

FINANCIAL LIBERALISATION AND THE SOUTH KOREAN FINANCIAL
CRISIS: SOME QUALITATIVE EVIDENCE

By

Kevin Amess
Department of Economics
University of Leicester

And

Panicos O. Demetriades*
Department of Economics
University of Leicester

Abstract

This paper provides a novel analysis of the South Korean financial crisis drawing on the findings of a unique survey of IMF/World Bank officials and South Korean economists. The survey reveals that over-optimism and inadequate recognition of financial risks inadvertently led to excessive risk taking by Korean financial intermediaries. It also indicates that the sources of over-optimistic assessments of East Asian economies, including Korea, were mainly to be found outside East Asia, including the IMF, the World Bank, western media and analysts. Weaknesses in risk management were the result of (i) lack of expertise in relation to handling the risks associated with capital flows, and (ii) disincentives to manage risks emanating from a relatively successful history of government provided safety nets for both industry and banking. Financial liberalisation widened risk-taking opportunities, by allowing lending to companies outside Korea. It also created additional disincentives for managing risk by intensifying competition and eroding bank franchise values. Finally, weaknesses in prudential regulation allowed bank portfolios to become much riskier, importantly in terms of maturity mismatches between dollar-denominated assets and liabilities. The liquidity crisis, which followed the re-assessment of the South Korean economy by international lenders in late 1997, triggered a full-blown financial crisis because of the absence of an effective international lender of last resort.

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* Corresponding author: Professor Panicos Demetriades, Department of Economics, University of Leicester, University Road, Leicester, LE1 7RH. Tel: +44 (0)116 2522835. Email: pd28@le.ac.uk

1. Introduction

Financial liberalisation involves a relaxation of interest rate and capital controls, therefore, it may in principle lead to a more efficient allocation of credit with banks making higher returns on their loans (Fry, 1995). Financial liberalisation, however, also offers fertile ground for banks to indulge in moral hazard behaviour (Caprio, 1992; McKinnon and Pill, 1997; Corsetti, Persenti and Roubini, 1999; Huang and Xu, 1999; Hellmann, Murdock and Stiglitz, 2000). Indeed, increased deposit rate competition erodes profits and lowers franchise values (i.e. the capitalised value of expected future profits), which in turn creates incentives for making risky loans (Hellmann Murdock and Stiglitz, 2000). Government provided safety nets in a liberalised financial market may also induce moral hazard behaviour. Indeed, such safety nets may lead to over-investment in unprofitable projects and may persist because the government's promise of a bailout allows banks to gain access to foreign borrowing (Corsetti et al, 1999). Financial liberalisation may, therefore, induce riskier banking behaviour and offers an environment in which a financial crisis may occur.¹

This paper provides a novel analysis of the South Korean financial crisis drawing on the findings of a unique survey of IMF/World Bank officials and South Korean economists. The survey reveals that over-optimism and inadequate recognition of financial risks inadvertently led to excessive risk taking by Korean financial intermediaries. It also indicates that the sources of over-optimistic assessments of East Asian economies, including Korea, were mainly to be found outside East Asia, including the IMF, the World Bank, western media and analysts. Weaknesses in risk management were the

¹ For a recent account of the role of financial institutions in the South Korean economy see Demetriades and Luintel (2001).

result of (i) lack of expertise in relation to handling the risks associated with capital flows, and (ii) disincentives to manage risks emanating from a relatively successful history of government provided safety nets for both industry and banking. Financial liberalisation widened risk-taking opportunities, by allowing lending to companies outside Korea. It also created additional disincentives for managing risk by intensifying competition and eroding bank franchise values. Finally, weaknesses in prudential regulation allowed bank portfolios to become much riskier, importantly in terms of maturity mismatches between dollar-denominated assets and liabilities. The liquidity crisis, which followed the re-assessment of the South Korean economy by international lenders in late 1997, triggered a full-blown financial crisis because of the absence of an effective 'international lender of last resort' (ILLR).

Two sets of interviews were carried out². The first in Washington DC during the Autumn of 1999 and the second in Seoul during April 2000. A semi-structured questionnaire relating to factors that contributed to the crisis was employed.³ In Washington 15 officials of the IMF and World Bank were interviewed and in Seoul 29 private and public sector economists were interviewed.⁴ All interviewees had direct experience of the South Korean crisis.

The interview responses, in addition to providing unique insights into the causes of the crisis, allow us to offer a novel theoretical analysis of the crisis. To this end, we adopt a theoretical framework employed by Greenwald and Stiglitz (1990), Caprio (1992), and

² The surveys were carried out by Panicos Demetriades (PD). In Seoul, PD was assisted by Eun Jun Jang and Ji Eun Jun, who acted as translators where necessary.

³ Dr Mark Stein, of South Bank University Business School, offered advice with respect to the formulation of the questionnaire.

⁴ A profile of the posts held by South Korean economists at the time of the crisis is reported in the Appendix.

Greenwald, Levinson and Stiglitz (1993). Specifically, we study the choice of bank portfolios under conditions of over-optimism, moral hazard and increased competition. Additionally, we utilise banking and financial data to solidify the arguments developed. The diagrammatic analysis offers a useful exposition of the links between financial liberalisation and banking crises, and, as such, provides more general policy lessons for financial liberalisation.

The areas that the survey focuses on are reflected in the structure of the paper. Thus, Section 2 focuses on over-optimism and studies its impact on banking behaviour. Sections 3 and 4 present an analogous analysis of moral hazard and financial liberalisation respectively. Section 5 provides a synthesis of the South Korean financial crisis. Finally, Section 6 summarises and concludes.

2.0 over-optimism

2.1 Survey results

Table 1 reports responses to questions concerning over-optimism. For each question the number that respond in each category of response is reported (percentages are in parentheses). In order to compare the perspectives of IMF and World Bank officials (Wash) with the private and public sector economists from South Korea (SK) their responses are reported separately for each question.

Both the South Korean economists and the IMF/World Bank officials agreed that economic agents had over-optimistic expectations about the prospects of East Asian economies prior to the crisis. The IMF/World Bank officials appeared to be more certain of this as 86.67% thought this was the case against 65.52% of South Korean

economists. Both groups of individuals thought the information produced by the IMF and World Bank regarding the prospects of the East Asian economy was not accurate; 80% and 72.41%, respectively. Nevertheless, a lower proportion of each group considered this to be a contributory factor to over-optimism (44.83% of South Korean economists and 40% of IMF/World Bank officials). In addition, 31.03% of South Korean economists and 33.33% of IMF/World Bank officials thought the assessments might have been a factor. Thus, a large proportion of interviewees were at least inclined to point to the IMF and World Bank assessments of the East Asian economy as a contributory factor towards over-optimism concerning economic prospects in the area. Most IMF/World Bank officials (66.67%) also thought that the western media and financial analysts were responsible for generating over-optimism concerning the prospects of the East Asian economies. South Korean economists, however, were less inclined to blame the western media as 44.83% thought this was the case. In contrast, the South Korean economists were more likely to believe that the South Korean financial institutions were over-optimistic about investment payoffs (51.72% against 46.67%).

2.2 Analysis

Bank managers may play an important role in transmitting over-optimism throughout an economy. This is because banks are at the centre of the flow of funds in an economy and because they price credit for liquidity-constrained firms (Herring, 1999). Thus bank managers' opinion of financial liberalisation impacts on the non-bank private sector. Over-optimism of the benefits of financial liberalisation may occur because signals of poorly performing firms may not be revealed due to soft budget constraints (Huang and Xu, 1999). This sends an incorrect signal to other economic agents, generating unduly

optimistic expectations regarding firms' performance and macroeconomic performance if this practice is widespread. Over-optimism also means that individuals fail to appreciate investment risks and their consequences in a liberalised market. Thus, cognitive biases mean that individuals incorrectly calculate the probability of a financial crisis (Herring, 1999). Bank managers' behaviour due to over-optimism is not tempered, however, due to poor risk management systems.

