A STUDY ON FINANCIAL STABILITY WITH CAPITAL MOBILITY: A HYPOTHESIS AND THE EXPERIENCE OF KOREA

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ABSTRACT

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Capital inflow has contributed to the growth of many developing countries. However, volatility of capital flows may undermine financial stability and, thereby, robust economic activity, particularly in small open economies. This paper inquires whether international capital flows increase financial instability in emerging market economies.

The literature on capital flows and financial stability suggests a hypothesis that free international capital mobility aggravates the financial instability problem in emerging market economies. Two kinds of causal mechanisms are identified. First, cross-border capital flows intensify asymmetric information problems in the financial system. Second, they restrict the ability of the government to pursue macroeconomic adjustment policies.

The case of financial evolution in Korea was examined to verify these arguments. Two periods – one with increased capital flows, the other with less capital flows – were compared in order to find out whether there were any noticeable differences between the two periods that provide an evidence of increased financial instability associated with increased capital flows.

The empirical study supports the hypothesis. On the one hand, there is some evidence on the effects of international capital flows on institution instability by way

of intensifying asymmetric information problems. Korean commercial banks exhibited serious moral hazard behavior in the times of increased capital mobility.

On the other hand, the increased capital mobility apparently restricted the ability of the government to accomplish macroeconomic adjustments. The government found it difficult to obtain both internal and external equilibria at the same time with the increased capital flows. Increased capital mobility brought about significant overvaluation of the Korean won, and it seems to have generated excessive lending to the domestic economy. Therefore, the Korean case ascertains that free international capital flows made the government face a more difficult environment in accomplishing macroeconomic adjustments.

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INTRODUCTION

As globalization spawned over the world, the economies of most countries in the world became heavily interdependent on one another. In the financial sector, emerging market countries such as Korea and Thailand experienced massive capital flows in recent years. Financial market opening in those countries enabled foreign investors to move their money freely to and from those countries.

Foreign capital influx is evaluated to have contributed to the growth of developing countries where capital accumulation progressed insufficiently. Countries in Latin America and Asia have been able to drive the economic development strategy with the help of foreign capital. Once investors lose their confidence, however, capital inflows turn right away into capital flight. In fact, in 1997, several Asian countries had to face serious economic distress with financial collapse when their capability to pay back was doubted.

It is generally accepted that an efficient financial system and well-functioning financial markets are important factors underpinning robust economic activity. This leads us to ponder upon questions of financial stability, because stable operation of financial market is necessary to sustain and improve the efficiency of financial system. Capital flows across the border naturally influence the national economy. In particular, they influence the economy by way of financial activity in its financial system. In this process, they may change the status of financial activity and even financial system itself. And the effects of these changes are ultimately transmitted to the business and the daily lives of the people.

This paper studies the causal relationships between international capital mobility and financial instability. To do so, it engages in both a literature survey and case study.

The literature survey on the theories of financial instability and the theories of capital flows suggests a hypothesis that free international capital mobility aggravates the financial instability in emerging market economies. Two kinds of causal mechanisms are identified. First, cross-border capital flows intensify asymmetric information problems in the financial system. Second, they restrict the ability of the government to pursue macroeconomic adjustment policies. The case of financial evolution in Korea was examined to verify these arguments. Two periods – one with increased capital flows, the other with less capital flows – were compared in order to find out whether there were any noticeable differences between the two periods that provide an evidence of increased financial instability associated with increased capital flows.

The empirical study supports the hypothesis. On the one hand, there is some evidence on the effects of international capital flows on institution instability by way of intensifying asymmetric information problems. Korean commercial banks exhibited serious moral hazard behavior in the times of increased capital mobility. On the other hand, the increased capital mobility apparently restricted the ability of the government to accomplish macroeconomic adjustments. The government found it difficult to obtain both internal and external equilibria at the same time with the increased capital flows. Increased capital mobility brought about significant overvaluation of the Korean won, and it seems to have generated excessive lending to the domestic economy. Therefore, the Korean case ascertains that free international capital flows made the government face a more difficult environment in accomplishing macroeconomic adjustments.

The organization of this thesis is as follows. Chapter One investigates the meaning of financial stability and presents a definition of financial stability. Chapter Two discusses what indicators are available for measuring the degree of financial

stability. Chapter Three identifies the general causes of financial instability, and Chapter Four summarizes the relationship between capital mobility and financial stability. Based upon the analytical framework discussed in the four preceding chapters, Chapter Five presents the case study of Korea. Korea is chosen since it is one of the emerging market economies that recently experienced massive capital movements. The relationship between capital flows and financial status changes is analyzed in detail in connection with the trends of other economic variables. Conclusion offers the insights of this study on the implication of capital mobility on financial stability.

CHAPTER 1
SIGNIFICANCE OF FINANCIAL STABILITY

Definition of Financial Stability

In discussing *stability*, a concept which can be interpreted in a variety of ways, we ought to be able to judge whether a financial system is stable or unstable on generally accepted grounds. Thus, to carry out a useful discussion as regards financial stability, we must first set up the grounds that can unambiguously distinguish stability from instability in a financial system. From a practical and policy viewpoint, a government or official bodies need to be able to figure out whether financial conditions require intervention to keep the economy on a desirable track. For this purpose, this chapter and following one elaborate on the definition and the measurement for further discussions on the issues of financial stability.

Crockett defines financial stability as *the smooth functioning of the institutions and markets that make up the financial system* (Crockett, 1997a, p.2). This definition serves as our basis for further discussion in this paper. I start with Crockett's definition, because he is one of the few authors who offer a definition of financial stability. However, there is no general consensus on how to define financial stability.

In discussing his definition, Crockett distinguishes financial stability from monetary stability. The latter refers to the stability of the general price level, that is, to an economic situation without inflation or deflation, while the former refers to the stability of the financial system. Although they are deeply interdependent as financial stability forms the ground for an effective monetary policy, the issue areas are quite different from each other. Monetary stability focuses on macroeconomic issues of inflation or the aggregate demand, while financial stability focuses on financial

transactions and financial asset prices. In this regard, financial institutions and financial markets constitute the central areas for the issues of financial stability.

Fragility in Financial Institutions

The central role of a financial institution is financial intermediation. Financial institutions are expected continuously to meet their contractual obligations for liquid liabilities that ought to be repayable at par value on demand in an ever-changing economic environment.[1] However, their assets are, on the whole, illiquid, as loans are collected on due dates. Liquid liabilities and illiquid assets are a natural consequence of financial intermediation. This implies that financial institutions are inherently vulnerable to runs by depositors. Hence, stability in financial institutions is preserved when lenders and borrowers keep their confidence in the financial institutions' ability to carry out their contractual obligations. In short, institution stability obtains when customers' confidence – mainly depositors' confidence – in the institutions' solvency is maintained in the financial activities of the whole economy.

If a financial institution is suspected to be unable to pay its liabilities at par to the depositors through any disturbances such as accumulated bad loans or major capital losses, depositors tend to rush to the financial institution at once to withdraw their money before the institution becomes insolvent.[2] Such a run may arise from depositors' herd behavior.[3] One thing to note is that the failure of a few small institutions is not considered financial instability if overall depositor confidence in an

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[1] In this paper, I will take *financial institutions* to mean the institutions that, on the whole, carry out financial intermediation. Banks will be the main concern for my study. Yet, some non-bank financial institutions are also included in so far as their role is judged to be the financial intermediation.

[2] This process is well explained by the famous *prisoners' dilemma*.

[3] Asymmetry of information is generally said to be the main cause for a bank run. This is reviewed in detail in Chapter Three.

economy's financial system is not harmed. In fact, this may be regarded as the normal functioning of the financial system and efficient working of the market. Thus, financial instability is generated only by a widespread loss of confidence in the ability of the majority of financial institutions to redeem their obligations.

Asset Price Volatility

When the financial system is stable, financial markets are expected to be flexible enough to continue to function efficiently over a long period to allocate financial resources according to the marginal productivity of business sectors or economic agents. Market prices should be able to move according to the shift of supply and demand of financial assets. Financial market stability refers to the market status where financial asset prices change by the amount that can be accounted for by changes in economic fundamentals.[4]

Yet, financial asset prices tend to overshoot, that is, move further than the extent to which changes in economic fundamentals correspond, once a disturbance occurs. Imperfect information of asset holders on the financial market contributes to the price instability by creating herd instincts. Generally speaking, it is quite difficult for individual asset holders to get the information on the stream of future incomes or the factors that affect the discount rate of financial assets. When a financial asset is involved in price fluctuation for some reason, this imperfect information reinforces deviation of the asset price. This is because imperfect information leads the asset

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[4] *Economic fundamentals* is not a rigorous concept for general acceptance in academic literature. In this paper, *economic fundamentals* means the real economic conditions including the levels of output, production capacity, consumption, and investment. On the other hand, Krugman (1997, p.6) takes *fundamentals* to be such elements as foreign exchange reserves, the government fiscal position, the political commitment of the government to the exchange regime, etc.

holders, in anticipation of less losses or more profits, to run one way in herds. The inordinate price movements that exceed what can be justified on the grounds of fundamental changes are considered to be the state of financial market instability, which hampers the normal economic activities.[5]

Significance of Financial Stability

Why do the issues of financial stability call forth public concern? Firstly, a financial disruption often causes a severe reduction in real economic activity. The impacts of financial disruption are so enormous that they affect every corner of economic activities. Depositors may lose their wealth by insolvency of financial institutions. Businesses face a credit squeeze. Above all, the economic system loses efficiency and suffers impaired credibility. Today, financial activity is closely linked with real economy. In fact, the development of financial techniques has greatly improved the outcome of real economic activities in many cases. However, the opposite also happens. In some countries such as Mexico and Thailand, banking strains, which were created by currency crises, led to serious recession of the economies. Financial distress caused the people of those countries enormous sufferings.

Secondly, a disruption of one national financial system can cause repercussions in other economies. With the development of new financial instruments, the volume of financial transactions has skyrocketed not only within the domestic market but also across the borders. Capital flows across the countries have risen dramatically, and integration of capital markets has made financial institutions more interdependent and

[5] Financial market instability is not unrelated to institution instability. When inordinate asset price movements lead to deteriorating asset quality, they may also lead to a run on financial institution. See Diamond and Dybvig (1983) for details.

vulnerable to system risks.[6] International capital flows, though they are generally considered to be beneficial for the efficient allocation of savings and investments, also have the power to undermine the effects of national economic policy and destabilize financial system in unstable conditions. The Mexican crisis in 1994 destabilized Argentina, and the Thai crisis in 1997 produced serious impacts on the economies of Malaysia, the Philippines, etc.

Thirdly, financial instability – especially a financial crisis – is extremely costly to resolve. As financial institutions are vulnerable to runs, and difficulties of a failed institution may be propagated widely and rapidly to other institutions by contagion effect, authorities intervene to avoid adverse consequences which may destabilize the whole system.[7] And there are pressures to compensate private losses. These activities all demand fiscal costs, which fall on the public budget.[8] A World Bank study estimated that 14 countries had had to devote more than 10 percent of GNP to the resolution of banking sector crises.[9] The estimated cost of the 1980s S&L crises in the United States has been put at between 2.5 and 3 percent of GDP.[10]

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[6] Financial industry is thought to be particularly liable to systemic instability because they are vulnerable to failure contagion. Network of interlocking claims and liabilities through interbank market, over-the-counter derivative transactions, and the payment and settlement system makes contagion more likely in financial industry than elsewhere. Difficulties in one institution may spread rapidly to others through this interlocking network (Crockett, 1997a, pp.9-10).

[7] In this regard, Crockett regarded *financial stability* as a *public good.* He explained that its consumers (i.e., users of financial services) do not deprive others of the possibility of also benefiting from it. In this sense, he argued that public authorities have an interest in seeing that it is supplied in an appropriate quantity (Crockett, 1997b, p.9).

[8] The resolution costs of financial sector are transfer costs. They are not all taken as losses in economic welfare. They could be smaller than the transfer costs if the real assets financed by failed banks remained in existence and continued to yield productive services.

[9] From Caprio, Gerard, and Daniela Klingebiel, 1996, *Bank Insolvencies; Cross-Country Experience*, unpblished manuscript, Washington, World Bank, as cited in Crockett, 1997b, pp.12-13.

