of the countries reported in Crook (2006), demand for debt decreases as the age of household head increases. However, in Korean case, households accumulate more debts as age increase until reaching retirement age. Such a pattern may reflect the characteristic feature of housing finance market in Korea. In the absence of well-functioning long-term mortgage market, a typical family in Korea has to accumulate financial asset until savings can cover down-payment required to purchase a home, which is, in most cases, at least 40% of housing price. The remaining amount should be borrowed from financial institutions, mainly banks, by offering the house for collateral. Therefore, the average age of first-time home buyer in Korea is higher than that in other countries where long-term mortgage market is well established. Since most of home purchases are related to debt increase to some degree as shown in significantly positive correlation between debt and homeownership in [Table 3], pattern of debt accumulation is likely to be closely correlated with that of home purchase and mortgage debt repayment. People start to buy home in late 30's and the number of first-time home buyer peaks at mid 40's. Moreover, since most of mortgage debts are not amortized under the convention that debts are rolled over when maturities arrive, we do not observe statistically significant drop in debt holdings even after home purchases.

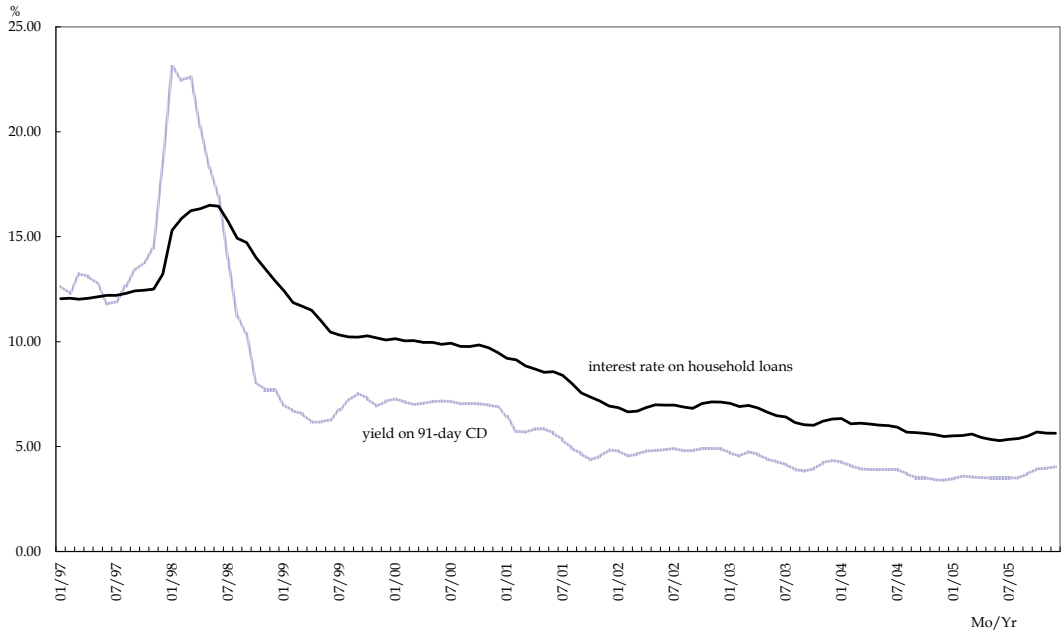
3. Causes and Consequences

3.1. Causes

3.1.1. Changes in financial market environment

One of most obvious reasons why household debt increased in such a remarkable speed in Korea seemed to be the low interest rate environment that started in 1999 as Korean government gave up high interest policy.

[Figure 8] Interest Rates: 1997~2005



Source: Bank of Korea

The policy especially advocated by International Monetary Fund was taken to restore stability in foreign exchange market. Confronted with a severe recession in 1998 due to high interest rate and positive signs in foreign exchange market stability, Korean government lowered interest rate to stimulate the slumping economy. In line with the favorable condition in global financial market, low interest rate policy has been

retained thereafter as shown in [Figure 8]. Since low interest rate, *ceteris paribus*, implies lower cost for debt financing and stronger demand for borrowing, low interest rate must have significantly contributed to rapid increase in household debt.

Another fundamental change in financial market was the change in financing pattern of corporate sector. Before the economic crisis, Korean government chose the strategy to pursue economic development by utilizing large conglomerates, *Chaebuls,* as the main engine. The government mobilized massive amounts of credit resources required for large scale investment through banking sector. Bank loans rather than bonds or equities had been the main financial vehicles through which corporate sector raised fund for investment. However, the structural fragility of debt driven development strategy was clearly revealed when the economy was hit hard by sudden and massive capital outflow as the solvency of *Chaebuls* became suspicious. Many conglomerates were forced to declare bankruptcy or resort to restructuring procedure. Several commercial banks suffered severe losses from large non-performing loans concentrated on failing conglomerates and were taken over by Korea Deposit Insurance Corporation or other less affected banks to prevent collapse of financial system. Out of 33 commercial banks operating at the end of 1997, 10 banks disappeared. Five were liquidated and the other five were acquired by other surviving banks. Once financial system regained stability, Korean government accepted the reality that pursuing economic development by channeling bank credits to selected sectors was no longer viable and required corporate sector to strengthen financial structure by reducing debt and injecting more capital. As a result, the focus of funding for corporate investment shifted from banking sector to capital market.

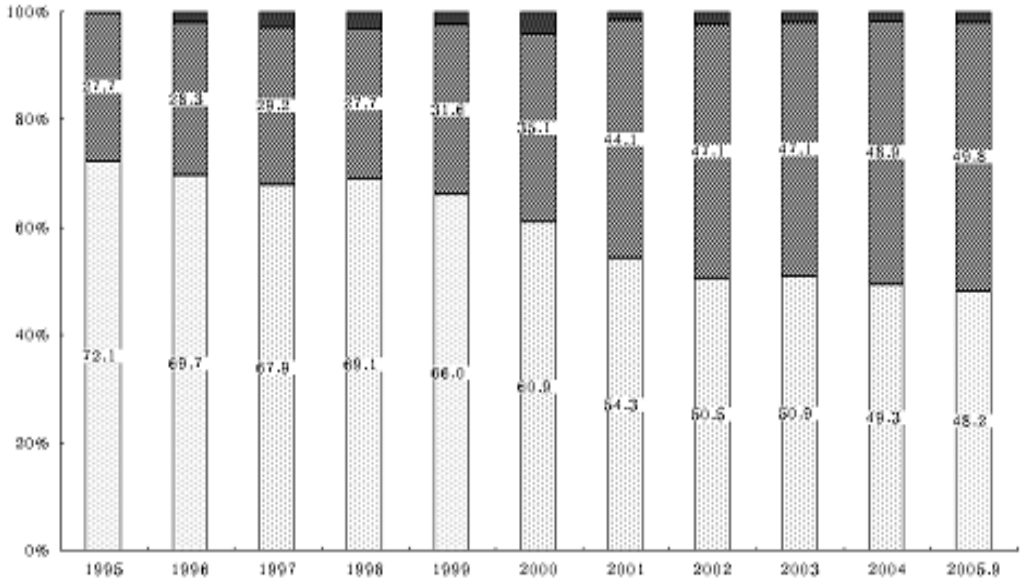
[Table 4] Source of Corporate Finance

(billion KRW)

Year	Bank loan	Bond and equity	Total
1996	44,977	35,191	80,167
1997	37,728	37,731	75,459
1998	-63,634	70,253	6,619
1999	-3,759	71,785	68,026
2000	19,658	73,011	92,669
2001	-27,487	99,363	71,875
2002	34,002	87,421	121,423
2003	28,129	72,909	101,038

Source: Bank of Korea

[Figure 9] Composition of Banks' Loan Portfolio



1. From bottom to top, household loans, corporate loans, and others
Source: Bank of Korea

[Table 4] illustrates the inflow of funds to corporate sector from banks and capital market. We can confirm the fact that capital market replaced banking sector as the

main funding source for corporate sector after the economic crisis. Shrinking demand for bank loans from corporate sector naturally put pressure on banks to pursue more aggressive approach in promoting loans to household sector.

