Financial Liberalization and International Capital Flows

BY

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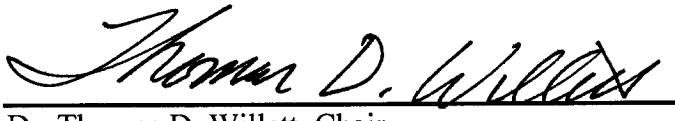

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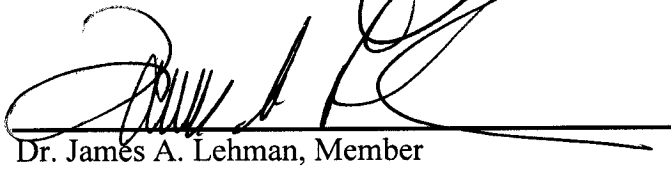

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Dissertation Abstract

Financial Liberalization and International Capital Flows

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The trend toward financial liberalization has increased over the last 30 years. Due to changes in prices, transaction costs, returns on assets, and quantitative limits on the foreign ownership of domestic financial and non-financial assets, financial liberalization policies have impacted the decisions of foreign and domestic investors regarding the allocation of investments which directly affects the movement of international capital flows. In addition, during the 1990s when liberalization in financial sectors and capital flows moved aggressively forward, many countries, particularly in emerging markets, experienced macroeconomic disequilibrium such as the deterioration of economic fundamentals and a disarrangement of exchange rates and asset price bubbles. This was the result at least in part, of substantial surges in cross-border capital flows, especially in short-term flows. As a result, these countries became more vulnerable to sudden stops and capital reversals which mostly ended in financial crisis.

This dissertation tests an array of relationships between financial liberalization policies and the behavior of international capital flows. It examines how foreign direct investments, portfolio flows, private loan flows, and net capital flows respond to financial liberalization policies in terms of direction, volume, composition, and the probability of a surge in capital flows. In addition, it explores whether increased regulation and supervision in the banking sector can reduce surges in international capital flows,

particularly in short-term flows. This dissertation uses a new measure of financial liberalization from Abiad (2008) which reflects the removal of legal restrictions on domestic financial transactions and capital movements in order to investigate such effects. Financial liberalization policies are segregated into six categories: elimination of credit restrictions and reserve requirements, elimination of interest rate controls, elimination of entry barriers in the banking sectors, privatization of state-owned banks, capital account liberalization, and security market liberalization. We investigate the panel data for 43 countries, including 8 industrialized countries, 30 emerging market countries, and 5 less-developed countries, from 1973 to 2005.

We find that domestic financial liberalization and capital account liberalization are crucial factors in determining the direction and volume of capital inflows. However the effects of financial liberalization on capital flows are varied, depending on the economic region, the types of financial liberalization policies, and the forms of capital flows. In emerging markets, the increasing trend toward financial liberalization tends to tilt the composition of international capital flows away from FDI flows. We find that the relaxation of domestic financial restrictions is related to a higher probability of a surge of capital inflows. In emerging markets, the probability of a surge in private loan flows decreases substantially when financial liberalization is accompanied by strong prudential regulation and banking supervision.

Dedications

I would like to dedicate this dissertation to my parents, Suwat and Ampa Sompornserm. Their constant support has given me the opportunity to pursue this goal. Also to my aunt, Nipar Sompornserm, and my brothers, Chakkrapan, Annop, and Sarun Sompornserm, who are great mentors and supporters.

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Last, but not least, it is impossible not to mention the large number of good friends who have given me such great times in Claremont.

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Chapter 1

Introduction

During the1990s, emerging market economies, particularly in Latin America and Asia, experienced a surge in international private capital inflows. A substantial expansion in capital inflows helped these countries smooth out consumption, stimulate investments, facilitate economic growth, and generate welfare gains.[1] However the lessons from a series of crisis episodes in the 1980s, 1990s and 2000s, i.e., the Latin American debt crises of the 1980s, the Mexican crisis of 1994-1995, the Asian crisis of 1997-1998, the Russian crisis of 1998, the Brazilian crisis of 1999 and the Argentine crisis of 2001-2002, show that the benefits of capital flows can be reversed and become massive output losses. Although capital inflows normally accelerate economic development, a byproduct can be domestic macroeconomic instability. Substantial capital inflows put upward pressure on exchange rates and/or domestic price levels generating large real-exchange rate appreciations. As a result, a decline in international competitiveness leads to a deterioration of current account balances.[2] Moreover, when countries experience large capital inflows, especially short-term flows that are associated with unsustainable rapid economic and credit growth, inflationary pressures, inappropriate exchange rate regimes,