[10] From U.S. Federal Reserve staff estimates, as cited in BIS, 1997, p.9.

CHAPTER 2
INDICATORS OF FINANCIAL INSTABILITY

What do we see when a financial system is unstable? Financial instability manifests itself in a variety of ways. This chapter reviews several observable phenomena that represent financial instability and discusses measurable indicators.

Institution Instability

Bankruptcy of financial institutions must be the most conspicuous aspect of financial instability. Few will doubt that financial system is unstable when bankruptcy in financial sector is widespread. Bankruptcy of financial institutions has particular meaning, distinguishing it from that in the other industries. A failure of a financial institution – especially a bank – is likely to spill over to other institutions. Financial institutions are generally interlocked with one another with claims and liabilities through the interbank market, over-the-counter derivatives transactions, and payment and settlement systems (Schoenmaker, 1996). A failure of one institution may easily harm other institutions' operation through this network of financial transactions. The whole financial system becomes vulnerable to run, particularly with the asymmetrical information problem. Bankruptcies of financial institutions are found in the United States in times of financial turmoil. Hundreds of S&Ls and commercial banks failed in the late 1970s and 1980s (Nakajima and Taguchi, 1995, p.42).

However, in Japan and Korea, bankruptcies in financial industry were rare until recently. Governments of these countries had not allowed their financial institutions to go bankrupt, as they wanted to avoid serious shocks to the economy. Instead, they guided problematic financial institutions to be merged with sound institutions, or

supplied bailout money to make them healthy. Sometimes, the governments nationalized the problematic financial institutions in order to recover depositor confidence in the whole financial sector. These are the features of involvement of official bodies in a financial distress. In Japan, several tens of financial institutions were merged into other institutions during the period of financial distress in the late 1980s and early 1990s (Nakajima and Taguchi, 1995, pp.43-44). This indicates that the *number of merged financial institutions* increases at the time of financial instability. Also, the *amount of bailout money* or *deposit insurance expenditure* is likely to increase if financial system is under distress. The United States deposit insurance expenditures expanded greatly in the second half of 1980s as a result of the financial turmoil.

Profitability is another indication of the healthiness of financial institutions. Profits provide the basis for future capital generation, protections against short-term problems, and insights into institutions' competitive position within the financial sector (IMF, 1998b, p.23). Falling profits in a majority of financial institutions will endanger depositors' confidence if they become suspicious of the institutions' solvency. Specifically, *return on assets (*or *equity), loan loss provisions*, and *net interest margin* represent profitability of financial institutions. *Bad loans* play an important role in squeezing the profit of financial institutions.[11] Bad loans degrade the quality of financial assets, thereby increase the risk of institution failure. If the asset quality evaluation policy or income recognition policy of a financial institution is such that, uncollected interest on non-performing assets is counted in its revenue, the

[11] Typically, loan assets are classified into four grades: standard or current, substandard, doubtful, and loss. The first category includes assets that are not considered problematic. Assets falling into the latter three categories possess various degrees of well-defined credit weaknesses and are typically referred to as *classified assets (bad loans)* (IMF, 1998b, p.17).

institution's profit will be overstated.[12] This will make the size of institution's true capital smaller than stated in the book, thus may harm the stability of the institution, especially under a financial distress.

The *capital adequacy ratio* is also an indicator of the soundness of financial institutions.[13] The more capital an institution has, the better it is able to deal with its problems. Thus, a general decline in capital adequacy ratios in the financial sector can impair the healthiness of financial institutions and may cause depositors' suspicion on institutions' repayment capability.

Market Instability

Market stability refers to the price stability of financial assets. Movements of financial asset prices reflect macroeconomic changes such as those in interest rates and price levels as well as management changes in individual institutions. Factors that make the financial asset prices change include changes in private sector's stock of wealth, changes in the rate of return to saving and investment, and change in business and consumer confidence. Furthermore, financial asset prices frequently exhibit volatility since financial asset pricing is subject to imperfect information. Neither the future income streams nor the asset discounting factors are perfectly known to asset holders. This feature of financial market generates instability bias, making financial systems vulnerable to loss of confidence and runs.[14]

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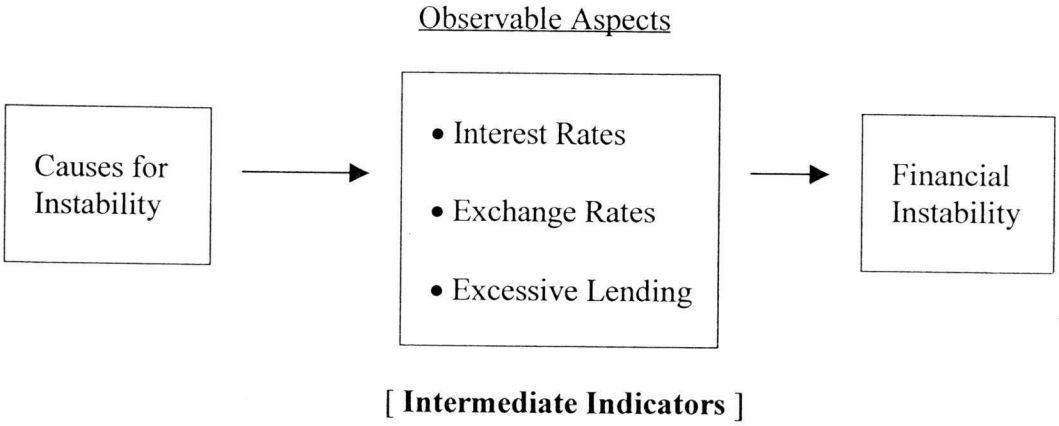
[12] If the management pays taxes and dividends based on those fictitious profits to conceal the institution's true condition, the financial status of the institution will deteriorate even more.

[13] The Basle Committee on Banking Supervision recommends the governments of the countries to keep its minimum capital adequacy ratio. For more details, see BIS, Basle Committee on Banking Supervision, 1988.

[14] Typically, financial asset prices are most vulnerable in the foreign exchange market

Interestingly, the observable aspects of market instability are less indicative than those of institution instability in a financial system. They do not stand for instability directly by themselves. Excessive fluctuation of interest rates, overvaluation of domestic currency, and domestic inflation generate potential difficulties of financial institutions' operation, and they may lead to financial instability in certain periods. Therefore, they are considered as the intermediate indicators for financial instability. Figure 1 illustrates this.

Figure 1. Observable Aspects of Market Instability



Among the indicators for market instability, the fluctuations of *interest rates* contribute to asset price volatility. As *equity prices* and *bond prices* represent the present discounted value of a future stream of earnings, they are subject to change according to changes of interest rates, which substitute for discount rates. Hence, if the interest rates continue to soar or plummet, we can judge that financial market is unstable. Inordinate fluctuation of interest rates diminishes financial activities in the economy by increasing the uncertainty of the asset prices. A risky situation may arise

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and the equity market. Consequently, these markets have been the principal subjects of analysis concerning financial instability.

when banks with large holdings of securities see their market value decrease sharply with interest rates fluctuation. Volatile interest rates also hamper the way in which real value of impaired bank asset is adjusted downwards and the ability of the central bank to act as a lender-of-last-resort to illiquid but solvent banks.[15] Several Asian countries experienced asset price crashes as interest rates hiked, when financial disturbances took place in 1997.

Inflation, if it is imperfectly anticipated, accentuates the uncertainty of interest rates fluctuation and thus, enlarges the asset price volatility.[16] Particularly, *real estate prices* are closely related with interest rate movements. At the same time, real estate is used as collateral for many financial transactions. If real estate price declines, collateral value for lenders decreases, which leads eventually to a deterioration in the quality of loan assets. The latter in turn causes the financial intermediaries to get more fragile. Fluctuations in real estate prices have frequently been an important factor for the transmission of distress through the financial system.

A currency crisis occurs when market participants lose their confidence in the sustainability of a currency's exchange rate and seek to reduce their exposure in that currency. When an authority defends fixed exchange rate with a narrow margin against depreciation pressure, speculators have a one-way bet to sell the currency anticipating its imminent depreciation. The country devalues its currency when it is unable to resist the market pressure. Market practices of portfolio adjustment exacerbate exchange rate volatility.[17] Misalignment in exchange rates under flexible

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[15] For details, see Goldstein and Turner, 1996.

[16] Bordo and Wheelock (1998) supported, with empirical evidence from the U.S. financial history, the claim of Anna Schwartz (1988) that instability in the price level exacerbates financial instability.

[17] Development of new financial instruments and the capital market liberalization have facilitated these practices.

exchange rate regime brings about the same outcome of a currency crisis. Hence, *overvaluation* causes financial instability.

Sachs and others argue that the countries that experience lending boom are more likely to suffer a currency crisis (Sachs, Tornell, and Velasco, 1996, p.180).[18] As currency difficulties go hand in hand with financial instability, *excessive lending* brings about financial instability. When lending expands rapidly, it becomes hard for financial institutions to determine borrower's ability to pay back as they can repay old debts with easy credit. Especially in developing countries where loan screen practices are not fully refined, lending boom is more likely to be associated with an increase in the riskiness and vulnerability of bank portfolios.

With regard to lending boom, a high level of lending ought to be distinguished from a high rate of loan increase. High ratios of private sector credit to output indicate financial deepening, and they are not considered as indicating financial instability. What matters to financial instability is sharp increases in lending to the private sector within a short period of time. Such jumps are likely to lower average loan quality (Sachs, Tornell, and Velasco, 1996, pp.189-190). Therefore, we may use the movements of *loan / deposit ratio, loan / capital ratio,* and *loan / GDP ratio* as indicators of the stability of financial activity. In fact, rapid growth in the ratio of bank credit to GDP preceded financial troubles in Argentina (1981), Chile (1981-82), Colombia (1982-83), Uruguay (1982), Norway (1987), Finland (1991-92), Japan (1992-93), and Sweden (1991).[19]

This section discussed two groups of indicators of financial instability: indicators for financial institution instability and indicators for price instability in financial asset

[18] Gavin and Hausmann (1995) also argued that the empirical link between lending boom and crisis is very strong.
[19] For more details, see Sachs, et al., 1996, pp.159-170.

markets. Nonetheless, it is worth noting that institution instability is closely related to market instability. Asset price changes in the financial market produce changes in the financial condition of the financial institutions by changing their asset values.

CHAPTER 3
CAUSES OF FINANCIAL INSTABILITY

Following the discussion of the meaning of financial stability and indicators in the preceding chapters, this chapter examines the general causes of financial instability. The vulnerability of financial sector is inherent to the functions it performs: transforming risk and liquidity. Financial instability is thus closely associated with a breakdown of these functions. Causes of financial instability are reviewed respectively from microeconomic and macroeconomic perspectives.

Microeconomic Factors in Financial Instability

Information asymmetry is a fundamental cause of the microeconomic failures of financial institutions. Lax management within financial institutions contributes to the poor asset quality. Regulatory shortcomings and supervisory forbearance can give rise to financial instability by failing to identify and address problems in a timely fashion.

Information Asymmetry [20]

Asymmetric information problems such as adverse selection, moral hazard, and herd behavior, can lead to financial inefficiency and even to financial instability by

[20] Information is *asymmetric* when one party to an economic relationship or transaction has less information about it than the other party or parties. While asymmetric information is present in many markets, some economists believe that it is particularly pervasive in financial markets. The importance of information asymmetry in financial markets is underscored by the fact that the very existence of financial institutions can be explained on asymmetric-information grounds. For instance, it has been argued that banks and other financial intermediaries specialize in assembling and analyzing information about borrowers and their investment projects, thereby attenuating informational asymmetries. From this perspective, financial intermediaries act as *delegated monitors* on behalf of their customers (Eichengreen, et al., 1998, p.2).

causing the asset quality of financial institutions to deteriorate (Eichengreen, et al., 1998, pp.12-16).

Adverse selection occurs, when borrowers who are bad with credit risks have a strong incentive to seek out loans. As lenders are not able to evaluate credit quality precisely because of incomplete information about borrowers, they will set a price for a security or loan that reflects the average quality of the borrowers concerned. This price is likely to be less than the fair market value for high-quality firms while it is above fair market value for low-quality firms. Consequently, only low-quality firms will sell their securities or get the loans because they know that the price of their securities is higher than their actual value (or the borrowing cost is less than what it should be). Therefore, the risks that financial institutions bear are likely to increase.