The structural transformation of banks' loan portfolio is clearly illustrated in [Figure 9]. The proportion of household loans in banks' total loan portfolio had stayed well below 30% until 1998 but increased continuously to reach 48.9% in 2004. In 2005, hitting the historical high at 49.8%, loans to household sector finally surpassed those to corporate sector.

3.1.2. De-regulation of financial sector

Though deregulation of financial sector had already begun in 1990's, it was not until the onset of the economic crisis in 1997 that the policy was vigorously pursued by financial regulators in Korea. Amid various actions taken during the deregulation process, the most important one was the fundamental paradigm shift in the way financial regulators view financial institutions. Under old regime, banks were simply regarded as instrumental agents to mobilize savings and channel them to strategically selected industries. Profitability of individual banks was not primary concern as long as banks served policy goals set by the government. Even banks themselves did not regard themselves as private businesses but as semi-public entities with important mission to serve the public interest by providing credit resources necessary to achieve fast economic development. Under the new regime, the government gave up the traditional approach to financial sector as well as to economic development. Efficiency in allocation of credit resource became the primary policy goal of financial regulation and price mechanism replaced the government direction as in credit resource

allocation.

Many policy measures were taken to materialize the philosophical transformation at operational level. Entry barrier to financial industry was lowered significantly and foreigners were allowed to enter the industry by establishing local subsidiary or acquiring the existing domestic companies. Financial Holding Company Act was enacted to promote competition among different sectors in financial industry. Implicit regulation on interest rate and service fees on financial services was also abolished and financial institutions were given the discretion to choose the level of fees they charged for the services they provided. Financial companies were allowed to be involved in many non-banking financial and non-financial services by simply reporting to the regulator, which used to have required authorization or consent from the regulator.

As a result, profitability rather than public interest was firmly established as the primary goal of a financial company. Banks turned their attention to household sector from corporate sector they had traditionally focused on as the target for credit provision.

[Table 5] tells us that loans to household sector had consistently brought, on average, higher interest and less default than loans to corporate sector at least until 2003. Under the circumstances, it is quite difficult to find a justification for the consistently large share of corporate loans before the economic crisis in [Figure 9] except for government intervention, implicit or explicit.

As financial de-regulation progressed, it was inevitable for banks to shift business practice by providing more credit to household sector following signal from the market.

[Table 5] Average Loan Rate and Default Rate

Year	Loan rate		Default rate		
	Household	Corporate	Household	Credit card	Corporate
1997	12.30	11.75	3.3	3.3	7.3
1998	15.21	15.20	7.1	17.9	8.9
1999	10.85	8.91	3.2	6.8	4.4
2000	9.88	8.18	2.4	7.7	3.4
2001	8.20	7.49	1.3	7.5	2.1
2002	6.92	6.50	1.5	11.9	2.0
2003	6.50	6.17	1.8	10.9	2.1
2004	5.88	5.92	1.8	5.5	2.1
2005	5.64	5.75	1.4	3.9	1.9

1. All interest rates are average rate charged for new loans in each category.
2. Default rate of credit card loan is for all credit card debt granted by banks.

3.2. Consequences

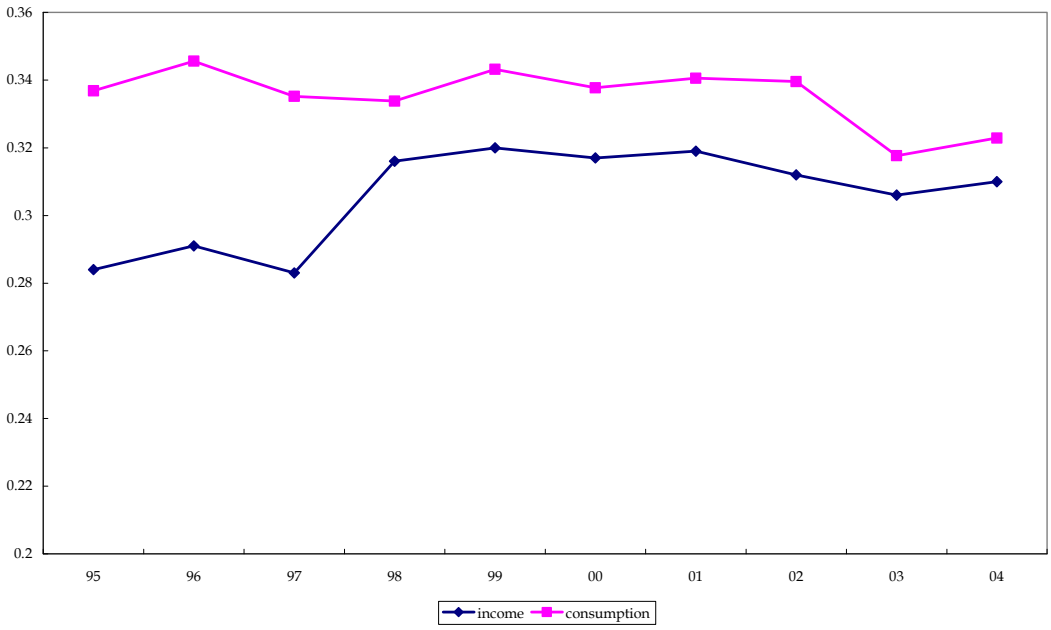
3.2.1. Efficiency improvement and welfare gain

Since wider and deeper penetration of financial intermediation into economy offers more opportunities for mutually beneficial voluntary exchanges, it, in general, brings more efficient resource allocation and higher welfare. Even if it is difficult to draw a firm conclusion due to lack of hard evidence, we can offer some circumstantial evidences for the claim that the increase in household debt may have brought some beneficial effects. The increased inflow of credit resources into household sector itself may imply efficiency gain in credit allocation.

As more credit resources are allocated to household sector, more consumers were able to free themselves from credit and liquidity constraints and significant welfare gain followed by the fact that it is much easier to pursue a smoother lifetime consumption path. According to an extensive study by Kim (1995), household sector had been under

very severe credit and liquidity constraints before the economic crisis and it was very hard for individuals to borrow from banks[15]. One cannot deny that large inflow of credit into household sector after the economic crisis contributed to alleviating restrictions imposed on consumers' inter-temporal budget constraint and helped them achieve better resource allocation and enjoy welfare gains.

[Figure 10] Trend in Gini Coefficients: Income and Consumption



Source: Author's calculation based on NHIES

While rising Gini coefficients in [Figure 10] indicates that income distribution in Korea worsened after the economic crisis, inequality in consumption measured in

[15] Here is a paradoxical evidence for the claim that consumer loans by commercial banks were severely discouraged and treated as special area in financial services. Two special purpose banks specializing in consumer credit were established by the government. Kookmin bank, now privatized and the biggest commercial bank in Korea, was established to deal with the consumer and SOHO loans. Another bank specializing in consumer finance was the Korea Housing Bank, merged with Kookmin Bank in 2001, whose business area was in mortgage finance.

consumption Gini coefficients has been consistently reduced. As long as the majority of improvement in consumption equality was not financed by reckless loan provisions to borrower who did not have ability to repay[16], improved consumption equality implies that less consumers are affected by frictions in financial market and able to attain better position in allocating consumption in inter-temporal context.