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[1] There is a significant amount of research that analyzes various aspects of the inherent benefits of capital flows. For example, Reisen and Soto (2001) suggest that foreign savings can increase domestic savings rather than crowding them out in order to stimulate capital accumulation. Moreover, international capital flows can increase the efficiency of a recipient economy by improving resource allocation, encouraging domestic competition, and reducing the cost of capital. Kose et al. (2006) showed that capital flows can help capital-poor countries growth faster through higher investment. Cohen (1993) found that countries that can access foreign credits appear to have more capital accumulation than countries without access to foreign credit. However, there is no consensus about the effect of capital flows on welfare gains. Gourinchas and Jeanne (2006) argue that welfare gain from capital mobility appears to be small. Moreover, Reisen and Soto (2001) also support the idea that capital flows can generate welfare losses due to "distorted consumption and production patterns"

[2] "The larger transfer from abroad has to be accompanied by an increase in domestic absorption. If part of the increase in spending falls on non-traded goods, their relative price will increase- the real exchange rate appreciates" (Calvo et al. 1993)

and monetary and fiscal imbalances, these countries are likely to be subject to unexpected sudden stops and reversals in capital flows which leaves them more vulnerable to costly currency and financial crises (The World Bank 2007).[3]

The different types of capital flows appear to have different effects in terms of the growth and stability of the economy and financial sectors. Many studies have reached the conclusion that foreign direct investment (FDI) flows lead either directly or indirectly to economic growth through both technology spillover and human capital improvement. Borensztein et al. (1998) found that FDI flows appear to contribute relatively more to economic growth than domestic investment because FDI flows have a "crowding in" effect on domestic investment through the complementary production and transfer of technology. In addition, the instability costs of FDI flows appear to be far less than other types of flows because FDI is typically associated with long-term assets such as property and equipment that investors hold for a long period of time, or are tied to long-term contacts. Moreover, "FDI is also influenced more by long-term profitability expectations related to a country's fundamentals than speculative forces and interest rate differentials" (Sula and Willett, forthcoming). Therefore, FDI is likely to be less vulnerable to sudden stops and capital reversals than other types of capital flows when a country faces a loss of confidence particularly in the financial markets. [4]

Many other studies also agree that portfolio flows, which are composed of bond and equity investments, can help energize economic growth through improving the

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[4] Goldstein and Razin (2005) suggest a complicated explanation by using a liquidity model to illustrate that investors with low expected liquidity needs are attracted to FDI, while those with high expected liquidity needs are attracted to foreign portfolio investment. In addition, the return on foreign portfolio investment is expected to have a high sensitivity to liquidity shocks. Thus, FDI appears to have less vulnerability to liquidity shocks. As a result, portfolio investors are more likely to get liquidity shocks that force them to withdraw their investments than direct investors, and this increases the volatility of net foreign portfolio investment inflows relative to that of net FDI.

allocation of global savings and the minimization of capital costs (Claessens 1995).[5] Theoretically, these flows can expose a country to the possibility of a high degree of reversibility as a result of high liquidity and low transaction costs (Reisen and Soto 2001) and occasionally, the degree of reversibility can become stronger when the decisions of investors are driven by animal spirits rather than rational expectations. However, Sula and Willett (forthcoming) suggest that, "[During a crisis period] most of the time portfolio investors are too late to sell their assets without incurring large losses. To the extent that markets are efficient, the immediate hit to asset prices means that future increases are roughly as likely as decreases. With more price adjustment there is less incentive for future quantity adjustments" As a result, the degree of reversibility of portfolio flows should not be as high as many have assumed. For instance, Claessens (1995) could not determine whether portfolio flows are more volatile than other types of capital flows or if they have a negative impact on stock price volatility.

In contrast to FDI and portfolio flows, there has been less analysis of the benefits of private loan flows. But many studies (e.g., Tornell and Westermann 2005, Campion and Neumann 2004, and Calvo et al. 2003) argue that the costs of these flows are considerable. In the nature of emerging market economies where the economic fundamentals are often unstable, the financial system is less developed, and the institutional quality is not strong compared to industrialized economies, the ability to borrow by emerging market countries tends to be limited by several constraints.

[5] Claessens (1995) addresses this issue from the micro view, that equity markets can help investors diversify wealth across a wide range of financial assets. Moreover, diversification in capital markets is normally easier than in other types of financial markets. Thus, capital markets are able to reduce the risk that investors must bear. By doing so, it tends to reduce the demand on risk premium and the risk-adjusted cost of capital. From the macro view, the increase in foreign equity flows can help increase the allocation of global savings toward the most productive investments. This can lead to higher investments and growth.