We model the behaviour of a representative bank manager working for a representative bank. We take the view that the bank manager is an agent of shareholders and undertakes decisions on their behalf. The moral hazard of agents, therefore, plays an integral role in investment decisions. Following Stiglitz and Weiss (1981), the manager confronts an adverse selection problem. As the contractual rate of interest she sets on loans rises there is an increase in expected portfolio returns until the expected portfolio return reaches a critical value and declines because lower risk borrowers are deterred from borrowing and increasingly riskier borrowers are more willing to borrow. Thus, as the contractual rate of interest increases, the standard deviation of the bank manager's portfolio also increases. Thus, the loan frontier (LF) takes an inverted U-shape, as illustrated in Figure 1. The bank manager intermediates a given level of wealth and has access to alternative investments, government bonds, in which to invest a proportion of this wealth (Greenwald et al, 1993). The government bonds yield an expected return $(1 + g)$ and are assumed to have zero risk. An efficient portfolio frontier (EP) is defined by a ray from the expected return of the government bond $(1 + g)$ that is tangential to the loan risk-return frontier. The tangency at r is the contractual loan rate that maximises the expected return on loans. In Figure 1 the representative bank manager's indifference

curve is illustrated by I_1 . It is assumed that the bank manager is risk averse; hence the indifference curve is convex to the origin.⁵

Over-optimism means that the bank manager expects a higher pay-off for any given level of risk. Thus, in Figure 1 the bank manager perceives the loan risk-return frontier she faces to be LF_1 , when the true frontier is represented by LF_0 . The fraction of the bank's assets going on loans, and therefore the optimal portfolio, is determined by tangency between the bank manager's preferences and the efficient portfolio frontier. When the bank manager is over-optimistic the portfolio held is represented by point a, which has an expected return of π^1 with a standard deviation of σ^1 . Coincidentally, at point a, the bank manager's portfolio does not include government bonds. However, given that the true loan frontier is represented by LF_0 , the true efficient portfolio frontier is EP_0 . If the bank manager decides not to hold any government bonds in her portfolio then this means the portfolio will be at point b. Thus, the expected portfolio return is π^* and the portfolio standard deviation is σ^* . Therefore, both the expected portfolio return is lower and the portfolio standard deviation is higher than the bank manager believes.

We have therefore demonstrated that over-optimism leads to bank managers taking higher risks with lower returns. Importantly, we have also shown that risky behaviour can occur without appealing to moral hazard behaviour. Effective risk management systems, and/or prudential regulation should, however, be able to prevent such behaviour.

⁵ Employees are typically characterised as risk averse and receive insurance from shareholders via a fixed component to their pay (i.e. salary) while it is the shareholders of the firm that bear the risk as they derive a residual income from the employees activities. Knight (1921) is an early exponent of this view.

3. Government insurance and moral hazard

3.1 Survey results

Responses to questions concerning the factors affecting moral hazard within the context of financial reform are reported in Table 2. A high proportion (93.1% of South Korean economists and 80% of IMF/World Bank officials) believed that South Korean financial institutions enjoyed implicit guarantees from the government prior to the crisis. Moreover, upon further questioning, many IMF/World Bank officials believed that the financial institutions enjoyed explicit guarantees. There is indication from Korean economists that the economy relied on government backing, which led to complacency and continued bad loans via foreign investors because of the government guarantees. Indeed, 82.76% of South Korean economists and 80% of IMF/World Bank officials believed that these guarantees encouraged excessive risk taking. This implies that governmental guarantees induced investor moral hazard. Neither group, however, thought that this factor was the prime cause behind the crisis. Nevertheless, the majority of South Korean economists and IMF/World Bank officials (65.52% and 78.57%, respectively) thought it was a contributory factor to the crisis.

The majority of both South Korean economists and IMF/World Bank officials thought the prime beneficiary of post-crisis rescue packages were the international lenders/investors. This is supported by the fact that 58.62% of South Korean economists and 53.33% of IMF/World Bank officials thought that the rescue packages were able to cover a large part of their losses. For domestic banks, in contrast, 65.52% of South Korean economists and 60% of IMF/World Bank officials did not think that domestic banks had a large part of their losses covered by rescue packages. This suggests that moral hazard, if any, was not associated with shareholder behaviour.

The majority of South Korean economists and the IMF/World Bank officials (82.76% and 80% , respectively) were both agreed that there had been significant changes to senior management and/or the board of directors at troubled financial institutions as a result of the crisis. There is also some indication that those individuals thought responsible for the crisis were removed from their posts; 60% of IMF/World Bank officials thought this was the case, however, 51.72% of South Korean economists thought only some had been removed. Again, these findings seem to suggest that moral hazard behaviour by bank managers, if any, was to a large extent penalised, even though not fully. Thus, the moral hazard argument as an explanation for excessive risk taking by bank managers receives only limited support by the survey findings.

A high proportion of South Korean economists (82.76%) and IMF/World Bank officials (80%) thought that tighter prudential regulation could have mitigated the problem of excessive risk taking within the financial system . Some suggested that this could be achieved through a better disclosure system making the system more transparent, upgrading the loan classification system , improving capital adequacy, and improving accounting practices. A tighter regulatory regime, therefore, could have reduced moral hazard, which manifested in the form of Korean financial institutions investing in junk bonds in Russia, Thailand, Indonesia, and Malaysia.

3.2 Analysis

The analysis we present here considers the moral hazard of a bank manager and the financial incentives for behaving in a particular fashion. Moral hazard means the bank manager is gambling with depositors and creditors cash. This is not in depositors or creditors best interests. However, if government insurance is provided neither of these

groups have a financial incentive to monitor bank manager behaviour. Moreover, depositors and creditors are not concerned if the bank manager gambles. The effect of deposit insurance, therefore, is to create a moral hazard problem by creating incentives for the bank manager to invest in riskier assets that yield higher expected returns. The bank's shareholders are not detrimentally affected if they have sufficiently diversified their own portfolio.

The provision of deposit insurance will result in the bank manager being less risk averse, which means that her indifference curves become flatter. In Figure 2 this is illustrated by I_h being flatter than I_0 . When financial liberalisation occurs and the controls on interest rates or reserve requirements are reduced, the manager will change her portfolio from that illustrated by point a and the optimal portfolio is now at point c. This has the effect of increasing the portfolio standard deviation from σ^* to σ^h and the expected returns from π^* to π^h . In principle, the investor is selling short government bonds and borrowing at the riskless rate of interest in order to invest in riskier assets. Greenwald et al (1993) argue that the analysis applies to any financial institution provided with implicit or explicit government insurance.

An effective prudential regulator would of course prevent such moral hazard behaviour. However, the Financial Supervisory Commission (FSC), a consolidated supervisory body was only created a few months prior to the crisis in April 1998. Formerly, commercial banks were supervised by the Office of Bank Supervision of the Bank of Korea (Balino and Ubide, 1999). The commercial banks, however, were able to maintain trust accounts that were less regulated than their other banking activities.⁶ At

⁶ Trust accounts are considered part of non-bank financial intermediation.

the end of 1997 trust accounts accounted for 40% of total banks assets (Balino and Ubidé, 1999). Thus, trust accounts were used to circumvent regulation on commercial bank lending. Trust accounts were not subject to reserve requirements, there were no specific exposure limits, and there was looser control of interest rates. Indeed, a comparison of the interest rates of Deposit Money Banks (DMBs) and trust accounts in Charts 1a and 1b illustrates this.

An analysis of the credit risks of banks' assets illustrates increasingly risky behaviour in bank practice. A number of indicators suggest that the credit risk of assets held by banks was becoming increasingly high in the early 1990s. Dooley and Shin (2000) report that the proportion of credit supplied by banks as a proportion of total credit increased from about 54% in 1990 and reached a peak of 63% in 1996, the year prior to the financial crisis. Moreover, the proportion of credit with collateral to total credit declined from 40% in 1990 to about 31% in 1996. Note, however, that the proportion of credit with no collateral formed about 54% in 1997. This decline from the 1996 figure could be due to loan write-offs. An increase in portfolio risk is illustrated by an increase in the proportion of securities in banks asset portfolios from 12% in 1990 to 16% in 1997. Securities are exposed to price changes compared to cash, call loans and deposits i.e. the other assets in a financial intermediaries portfolio.