3.2.2. Potential deterioration of stability in financial system

In the previous section, we show that one of the main driving forces behind the fast growth of household debt between 2000 and 2002 was the increase in LSRP[17] supplied by banks. LSRP quadrupled just in five years from 1999 to 2003 during which total loans to household by banks tripled. As a result, the proportion of LSRP in household loan portfolio rose from 58.1% in 2001 to 62.4% in 2005. The pace of LSRP growth in the booming period between 2000 and 2002 was especially spectacular with annual growth rate over 50%.

Compared to the conventional long-term mortgage contracts, LSRP contracts prevalent in Korea have three distinguished characteristics: short maturity, no amortization of principals, and low loan-to-value (LTV) ratio. First, LSRP has a very short maturity structure. A typical LSRP matures in 3 years and the maturity is shortened further when conditions in credit market deteriorate. According to a survey by Financial Supervisory Service (FSS) in 2005, 47.6% of LSRP have the (original) maturity no longer

[16] One cannot deny that some part of the consumption was financed by debt that was recklessly extended without scrutinizing the credibility of borrowers.

[17] LSRP is the term used in Basel II accord to represent any form of loan contract collateralized by residential properties. That includes various kinds of loan contracts such as equity loan and bullet mortgage as well as conventional long term mortgage. We use the term "LSRP" to indicate the bullet mortgage explained later in detail in order to distinguish it from the conventional long term mortgage.

than 3 years, 21.4% for 3 to 5 years. On the other hand, LSRP with maturity longer than 10 years occupies 25.3% of total LSRP and the weight increased by 15.7% points compared to the previous survey in 2003. The increase of long term LSRP contracts is mainly attributable to the establishment of Korea Housing Finance Corporation in 2003[18] in the wake of fast increase in LSRP and subsequent rising concerns on its long-term stability. According to [Table 6], all countries surveyed by Bank for International Settlement (BIS) other than Korea have long-term mortgage with maturity no shorter than 10 years as the primary instrument in housing finance market.

[Table 6] Features of Mortgage Contract in Selected Countries

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.

Source: BIS(2006)

The second feature of LSRP in Korea is that borrowers are not required to repay the

[18] KHFC started to sell long-term mortgage loans from March, 2004.

principal till maturity. Borrowers pay only interest on regular basis[19] and the loan is rolled over unless some events that may harm the credibility of the borrower or collateral such as delayed interest payment, default, and sharp decrease in housing value[20] happen. In order to deal with possible risk factor embodied in no amortization scheme, LTV is set at very low level compared to long-term mortgage with amortization. The average LTV for LSRP in Korea is currently well below 60%. According to [Table 6], in most of the countries with the conventional mortgage system, LTV are set at 70%~80% when a mortgage contract originates.

Literatures call the type of mortgage loan dominating housing finance market in Korea as bullet mortgage to emphasize the risk factor embodied in the loan contract (Fabozzi and Modigliani (1992)). Since the principal is carried to the maturity without amortization, borrowers are required to pay very large amount when maturity arrives. Borrowers have three ways to deal with this problem; refinancing the debt through roll over or borrowing from other lenders, repaying the debt by liquidating other assets, or selling the collateralized property and settle the debt. If the first option is available, no significant disruption would occur. A new debt contract will be signed and borrower is required to pay only interest without amortization of the principal until the maturity. The maturity clock restarts. The second option is available for the borrowers who have already accumulated enough assets to pay off the debt. Considering high income-to-house price ratio in Korea, the number of debtors qualified to choose the second option would be very few especially among young borrowers[21]. Should neither the first nor

[19] Monthly interest payment is the usual arrangement.

[20] In some cases, borrowers are asked to pay very small portion (typically less than 5%) of the principal as a precondition for roll-over of the matured loan.

[21] Average income-to-house price ratio for an urban residence is known to be around 10 in Korea. Assuming that average propensity to consume is 0.3 and average LTV is 60%, an average worker should save at least 10 years to accumulate asset enough to cover the principal

the second option is available, a borrower would be forced to sell the collateralized house to meet the repayment obligation. Under the usual circumstances, the sales receipt would be large enough to cover the repayment as long as LTV was originally set and maintained at acceptable level. Whether voluntary or not, liquidation of collateralized house, in most cases implies that the borrower confronts with a stress situation. When the stress situation is confined at isolated individual level, borrowers would be able to execute the strategy of repaying debt by selling property. However, when it comes to stress situation at economy wide level such as severe depression, they will have considerable difficulties in executing the strategy. Lenders would become very selective in allowing rollover the maturing debt contracts and a significant chunk of them would be denied contract renewal. Most of the borrowers rejected in rollover application would have to resort to liquidating the collateralized house since it would be equally difficult to refinance by obtaining new loans from other financial institutions. Large pressure is applied in supply side of housing market and it is highly likely to result in significant price shock or in some cases panic in housing market. Disappearing liquidity, plummeting prices, rush to dump assets at all costs are a few examples of chaotic events we typically observe in a depressed asset market. Kindleberger and Aliber (2004) documented numerous historic events when abrupt change in investors' mood or market environment led to panic in financial market and crisis in economic system.

With the average maturity of 3 years, roughly a third of total outstanding debt will mature within a year. Therefore, rapid accumulation of bullet mortgage debt has

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repayment. With the bullet mortgage with maturity of 3 years, mortgage contract should be rolled over three or four times for an average borrower to exercise the second option in the text. In other words, no major events that make lenders refuse rollover of matured debt should occur for a very long period of time.

already become one of the major risk factors that might harm stability of financial system. Moreover, banks did not regard borrower's income as the main variable on which they make loan decision based. In other words, as long as he could provide enough collateral whose value satisfies LTV requirement, a borrower did not have little difficulty in acquiring mortgage loan even if the lender as well as the lender knew that the borrower did not have the ability to accumulate enough savings to repay the debt when it matured. The strategy was acceptable to both parties in Korea simply because they expect that during the contract house price would increase significantly and borrower would be able to repay the debt by utilizing capital gains. Even if their expectations were not materialized, borrowers were easily granted rollover of the maturing loans unless such serious events as delayed interest payment or violation of LTV requirement occurred. However, if rollover for the significant portions of matured debts would be denied from some reasons, most debtors should be forced to respond to call for repayment by liquidating the collateral. It is highly likely that downward spiral of housing price will be initiated and further deterioration of mortgage market follows, which, if not properly controlled, may lead to disastrous collapse of financial market.

In a theoretical exploration on structural characteristics of bullet mortgage contract, Park and Hur (2006) argued that bullet mortgage contract is more robust to adverse income shock, but more vulnerable to adverse housing price shock than the conventional mortgage contract with amortization. Since borrowers under the conventional mortgage arrangement are required to pay interest and part of principal, they have to set aside larger portion of income to meet periodic repayment obligation than borrowers under bullet mortgage. Affected by the same adverse shock to income,

borrowers under conventional mortgage would be more prone to default than borrowers under bullet mortgage. On the other hand, borrowers under conventional mortgage are less prone to adverse shock to housing price than borrowers with bullet mortgage since they are not required to constantly maintain LTV condition as long as they fulfill scheduled repayments. Under bullet mortgage contract, borrowers are required to satisfy LTV requirement periodically whenever the debt contracted is renewed. With a large scale adverse shock in housing market, borrowers will have much difficulty in meeting the LTV condition to get the maturing loans rolled over.