Moral hazard arises when borrowers alter their behavior after the transaction has been concluded in ways that the lenders regard as undesirable. Unless the lenders can monitor the borrowers perfectly, borrowers have an incentive to invest in relatively riskier projects, so that they could earn more profits if the project succeeds while lenders would bear most of the loss if the project fails. That is, borrowers tend to attempt to alter their projects in ways that increase their risk after the financial transaction is done. Information asymmetries enable the borrowers to take on moral hazard.

Moral hazard can also arise, if the government guarantees to relieve lenders' losses.[21] Implicit or explicit deposit insurance aggravates moral hazard problem. It provides depositors with the incentive of excessive risk taking. Lenders are also likely to favor more profitable but riskier project with deposit insurance. Excessive risk-

[21] Many governments sought to prevent bank runs by introducing deposit insurance. Even where deposit insurance does not exist, they have reacted to bank runs by providing ad hoc deposit guarantees in an attempt to restore confidence in banking activities. The episodes in Korea and Indonesia in 1997 are examples of such a case.

taking may get the financial institutions in trouble, because increased rates of borrower default imply an increase in non-performing loans, eroding banking profitability and capital adequacy.

Herd behavior arises when agents optimally infer information from the actions of other agents and therefore act alike. It arises in the presence of payoff externalities, which imply that the payoff to an agent adopting an action increases the number of other agents adopting the same action. Especially in financial markets, lenders are prone to follow the lead of those who they believe are better informed. Herding also arises in the presence of a principal-agent problem, under which investors managing money for others may have an incentive to hide in the herd in order not to be easily evaluated. Herd behavior works to amplify price movements and can precipitate sudden instability.

Mismanagement of Financial Institutions

Financial institutions may make credit judgements that turn bad, causing their asset quality to deteriorate. Poor internal control, connected lending, inside dealing, and fraud are the typical symptoms of lax management.[22] Problems get worse particularly when managers are guided by objectives that are not compatible with sound financial practices and, at the same time, shielded from external discipline.

Management failures in the financial sector generally reflect a lack of appropriate incentives. Managers of financial institutions may not have the incentive to act prudently owing to inadequacy of information, accounting standards, monitoring and reporting procedures and requirements. Government ownership of

[22] They can be included in the category of moral hazard problems if the meaning of moral hazard is broadly interpreted to cover illegal practices.

financial institutions has frequently been at the root of management failures, because political pressures may place prudential and commercial considerations second to other objectives. In this case, the resulting incentive structure does not promote profitability and bank soundness. Directed lending of state banks, for instance, can be an important factor behind poor asset quality. Insider lending or lending to related enterprises is another major cause of management failure. Under these circumstances, lending decisions are not based solely on the borrower's creditworthiness.

Financial controls can cause financial mismanagement by giving wrong incentives to borrowers, lenders, and financial institutions.[23] Government-led credit allocation policy typically contributed to bank weakness and systemic unsoundness by imposing quasi-fiscal responsibilities on banking system without adequate compensation for, or incentives to monitor and contain, the underlying risk. It creates economic rents through financial regulations and distributes thus created economic rents to policy designated areas.

Lack of Prudential Regulations and Supervision

Lax regulation undermines financial system by allowing the entry of unqualified owners and managers into the industry, or by failing to step in when weak internal governance has allowed excessive exposures and risk-taking. Lack of reliable information makes it difficult for supervisors to assess the quality of loans and bank exposures. On the other hand, prudential rules governing what activities financial institutions can engage in, more often than not, mask quasi-fiscal motivations or other policy objectives such as channeling financial resources to priority sectors. This kind

[23] Financial controls have been extensively used as the main means for conducting industrial policies in many developing countries.

of non-prudential regulation tends to weaken financial institutions by limiting their ability to diversify risk and by inhibiting innovations (BIS, 1997, p.18).

Supervisory forbearance allows weak financial institutions with distorted incentives to continue operating or invites looting by insiders. Once this happens, it leads eventually to much larger clean-up costs. Supervisory forbearance may be due to a number of factors, including a lack of supervisory independence, political interference aimed at preventing failures rather than ensuring the exit of weak institutions, regulatory capture, a lack of supervisory accountability, or fears of legal challenges (BIS, 1997, p.18).

Macroeconomic Factors in Financial Instability

Macroeconomic fluctuation – booms and busts in economic activity and unstable fiscal and external positions – is the most important factor that causes financial instability on account of its adverse effect on asset price volatility. Inconsistent macroeconomic government policies, which contradict the fundamentals of the economy or distort efficient financial resource allocation, eventually undermine financial stability.

Business Downturn

Debt deflation theory states that deflation increases the real burden of existing debts and leads to further bankruptcies and sluggish economic activity.[24] It regards crises and contractions in economic activity as inevitable consequences of excessive expansion during economic booms. The relationship between business cycles and

[24] See Minsky (1977) for this view of financial instability.

financial instability is as follows. Business cycle upturns are triggered by exogenous events that provide new and profitable investment opportunities in key sectors of the economy. Rising prices and profits encourage more investments and speculation for capital gains. Much of the process is debt financed, primarily by bank loans. This, in turn, increases the price level by increasing deposits and money supply. A general optimism takes hold and increases monetary velocity and further fuels the expansion, while rising prices, by reducing the real value of outstanding debt, encourages further borrowing. The process continues until it reaches a general state of overindebtedness, that is, the point at which individuals, firms, and banks have insufficient cash flow to service their liabilities. At this point, the financial system becomes vulnerable to instability. The inability of borrowers to repay their debts leads to distress selling, which, if widespread, produces a decline in the price level. As loans get extinguished, bank deposits and the money supply decline, further lowering the price level. Deflation then enlarges the real burden of remaining debt, reducing economic activity (Bordo and Wheelock, 1998, p.44). Through this process, the quality of financial institutions' loan assets deteriorates, eroding their capital and reserve positions.

In the second half of 1980s, expansionary macroeconomic policy prevailed globally. The United States expanded money supply until mid-1988. Germany and the United Kingdom also experienced monetary expansion until mid-1988. Japan's monetary policy eased significantly during 1986-87, with the discount rate lowered to a record 2.5 percent (Nakajima and Taguchi, 1995, p.43). Such a macroeconomic policy contributed to a sharp rise in asset prices and a cyclical upswing in economic activity. Subsequently, a stock market crash took place in the autumn of 1987 in the United States and was followed by a global financial turmoil in the late 1980s and early 1990s.

Inappropriate Macroeconomic Policies

Government macroeconomic policies – fiscal policy, monetary policy, and foreign exchange rate policy – may cause financial instability if they distort market forces. Monetary policy that generates unanticipated fluctuations in the price level and inflation contributes to financial instability. An anticipated decline in the price level raises the value of firms' liabilities in real terms, and increases the burden of the debt. It causes a sharp deterioration in firms' balance sheets. Monetary tightening leading to a steep rise in interest rates can result in a sharp decline in asset prices and reduce the ability of borrowers to service their loans. This can, in turn, contribute to banking problems as in debt deflation.[25] In fact, a significant reduction in the rate of inflation has been a factor in a number of financial instability episodes since 1980 (BIS, 1997, p.13).

Expectations of a surge in inflation can also lead to higher interest rates,[26] and this can have a negative impact on firms' cash flows in emerging market countries where debt contracts are typically of very short duration and many of them are denominated in foreign currencies (Mishkin, 1996, p.12). Firms should pay higher interests as interest rate rises. Furthermore, expectations of higher inflation can lead to a sharp depreciation in the value of the domestic currency, which also causes a deterioration in firms' balance sheets. Excessive money creation can cause financial instability by generating inflationary expectations.

Fiscal policy also can cause financial instability. If a government increases its debt by issuing excessive government bonds, the interest rate increases and may cause

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[25] This issue deserves attention in the design and implementation of disinflation policies. Monetary authority is required to preserve banking soundness when it tries to reduce the rate of inflation.

[26] Fisher explained that inflationary expectation raises nominal interest rate.

a deterioration in firms' balance sheets. This in turn may lead to banking problems as described above. If the deficit of a government is financed by printing money, expectations of an inflation will cause higher interest rates and worsen firms' cash flows, especially in emerging market countries.[27] Expansionary fiscal policy supported by excessive money can bring about financial instability by generating inflationary expectations.

Mismanaged exchange rate policy can also cause financial instability. According to the theory of purchasing power parity (PPP), the exchange rate between a pair of currencies is determined by the relative purchasing power of a currency within each country. Real exchange rate stands for relative purchasing power of currencies. Market forces prevent the real exchange rate from moving too far from PPP or remaining away from PPP indefinitely.[28] If a government continues to maintain its currency overvalued regardless of the economic fundamentals, the discrepancy between its real exchange rate and the PPP is likely to expand, generating expectations for a sharp depreciation. And speculators anticipating depreciation may start speculating against the currency. Once the exchange rates begin to change, severe fluctuation of asset prices arises as international investors adjust their portfolio composition in order to avoid losses that might occur in the process of currency exchange. Therefore, inappropriate government policy on foreign exchange rate may well cause financial instability making asset prices vulnerable to the changes of exchange rate.[29] It is argued that real exchange rate is one of the particularly useful

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[27] As mentioned before, they are characterized by the debt contracts of very short period and denominated in foreign currencies.

[28] For more detail, see Dornbusch, Fisher, and Startz, 1998, pp.274-276.

[29] Yet, financial instability is not only driven by inappropriate policy. Even when there is no worsening trend in economic fundamentals, a government may abandon its exchange rate peg if faced with a sufficiently severe speculative attack.

indicators which warn forthcoming currency crisis (Kaminsky, Lizondo, and Reinhart, 1997, p.21).[30]

[30] In fact, they argued that indicators that have been proven to be particularly useful in anticipating currency crises include the behavior of international reserves, the real exchange rate, domestic credit, credit to the public sector, and domestic inflation.

CHAPTER 4
CAPITAL MOBILITY AND FINANCIAL INSTABILITY

Having reviewed general causes of financial instability under the implicit assumption of closed economy without capital mobility, this chapter focuses on the relationship between free international capital mobility and financial instability in an open economy. It explains theoretically how free capital mobility intensifies financial instability. General causes of financial instability discussed in the previous chapter provide a foundation for further elaboration. After investigating the relationship between capital mobility and financial instability, this chapter arrives at a hypothesis to be used for an empirical study in the subsequent chapter.

Definition and Implications of Free International Capital Mobility

Theoretically, capital is said to be freely mobile within a multicountry region when its residents face no official obstacles to the negotiation and execution of a financial trade anywhere and with anyone within the region and face transactions costs that are no greater for parties residing in different countries than for parties residing in the same country (Obstfeld, 1995, p.202).[31] Consequently, free international capital mobility implies that the price of an asset is the same wherever it is sold.

Classical economic theory argues that free international capital mobility allows countries with limited savings to attract financing for productive domestic investment

[31] This definition implies that national authorities do not interpose themselves between transaction partners from different countries, other than through the provision of a nationality-blind legal framework for contract enforcement (Obstfeld, 1995, p.202).

projects.[32] Thus, it contributes to higher investment, faster growth, and rising living standards in recipient countries. It also enables investors in sending countries to diversify their portfolios, spread investment risk more broadly. And it promotes intertemporal trade: the trading of goods today for goods in the future. Free capital mobility thus permits more efficient global allocation of savings and directs resources toward most productive users (Eichengreen, et al., 1998, p.12). Increased international competition in the provision of financial services, which free capital mobility entails, may stimulate innovation and improve productivity by forcing domestic financial institutions to become more efficient.

Effects of Capital Mobility on Financial Stability

Even though the classical theory sees only economic benefits of capital mobility across borders, experience has shown that capital market opening can generate serious economic problems if the market-opening takes place before the financial system is strengthened. How does capital mobility affect financial stability in an open economy?

Capital Mobility and Information Asymmetry

Critics of the classic economic theory argue that liberalized financial markets are distorted owing to imperfect information. With pervasive asymmetric information problems in the financial market, capital mobility will not bring an efficient allocation of resources. On the contrary, it amplifies the inefficiency in the allocation of financial resources and, thus, makes the financial system more vulnerable to instability.