Excessive risk-taking by banks may well lead to bank runs and financial panic. Dooley and Shin (2000) state that when the contingent liabilities of the government are equal to the government's assets, competition amongst bank depositors and creditors will mean that the insurance option is exercised. Thus, investors' moral hazard and a desire to avoid losses cause the attack. The South Korean economists we surveyed thought that

western investors deciding not to renew /rollover loans and other credits to South Korean financial institutions was a manifestation of such financial panic. Indeed, the evidence suggests that this did occur, particularly in November and December of 1997, despite the Korean government announcing a rescue package on 21 November 1997. Between July and October 1997 the rollover rate of the seven largest South Korean Banks was generally over 85% (in August it was about 79%), however, in November this rate had dropped to 58.8% and in December it had dropped to 32.2% (Dooley and Shin, 2000). The decline in rollover/renew rates could be due to western investors reassessing the South Korean economy due to the crisis in Thailand and in the region in general, generating fear of a contagion effect. There may also have been concern that the Bank of Korea was unable to meet government guarantees to both domestic and international lenders. Chart 2 illustrates that the panic by international investors caused the Bank of Korea's foreign exchange reserves to decline from \$29.73 billion in October 1997 to \$19.71 billion in December 1997.

We have therefore, illustrated the effect of moral hazard on bank managers' preferences and the subsequent effect on the portfolio they hold. Moreover, if all investors behave in the same way as the representative bank manager, the individual behaviour of investors may lead to increased systemic risk and pending financial crisis. The focus on private returns does not consider social costs, especially in the form of systemic risk.⁷

4. Financial liberalisation, competition and moral hazard

4.1 Survey results

⁷ Thus, financial stability can be thought of as a public good.

Table 3 reports responses to questions relating to financial liberalisation in South Korea. 58.62% of Korean economists and 66.67% of IMF/World Bank officials believe that financial liberalisation via the removal of interest rate restraints and capital controls leads to both higher investment returns and a more efficient allocation of resources. 55.17% of South Korean economists and 53.33% of IMF/World Bank officials believed that financial liberalisation played a role in generating over-optimism regarding investment payoffs. Some South Korean economists further argued that western investors initially gained from high returns in Korea but were operating under an illusion that emerging markets yield higher returns, possibly due to herding behaviour.

Increased investment payoffs could come at a cost i.e. increased risk undertaken by investors. Indeed, 65.52% of South Korean economists and 93.33% of IMF/World Bank officials believed that financial liberalisation led to increased risks within the financial system, in the form of credit risk and exchange risk. Despite the perceived increase in risk as a consequence of financial liberalisation, 86.21% of South Korean economists and 93.33% of IMF/World Bank officials thought that the South Korean financial institutions did not have in place the risk management systems that are required to manage the new types of risk that arise as a consequence of financial liberalisation. Moreover, 75.86% of South Korean economists and 86.67% of IMF/World Bank officials thought that South Korean financial institutions were not equipped with the human capital and expertise to adequately manage the risks associated with the intermediation of large amounts of foreign capital. In addition, 96.55% of South Korean economists and 73.33% of IMF/World Bank officials thought that the institutional framework of prudential regulation and supervision was not sufficiently well developed to deal with the risks associated with the substantial volumes of capital flows. Given

this background in which financial institutions were operating, the fact that 72.41% of South Korean economists and 100% of IMF/World Bank officials thought that Korean financial institutions and the financial system, on balance, faced increased risk meant that financial institutions would face problems when operating in a more liberalised environment. Indeed, credit risk, market risk, exchange rate risk, interest rate risk, and liquidity risks were all identified by South Korean economists and IMF/World Bank officials as different types of risk that the financial institutions and regulators had to face. Moreover, 86.21% of South Korean economists and 80% of IMF/World Bank officials thought that financial liberalisation played either a significant or very significant factor behind the financial crisis. Although there may have been a contagion effect despite liberalisation, financial liberalisation and the lack of prudential regulation allowed merchant banks to borrow short term and lend long term, creating fertile ground for a liquidity crisis.

Despite the majority of both South Korean economists and IMF/World Bank officials believing that financial liberalisation would lead to higher investment returns, 65.52% of the former and 53.33% of the latter thought that financial liberalisation led to the profits of financial institutions being effected downwards. Many Korean economists who thought that profits would be affected downwards attributed this to increased competition and lower interest rate margins.

Table 4 reports the concluding questions regarding the financial crisis. Most of the IMF/World Bank officials, 73.33%, thought that the crisis could have been avoided whereas 48.28% of South Korean economists concurred with this view. Better prudential supervision was the factor chiefly mentioned that could achieve this. Thus

resulting in less risk taking and less exposure to default. Slower reforms, better understanding of the links between the corporate and financial sectors, and improved corporate governance so that firms were not exposed to high debt/equity ratios were also cited as factors that could have prevented the problem.

A higher proportion of South Korean economists (79.31%) compared to IMF/World Bank officials (46.67%) thought that international lenders over-reacted to the crisis when they decided not to renew or rollover loans and other credits to South Korean institutions. This was attributed to a coordination problem as once the panic started then it was rational to join in, although some thought this was herding behaviour. The behaviour of western investors was also perceived as short-termist causing financial distress for some Korean firms (e.g. Samsung Electronics). Indeed, 93.1% of South Korean economists and 86.67% of IMF/World Bank officials thought that the reaction of western investors to the crisis was either a contributory factor or the prime cause for exacerbating the financial crisis.

The consequences of the financial crisis for borrowers were potentially serious because 51.72% of South Korean economists and 53.33% of IMF/World Bank officials thought that illiquid borrowers became insolvent as a result of the crisis. There is, therefore, some evidence to suggest that the Korean financial crisis was triggered by the illiquidity of financial institutions emanating from weaknesses in risk management and prudential regulation. Additional information collected during the interviews suggested that these mechanisms manifested themselves in the form of borrowing and maturity mismatches, stemming from short-term borrowing from overseas sources and longer-term lending, again mostly to overseas borrowers. These activities essentially undermined the ability

of the Bank of Korea to act as a 'lender of last resort' (LLR) since these liabilities were denominated in foreign currencies.

4.2 Analysis

The ability to raise finance via the issue of foreign currency denominated bonds and deposits increased the lending capacity of financial institutions in South Korea. Financial liberalisation also meant that South Korean financial institutions were able to invest in Russia, Thailand, Malaysia, and Indonesia, as expressed by the interview respondents above. Notwithstanding the opening of new markets in which South Korean financial institutions could lend, the findings in Section 4.1 reveal that increased competition reduced profit margins as a consequence of reduced interest rate margins. Indeed, for DMBS, Chart 1a indicates that prior to the crisis interest rate margins in the domestic market were narrowing, particularly on time deposits of less than 6 months and general loans of nationwide commercial banks. Moreover, the interest rates on these products were virtually identical in late 1997 to early 1998 and interest rates on time deposits of less than 6 months were higher than those on general loans in mid 1998. In January 1998, interest rates on nationwide commercial banks general loans reached a peak of 17.53% while deposit money banks were paying 18.26% on time deposits of less than 6 months. In contrast, Chart 1b indicates that trust account loan and deposit rates did not narrow prior to the crisis. Thus, we can see why deposits and loans from these accounts were attractive to commercial banks.