Fabozzi and Modigliani (1992) provided very interesting historical evidence on the fragility of bullet mortgage system. During the Great depression in the US, massive foreclosure of homes under the bullet mortgage contracts occurred as a result of the collapse of housing price and failure to renewing matured mortgage contracts. Negative wealth effect due to the mass foreclosure made the recovery of private consumption very sluggish and the economy suffered greatly from the delayed recovery. Fabozzi and Modigliani (1992) argue that US Congress enacted the National Housing Act of 1934 that offered the legal foundation for the Federal National Mortgage Association (Fannie Mae) in order to circumvent the structural problem embodied in bullet mortgage system by encouraging the development of long-term mortgage market.

It seemed not to be until 2002 that policy makers in Korea started to notice the risk factors in fast accumulation of bullet mortgage debts and took various policy measures such as tightened monitoring to make sure smooth rollover of maturing debts and introduction of long term mortgage instruments into Korean housing finance market. Korean Housing Finance Corporation was established in 2003 to promote conventional

mortgage market. Unlike government sponsored enterprises in the US housing finance market, KHFC sells conventional long-term mortgage products to consumers with the help of financial institutions. Financial institutions are not legally involved in loan contracts. They are simply agents employed by KHFC. KHFC is allowed to securitizing the loan contracts by issuing mortgage backed securities.

Due to lack of accurate official statistics on LSRP and short time span, it is very difficult to make a judgment on the effectiveness of government policies to reduce risk factors by promoting long term mortgage products. According to FSS survey in 2005, 70.5% of LSRP in May, 2005 were still bullet mortgage loans although the proportion decreased very fast compared to the previous survey in 2003. On the other hand, LSRP with amortization doubled in 2 and half years. It was only 14.1% in 2003 but rose to 28.3% in May, 2005[22].

It would be a fair assessment on the current state in housing finance market in Korea that in spite of various policy efforts to mitigate risk factors in bullet mortgage system, banking sector is still exposed to considerable risk but a steady progress is occurring.

3.2.3. Boom in housing market

Rapid growth in LSRP channeled a large amount of liquidity into housing market and strong demand resulted in a boom.

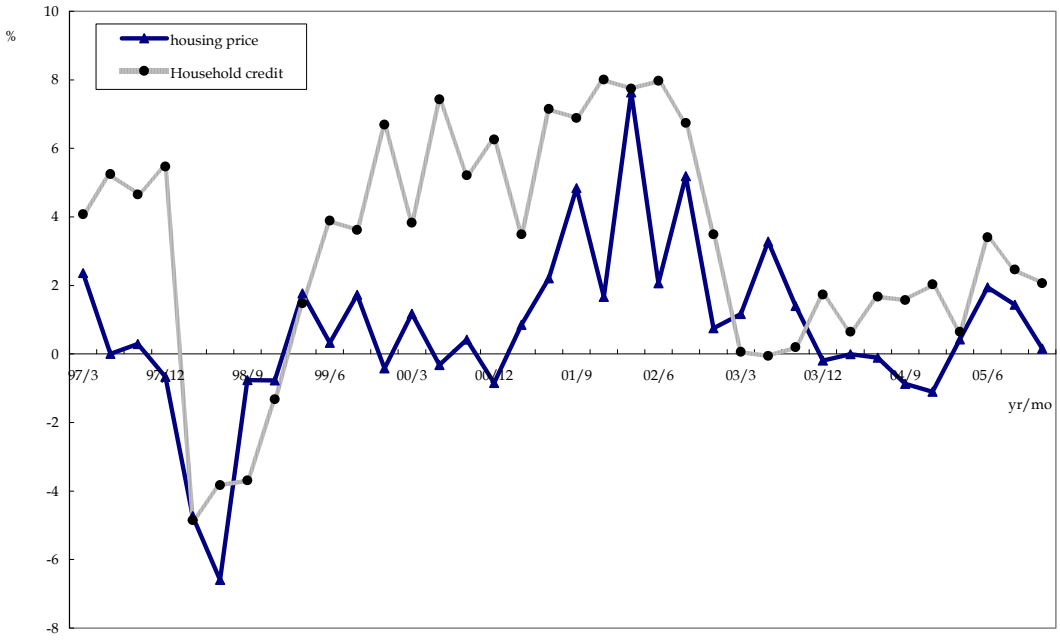
Housing market had not recovered from the slump brought by the economic crisis until 2000. However, housing price rose by 9.87% in 2001 to regain the pre-crisis level and further increased by 16.4% in 2002, and 5.74% in 2003, respectively. The increase in housing price was so fast that it even fostered concerns on bubble formation in housing

[22] It is a conventional wisdom in the market that the proportion of conventional long term mortgage has increased steadily since then.

market.

According to [Figure 11], growth of household credit seems to lead increase in housing price. It is, however also true that boom in housing market may invite stronger demand for household credit in an attempt to finance additional investment demand in housing market pursuing capital gains. To resolve the causality issue, we conduct Granger-causality test. We use two different measures for increase in liquidity provision into housing market: growth of household credit and growth of LSRP by banks. It turns out that growth in household credit as well as LSRP by banks Granger-causes increase in housing price but the reverse does not hold.

[Figure 11] Household Credit and Housing Price



1. Quarterly growth rates are indicated.

[Table 7] Test for Granger-causality

Hypothesis	Test statistic	p-value	Lags
housing price ↛ household credit	2.08	0.4403	3
household credit ↛ housing price	4.77	0.0481	3
housing price ↛ LSRP	2.85	0.1609	3
LSRP ↛ housing price	5.36	0.0286	3

1. Quarterly data are used in the tests.
2. The number of observations is 36 (1997-2005) for the first pair and 24 (2000-2005) for the second pair

3.2.4. Increase in credit delinquents

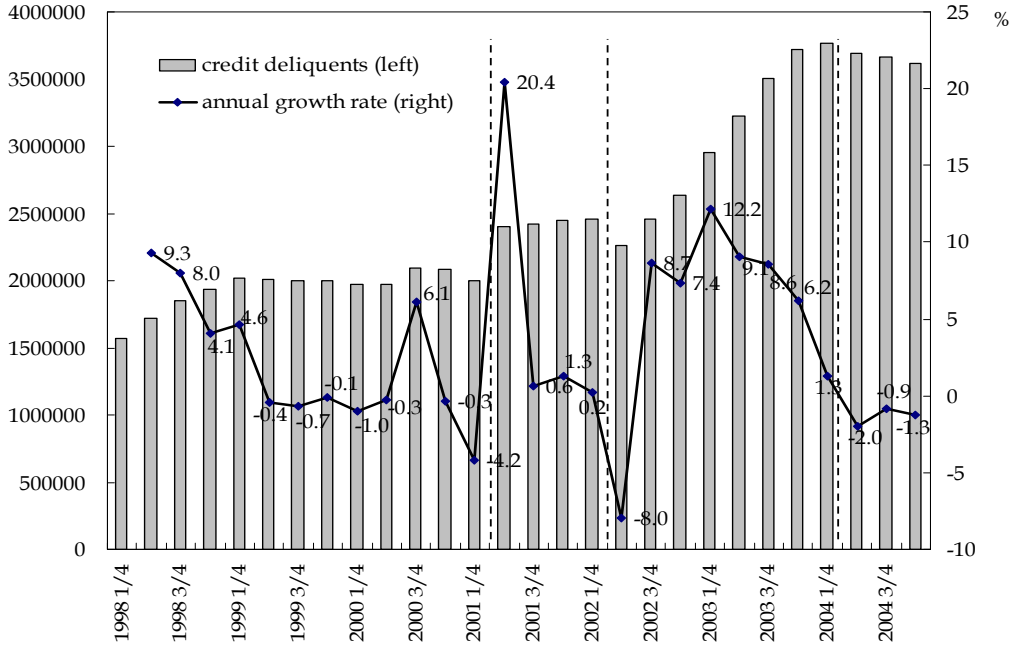
In Korea, credit delinquent is the term reserved to indicate people who are in arrears for larger than 0.3 million Korean Won[23] and longer than 3 months. Their records are reported to the public registry maintained by Korea Federation of Banks. The information at the Registry is shared among the member financial institutions including banks, insurance companies, credit card companies and others.