Consequently, many heavily indebted countries tend to face the problems of a high ratio of foreign currency-denominated liabilities to domestic currency-denominated assets in the balance sheets, the so-called "currency mismatch." Also, since the cost of short-term borrowing is relatively lower than the cost of long-term borrowings, most of those countries tend to heavily finance their long-term maturity assets by short-term maturity debts, the so-called "maturity mismatches." In addition, the Asian crisis of 1997-1998, private loan flows are found to be the most volatile type of capital flows because the supply of foreign loans appears to be very sensitive to both internal and external shocks. Moreover, unlike portfolio flows, "due to the illiquid nature of bank loans, their prices do not adjust automatically, and thus banks adjust the quantity of lending instead" (Sula and Willett, forthcoming). Therefore, private loan flows tend to decline sharply when creditors lose confidence in their customers' ability to repay their debts as a result of financial turmoil. Moreover, due to sticky prices in the credit markets compared to the equity markets, it takes a longer period to restore the confidence of investors (Tornell and Westermann 2005). In addition, an increase in interest rates due to a higher default risk during the period of financial crisis also increases the costs of borrowing. This leads to the deterioration of the borrowers' balance sheets and make them more of a risk. As a consequence, "banks may have larger incentives to pull out from crisis countries in order to cut their losses" (Sula and Willett, forthcoming). Sometimes these flows are in the form of syndicates or small groups of large creditors, thus they may be more subject to herding behavior than other flows (Campion and Neumann 2004).

The lessons from many financial crisis episodes during the 1990s also show that a sudden downward shift in the supply of foreign debt led heavily indebted countries to

become more prone to crises. In addition, in a world where markets are relatively imperfect, private loan flows are typically associated with the problem of asymmetries of information, such as adverse selection and moral hazard (Calvo et al. 2003).[6] This problem can catalyze the boom and bust cycles in credit markets where regulation and supervision are very weak, accounting systems are not standardized, and the allocations of credit are driven by rent seeker groups rather than rates of return.

The surge in capital inflows tends to have a beneficial influence on the growth and stability of the recipient economy when capital inflows are dominated largely by long-term flows.[7] However, according to several financial crisis episodes in the 1990s, most countries in crisis experienced a surge in short-term capital flows before (Sula, 2008).[8] The costs of capital flows appear to outweigh the benefits for these countries. Therefore, concerns about surges in capital inflows, particularly short-term flows, have led academic researchers and policymakers to pay more attention to the question of the determinants of flows.

Theoretically, the causes of the movement of international capital flows can be divided into country-specific factors (the pull effect) and global factors (the push effect) (see Calvo et al. 1993, Calvo and Reinhart 1996, Campion and Neumann 2004, and Alfaro et al. 2006). The mechanisms of these two factors can be analogized as like a

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[6] For example, "a sudden capital outflows may make lender to conclude that the countries may suffer from negative supply shocks, even no shock has occurred.....The moral hazard appears to occur when a government provides implicit or explicit guarantees on banks' liabilities. Hence, there is no incentive for creditors to monitor the bank performance or risk in projects invested, but have more incentive to behave more risky by investing in a bank that provide higher return, even having substantial risks. In addition, the banks also have incentive to gamble with a risky project in order to receive higher returns, since they expect that the government would bail them out when crisis occurs".(Calvo et al. 1993)

[7] Note that long-term flows and short-term capital flows is used here in terms of how long they stay, not what they are labeled.

[8] Sula (2008) found that a surge in capital inflows significantly increase the likelihood of a sudden stop. Moreover, countries that experience a surge in portfolio and private loans flows, rather than foreign direct investment flows, are more likely to have a sudden stop.

magnet that pulls or pushes international funds to places that provide relatively more attractive risk-adjusted returns. For example, an increase in domestic economic growth and sound monetary and fiscal policies (the pull effect), along with a fall in world interest rates, recessions in the U.S. and Japan, and excessive liquidity in industrialized countries (push effects) were typically the main factors that drove international capital flows to emerging markets during the 1990s (The World Bank).

Furthermore, the trend toward financial liberalization, both domestic financial liberalization and capital account liberalization, can be crucial for surges and changes in the composition of capital flows. Financial liberalization policies such as the elimination of credit and interest rate controls, the elimination of entry barriers in the banking sectors, the removal of restrictions on capital flows, and security market liberalization tend to have an impact on prices, transaction costs, returns on assets, and quantitative limits of ownerships and investments (Campion and Neumann 2004). These policies affect foreign and domestic investors' decisions on whether to allocate their funds locally or abroad. As a consequence, this leads to a change in the movement and structure of international capital flows.