Given that there was an over-supply of credit, competition would lead to a decline in the contractual rate of interest for a given size of loan until credit market equilibrium is attained. In Figure 3, the decline in lending rates is modelled by interest rates declining

from r to r^c . If government bond rates remain unchanged, this has the effect of rotating the efficient portfolio frontier, from EP_r to EP_c . Given the investor's risk-return preferences the equilibrium portfolio shifts from point a to point b. Thus, the investor makes a lower contractual return, π^c , on a portfolio with a lower standard deviation σ^c . Theoretically, this should cause a decline in loan investments, therefore, reducing the supply of loans (Greenwald and Stiglitz, 1990). In practice, however, optimism in the South Korean economy meant that South Korean financial institutions were able to obtain funds on the international markets in order to continue making loans and prop up unprofitable investments.

The increase in competition leads to declining returns, which implies lower franchise values. If the stock market is efficient, the equity value of the bank will reflect the lower franchise value of the bank. Chart 3 shows the stock market performance of retail banks and financial services. The stock market index shows the decline of financial services and retail banks prior to the crisis. This could be due to a reassessment of the South Korean economy as there is also a decline in the Korean Stock Price Index (KOSPI). The equity index of retail banks generally outperforms the KOSPI until November 1993, where the retail banks and financial services under-perform the rest of the market. This could be due to the equity market responding to financial liberalisation and expecting the financial institutions profits to reduce as a consequence. In addition, it may reflect the market's assessment of financial institutions undertaking risky investments through, for instance, trust accounts.

Lower franchise values lower the incentives for making good quality loans and increase the moral hazard of the investor (Hellmann et al, 2000). Whether the bank manager's

skills are firm-specific or general, if there is a decline in the franchise value the bank manager has incentives to gamble.⁸ When the bank manager has firm-specific skills (Williamson, 1986) she invests in more risky assets to save her job and continue receiving remuneration for such skills. If her human capital is general she gambles in an attempt to increase the bank's franchise value so that she is not associated with failure, which would detrimentally affect future lifetime earnings (Fama, 1980). Thus, a decline in franchise value will lead to the bank manager becoming less risk averse. The bank manager's indifference curve will flatten, therefore, from I to I' . Consequently, the efficient portfolio that the bank manager holds is at point c. The portfolio standard deviation is now σ^h with a return of π^h . In this case, the financial institutions are borrowing at the government bond rate because of government guarantees. Indeed, in order to continue attracting international investment the South Korean government provided implicit and explicit guarantees.

We have, therefore, demonstrated that when financial liberalisation occurs with a subsequent increase in competition in the loan market, this leads to the bank manager undertaking excessive risk because of a decline in the bank's franchise value. If the analysis for the representative bank manager and bank are extrapolated to all financial institutions in the economy, then we see how the actions of individual agents can create systemic risk. Indeed, Dooley and Shin (2000) suggest that liberalisation reduced the franchise value of the banking system exposing weak balance sheets to competitive pressures that promoted riskier behaviour by banks. Increased riskiness of investor portfolios may also lead to a decline in franchise values (Dooley, 2000). Korean banks

⁸ Note that the investor is gambling by lending this to a recipient, who is willing to accept the credit because it may prevent bankruptcy for the firm, which the recipient is a manager of, in the short run and provide an opportunity to restructure the firm's activities and make an unprofitable firm and/or activity profitable in the future.

were replacing riskless assets with riskier securities that were exposed to greater price changes. Bank managers' were, therefore, in a vicious cycle that was prompted by competition between banks, which reduced financial institutions' franchise values.

5. Synthesis

Financial liberalisation led to increased lending and borrowing opportunities as it allowed non-bank financial institutions and banks to undertake new activities that were previously unavailable to them. Indeed, South Korean financial intermediaries exploited these new opportunities. Chart 4 indicates a steady increase in both the foreign assets and liabilities of DM Bs throughout the 1990s. Prior to the crisis and throughout much of the 1990s, however, South Korean DM Bs foreign liabilities were greater than their assets. This gap reached a peak of \$12.14 billion in October 1997.

Financial liberalisation also created the potential for increased returns and improved efficiency in the allocation of capital. It also brought, however, increased risk because South Korean financial intermediaries operated in markets in which they had no previous experience (e.g. Russia, Malaysia, Indonesia, and Thailand). Over-optimism and moral hazard amongst financial investors, cited by the survey respondents, led to increasingly risky investments. In addition, 'disaster myopia' may also have played a role in generating over-optimism (Herring, 1999). Poor risk management systems and a lack of supervisory control (both within financial institutions and from the regulatory framework) allowed investors to increase the risk of their portfolios. It is not certain, however, that more sophisticated risk-management systems would have prevented the crisis because such systems are unable to model high-impact and low-probability risks. The crisis was triggered by western creditors reassessing their lending to South Korea,

which was prompted by the contagion effects of the Thai crisis. In addition, international creditors realised that the ability of the Korean government to honour its implicit or explicit guarantees was eroded by the Bank of Korea's practice of depositing a large part of its foreign exchange reserves with Korean Bank branches overseas. Thus, international lenders did what was rational from their individual point of view, which was to refuse to rollover or renew loans to South Korean banks. Chart 2 shows that the panic resulted in the Bank of Korea's foreign exchange holdings declining sharply. This created serious liquidity problems for South Korean financial institutions because they were borrowing short-term and lending long-term.

Chart 5 shows the assets and liabilities of the Bank of Korea. In late 1997/early 1998 there was a sharp decline in the assets of the Bank of Korea. There was also an increase in the liabilities of the Bank of Korea, reflecting the IMF rescue package. The massive increase in the Bank of Korea's assets and the difference between its assets and liabilities over the subsequent two years indicates the crisis was largely due to a liquidity problem. The rapid recovery of the South Korean economy after the crisis is consistent with this argument.

The IMF was involved in alleviating South Korea's liquidity problems. The IMF announced on the 4 December 1997 its approval for a three-year-stand-by credit equivalent to \$21 billion in order to support the liberalisation program; \$5.6 billion was made available immediately. With the IMF acting as an 'LLR', the Bank of Korea was able to intervene and take over some of the foreign liabilities of financial institutions. Indeed, Chart 4 indicates that the liabilities of DMBS were reduced from \$48.26 billion in November 1997 to \$31.95 billion in December 1997, while Chart 5 indicates that the

liabilities of the Bank of Korea increased from \$0.64 billion in November 1997 to \$9.83 billion in December 1997. With the IMF acting as an ILLR, along with a microeconomic restructuring package, confidence in the South Korean economy soon returned.

6. Summary and concluding remarks

This paper presents new results on the South Korean financial crisis using a unique survey of IMF/World Bank officials and South Korean economists who had first-hand experience of the crisis. The survey is used to focus the analysis on particular factors associated with financial liberalisation: over-optimism, moral hazard due to government safety nets, and moral hazard due to declining franchise values. All these factors, combined with weaknesses in prudential regulation, resulted in increased risk-taking by banks, which manifested itself in the form of maturity mismatches between foreign-currency denominated assets and liabilities. When international creditors' re-assessed the South Korean economy, in the light of the Thai crisis and its contagion effects in the region, they discovered that the South Korean government's ability to honour the obligations of Korean financial institutions was severely limited. What was rational for international lenders to do on an individual basis was, of course, to refuse to renew or rollover loans to South Korea. However, the absence of an ILLR meant that the liquidity crisis was able to trigger a full-blown financial crisis, with widespread bankruptcies.

An important policy lesson to be learnt from our analysis is that capital account liberalisation erodes the ability of national central banks to act as lenders of last resort, weakening an important safety valve of fractional reserve banking. Even worse, in an environment where agents are learning about the 'new model' of the financially

liberalised economy, they may continue to assume the existence of implicit or explicit safety nets, thereby taking advantage of the widened risk-taking opportunities. Due to these factors, capital account liberalisation can prove catastrophic unless it is accompanied by prudential measures aimed at limiting risk-taking, particularly foreign-currency liquidity risk. Such measures will essentially work like capital controls, limiting the ability of domestic financial institutions to acquire certain types of foreign assets. The only alternative to this is to establish an effective ILLR, which may be impracticable or politically unacceptable, given that an effective ILLR would require unlimited resources.⁹

Another policy lesson, which to some extent appears to have already been learnt in both Asia and Washington, is to curb the euphoria associated with financial liberalisation. In addition, a heightened awareness of the risks emanating from financial liberalisation could, in the future, prove to be one of the keys to successful financial liberalisation.