The explosive increase in household debt and subsequent deterioration of average quality of loan portfolio resulted in rapid increase in household arrears and credit delinquents.

According to [Figure 12], the number of credit delinquents increased significantly in 1998 and then declined slightly during 1999 and 2000. It rose again in a faster pace from the latter half of 2002 and continued to rise until the first quarter of 2004.

[23] The sum is equivalent to approximately 300 US dollars.

[Figure 12] Trend in Credit Delinquents



1. KFB tightened the criteria of registration at the second quarter of 2001. The change was reflected in a sudden jump of number of registered credit delinquents. On the other hand, KFB lowered the criteria of registration at the first quarter of 2002.
2. Several administrative errors were cleared in March, 2004 to lead to a slight decline in the number of credit delinquents. Many were already deceased or were registered more than twice.
Source: Korea Federation of Banks

The large increase in credit delinquents in 1998 was attributable to severe depression initiated by the economic crisis. Recovery of the economy from the last quarter of 1998 was reflected in the slight decline in credit delinquents in 1999. The second wave of increase in registered credit delinquents started from the second half of 2002 and was closely associated with the increase in household debt between 2000 and 2002 and sluggish economy in 2002. In the first quarter of 2003, the number of credit delinquents increased by 11.2% compared to the previous quarter. That was the biggest jump since the economic crisis[24]. The number of credit delinquents finally exceeded 3 million and

[24] The number of credit delinquents increased by 20.4% in the second quarter of 2001. But the increase was due to change in registration criteria in March, 2001 and does not represent change in economic condition.

continued to reach 3.83 million in the first quarter of 2004.

The term 'credit delinquent' was officially discarded in 2005[25] and the statistics on credit delinquents has not been announced since then. However, it is known that the decline that started in the second quarter of 2004 continued until the number of credit delinquents dropped to approximately 3 million at the end of 2005. It was mainly due to active restructuring of delinquent household loans rather than improvement of ability to repay the debt such as increased in income or decrease in debt burden.

Shin *et. al.* (2003) pointed out several reasons for the fast increase in credit delinquents after the second quarter of 2003; adverse macroeconomic conditions, moral hazard by credit card companies, inefficient allocation of credit resources due to the lack of adequate scheme to share credit information, improper and untimely financial regulation.

The slumping economy since the third quarter of 2000 generated adverse shock on income as well as debt burden and ultimately made ability to repay deteriorated. That would result in increase of arrears in household debt and registered credit delinquents.

In order to examine the role of macroeconomic conditions in the growth of credit delinquents, we adopt equation (1) from Shin *et. al.* (2003) in which change in credit delinquents is regressed on lagged changes in household debt and income utilizing the quarterly data from 1998 to 2004.

[25] Public registration of credit delinquents was discarded but collection and sharing of credit information continued. Policy to register credit delinquents had been subject to severe criticism that the classification was not only arbitrary one void of sound economic justification but became an obstacle that prevented individual financial institutions from developing credit scoring system.

$$\Delta \ln CD_t = 6.1354 + \underset{(0.8153)}{0.3199}\Delta \ln HD_{t-3} + \underset{(1.5634)}{0.6005}\Delta \ln HD_{t-4} - \underset{(-0.7764)}{0.3232}\Delta \ln GNI_{t-1}$$
$$- \underset{(-1.5039)}{0.4971}\Delta \ln GNI_{t-2} - \underset{(-0.9082)}{0.2116}\Delta \ln GNI_{t-3} - \underset{(-1.8634)}{0.4318}\Delta \ln GNI_{t-4} + \underset{(2.3568)}{8.3342} D_{01/2} \quad (1)$$

$R^2 = 0.5034$ the number of observations = 28

In equation (1), $D_{01/2}$ indicates the dummy for change in registration criteria occurred in the second quarter of 2001 and t-values are in parentheses under the estimates.

The estimation result indicates that the number of credit delinquents (CD) is positively correlated with household debt (HD) and negatively with income measured by GNI. The result conforms to the literature reporting the empirical findings that households' ability to repay debts is associated with income, debt burden, and interest rate[26].

Explosive growth of credit card loans in 2000 and 2001 and subsequent increase in default rate is another important factor that sparked increase in credit delinquents. De-regulation of credit card industry in 1999 triggered a throat-cutting competition to expand market share among credit card companies. The competition was a blind race to take top position in terms of asset size. Many borrowers with very high credit risk who would have been refused to loans were allowed to acquire loans without proper credit evaluation. Owned by banks or large conglomerates, credit card companies under-evaluated the possibility of their failure and charged into the race for becoming the biggest. They believed that they were too big to fail and the government would not be able to watch them collapse. That was a reckless moral hazard by credit card companies. Moreover, majority of bonds issued by credit card companies to finance credit card loans were possessed by banks and money market funds that are generally

[26] For an excellent survey on the topic, see CBO(2000)

regarded to be linked to system risk. That also fueled the belief that the government would not allow credit card companies to get into difficulty. Credit cards were issued recklessly without proper check on credit risk and limit on cash advance service was lifted up frequently even if the borrower had already held significant outstanding balance to repay.

As we have already seen in [Figure 6], increase in credit card debt during the boom in 2000 and 2001 was led by cash advance service that embodied much higher credit risk than other forms of services credit cards provide. Confronting with mounting arrears and accumulation of non-performing loans, the financial regulator was forced to take decisive measures to stop expansion of credit card debts and to prevent further deterioration in quality of loan portfolios[27].

The growing concern on the viability of credit card companies and sudden turning of policy stance resulted in a violent crash lending in the fourth quarter of 2002. Already having huge difficulty in paying the monthly bill, significant portion of credit card debtors had managed to escape falling into arrears by financing a new debt from other credit card companies or usurious private loan market. Sudden strengthening of regulatory measures and subsequent tightening of credit evaluation by credit card companies resulted in massive increase in arrears. That could explain the majority part of the steep increase of credit delinquents in 2003. In order to see the role played by credit card companies in increase in credit delinquents, we classify the credit delinquents by the types of financial institutions that reported the arrears. [Figure 13] illustrates the change in credit delinquents registered by a single type of financial institution. It is obvious that credit card companies played the most significant role in

[27] We will discuss the development of credit card crisis in 2003 in the next chapter.

increase in credit delinquents in 2001 and 2002. We can draw the same conclusion from [Figure 14] that reports the changes in the number of credit delinquents registered by more than one kind of financial institutions. Among the increase in the registered by multiple types of financial institutions, nearly 90% were involved with credit card in 2002 and 95% in 2003.

Lack of well-functioning credit information system is thought to be another major contributing factor. Roughly speaking, credit information system consists of credit reporting system and credit evaluation system. The former collects and distributes credit information among financial institutions and the latter is maintained by individual financial institutions to evaluate the creditworthiness of individual borrowers. The current form of credit reporting system was established in 1955 when the Bank Supervisory Office[28] introduced compulsory reporting system that obliged all participating financial institutions to report delinquent credit information satisfying criteria set by the agreement among participating financial institutions. Under "Use and Protection of Credit Information Act (UPCIA)" enacted in 1995, the Korea Federation of Banks was appointed as the agent of the Banking Supervisory Office to maintain the public registry[29]. The credit information gathered by the public registry is shared among participating financial institutions. Majority of information consist of negative information such as loan delinquency, default and fraud. Positive information such as outstanding loan balance and number of credit cards held was collected in a limited rage only after 2001.