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[32] This argument assumes that the marginal product of capital is higher in the recipient country than in the sending country.

Free capital mobility, from the viewpoint of microeconomic analysis, makes asymmetric information problems more salient. First, capital inflows may reinforce the *adverse selection* problem by making credit access easier. Lower-quality firms have a greater chance of borrowing in the financial market owing to more abundant financial resources. Second, for the same reason, capital inflows may aggravate *moral hazard* problem. Borrowers may invest in far riskier projects at the cost of lenders as they can borrow more easily.

Capital inflows may reduce the problems of adverse selection and moral hazard, since superior techniques of foreign creditors to screen and monitor the quality of borrowers may inhibit low-quality firms from accessing financial resources. In practice, however, it is doubtful that foreign creditors have performed prudential lending with their advanced techniques in emerging market countries in the cases of financial crises in Latin America and East Asia. The problems of imperfect information seem to outweigh the merits of superior techniques.

Third, increased capital mobility renders *herd behavior* more frequent and harsher as the scope of herding extends across national borders. If international investors or creditors are imperfectly informed about the financial status of an institution or a country, herd behavior may lead to large swings in capital flows unrelated to fundamentals. Under the circumstance where depositors can invest in offshore deposits in foreign countries, and if offshore deposits are better substitute for domestic deposits than the other domestic assets, herd behavior enables domestic bank runs to be more probable, as depositors are prone to transfer their assets at less serious financial turmoil. Calvo and Mendoza, in addition, explained that globalization, by increasing the menu of financial assets available to investors and by promoting portfolio diversification, reduces the returns to investing in acquiring

information on individual assets and thereby aggravates the problem of incomplete information that encourages herding (Calvo and Mendoza, 1997). In short, we note here that asymmetric information problems become more serious in financial practices with free international capital mobility.

Particularly if capital market opening is undertaken under unstable macroeconomic environment, the risks of financial instability will be greater. Financial institutions in recently liberalized financial systems often lack the experience to manage these risks. And, in the face of stronger competition,[33] institutions will tend to be pushed towards riskier investments, especially with easier access to an abundant supply of offshore funding. Also, they will have the incentives to build up large open foreign exchange positions abroad to finance domestic assets, or to engage in foreign exchange lending to residents supported by domestic resources.

It is possible that these risks of financial instability may be countered by adequate regulation and supervision on financial activities. However, in many countries that opened their financial market to foreigners, prudential regulation and supervision capabilities did not keep pace. Therefore, the authorities did little to limit banks' exposures to exchange and interest rate disturbances. Inadequate capability to regulate and supervise financial activities also meant a failure to keep the financial institutions from engaging in riskier projects.

Capital Mobility and Macroeconomic Adjustment

In an integrated financial environment, it is difficult for a government to attain macroeconomic policy effectiveness. For example, if a government changes its

[33] Capital account liberalization squeezes margins and leaves less leeway for poor loans and management practices.

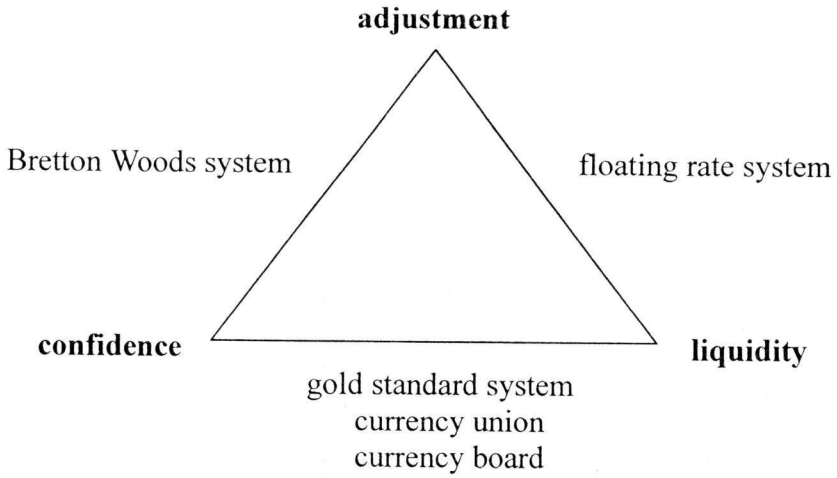
official discount rate in order to lean against cyclical business trends, the capital flows will attenuate the policy effects of interest rate change because the link between domestic and foreign interest rates is tightened as a result of capital account liberalization. Attempts to keep domestic interest rate above world rate will provoke persistent capital inflows, while attempts to keep domestic rate below world rate will lead to continued outflows. Also, a government's effort to maintain its exchange rate within a certain band will face harder trouble with free capital mobility. When capital moves freely across the border, a government should be equipped with a paramount capability that can lead the international currency market in order for her to be able to manage the exchange rates.

Krugman argues that the current international financial architecture does not guarantee financial stability if a national economy performs macroeconomic adjustment policy in a free capital-mobile world (Krugman, 1998). According to him, the problem of choosing an international monetary regime could be summarized as one of how to achieve *adjustment, confidence*, and *liquidity*. Adjustment means the ability to pursue macroeconomic stabilization policies – to fight business cycle. Confidence means the ability to protect exchange rates from destabilizing speculation, including currency crises. Liquidity basically means short-term capital mobility, both to finance trade and to allow temporary trade imbalances. Here, the dilemma of international financial architecture arises, namely the fact that those three objectives cannot be achieved simultaneously.

Figure 2 illustrates the problem schematically. Each vertex of the triangle shows one desirable feature of an international regime. Each side of the triangle, which corresponds to the choice to have two of these three features, indicates a possible regime. Suppose that a country decides to maintain its currency value (to choose the

vertex of "confidence"). This means that it must peg its exchange rate.[34] Under this constraint, if it allows unrestricted capital flows (to guarantee "liquidity"), its stabilization policy (macroeconomic "adjustment") may face harsh challenge.[35] This country will be subject to severe speculative attacks whenever the market suspects that stabilization concerns will lead to a devaluation. Alternatively, suppose that a country considers its stabilization policy ability most important (to be able to carry out "adjustment" program). Then, if it prefers free capital mobility (to guarantee "liquidity"), it exposes the economy to massive speculative capital movement whenever it is suspected that its monetary policy stance will change. Exchange rate

Figure 2. Triangle of International Monetary Regime



- Adjustment: macroeconomic stabilization policy
- Liquidity: free international capital mobility
- Confidence: exchange rate stability, financial stability

[34] Under floating exchange rate regime, it must manage the exchange rate strongly to maintain its currency value.

[35] Bretton Woods system chose adjustment ability instead of liquidity. Thus, it relied heavily on capital control in its early days.

stability (confidence) – also financial stability – is not guaranteed.[36]

If a country carries out macroeconomic adjustment program, for example, engages in a loose monetary policy to address severe unemployment problems, the only way to avoid capital outflows and subsequent financial instability would be to have effective capital controls.

A Hypothesis

The discussion so far suggests a hypothesis that freer international capital mobility can make a financial system more vulnerable to financial instability problems. As the problems of asymmetric information remain intrinsic in the financial system, capital inflows can increase the possibility of financial instability by providing both borrowers and lenders with easier access to money and, thereby, greater opportunities to engage in riskier projects. Particularly, capital flows may bring about a serious financial distress if the domestic financial system is not as robust as to contain asymmetric information problem within an acceptable level.

On the other hand, free international capital mobility makes a country's macroeconomic policy effectiveness less attainable. In a financial regime with free capital mobility, the possibility of a speculative attack on the currency exposes the financial system to instability by constraining the government's ability to carry out adjustment policies. Governments may not be able to engage in expansionary monetary and fiscal policies to counter a recession, and it may have difficulty in maintaining appropriate exchange rate in the face of large capital flows. Developing

[36] Historically, in early 1970s, countries' dependency on macroeconomic policies with capital movements led to the collapse of Bretton Woods system and the emergence of floating rates. In other words, as countries prefer the vertexes of "adjustment" and "liquidity", "confidence" was impaired, by allowing exchange rates to float.

countries are particularly more likely to suffer financial instability in an environment of free international capital mobility because of their poor financial systems and huge burdens of foreign currency debt.

Thus, in summary, it is argued that *free international capital mobility aggravates financial instability in emerging market economies by intensifying asymmetric information problems in financial system and by restricting the ability of a government to pursue macroeconomic adjustment policies.*

Next chapter will empirically assess this hypothesis by examining the case of financial evolution in Korea. Korea is one of the emerging market economies that have recently shown considerable volatility in capital flows.

Capital Mobility and Systemic Instability

From a global perspective, free international capital mobility is problematic because it may increase systemic instability in international financial system.[37] Two important reasons underlie this. First, international capital flows to emerging market countries are too volatile. And the volatility subjects recipient countries to shocks and crises that are both excessively frequent and excessively large. A common characteristic of the recent financial crises is that the large increase in capital inflows were reversed with an equally large and rapid outflow when the conditions that created the inflows were reversed or when the latter had rendered domestic economic policies and conditions unsustainable.[38]

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[37] For more details, see UNCTAD, 1998, pp.53-82.

[38] Excessive volatility in the capital market can push countries into bad equilibria if there are multiple equilibria in the economy. That is, when a country's policies and institutions are subjected to massive pressure by a reversal of capital flows, they may crack, thereby seeming to justify the reversal of flows that produced the crisis (Fischer, 1998, pp.1-2).

Second, There is too much contagion in the international financial system. Contagion is the mechanism through which excessive volatility is propagated. And the contagion usually hits weaker economies harder than the strong economies. The East Asian crisis is an example of the contagion. Since the Asian crisis, there is a wide agreement that international financial system needs to be reformed to reduce the volatility in the international financial system and to reduce the extent of contagion.

In this paper, however, the empirical study is limited to the analysis of the evolution in domestic financial system in relation to the effects of international capital mobility. Main concern of the empirical study is to review what effects the capital mobility brings to the domestic financial system. This study, therefore, excludes the effects of capital mobility on the international financial system and the volatility of capital flows themselves.

CHAPTER 5
KOREAN EXPERIENCE IN THE 1990S

Increased Capital Mobility in 1990s

Capital Market Opening and Financial Deregulation

There have been a number of studies to measure the degree of international capital mobility. One approach is to evaluate the actual international capital mobility by comparing the real world data with what the ideal case of perfect international capital mobility would imply.[39]

Another approach evaluates the degree of actual capital mobility by assessing the implementation measures of capital market opening in a given country. It analyzes the institutional arrangements of a country for the integration with the international financial market. As free international capital mobility is obtained in the environment that capital can move across the borders whenever there are incentives for their movements, this institutional approach provides a reasonable ground for the evaluation of actual capital mobility. Free international capital mobility is, in this regard, attained by full-scale market opening.[40] Capital market opening is the

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[39] *Perfect international capital mobility* is accomplished when capital is free to move internationally and transaction costs are literally zero. Perfect capital mobility hence implies the ideal status of one price of an asset wherever it is sold, positively correlated consumption co-movements among countries, and the international allocation of investment (Obstfeld, 1997, pp.202-207). However, actual conditions may differ from the ideal of perfect international capital mobility. Above all, even if there are no policy-based obstacles or costs to capital movements, there will be various transaction costs. This situation is called *free international capital mobility*. In addition, government can impose taxes on cross-border financial flows and payments, including certain types of reserve requirements, as well as quantitative limits and outright prohibitions. In fact, many countries have limited full-scale movements of capital to a certain degree, using various instruments described here.

[40] *Capital market opening* has practically the same meaning with *capital account liberalization*, which is defined as freedom from prohibitions on transactions in the capital

prerequisite for free international capital mobility. In this paper, the degree of capital mobility of Korea is evaluated by assessing the extent to which institutional arrangements have been changed toward opening of its capital market.