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⁹ Strengthening the role of the IMF to act as ILLR - as for example through its new Contingent Credit Line (CCL) facility - would go some way toward addressing this problem but could never be as effective as domestic LLR arrangements, thereby leaving considerable scope for prudential controls of capital flows by domestic monetary authorities. An alternative arrangement is to use corporate style payments standstills as suggested by Miller and Zhang (2000).

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Table 1 - Over-optimism

Question	Yes (%)		No (%)		Maybe (%)		Don't know (%)		No response (%)	
	SK	W ash	SK	W ash	SK	W ash	SK	W ash	SK	W ash
Most analysts now argue that economic actors had over-optimistic expectations about prospects of East Asian economies. Do you agree?	19 (65.52)	13 (86.67)	4 (13.79)	1 (6.67)	6 (20.69)	1 (6.67)	0 (0)	0 (0)	0 (0)	0 (0)
Do you think that the IMF and the World Bank always produced accurate and objective assessments of the prospects of East Asian economies (in their publications, country reports etc)?	1 (3.45)	1 (6.67)	21 (72.41)	12 (80.00)	4 (13.79)	1 (6.67)	1 (3.45)	0 (0)	2 (6.90)	1 (6.67)
- If yes, could it be the case that they may have contributed to over-optimism?	13 (44.83)	6 (40.00)	3 (10.34)	2 (13.33)	9 (31.03)	5 (33.33)	1 (3.45)	0 (0)	3 (10.34)	2 (13.33)
Do you think that the western media and/or western financial analysts played a role in creating over-optimistic expectations about the prospects of East Asian economies?	13 (44.83)	10 (66.67)	4 (13.79)	3 (20.00)	5 (17.24)	2 (13.33)	4 (13.79)	0 (0)	3 (10.34)	0 (0)
Do you think that Korean financial institutions played a role in creating over-optimistic expectations about investment payoffs?	15 (51.72)	7 (46.67)	5 (17.24)	5 (33.33)	6 (20.69)	2 (13.33)	0 (0)	1 (6.67)	3 (10.34)	0 (0)

Notes: (1) Percentages may not total 100 due to rounding. (2) SK and W ash refer to interviewees based in South Korea and Washington, respectively.

Table 2 – Moral hazard and financial reform

Question	Yes (%)		No (%)		Maybe (%)		Don't know (%)		No Response (%)	
	SK	W ash	SK	W ash	SK	W ash	SK	W ash	SK	W ash
Do you think that financial institutions in Korea enjoyed implicit guarantees (by the government) prior to the crisis?	27 (93.10)	12 (80.00)	0 (0)	1 (6.67)	2 (6.90)	1 (6.67)	0 (0)	1 (6.67)	0 (0)	0 (0)
- If so, do you think that these guarantees encouraged them to take excessive risks?	24 (82.76)	12 (80.00)	1 (3.45)	0 (0)	4 (13.79)	1 (6.67)	0 (0)	0 (0)	0 (0)	2 (13.33)
- Were the implicit guarantees a significant factor behind the crisis?	-	-	-	-	-	-	-	-	1 (3.45)	2 (13.33)
a) The prime cause	6 (20.69)	1 (6.67)								
b) Contributory factor	19 (65.52)	11 (78.57)								
c) Not significant	3 (10.34)	1 (6.67)								
Who do you think was the prime beneficiary from the rescue packages that were put together after the crisis?	-	-	-	-	-	-	-	3 (20.00)	1 (3.45)	0 (0)
a) Domestic corporations (i.e. chaebols)	3 (10.34)	2 (13.33)								
b) Domestic banks	6 (20.69)	1 (6.67)								
c) International investors/lenders	19 (65.52)	9 (60.00)								
Do you think that rescue packages enabled domestic banks to cover a large part of their losses?	3 (10.34)	4 (26.67)	19 (65.52)	9 (60.00)	6 (20.69)	2 (13.33)	0 (0)	0 (0)	1 (3.45)	0 (0)
Do you think that rescue packages enabled international investors/lenders to cover a large part of their losses?	17 (58.62)	8 (53.33)	6 (20.69)	1 (6.67)	6 (20.69)	4 (26.67)	0 (0)	2 (13.33)	0 (0)	0 (0)
Have there been any significant changes in the senior management and/or board of directors of troubled financial institutions as a result of the crisis?	24 (82.76)	12 (80.00)	1 (3.45)	0 (0)	3 (10.34)	2 (13.33)	0 (0)	1 (6.67)	1 (3.45)	0 (0)
Were those thought responsible for the troubles removed from their posts?	12 (41.38)	9 (60.00)	2 (6.90)	0 (0)	Some Have: 15 (51.72)		6 (40.00)	0 (0)	0 (0)	0 (0)
Do you think that tighter prudential regulation could have mitigated the problem of excessive risk taking in the banking system?	24 (82.76)	12 (80.00)	1 (3.45)	1 (6.67)	3 (10.34)	2 (13.33)	1 (3.45)	0 (0)	0 (0)	0 (0)

Note: See Table 1.

Table 3: Financial Liberalisation

Question	Yes (%)		No (%)		Maybe (%)		Don't know (%)		No response (%)	
	SK	W ash	SK	W ash	SK	W ash	SK	W ash	SK	W ash
Many economists believe that financial liberalisation (FL): the removal of interest rate restraints and capital controls) leads to higher investment returns (more productive investments, more efficient allocation of resources). Do you agree?	17	10	1	2	10	2	1	1	0	0
	(58.62)	(66.67)	(3.45)	(13.33)	(34.48)	(13.33)	(3.45)	(6.67)	(0)	(0)
- Given this, do you believe that FL may have played some role in creating over-optimistic expectations about investment payoffs?	16	8	7	4	4	3	2	0	0	0
	(55.17)	(53.33)	(24.14)	(26.67)	(13.79)	(20.00)	(6.90)	(0)	(0)	(0)
Some economists believe that FL leads to increased risks in the financial system (e.g. exchange rate risk, credit risk, interest rate risk). Do you agree?	19	14	4	0	6	1	0	0	0	0
	(65.52)	(93.33)	(13.79)	(0)	(20.69)	(6.67)	(0)	(0)	(0)	(0)
Did Korean financial institutions have in place the risk management systems required to manage the new types of risks that FL may bring about?	2	0	25	14	2	0	0	1	0	0
	(6.90)	(0)	(86.21)	(93.33)	(6.90)	(0)	(0)	(6.67)	(0)	(0)
Do you think that Korean financial institutions were equipped with the human capital and expertise to adequately manage the risks associated with the intermediation of large amounts of foreign capital?	1	1	22	13	6	1				
	(3.45)	(6.67)	(75.86)	(86.67)	(20.69)	(6.67)				

Note: See Table 1.