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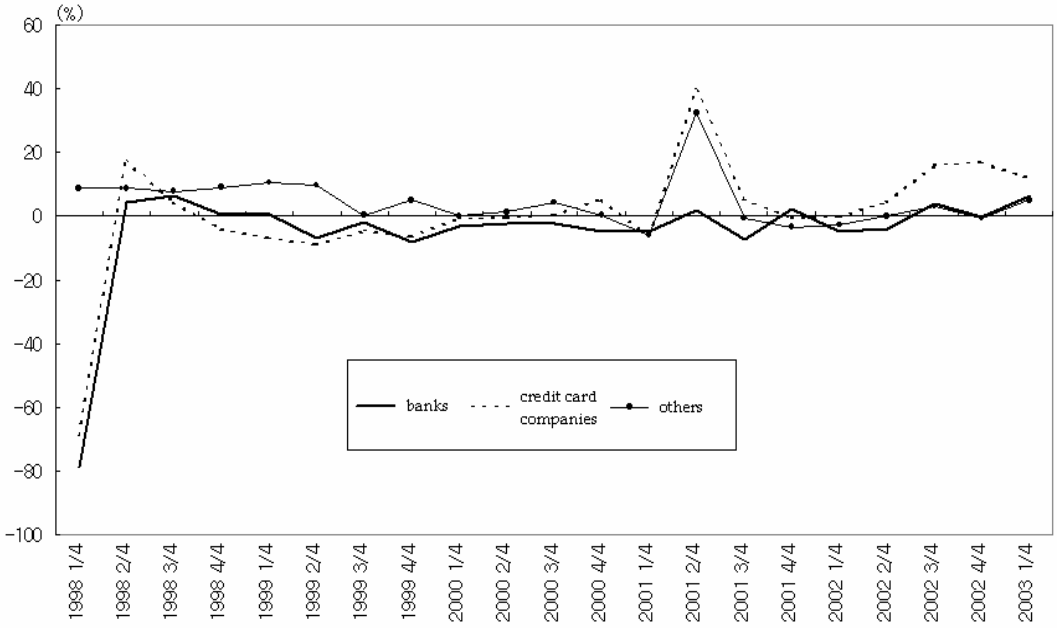
[28] The integrated body of financial regulators, Financial Supervisory Commission and Financial Supervisory Service, was established after the foreign exchange crisis. Before FSC was established in 1998, three were three main separate financial regulators, the Bank Supervisory Office in Bank of Korea, the Securities Supervisory Office, and the Insurance Supervisory Office.

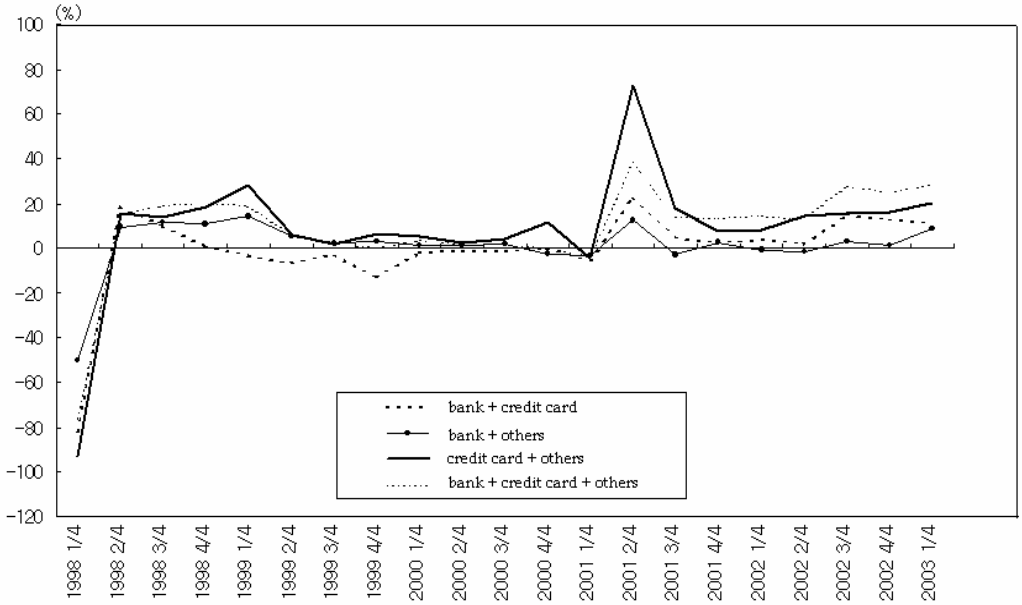
[29] The Korea Federation of Banks had already performed as *de facto* public registry of credit information since early 1980's through the authorization from the Bank Supervisory Office. However, the authorization was not based on the legal mandate but on the convenience of the supervisor.

[Figure 13] Change in Credit Delinquents by FIs; Single Registration



1. Others include insurance companies, mutual savings banks, mutual cooperatives.
Source: Korea Federation of Banks

[Figure 14] Change in Credit Delinquents by FIs; Multiple Registrations



1. Others include insurance companies, mutual savings banks, mutual cooperatives.
Source: Korea Federation of Banks

It is now well-known that the use of credit information limited to negative information may result in inefficient allocation of credit resources by lowering the accuracy of credit evaluation system[30]. Therefore, the lack of adequate credit information must have, at least in part, contributed to inefficient allocation of credit resources and ultimately increase in credit delinquents in Korea.

The common practices among financial institutions in evaluating credit risk of individual borrowers were also very important reason for deterioration of the problem. Shin and Park (2006) reported that banks had not seriously regarded credit scoring system as an integral part of consumer loans decision[31] until 2003. Moreover, credit card companies also did not have workable credit scoring system until 2003 when the credit card crisis damaged the industry very seriously. In sum, we can conclude that the startling growth of household debt between 2000 and 2002 was not issued based on sound practice of evaluating borrowers' credit risk and huge jump in credit delinquents in 2001 and 2003 were predictable events in some sense.

Lastly, we can point out the role of untimely and improper regulatory responses to worsening of market conditions. The mistakes by the regulatory authority are very easy to locate if we examine the series of policy measures imposed on credit card industry since 2002. We will present a detailed discussion next chapter.

[30] See Barron and Staten (2003) for a detailed discussion on the value of positive information on the performance of credit scoring system.

[31] The first credit scoring system in Korean banking sector was introduced by Hana Bank in 1996. Other banks followed in introducing credit scoring system in late 90's. However, traditional evaluation system utilizing score card had been the primary tool used in loan decision. Credit scoring system was not regarded as the integral part of the process and used as a supplementary device.