Korea, from the 1980s onward, continued to open its financial market to meet the increasing need for liberalization to improve the efficiency of domestic financial markets and to respond effectively to the rapid changes in international financial markets. In mid 1980s, Korea allowed foreigners to invest in domestic bonds and equities, but only through open-end and closed-end funds such as Korea Fund, Korea Europe Fund, and Korea Asia Fund. Domestic firms were also allowed to issue limited amount of overseas bonds. However, from January 1992, foreign investors were allowed to invest directly in the domestic stock market, though with ownership ceilings. At the same time, the positive system for the management of current transactions were replaced by a negative system in September 1992, under which all current transactions are allowed unless specifically prohibited. Residents were, on the other hand, allowed to invest in overseas securities via beneficiary certificates in 1993.

Notably in 1994, foreigners were allowed to purchase government and public bonds issued at international interest rates, and equity-linked bonds issued by small and medium-sized firms. In 1995, Korean government abolished the ceiling on the overseas portfolio investment of domestic institutional investors. Furthermore, foreign commercial loans were allowed without government approval in so far as they meet the guidelines established in May 1995. In 1997, foreigners were allowed to purchase even non-guaranteed long-term bonds issued by small and medium-sized firms, and non-guaranteed convertible bonds issued by large companies. In addition, private companies engaged in major infrastructure projects were allowed to borrow overseas

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and financial accounts of the balance of payments (Eichengreen, et al., 1998, p.2).

to pay for domestic construction cost. Borrowings related to foreign direct investment were also liberalized in the same year. After the currency crisis in late 1997, Korea accelerated the speed of capital account liberalization. The ceiling on foreign investment in Korean equities was entirely abolished in May 1998, and the local bond markets and money markets were completely opened to foreigners.[41] This historical analysis suggests that capital mobility has been dramatically enhanced since 1994 with the bond market opening in Korea.

Increased Capital Flows Since 1994

Capital flows are taken to be the outcome of *capital mobility*. Capital flows refer to actual movements of capitals in the process of international investment while capital mobility refers to the state where capital can move freely across the borders of countries. Theoretically, increased capital mobility is not always followed by increased capital flows, since the latter will happen only if there are incentives for capital movements in addition to capital mobility. In practice, however, when countries where capital mobility was highly restricted in the past move toward capital market opening, capital flows tend to increase. This is because capital movements had been restricted despite the existence of incentives for such movements. The Korean experience also shows that capital flows increased along with enhancement of capital mobility. In this context, gross capital flows, which add each amount of all individual capital transactions of either inflow or outflow, are to be examined.

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[41] Keeping the steps with capital market opening, Korea also implemented a series of deregulatory measures for foreign exchange liberalization. 'Free won' accounts were introduced for non-residents in 1993. In June 1996, simple declaration to a foreign exchange bank was introduced for current account transaction payments, and the procedure for establishment of foreign exchange banks was simplified. From March 1998, foreign financial institutions have been allowed to establish subsidiaries of banks and securities companies and to set up joint-venture banks.

Table 1 shows that Korea experienced increased capital flows particularly since 1994. The amount of total capital flows greatly increased until the currency crisis of late 1997.[42] It more than doubled in 1994 compared to the previous year and continued to swell for three consecutive years. Specifically, the expansion of capital flows in the form of international loan was pronounced and the expansion of portfolio investment was also notable as capital market opening widened. Both inflows and outflows by means of international loans expanded rapidly since 1994 until 1997 which saw drastic net outflows with currency crisis. From the viewpoint of balance of payment, Korea saw net capital inflow in portfolio investment and international loans while foreign direct investment had been a channel of net capital outflow.

The ratio of total amount of capital flows to nominal GDP also exhibited remarkable increase from 1994 to 1997, as displayed in Figure 3. The ratio of international loan flows to nominal GDP and the ratio of portfolio investment flows to nominal GDP kept up high levels during the period of 1994-97. Pronounced increase in total amount of capital flows, once again, supports the fact that that capital mobility has been greatly enhanced since 1994.

In the following, this chapter compares the financial statuses in two sub-periods: the period of 1994-1997 and the period of 1990-1993, to find out whether there were noticeable differences concerning financial stability with increased capital mobility. Financial evolution of 1998 is excluded from this analysis because it is obvious that the currency crisis that took place at the end of 1997 increased financial instability

[42] The amount of total capital flows does not mean the gross capital flows, because the former is not more than summed amount of inflow and outflow each of which represent net balance change between two periods while the latter is the sum of the amount of every capital transaction irrespective of inflow and outflow. As the Bank of Korea currently releases only balance-of-payment statistics, there are no choices but to rely on total capital flows instead of gross capital flows in this paper.

Table 1. Trend of Capital Flows in Korea: 1980-1998

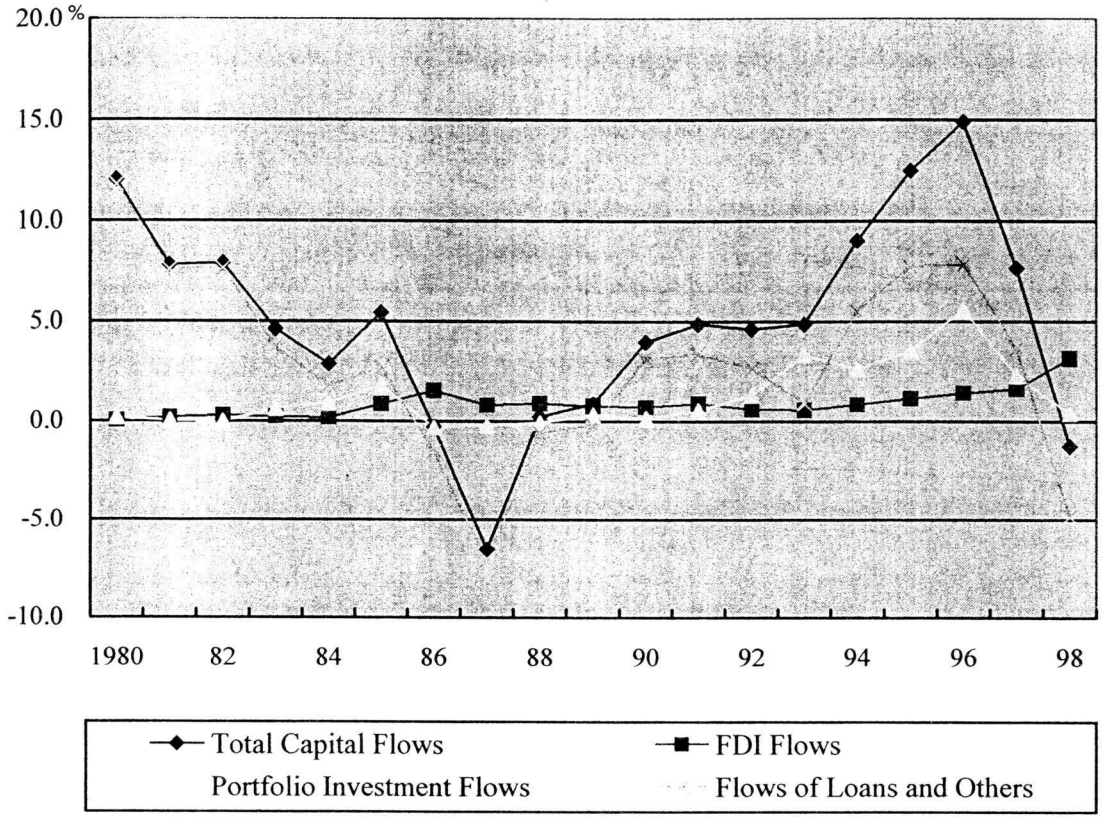
In Millions U.S. Dollars

	1980	81	82	83	84	85	86	87	88	89	90	91	92	93	94	95	96	97	98
Total Capital Flows 1	7,555	5,481	5,922	3,825	2,653	5,124	-304	-8,905	443	1,972	10,116	14,297	14,217	16,155	34,448	56,928	72,235	33,940	-4,038
1. Flows of FDI	32	150	220	198	162	825	1,686	1,131	1,657	1,716	1,840	2,668	1,890	1,928	3,270	5,328	6,996	7,294	10,215
2. Flows of Portlolio Investment	134	24	-15	546	836	1,737	-333	-297	-134	707	351	1,621	4,104	11,091	10,177	16,159	27,181	10,279	1,295
3. Flows of Loans and Others	7,390	5,307	5,717	3,081	1,654	2,562	-1,658	-9,740	-1,079	-451	7,925	10,007	8,224	3,137	21,001	35,441	38,058	16,368	-15,548
Net Capital Account	6,522	5,313	3,935	2,391	3,059	1,633	-4,217	-10,369	-5,068	-2,886	2,564	6,412	6,587	2,741	10,295	16,786	23,327	1,314	-3,253
1. FDI	-20	55	-82	-61	58	-358	-767	101	371	520	-263	-309	-433	-752	-1,652	-1,776	-2,345	-1,605	616
Abroad(-)	-26	-48	-151	-130	-52	-591	-1,227	-515	-643	-598	-1,052	-1,489	-1,162	-1,340	-2,461	-3,552	-4,670	-4,449	-4,799
In Korea	6	102	69	69	110	234	460	616	1,014	1,118	789	1,180	728	588	809	1,776	2,325	2,844	5,416
2. Portfolio Investment	134	24	-15	546	836	1,737	-333	-297	-1,081	-711	84	3,055	5,803	10,014	6,120	11,591	15,185	14,295	-1,878
Abroad(-)	0	0	0	0	0	0	0	0	-473	-709	-134	717	849	-538	-2,028	-2,284	-5,998	2,008	-1,587
In Korea	134	24	-15	546	836	1,737	-333	-297	-607	-2	218	2,338	4,953	10,553	8,149	13,875	21,183	12,287	-292
Equity Securities	0	0	0	0	0	0	0	0	0	0	381	200	2,482	6,615	3,614	4,219	5,954	2,525	3,856
Debt Securities	134	24	-15	546	836	1,737	-333	-297	-607	-2	-163	2,138	2,471	3,938	4,534	9,656	15,229	9,762	-4,148
3. Loans and Others	6,405	5,270	4,129	1,987	2,247	345	-3,021	-9,965	-4,005	-2,377	3,075	3,995	1,625	-6,047	6,264	7,459	11,085	-10,768	-2,162
Abroad(-)	-492	-19	-794	-547	296	-1,108	-682	-112	-1,463	-963	-2,425	-3,006	-3,299	-4,592	-7,369	-13,991	-13,487	-13,568	6,693
In Korea	6,897	5,288	4,923	2,534	1,951	1,454	-2,339	-9,852	-2,542	-1,414	5,500	7,001	4,924	-1,455	13,632	21,450	24,571	2,800	-8,855
Long-term Loans	3,873	4,328	3,135	2,207	2,805	1,856	-166	-8,899	-3,771	-4,274	-1,402	3,061	1,060	-1,328	3,172	3,800	4,798	21,777	19,107
Short-term Loans	963	914	1,933	-718	-202	-206	-1,266	-759	-100	2,364	3,552	2,024	1,523	1,354	7,645	12,439	14,549	-17,992	-20,615
Deposit Money Banks	963	914	1,925	-683	-202	-206	-1,300	-723	-337	1,642	2,418	1,802	697	388	5,378	8,517	7,192	-12,085	-12,250
Other Sectors	0	0	0	0	0	0	0	0	237	723	1,134	222	826	966	2,268	3,921	7,358	-5,907	-8,365

Source : The Bank of Korea .

Note : 1. Summed amount of the absolute values of each inflow and outflow.

Figure 3. Trend of the Ratio of Total Capital Flows to GDP in Korea: 1980-1998



due to its enormous impacts on both real and financial economies.

Covered Instability of Financial Institutions

Korean commercial banks saw decreasing profits since 1995.[43] Return on equity (ROE) dropped drastically from 6.1 percent in 1994 to 3.8 percent in 1996 and further to negative 14.2 percent in 1997.[44] Return on assets (ROA) also continued to decrease throughout the 1990s. The profitability of Korean banks was declining during the period of increased capital mobility.

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[43] Korean Commercial banks do not include foreign banks or their branches in Korea. The analyses of this paper focus on commercial banks, as they are the majority of financial intermediaries.

[44] The loss in 1997 is considered to be exceptional because of currency crisis.