Table 3 (Continued)

Question	Yes (%)		No (%)		Maybe (%)		Don't know (%)		No response (%)	
	SK	W ash	SK	W ash	SK	W ash	SK	W ash	SK	W ash
Do you think that the institutional framework of prudential regulation and supervision was sufficiently well developed to deal with the risks associated with substantial volumes of capital flows?	0 (0)	0 (0)	28 (96.55)	11 (73.33)	1 (3.45)	2 (13.33)	0 (0)	2 (13.33)	0 (0)	0 (0)
Do you think that FL affected the profit margins of financial institutions?	-	-	-	-	-	-	1 (3.45)	6 (40.00)	2 (6.90)	0 (0)
a) Upwards	5 (17.24)	0 (0)								
b) Downwards	19 (65.52)	8 (53.33)								
c) No effect	2 (6.90)	1 (6.67)								
Taking into account the new types of risks as well as the responses of financial institutions and regulators, would you say that on balance FL increased the risks faced by the Korean financial institutions/system?	21 (72.41)	15 (100)	3 (10.34)	0 (0)	4 (13.79)	0 (0)	1 (3.45)	0 (0)	0 (0)	0 (0)
Do you think that FL was a significant factor behind the crisis?	-	-	-	-	-	-	0 (0)	0 (0)	0 (0)	0 (0)
a) Very significant	8 (27.59)	5 (33.33)								
b) Significant	17 (58.62)	7 (46.67)								
c) Not significant	4 (13.79)	3 (20.00)								

Table 4 - Concluding questions

Question	Yes (%)		No (%)		Maybe (%)		Don't know (%)		No response (%)	
	SK	W ash	SK	W ash	SK	W ash	SK	W ash	SK	W ash
Do you think that the crisis could have been avoided?	14 (48.28)	11 (73.33)	5 (17.24)	0 (0)	10 (34.48)	4 (26.67)	0 (0)	0 (0)	0 (0)	0 (0)
Do you think that western investors (including fund-managers) over-reacted (panicked unnecessarily) when they decided not to renew /rollover loans and other credits to Korean institutions?	23 (79.31)	7 (46.67)	2 (6.90)	5 (33.33)	4 (13.79)	2 (13.33)	0 (0)	1 (6.67)	0 (0)	0 (0)
- If so, how important was this as a factor in exacerbating the crisis?	-	-	-	-	-	-	-	1 (6.67)	2 (6.90)	1 (6.67)
a) The prime cause	11 (37.93)	6 (40.00)								
b) Contributory factor	16 (55.17)	7 (46.67)								
c) Not significant	0 (0)	0 (0)								
- Do you think that illiquid borrowers became insolvent as a result?	15 (51.72)	8 (53.33)	4 (13.79)	0 (0)	0 (0)	0 (0)	8 (27.59)	4 (26.67)	4 (13.79)	3 (20.00)

Note: See Table 1.

Appendix

Table A 1: Profile of Respondents at time of July 1997 (interviews conducted during 10/4-20/4/00 in Seoul)

Institution	Presidential commission on financial reform	Director/Board	Senior management/ Chief Economist	Economist/ Fellow
Bank of Korea	-	2	1	2
Korea Development Institute	1	-	1	2
Ministry of Finance	-	2	-	-
Korea Institute of Finance	1	-	2	1
Korea Small Business research Institute	1	-	-	-
Economic Research Institute	-	1	-	-
Academic Financial Institutions:	1	-	-	-
Korea Exchange Bank R. I.	-	-	1	-
Korea First Bank	-	-	-	2
City Bank	-	-	1	-
Industrial Bank of Korea	-	-	2	-
Credit Swiss First Boston	-	-	1	-
Korea Long Term Credit Bank	-	-	-	1
Chaebols:				
Hyundai R. I.	-	-	1	1
Hanwha R. I.	-	-	-	1
Total	4	5	10	10

Notes: (1) R. I. means Research Institute. (2) Korea Institute of Finance: Research Institute owned by commercial banks.