4. Credit Card Crisis: Policy Responses and Evaluation

4.1. Development of credit card crisis

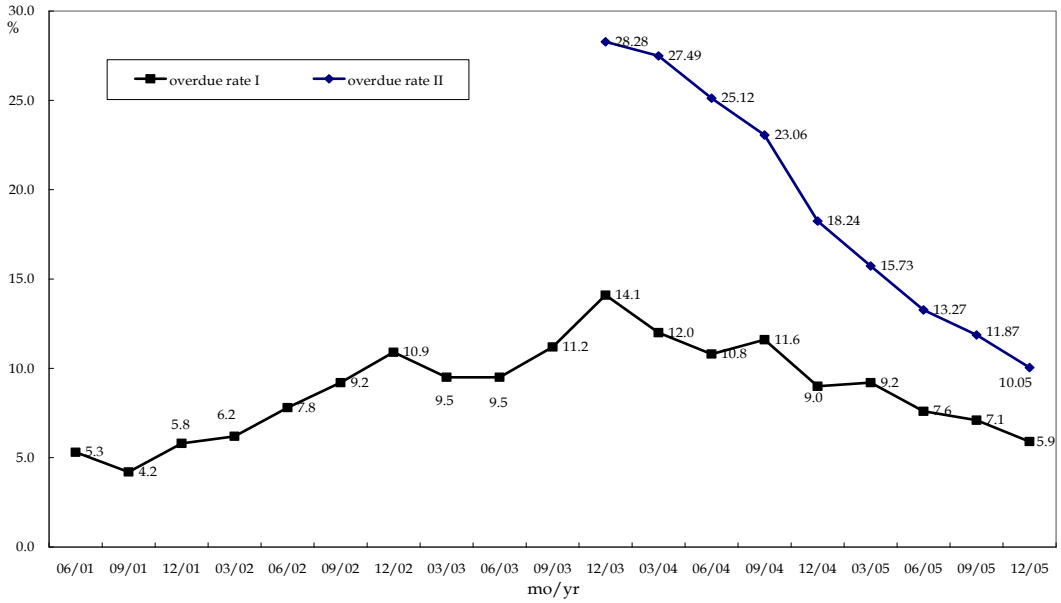
Even though credit card was first introduced to Korea in 1979, the emergence of credit card as a major financial instrument in consumer credit market should wait about 20 more years. In additional to [Figure 5] and [Figure 6], we can offer the following statistics in order to give more hints on how fast the credit card had penetrated Korean economy since the economic crisis,. The number of merchants accepting credit cards was less than one million in 1992 and it increased by 17 folds just in ten years to mark 17 million in 2003. The average number of credit cards per economically active person also increased very fast from one card in 1993 to two in 1998 and peaked at 4.6 in 2002. The use of credit card has become so common that about 50% of total private consumption expenditure is now intermediated by credit cards.

As a result of fast expansion, the quality of loan portfolio started to deteriorate. Overdue loan rate was already crawling up in the second half of 2001 when few noticed possible risk factors behind the fast loan growth and increased further to reach 10.9% at the end of 2002. The sharp increase in overdue rate seemed to stop during the first half of 2003. However, the official statistics on overdue loan rate was quite misleading because confronting with mounting overdue loans credit card companies tried to window dress the quality of their loan portfolio by replacing overdue loans with additional credit to debtors in serious arrears. Official statistics did not include the overdue loans once they were replaced by new loans[32]. The temporary halt in increase of overdue loan rate in the first half of 2003 was the result of strategic behavior

[32] Financial Supervisory Service changed the stance on the official statistics only after they faced with severe criticism against the practice in 2004.

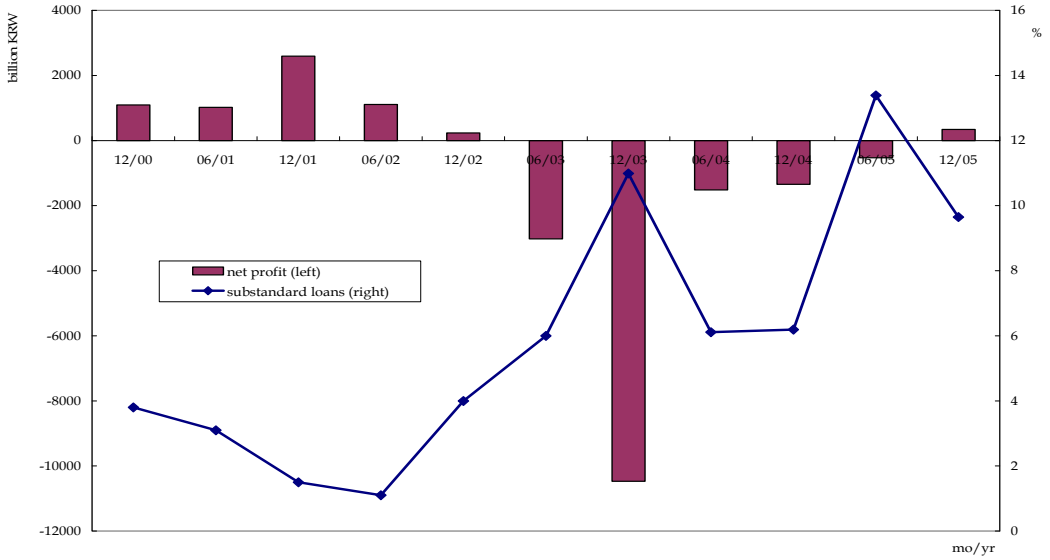
by credit card companies to disguise the seriousness of the problem. One can confirm the argument from [Figure 15] that the overdue rate with replacement loans could be twice as high as the overdue rate without them. The overdue loan rate had increased steadily at least until the end of 2003. Additionally, we also find in [Figure 16] that both profitability and quality of loan portfolios showed a significant decline already from the second half of 2002.

[Figure 15] Overdue Rate of Credit Card Loans



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

[Figure 16] Net Profit and Quality of Loan Portfolio of Credit Card Companies



1. Substandard loans indicates the proportion of loans classified as substandard or below.

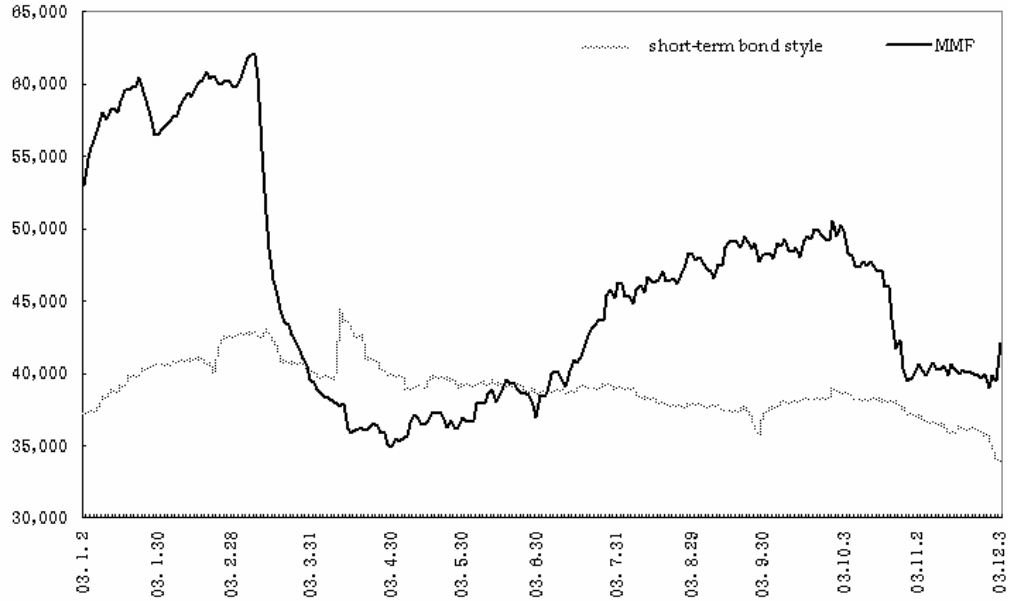
Source: Financial Supervisory Service

The pressure was building up in credit card industry as the overdue loans accumulated and quality of loan portfolio deteriorated. The industry was carrying a time bomb waiting for the momentum to ignite a violent crash lending.

The accounting fraud committed by SK Global Corporation was uncovered in March, 2003[33], which sparked the spread of pessimistic atmosphere across financial market. The growing pessimistic mood struck the weakest spot in the financial market. The liquidity of the bonds issued by credit card companies suddenly evaporated and credit card companies fell into liquidity crisis.