However, Korea did not have any bank failures until 1998. This is partly because the financial authority had implicitly protected banks from failures such as bankruptcy. Five commercial banks withdrew from the market and three banks were merged into other banks only in 1988 after the shock of the currency crisis. Equity participation and contribution for the banks by the Korea Deposit Insurance Corporation (KDIC) did not start until 1998.[45]

The quality of loan assets does not seem to have undermined the profit statue of the Korean commercial banks during the period of 1994-97. Loan asset quality of the banks was, on the contrary, maintained fairly good against the trend of decreasing profits. Both ratios of bad loans and non-performing loans to total loans decreased until 1996.[46]

Moreover, interest rate spread between bank loans and deposits, an indicator of bank operating profitability, grew larger in the period of 1993-97. Neither did the ratio of interest revenues to loans decrease, nor did the ratio of interest expenditures to deposits increase. And the ratio of interest expenses to interest revenues was maintained fairly constant before 1997.

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[45] The KDIC had provided bailout money to Merchant Banks since early 1995 and to Mutual Savings and Finance Corporations in 1996. But the amounts were small. The amounts of total bailout money swelled up in 1998 to 27.5 trillion won, including subrogated deposit payoffs.

[46] Korean financial supervisory authority classifies *non-performing loans* into three categories: substandard, doubtful, and estimated loss. A credit is classified as *substandard* when it was to be extended to customers who have been in arrears for no less than three months, or for whom a suspension of servicing or reduction of interest has been granted. A portion of credit is classified as *doubtful* if that portion of credit in excess of the amount expected to be collected from customers classified as substandard is expected to be a loss, but has not yet been realized as much. And, a portion of credit is classified as *estimated loss* if that portion of credit in excess of the amount expected to be collected from customers classified as substandard must be accounted as a loss, because collection is not possible in a foreseeable period. *Bad loans* consist of those of substandard and doubtful (Financial Supervisory Committee, Korea).

Table 2. Performance of the Korean Commercial Banks: 1990-1998

	Unit	1990	91	92	93	94	95	96	97	98
< Profitability >										
ROE	%	6.28	6.58	6.69	5.90	6.09	4.19	3.80	-14.18	-52.53
ROA	"	0.63	0.59	0.56	0.45	0.42	0.32	0.26	-0.93	-3.25
Total Revenue	tril.won	8.9	11	12.9	13.2	17.4	23.1	27.1	46.2	55.8
Interest Revenue (A)	"	7.4	9.3	10.5	10.1	12.3	18.3	21.8	31.9	37.9
Loan Interests	"	5.2	6.4	7.2	6.8	8.5	12.4	14.5	21.2	22.5
Loan Interest / Average Loan	%	(8.7)	(8.7)	(7.8)	(6.4)	(6.9)	(7.6)	(7.5)	(8.1)	(9.1)
Total Expense	tril.won	8.2	10.2	11.9	12.4	16.3	22.2	26.2	50.1	68.3
Interest Expense (B)	"	5.5	6.7	7.4	7.0	8.9	13.4	15.7	24.1	31.2
Deposit Interest	"	3.4	4.3	4.9	4.8	6.2	9.3	10.8	15.5	20.5
For Borrowing	"	1.2	1.5	1.5	1.3	1.5	2.2	2.6	3.8	3.9
Deposit Interest / Average Deposit	%	(4.7)	(4.7)	(4.5)	(3.5)	(3.5)	(3.8)	(3.6)	(4.1)	(5.3)
Interest Expense (B) / Interest Revenue (A)	"	(74.3)	(72.0)	(70.5)	(69.3)	(72.4)	(73.2)	(72.0)	(75.6)	(82.3)
Operating Expenses	tril.won	1.5	2.0	2.4	2.7	3.2	4.4	5.2	6.1	-
< Interest Rate Spread >										
Loan Interest Rate	%	10.74	10.28	10.82	9.36	9.91	10.82	11.07	11.43	-
Deposit Interest Rate	"	6.21	8.08	8.59	7.45	7.61	7.79	7.55	7.86	-
Spread	%p	4.53	2.20	2.23	1.91	2.30	3.03	3.52	3.57	-
< Asset Quality >										
Total Loans[1](C)	tril.won	90.6	118.5	143.7	160.5	194.7	241.8	289.6	375.8	288.5
Bad Loans[2](D)	"	1.9	2.1	2.4	2.9	1.9	2.3	2.4	10.1	10.0
(D / C)	%	(2.10)	(1.77)	(1.67)	(1.81)	(0.98)	(0.95)	(0.83)	(2.69)	(3.47)
Non-Performing Loans[2](E)	tril.won	7.2	8.3	10.2	11.9	11.4	12.5	11.9	22.7	21.2
(E / C)	%	(7.95)	(7.00)	(7.10)	(7.41)	(5.86)	(5.17)	(4.11)	(6.04)	(7.35)

Source: Financial Supervisory Services (Korea), Monthly Financial Statistics Bulletin.

Notes: [1] Amount of year averages.

[2] Bad loans consist of the loans classified as doubtful and estimated loss, while non-performing loans include substandard loans in addition to bad loans.

These observations reveal that the loan asset quality of the Korean commercial banks did not deteriorate seriously and that the liabilities of the banks did not impose heavy burden on banking operations in the times of increased capital mobility. In other words, the environment for bank operation was not so severe as to squeeze their operating profits. It appears that the decreasing profits in the Korean commercial banks in the period of increased capital mobility resulted from reasons other than the deterioration of loan asset quality or reduced interest rate spreads.

Capital adequacy of the Korean banks does not appear to have seriously deteriorated. Even though the ratio of bank capital to total asset and the BIS capital ratio continued to decline throughout the 1990s, the BIS capital ratio had been maintained above 8 percent and the ratio of capital to total asset above 4 percent until 1996. Korean banks seem to have met the minimum requirements of capital adequacy before the currency crisis.[47]

However, it deserves to be noted that the loan classification criteria and loan loss provision requirements in Korea had been very lenient until 1997 compared to international standards. In addition, we have to note that banks were allowed to provision less than 100 percent of required allowances for loan losses. The standards for loan loss provision were gradually strengthened to rise to 100 percent only in 1998. Therefore, the official data could be misleading as a result of insufficient loan loss allowances and there is a need to adjust the loan classification in accordance with the international standards in order to obtain estimates of the true status of bank capital adequacy.

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[47] BIS recommends banks to maintain their ratios of capital to risk-weighted assets above 8 percent for bank soundness.

Table 3. Capital Adequacy of the Korean Commercial Banks: 1990-1998
(As of the end of the year)

	Unit	1990	91	92	93	94	95	96	97	98
< Capital Adequacy >										
BIS Ratio	%	-	-	11.18	11.00	10.62	9.33	9.14	7.04	8.23
Capital (B) / *Asset* (A)	"	*8.0*	*7.5*	*6.8*	*6.1*	*5.7*	*4.8*	*4.3*	*3.0*	*2.8*
Asset (A)	tril.won	141.6	168.8	197.7	232.9	295.2	395.6	472.6	606.6	565.1
Capital (B)	"	11.3	12.6	13.4	14.3	16.8	18.9	20.1	18.1	16.0
< Adjusted Capital Adequacy >										
Allowances for Loan Losses (C)	tril.won	1.0	1.3	1.7	2.0	2.4	3.2	3.4	5.6	10.3
Actual / Required Loan Loss Allowances[1] (D)	"	0.50	0.50	0.50	0.50	0.61	0.72	0.86	0.95	1.00
Additional Provisions Required[2] (E=C/D-C)	"	1.0	1.3	1.7	2.0	1.5	1.2	0.6	0.3	0.0
Adjusted Capital I[3] (F=B-E)	"	10.3	11.3	11.7	12.3	15.3	17.7	19.5	17.8	16.0
Additional Reserve Required* (G)	"	-	-	1.5	2.0	1.8	1.9	2.9	4.2	5.3
Adjusted Capital II (H=F-G)	"	-	-	10.2	10.3	13.5	15.8	16.6	13.6	10.7
Adjusted Capital / Asset Ratio (I=H/A)	%	-	-	*5.2*	*4.4*	*4.6*	*4.0*	*3.4*	*2.2*	*1.9*

Source: Financial Supervisory Services (Korea), Monthly Financial Statistics Bulletin.

Notes: [1] Ratio of actual loan loss allowances accumulated to loan loss allowances required assuming 100 percent provision. We assume 0.5 for 1990-1993 as official data for the ratio is not available before 1994.

[2] Additional loan loss allowances that must be provisioned to raise it up to 100 percent of the required value.

[3] Adjusted bank capital in each year under the assumption that additional reserves were provisioned to meet 100 percent of required loan loss allowances.

* The estimates in Hahm and Mishkin, 1999, p.59.

Hahm and Mishkin (1999) estimated adjusted bank capital of Korea under the assumption that additional reserves were provisioned to meet 100 percent of required loan loss allowances. They further adjusted the bank capital by assuming the

international asset classification standards. For this, they made an adjustment for latent non-performing loans, which are more consistent with the international standards of asset classification depending on interest coverage ratio[48] from corporate balance sheet data.[49] They argue that the ratio of capital to total asset on international standards dropped below the 4 percent minimum level since 1995 as shown in table 3. That is, the deterioration in asset quality was far more serious than it appeared in the official data, and the institutions were becoming vulnerable with increased capital mobility in Korea.

On the other hand, loan / deposit ratio of the Korean commercial banks decreased through 1990s. It fell to 63.9 percent in 1996 from 82.9 percent in 1990 as shown in Table 4. This means that the Korean commercial banks did not – or could not – hold increasing share in loans which generated higher profits than the other bank assets, even though they had to pay considerable costs to maintain bulky deposits. In fact, the banks increasingly invested in the securities including corporate bonds and stocks, and those assets brought less profits than loan assets due to the sluggish stock market.

Increases in the share of foreign borrowing in the bank liability gave negative impact on banks' healthiness, too. It rose steadily to 12.5 percent in 1997 from around 9-10 percent in the first half of 1990s. With the nominal depreciation of Korean won since 1996, interest payments on foreign borrowing increased, reducing the bank profits.

More importantly, the number of bank branches had jumped during 1995-1997 following the steady increasing trend in the early 1990s. 875 new domestic branches

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[48] Interest coverage ratio is calculated as EBITDA / Interest Payments, where EBITDA denotes earnings before interest payment and tax plus depreciation and amortization. If the interest coverage ratio is less than 1, it means that the borrowing firm cannot meet interest payment with its operating cash flow.

[49] For details, see Hahm and Mishkin, 1999, pp.13-16.

Table 4. Soundness of the Korean Commercial Banks: 1990-1998

	Unit	1990	91	92	93	94	95	96	97	98
< Assets-Liability Structure >										
Loan, average (H)	tril.won	59.7	73.8	92.3	105.5	123.7	163.3	192.3	262.6	246.2
Deposit, average (I)	"	72.0	91.3	109.9	135.5	177.5	246.3	300.9	379.4	384.7
Loan / Deposit (H/I)	%	(82.9)	(80.8)	(84.0)	(77.9)	(69.7)	(66.3)	(63.9)	(69.2)	(64.0)
Foreign Borrowing / Total Liability	"	(9.0)	(10.2)	(10.5)	(10.0)	(9.8)	(10.8)	(11.7)	(12.5)	(7.0)
< Institution Size >										
# of Domestic Branches	Each	2,333	2,677	2,967	3,317	3,682	4,557	5,105	5,987	5,056
# of Overseas Branches	"	109	119	122	131	134	149	168	190	127
# of Personnel	Thousand	82	87	88	88	87	103	103	113	104

Source: Financial Supervisory Services (Korea), Monthly Financial Statistics Bulletin.

were established in 1995, 548 in 1996, and 882 in 1997, outnumbering 365 in 1994 and 350 in 1993. Overseas branches also increased in the same fashion. 15 branches were newly established in 1995, 19 in 1996, and 22 in 1997, far exceeding the average of six new overseas branches during the period of 1991-94. The number of bank staffs also increased conspicuously in 1995 and in 1997, accompanying the bank expansion. Rapid increases in the banks' operating expenses were the result of such expansion. Operating expenses rose by 23 percent annually during 1994-97.