Figure 1

Optimal lender portfolio with over-optimism

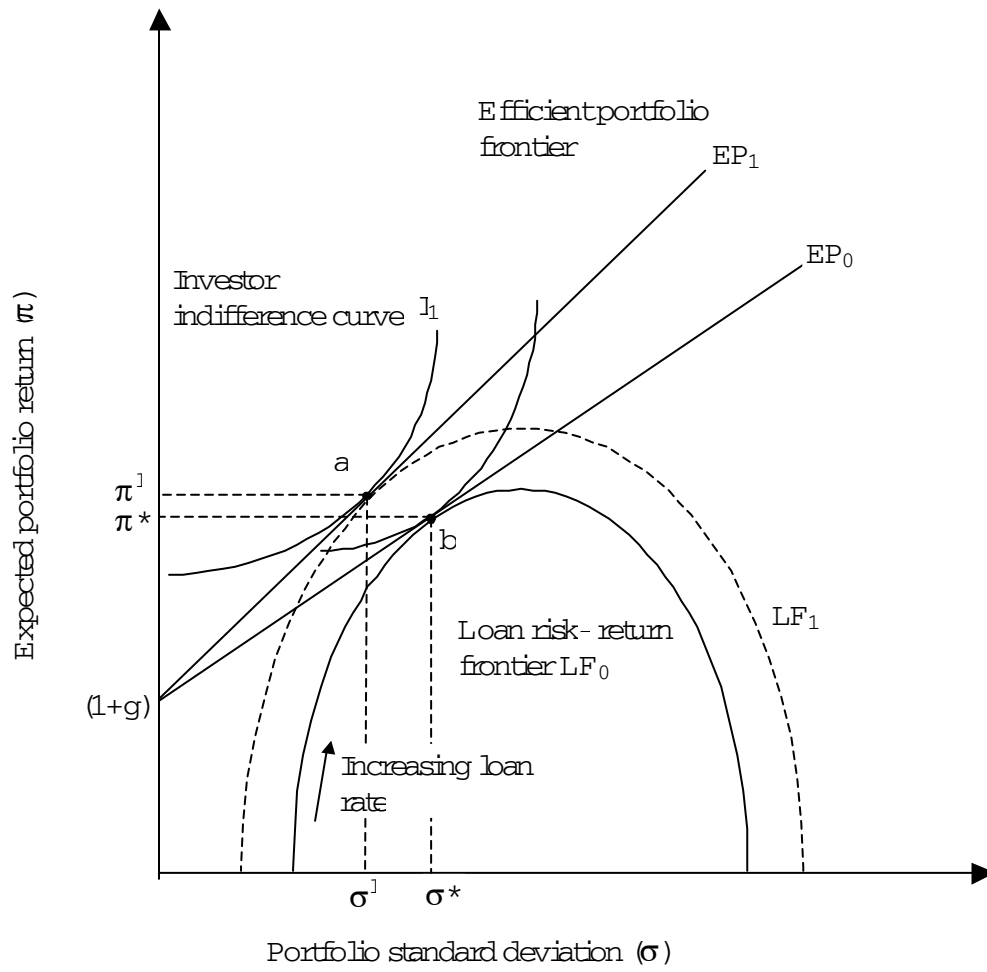


Figure 2

Moral hazard and risk

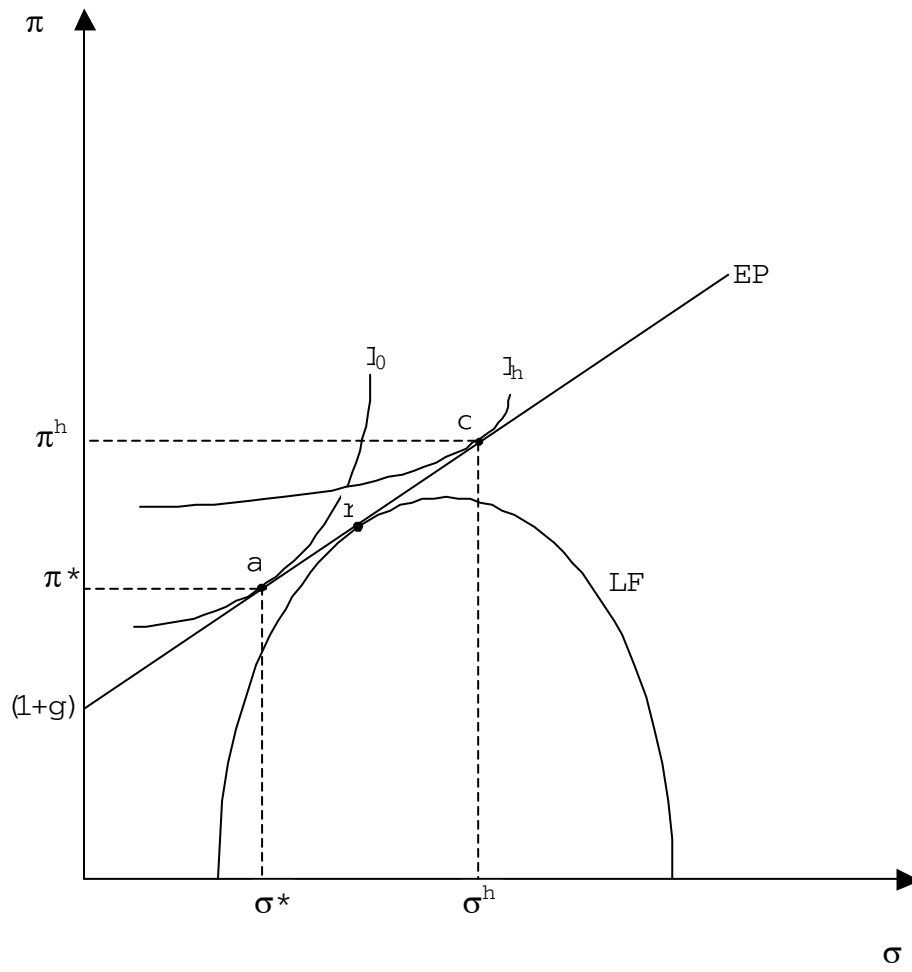


Figure 3

Optimal lender portfolio with inter-bank competition

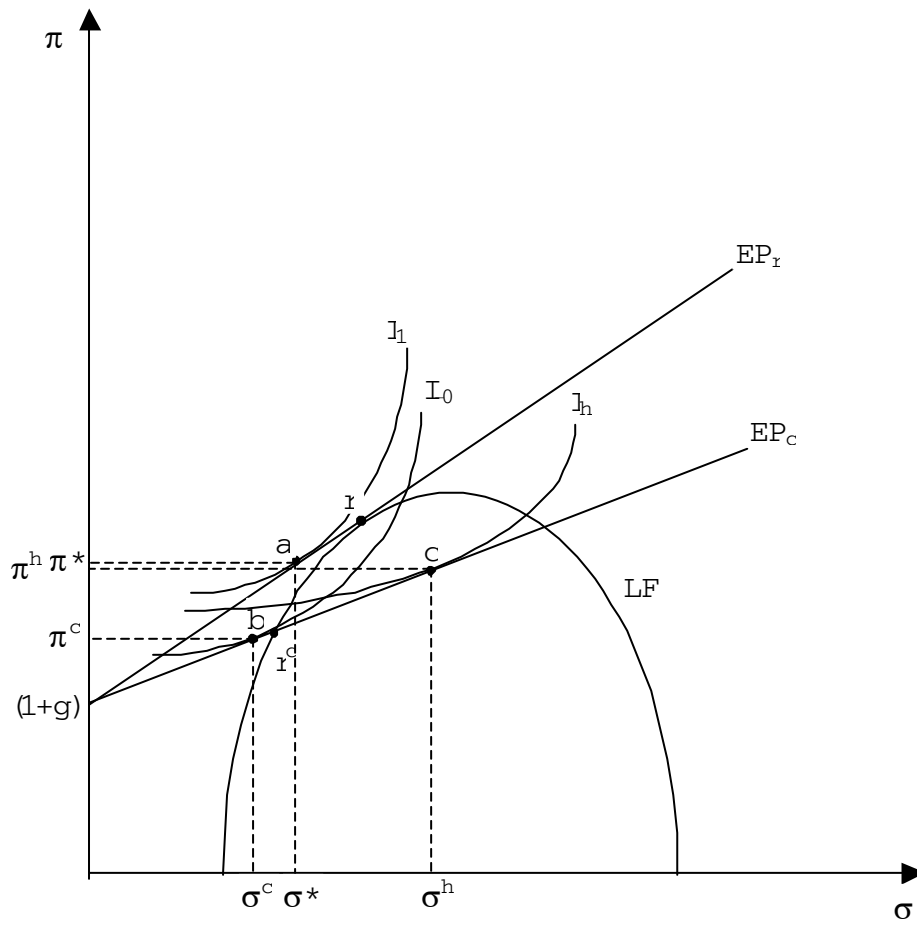


Chart 1a - Deposit and Loan Interest Rates for Deposit Money Banks

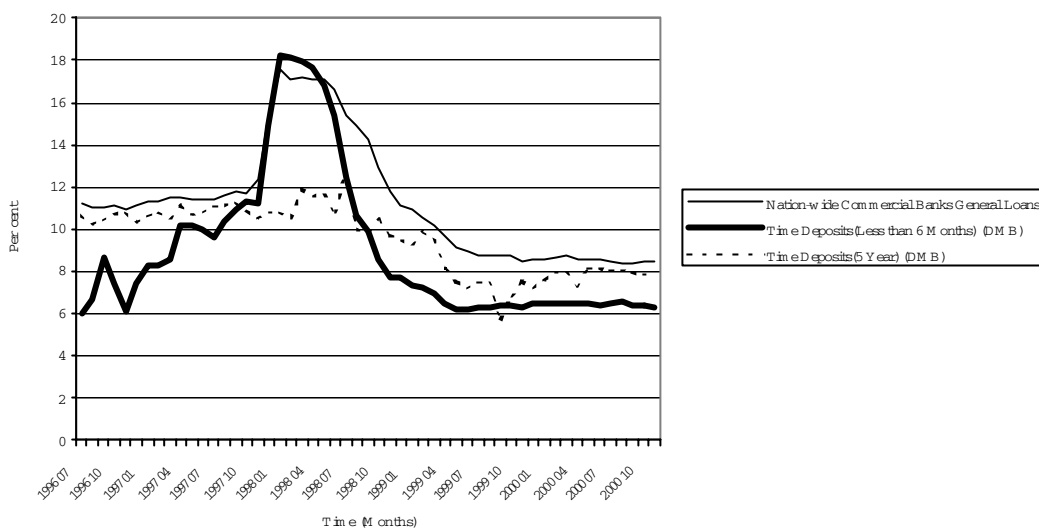
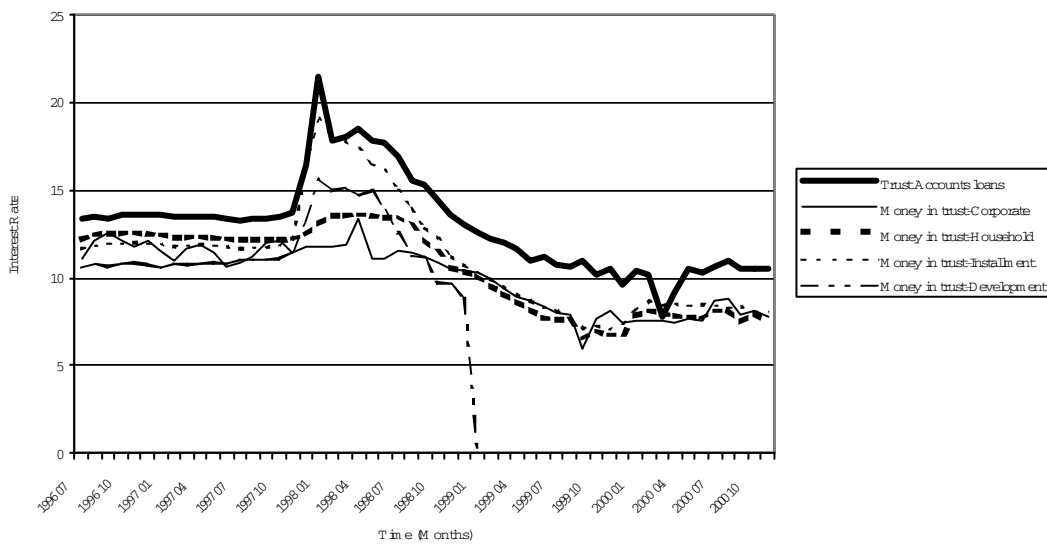
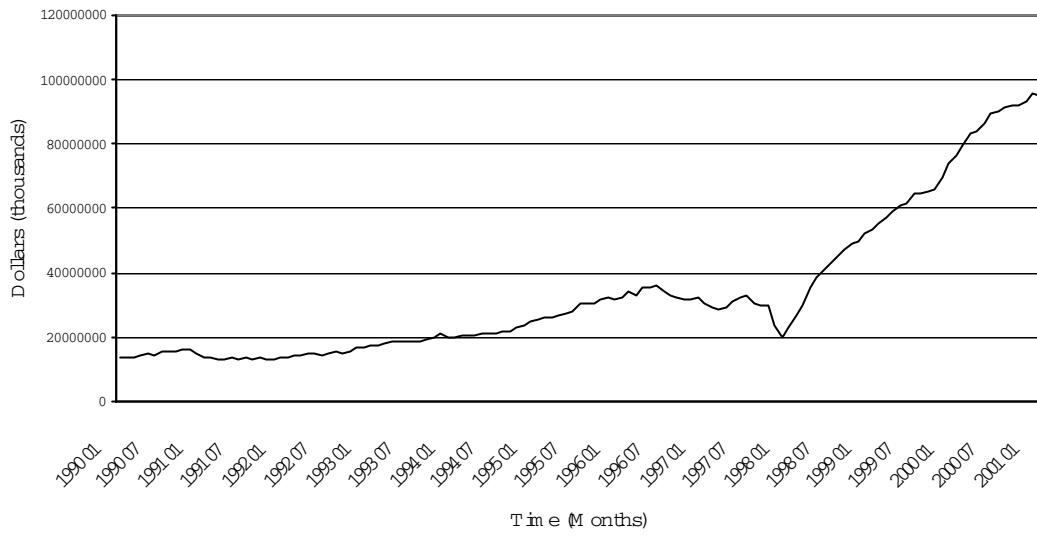