[33] The amount of accounting fraud committed by SK Global was 1.56 trillion Korean Won. Virtually all imaginable kinds of accounting irregularities were utilized to camouflage the deterioration of balance sheet. Liability was undervalued while asset was grossly overvalued.

[Figure 17] Outstanding Stock of MMF and Short Term Bond Fund



Source: Korea Association of Asset Management Corporations

[Figure 17] shows the movements in outstanding stock of money market fund and short term fund around the revelation of accounting fraud by SK Global in March, 2003. Those funds carried portfolio focusing on bonds issued by credit card companies. Investors rushed to secure their investment on those funds and fund managers were forced to dump credit card bonds to meet investors' demand. Already in deep trouble due to severe liquidity crisis, credit card companies were barred from bond market and not able to secure enough capital to meet the repayment requirement for the maturing bonds they had already issued.

Alarmed by the possibility of contagion to other sectors in financial market, especially the banking sector, financial regulator promptly intervened and mediated debt rescheduling negotiations between credit card companies and lending financial

institutions to avert a catastrophic collapse. Credit card companies issued various debt instruments such as commercial paper, corporate bond, and asset-backed security. The total debt of credit card companies was 17.6 trillion KRW at the end of 2002. Invest trust companies that managed various kinds of investment funds were the biggest lender with the outstanding balance of 25.5 trillion KRW. Banks followed in a close distance by lending 21.7 trillion KRW to credit card companies. Insurance companies, security companies, and pension funds also extended significant amount of credit to credit card companies.

Considering the size of debt held by banks and insurance companies that are widely regarded to be related to system risk, some argue that the government intervention was well warranted even though collapse of credit card companies should not be related to system risk in principle.

[Table 8] Lenders of Credit Card Companies

(unit: trillion KRW)

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

1. The table illustrates the position at the end of 2003.

Agreement between credit card companies and lending financial institutions was reached in April, 2003. Credit card companies promised to strengthen their financial structure by injecting more capital and lending financial institutions agreed to delay the redemption of matured bonds issued by credit card companies in return. Financial market regained the stability temporarily and credit card companies were able to secure liquidity by selling newly issued bonds and structured securities that were

backed by portfolio of existing credit card loans.

However, the market had not fully brushed away doubts on the viability of credit card companies and kept a watchful eye on fulfillment of promised injection of additional capital to strengthen the financial structure. The largest credit card company, LG Card, had become the main target of watchful monitoring by doubtful investors in bond market. The overdue rate on LG Card's loan portfolio stayed at very high level and the proportion of non-performing loans rose very fast even after the agreement in April, 2003. Moreover, capital expansion plan promised by the group of large shareholders comprising controlling family members of LG Group, then the third largest conglomerate in Korea, was not fulfilled as planned. When the news that the group of large shareholders had sold their shares through OTC transactions after the trading hours arrived at the market, it suddenly became impossible to trade the bonds issued by LG Card and the company again faced with severe difficulty in securing liquidity. The company was overtaken by lending financial institutions led by Korea Development Bank and a series of negotiations among creditors to devise a plan to bail out the company came into fruit finally in December, 2003.

4.2. Regulatory failures

The first regulatory misstep was committed in 1999 when the universal ceiling on cash advance service by credit cards was removed as a part of de-regulation process in financial market. It is very hard to question the legitimacy of the de-regulation measure in that setting the limit of cash advance service should be left to the private contract negotiated between credit card companies and customers. However, it is also true that in the absence of adequate credit evaluation system the uniform ceiling on maximum

amount of cash advance service played an important role of checking the uncontrollable increase in cash advance services and keeping the soundness of loan portfolios held by credit card companies at a the minimum level. Before the abolishment of the universal ceiling on cash advance service, it was limited to 700,000 KRW and was not linked to creditworthiness of individual borrowers. Credit card companies, however, did not have either the will or the resources to install adequate credit evaluation system. Free from restrictions, credit card companies plunged into brutal competition to increase market shares. To make matters worse, credit card companies stopped to share credit information in order to avoid revealing managerial strategies to the competitors. That ultimately made reckless and unfettered increases in credit card debt possible. As an inevitable result of ill-advised de-regulation measure, credit card debt rose in an unprecedented pace in 2001 and 2002 and fast increase in credit delinquents followed in 2003.

The second regulatory failure was committed during the boom between 2000 and 2002. Despite increased risks due to growing credit card debts, the financial regulator did not fully understand the fundamental nature of the problem. During the booming era, credit card industry was regarded as a highly profitable business and many financial institutions including banks were willing to provide credits to credit card companies by buying debt instruments issued by credit card companies. [Table 9] reports the size of credit financed by different debt instruments. The total outstanding stock of debt instruments issued by credit card companies increased by 500% from 1999 to 2002 and most were bought by banks and investment trust companies shown in [Table 8].

[Table 9] Financing by Various Debt Instruments

(unit: billion KRW)

	1999	2000	2001	2002
CP	4,084	9,649	11,324	20,888
Bonds	10,850	16,731	18,665	29,612
ABS	-	4,476	26,712	33,535
Others	2,905	2,666	4,445	3,632
Total	17,839	33,264	61,146	87,666

High profitability of credit card business that attracted huge amount of credit was primarily based on high interest rate charged on overdue loans. Borrowers had little difficulty in paying the high interest charged on overdue loans since they were allowed to access to credit provided by other credit card companies. In other words, debtors already in arrear were able to borrow from another credit card company to pay overdue loans.

The practice of replacing debts with new debts made it possible to spread the wrong belief that high profitability in credit card business would last forever. However, that was correct presumption only if borrowers could find another credit card company to permit additional credit that would be used to pay the existing overdue loan. That, however, was exactly a financial pyramid that cannot be sustained.

Noticing the fragility of the scheme and observing the fast inflow of huge credit into credit card companies, the financial regulator should have intervened promptly. They should have blocked the inflow of credit by taking tighter supervisory measures on banks and investment trust companies. The financial regulator had the legitimate power to ask banks to stop providing further credit from the perspective of prudential

regulation.

The third regulatory failure was committed in 2002 when the financial regulator took several drastic measures to curb rapid credit expansion by credit card companies. Giving up the laissez faire attitude toward credit card industry, financial regulator suddenly changed the policy stance and imposed very strong restrictions on credit card industry. The objective was to restore stability in the credit card market and to avoid system risk.

The proportion of cash advance services among total financial activities by a credit card company should be kept below 50%. It was so drastic that even financial regulator knew that it would be impossible to enforce the regulation by the deadline they set. Enforcement of the regulation was delayed twice to accommodate situations in the market. Financial regulator was given the power of exercising prompt corrective action to facilitate fast and efficient interventions on failing credit card companies even though they were not the members of deposit insurance scheme.

Moreover, standard for loan provision was strengthened. The new standard was far higher than the one required for banks and credit card companies suddenly regarded as in bad shape because position in income statement considerably deteriorated due to the fact that credit card companies were required to set aside a lot more resources to meet the strengthened provision standard.

No one can raise a question to the necessity of the policy measures to restore stability of the market. But the timing and strength of regulatory interventions invited strong criticism from both the market and the expert commentators. Already in deep trouble in repaying the monthly bills, large portion of credit card debtors who managed to avoid falling into arrears by financing a new debt from other credit card companies or

usurious private loan market were suddenly refused to access to further credits due to strengthened regulatory measures and tightened credit risk management by credit card companies. That resulted in drastic increase in overdue loans as well as fast decrease in credit card debts. Consequently, the number of credit delinquents soared by more than 50% in a year. Many commentators claim that the regulatory authority could have been able to avoid such a violent crash landing with more cautious choice of timing and intensity of policy execution.

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