The analyses so far prove that the Korean commercial banks kept a policy of expansion in spite of decreasing profitability in the period of 1994-97. They did not pay much attention to their healthiness despite that risks were rising as the share of foreign borrowing became larger in their liability. Therefore, it may well be argued that the moral hazard problem was pervasive in the management of the Korean commercial banks in the days of increased capital mobility. The banks cared for

things other than their profitability and soundness, which their equity holders and depositors favor.

Increased Volatility in Financial Asset Prices

Market indicators themselves exhibited increased volatility in the period of 1994-97 compared to the period of 1990-93. As shown in table 5, the volatility of interest rates rose to a considerable level. The volatility of corporate bond yield, the representative market interest rate in Korea, more than doubled in terms of monthly measurements. Yield on financial debenture, however, showed little difference in volatility between the two periods. Equity prices exhibited higher volatility in accordance with increased capital flows, when they are measured with quarterly data. Foreign exchange market turned out to be particularly volatile in the period of 1994-97. Larger capital flows seem to have made the financial market more volatile.

The ratio of loan to deposit of the deposit money banks remained at stable level

Table 5. Volatility[1] of Financial Market Indicators in Korea

	Quarterly Data		Monthly Data	
	1990-93	1994-97	1990-93	1994-97
Yield on Corporate Bond[2]	7.7	11.7	4.0	11.0
Yield on Financial Debenture[3]	7.6	7.3	4.0	4.3
Equity Prices	9.8	11.6	6.2	6.2
Foreign Exchange Rates	1.0	6.9	0.4	6.6

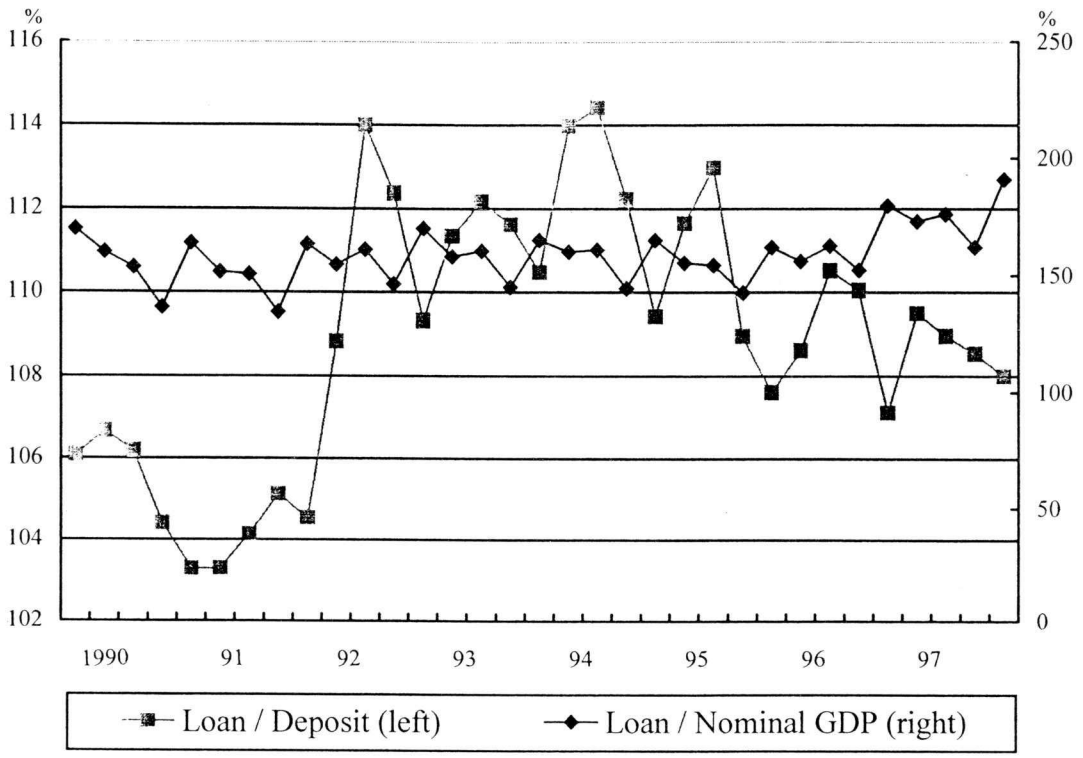
Source: The Bank of Korea.

Notes: [1] Standard deviations of the monthly and quarterly changes in percentage terms during the periods.

[2] Bond with maturity 3 years.

[3] Industrial financial debentures with maturity 3 years.

Figure 4. Trend of Relative Bank Loan Growth in Korea: 1990-1997



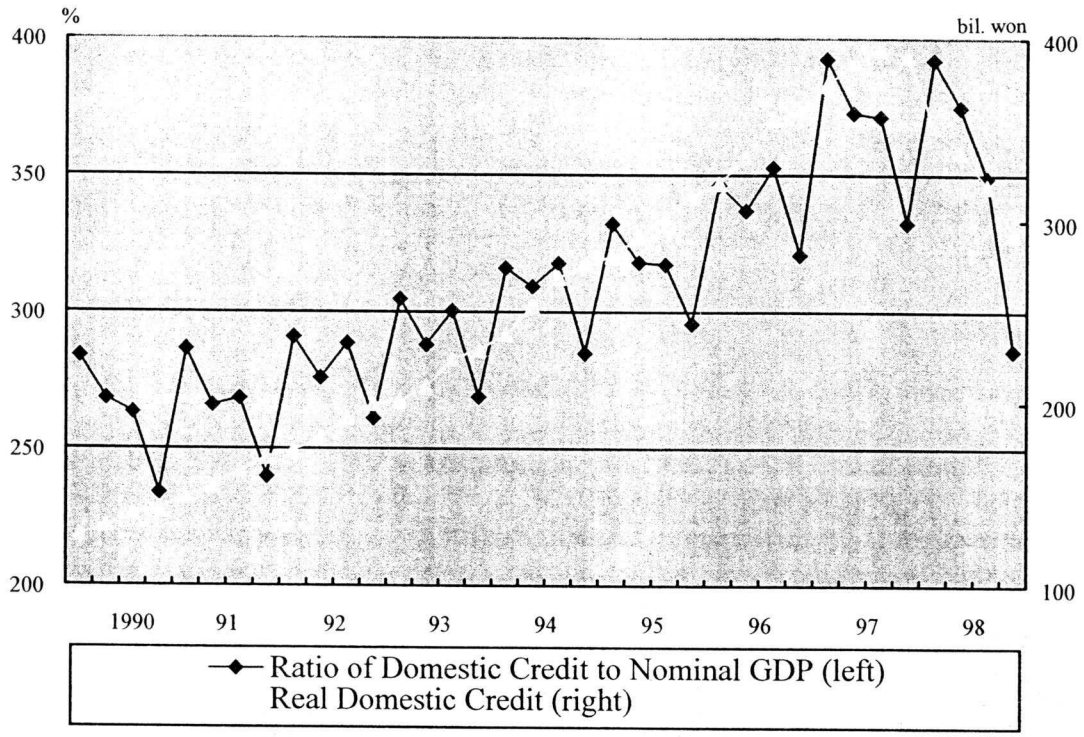
during 1994-97 after it rose in 1992. The ratio of loan to nominal GDP also fluctuated sideways within the range of 140-170 percent until 1996.[50] It rose only in 1997 as a result of the business downturn that produced smaller GDP (Figure 4). Hence, when we look at only the bank loans, no lending boom seems to have occurred in the Korean banking system during the days of capital inflow surge.

However, the credit extended from the whole financial institutions including non-bank financial institutions grew rapidly throughout 1990s. As shown in Figure 5, the ratio of domestic credit[51] to nominal GDP almost doubled and the domestic credit in real terms[52] nearly quadrupled during the period of 1990-97. Very significantly, the

[50] The amounts of loans and deposits are those of quarterly average balances, while those of nominal GDP are quarterly value-added.
[51] It consists of the balances of the loans and discounts of both deposit money banks and non-bank financial institutions as of end of period.
[52] Domestic credit was adjusted by the producers' price index.

ratio of domestic credit to nominal GDP rose by 6.0 percent per annum during the period of 1994-97, far exceeding the annual average increase of 3.6 percent during the period of 1990-93.[53] Increased capital inflows during 1994-97 period seem to have contributed to a lending boom in Korea, and this was led by non-bank financial institutions.

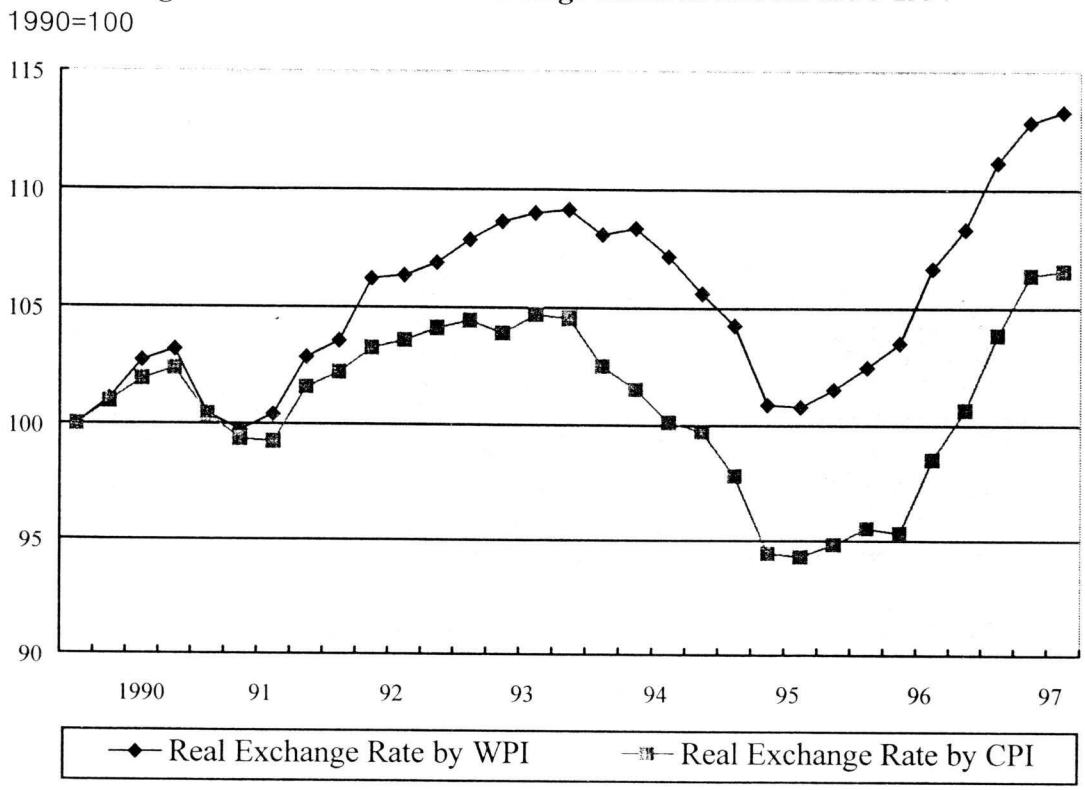
Figure 5. Trend of Domestic Credit by All Financial Institutions in Korea: 1990-1998



Increased capital mobility brought about overvaluation of the Korean won. During 1994-96, Korea saw sustained and expanded current account deficit. Pressures for depreciation were accumulated and expectations of additional depreciation were widespread. The terms of trade shock to the Korean economy in 1996 further

[53] However, the annual average increase rate of the real domestic credit declined to 15.7 percent during the period of 1994-97 from 17.5 percent during the period of 1990-93. This seems to be the result of drastic reduction in the real domestic credit in 1997 by high increase in producers' price index but sharp decline in GDP.

Figure 6. Trend of Real Exchange Rates in Korea: 1990-1997



aggravated the problem of overvaluation. The terms of trade deteriorated by approximately 20% in 1996-97 period. The prices of major export goods such as semi-conductor chips, steel and chemical products fell significantly during the period. The unit price of semi-conductor chip, especially, fell by more than 70 percent. Massive current account deficits caused by this terms of trade shock added the pressure for the depreciation of the Korean won.