Chart 1b - Trust Account Deposit and Loan Interest Rates



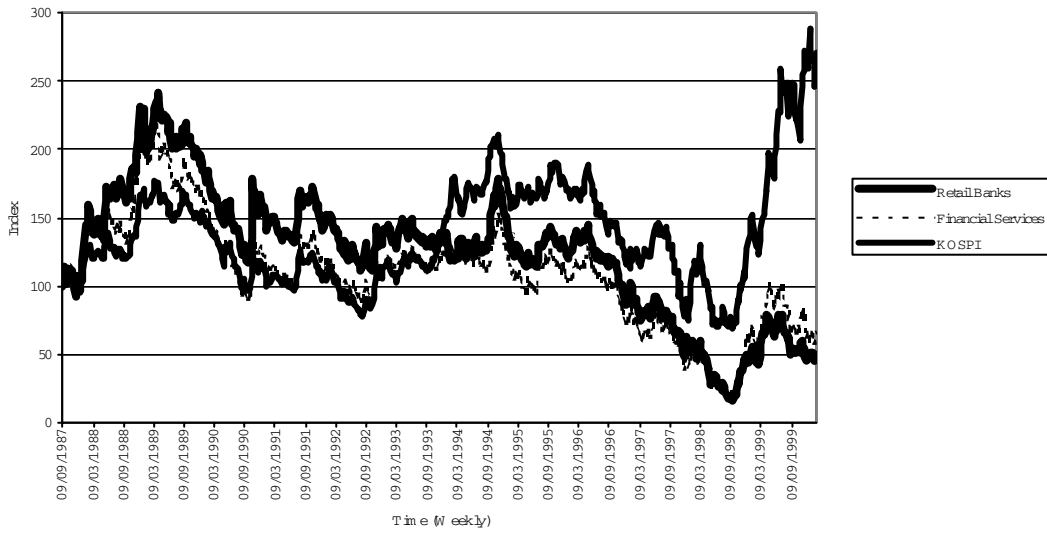
Source: Bank of Korea

Chart 2 - Foreign Exchange Holdings



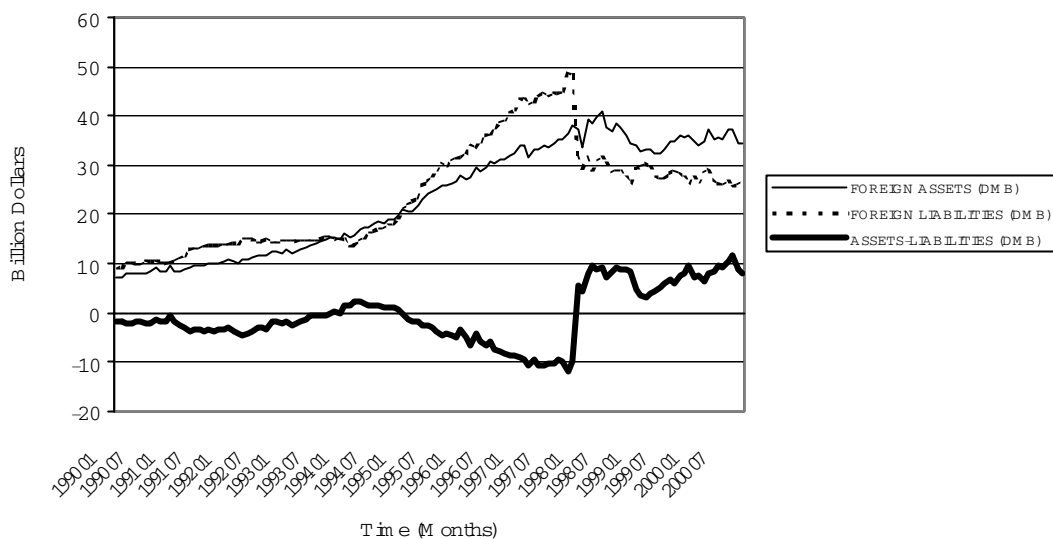
Source: Bank of Korea

Chart 3 - Stock Market Performance of Korean Banks, Financial Services, and KOSPI



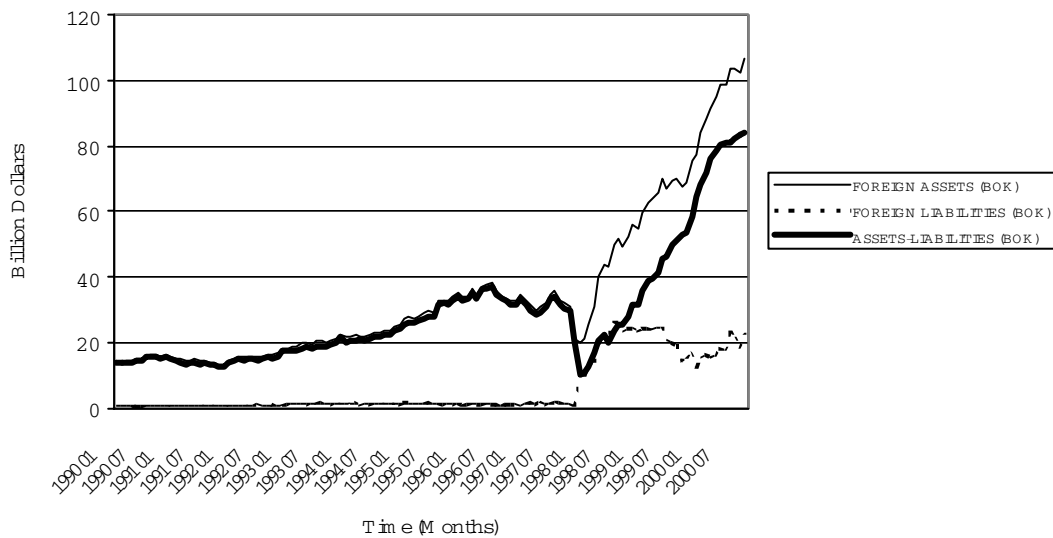
Source Data Stream

Chart 4 - Foreign Assets and Foreign Liabilities of Deposit Money Banks



Source: Bank of Korea

Chart 5 - Foreign Assets and Foreign Liabilities (Bank of Korea)



Source: Bank of Korea