Yet, massive capital inflows pushed up the value of the Korean won. As seen in figure 6, real exchange rate of Korean won started to decrease since 1994 and remained at low levels until 1996, failing to keep up with the economic fundamentals such as industrial productivity.[54] Thus, in the eyes of international investors, the

[54] This paper calculated the real exchange rate of Korean won as

$$\text{Nominal exchange rate of Korean won} \times \frac{\text{Price indices of the U.S.}}{\text{Price indices of Korea .}}$$

financial assets denominated in Korean won turned out to carry higher risks. Capital flows made the Korean financial market more vulnerable to instability by generating an external disequilibrium.

Table 6. Terms of Trade and Balance of Payment in Korea: 1990-1998

	1990	91	92	93	94	95	96	97	98
Terms of Trade [1]	97.6	98.2	98.2	102.5	103.7	100.0	87.7	77.8	79.2
Current Account [2]	-2.0	-8.3	-3.9	1.0	-3.9	-8.5	-23.0	-8.2	40.6

Notes: [1] Net barter terms of trade index, which are derived through division of export unit value index by import unit value index. 1995=100.
[2] In billion dollars.

Impacts of Increased Capital Mobility on Korean Financial System: An Evaluation

Korean economy was doing well by macroeconomic indicators during the period of 1994-97 when foreign capital inflows surged after a substantial liberalization of capital account transactions in 1993. Growth was strong, though decreasing, and inflation was modest at around five percent. Current account deficit, the only significant concern, was commonly understood to be a result of temporary terms of trade shock, particularly the collapse of semi-conductor prices, and started to decline by 1997.

Standing on such a real economic performance, during the period of 1994-97, the Korean commercial banks did not reveal serious symptoms of institution instability when judged by the official data. Bad loans did not grow. Interest spreads were maintained, providing the banks with adequate levels of revenue. The environment for bank operation was not so severe as to squeeze their operating profits.

Nonetheless, the Korean commercial banks suffered decreasing profitability since 1995. Most importantly, the banks continuously added to their branches during the period of 1994-97. The expansion of the banks reduced their profitability as operating expenses increased greatly. The sluggish stock market also produced a negative impact on the profitability of the banks as they increasingly invested in the securities.

In addition to the deterioration in the status of balance sheets, capital adequacy ratio continued to deteriorate. Capital adequacy, although it appears to have been maintained above the minimum requirements by the official data, is estimated to have been seriously eroded since 1995 when international standards of asset classification are applied. Rising share of foreign borrowing in total liability also hurt the healthiness of the banks. In addition, the management of the banks indulged in outward expansion of the institutions for the competition in the domestic market share to the detriment of bank soundness. Capital account liberalization neither brought advanced credit analysis practices nor improved market efficiency in financial resources allocation.[55]

Financial market exhibited increased volatility with the increased capital mobility during the period of 1994-97. While the volatility of the interest rates and the equity prices approximately doubled, the volatility of the foreign exchange rates became far greater. Increased capital inflows during this period contributed to a lending boom, led by non-bank financial institutions, and created financial

[55] In fact, under the control by the government, Korean financial institutions had little capacity to do credit analysis and risk management. Taking collateral was the only thing they did in the way of risk management. They became accustomed to lend money where they are told to or to the big firms, as these were regarded safe due to the implicit government guarantee. A history government bailouts when firms face financial troubles has led to such a belief (You, 1998, p.100).

vulnerability. It also brought about overvaluation of the Korean won. The terms of trade shock to the Korean economy in 1996 further aggravated the problem of overvaluation.

The Korean government could not accomplish internal and external equilibria simultaneously in the face of capital inflow upsurge. The government's macroeconomic policy allowed the external disequilibrium to continue in 1995 and 1996.[56] Current account deficit expanded with the overvaluation of Korean won during 1994-96. Capital inflows, however, prevented Korean won from depreciating.

[56] But the real exchange rate gradually depreciated against the dollar after 1996 toward the equilibrium. As a result, the current account deficit began to shrink in 1997.

CONCLUSION

The literature on capital flows and financial stability suggests a hypothesis that international capital mobility aggravates the financial instability problem in emerging market economies. Two kinds of causal mechanisms are identified. First, cross-border capital flows intensify asymmetric information problems in the financial system. Second, they restrict the ability of the government to pursue macroeconomic adjustment policies.

The case of financial evolution in Korea was examined in the previous chapter to verify these arguments. Two periods – one with increased capital flows (1994-97), the other with less capital flows (1990-93) – were compared in order to find out whether there were any noticeable differences between the two periods that provide an evidence of increased financial instability associated with increased capital flows.

The empirical study supports the hypothesis. On the one hand, there is some evidence on the effects of international capital flows on institution instability by way of intensifying asymmetric information problems. Korean commercial banks exhibited serious moral hazard behavior in the times of increased capital mobility. Even though they suffered decreasing profitability since 1995, they continuously added to their branches both in Korea and overseas for outer expansion. This eventually led to worsening of their profitability. In addition, capital adequacy ratio continued to deteriorate. Capital adequacy, though it appears to have been maintained above the minimum requirements by official data, is estimated to have been seriously eroded since 1995 when international standards of asset classification are applied. Hence, it is asserted that the management of the banks put greater weights on other objectives than bank soundness and profitability.

On the other hand, the increased capital mobility apparently restricted the ability of the government to accomplish macroeconomic adjustments. The government found it difficult to obtain both internal and external equilibria at the same time with the increased capital flows. Increased capital mobility brought about significant overvaluation of the Korean won, and it seems to have generated excessive lending to the domestic economy. Capital inflows prevented Korean won from depreciating in spite of accumulated pressures for depreciation. The terms of trade shock to the Korean economy in 1996 had further aggravated the problem of overvaluation. Financial market also exhibited increased volatility with the increased capital mobility during the period of up-surge in capital flows. Therefore, the Korean case ascertains that free international capital mobility made the government face a more difficult environment in accomplishing macroeconomic adjustments.

An important limitation of this study is the lack of an analysis on the non-bank financial institutions due to the difficulties in obtaining relevant data. For a better understanding on the institution instability, a study on the non-bank financial institutions must be supplemented. Further analyses on other developing economies are also required to strengthen the argument on the relationship between capital mobility and financial instability.

REFERENCES

BIS, 1997, *Financial Stability in Emerging Market Economies - A Strategy for the Formulation, Adoption and Implementation of Sound Principles and Practices to Strengthen Financial Systems,* Report of the Working Party on Financial Stability in Emerging Market Economies, Bank for International Settlements, Basle, Switzerland.

BIS, Basle Committee on Banking Supervision, 1988, *The International Convergence of Capital Measurement and Capital Standards,* Bank for International Settlements, Basle, Switzerland.

Bordo, Michael D. and David C. Wheelock, 1998, Price Stability and Financial Stability: The Historical Record, *Review*, September/October: 41-62, Federal Reserve Bank of Saint Louis.

Calvo, Guillermo A., and Enrique G. Mendoza, 1997, *Rational Herd Behavior and the Globalization of Securities Markets*, Institute for Empirical Macroeconomics Discussion Paper, No. 120-1, Federal Reserve Bank of Minneapolis.

Crockett, Andrew, 1997a, *The Theory and Practice of Financial Stability*, Essays in International Finance, No. 203, International Finance Section, Department of Economics, Princeton University, Princeton, New Jersey.

Crockett, Andrew, 1997b, *Why Is Financial Stability a Goal of Public Policy?*, Paper presented at the Federal Reserve Bank of Kansas City's 1997 symposium on Maintaining Financial Stability in a Global Economy, August 28-30.

Demirguc-Kunt, Asli, and Enrica Detragiache, 1998, *Financial Liberalization and Financial Fragility*, IMF Working Paper WP/98/83.

Diamond, Douglas W., and Philip Dybvig, 1983, Bank Runs, Deposit Insurance and Liquidity, *Journal of Political Economy* 91: 401-413.

Dornbusch, Rudiger, Stanley Fisher, and Richard Startz, 1998, *Macroeconomics*, 7th ed., Irwin/McGraw-Hill, Boston.

Eichengreen, Barry, Michael Mussa, Giovanni Dell'Ariccia, Enrica Detragiache, Gian Maria Milesi-Ferretti, and Andrew Tweedie, 1998, *Capital Account Liberalization: Theoretical and Practical Aspects*, IMF Occasional Paper No. 172.

Fischer, Stanley, 1998, *Reforming the International Monetary System*, paper (preliminary) presented as the David Finch Lecture in Melbourne, November 9 1998, mimeo, [Online] Available http://www.imf.org/external/np/speeches/1998/110998.htm.

Gavin, Michael, and Ricardo Hausmann, 1995, "The Roots of Banking Crises: The Macroeconomic Context," in Hausmann, Ricardo, and Liliana Rojas-Suarez, eds., *Banking Crises in Latin America*: 27-63, Inter-American Development Bank.

Goldstein, Morris and Philip Turner, 1996, *Banking Crises in Emerging Economies: Origins and Policy Options*, BIS Economic Papers, No. 46, BIS, Basle, Switzerland.

Hahm, Joon-Ho, and Frederic S. Mishkin, 1999, *Causes of the Korean Financial Crisis: Lessons for Policy*, paper presented at the Korea Development Institute (KDI) Conference on Korea's Economic Crisis, October, KDI.

IMF, 1998b, *Toward a Framework for Financial Stability*, World Economic and Financial Surveys.

Kaminsky, Graciela, Saul Lizondo and Carmen M. Reinhart, 1997, *Leading Indicators of Currency Crises*, IMF Working Paper WP/97/79.

Krugman, Paul, 1997, *Currency Crises*, mimeo,
[Online] Available http://web.mit.edu/krugman/www/crises.html, October 1997.

Krugman, Paul, 1998, *The Eternal Triangle: Explaining International Financial Perplexity*, mimeo,
[Online] Available http://web.mit.edu/krugman/www/triangle.html, 13 October 1998.

Lee, 1998, *Korean Currency Crisis: The Financial Sector Fragility*, mimeo, Korea Institute of Finance, Seoul, Korea.

Lopez-Mejia, Alejandro, 1999, *Large Capital Flows: A Survey of the Causes, Consequences, and Policy Responses*, IMF Working Paper WP/99/17.

Minsky, Hyman, 1977, "A Theory of Systemic Fragility," in Altman, Edward I., and Arthur W. Sametz, eds., *Financial Crises: Institutions and Markets in a Fragile Environment*: 138-152, Wiley.

Mishkin, Frederic S., 1996, *What Monetary Policy Can and Cannot Do*, mimeo, Federal Reserve Bank of New York.

Morris, Charles and Klara Parrish, 1997, Maintaining Financial Stability in a Global Economy: A Summary of the Bank's 1997 Symposium, *Economic Review*, 4th Quarter, Federal Reserve Bank of Kansas City.

Nakajima, Zenta, and Hiroo Taguchi, 1995, "Toward a More Stable Financial Framework: Long-term Alternatives - an Overview of Recent Bank Disruption Worldwide" in Sawamoto, Kuniho, Zenta Nakajima, and Hiroo Taguchi, eds., *Financial Stability in a Changing Environment*: 41-108, St. Martin's Press, New York.

Obstfeld, Maurice, 1995, "International Capital Mobility in 1990s," in Kenen, Peter B., ed., *Understanding Interdependence: The Macroeconomic of the Open Economy*: 201-261, Princeton, New Jersey, Princeton University Press.

Sachs, Jeffrey D., Aaron Tornell, and Andres Velasco, 1996, Financial Crises in Emerging Markets: The Lessons from 1995, *Brookings Papers on Economic Activity*, 1:147-215.

Schoenmaker, Dirk, 1996, Contagion Risk in Banking, *Discussion Paper* No. 239, London School of Economics, Financial Markets Group, processed.

Schwartz, Anna J., 1988, "Financial Stability and the Federal Safety Net," in Haraf, William S., and Rose Maire Kushneider, eds., *Restructuring Banking and Financial Services in America*: 34-62, American Enterprise Institute.

The Bank of Korea, 1998, Financial Crisis in Korea - Why it happened and how it can be overcome, *Research Paper Series* 98-11.

UNCTAD, 1998, "International Financial Instability and the East Asian Crisis," in *Trade and Development Report*: 53-82.

You, Jong-Il, 1998, "Lessons from the Currecny-Financial Crisis in Korea," in KDI School, ed., *Building a Global Education Community for the 21st Century - 1998 International Conference*: 95-111, KDI School of International Policy and Management, Seoul, Korea.