Many studies have theoretically and empirically investigated the effects of financial liberalization on financial development, economic growth, and financial crises. However, while many authors have made statements about the effect of financial liberalization on the behavior of capital flows, there have been few systematic studies of this question. Of these studies, most researchers have studied the effectiveness of capital controls.[9] However, they fail to consider the influence of domestic financial liberalization

[9] Alfaro et al. (2006) found a negative relationship between capital controls and the volume of capital flows, but the results are not statistically significant. Moreover, Montiel and Reinhart (1999) found that

policies, such as the relaxation of credit controls, interest rates controls, entry barriers in the banking sector, privatizations of state-owned banks, and the security market liberalization on capital movements and the structure of capital flows. Moreover, the few empirical studies in this area have generally adopted simple zero-one dummy variables of financial liberalization which can not detect the degrees of liberalization of financial sectors and capital flows. By doing so, it is unable to capture how the intensity of financial liberalization influences the behavior of capital flows.

Therefore, this dissertation attempts to fill in the gaps by utilizing the new financial liberalization index developed by Abiad et al. (2008). This new index is classified into six categories: elimination of credit controls and reserve requirements, elimination of interest rate controls, elimination of the restrictions on the scope of bank activities and of bank entry barriers, privatization of state-owned banks, capital account liberalization, and security market liberalization. This dissertation focuses on the panel data of 43 countries, including 8 industrialized countries, 30 emerging market countries, and 5 less-developed countries, from 1973 to 2005.

The main objective of this dissertation is to investigate the effect of different types of financial liberalization policies on international capital flows in terms of direction, magnitude, composition, and the probability of a surge in capital flows. The main findings suggest that domestic financial liberalization and capital account liberalization are crucial factors in determining the direction and volume of capital inflows. However the financial liberalization effects on capital flows are varied, depending on the economic region, the types of financial liberalization policies, and the

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capital control influences only the composition of capital flows, not the volume. For a specific set of countries also Edwards (2007)

forms of capital flows. For example, while relaxing restrictions on capital flows can attract substantial funds from foreign investors, other financial liberalization policies, such as abolishment of restrictions on interest rates and credit controls, elimination of bank entry barriers, and liberalization of the security market can create a large reduction in the offshore investment from domestic investors. Furthermore, in emerging markets, the increasing trend towards financial liberalization tends to tilt the composition of international capital flows away from FDI flows. In addition, apart from capital account liberalization, domestic financial openness is likely to be associated with a surge in capital flows in emerging markets. Finally, in emerging markets, the probability of a surge in private loan flows decreases substantially when financial liberalization is accompanied by prudential regulation and banking supervision.

The dissertation is organized as follows: the second chapter provides an overview of the trends in international capital flows and patterns of financial liberalization covering the period of 1973-2005. The third chapter reviews the literature on factors that influence the movement of each type of capital flows, and also addresses the theoretical framework of how the different financial liberalization policies affect cross-border capital flows. The fourth chapter focuses on the methodologies and the data. The fifth chapter evaluates the empirical results on the effect of financial liberalization. The sixth chapter investigates the effect of financial liberalization on international capital flows after grouping financial liberalization policies into four categories: domestic financial liberalization, bank liberalization, capital account liberalization and security market liberalization. A principal components analysis and an examination of the severity of the multicollinearity problem are also included in this chapter. The seventh chapter compares the effect of

capital account liberalization (controls) on cross-border capital flows by using several types of indices, such as Abiad et al. (2008), Kaminsky and Schmukler (2005), Potchamanawong-CGU (2007), Schindler (2009) and Chinn-Ito (2005). Conclusions and recommendations are presented in the final chapter.

Chapter 2

The trend of capital flows and the changing pattern of financial liberalization

2.1 The trend of international capital flows

Global market

Cross-border private capital flows in the world economy have increased significantly over the last thirty years. The volume of gross capital flows around the world rose to over $8.8 trillion in 2005, up 15 % from 1980 (Table 2-1 and Figure 2-1). Although the total number of capital flows in all economic regions has grown rapidly, more than 85 % of the total flows are still concentrated in industrialized markets while the rest are in emerging and less-developed markets (Figure 2-2).

As with gross capital flows, the number of net private financial flows into global markets has also increased from $31 billion in 1977 to $616 billion in 2005, which accounts for an almost 2,000 % increase over 20 years. A rapid increase in net capital flows is typically the result of higher growth in international trade, an increase in investment opportunities in emerging market economies, and a rise in financial integration (The World Bank 2007). But net capital flows in the global market have fluctuated significantly over time (Table 2-2 and Figure 2-3). In the early 1980s, capital flows to all regions almost ceased as a result of the debt crisis in emerging Latin American countries, however capital flows rose strongly again in the early 1990s.The sharp rise in capital flows mainly resulted from improved macroeconomic fundamentals, particularly in emerging markets, along with an increased number of countries that deregulated their capital accounts (Kawai and Takagi 2008). However, global net capital flows fell sharply in 1998 in the aftermath of the Asian financial crisis. Net capital flows

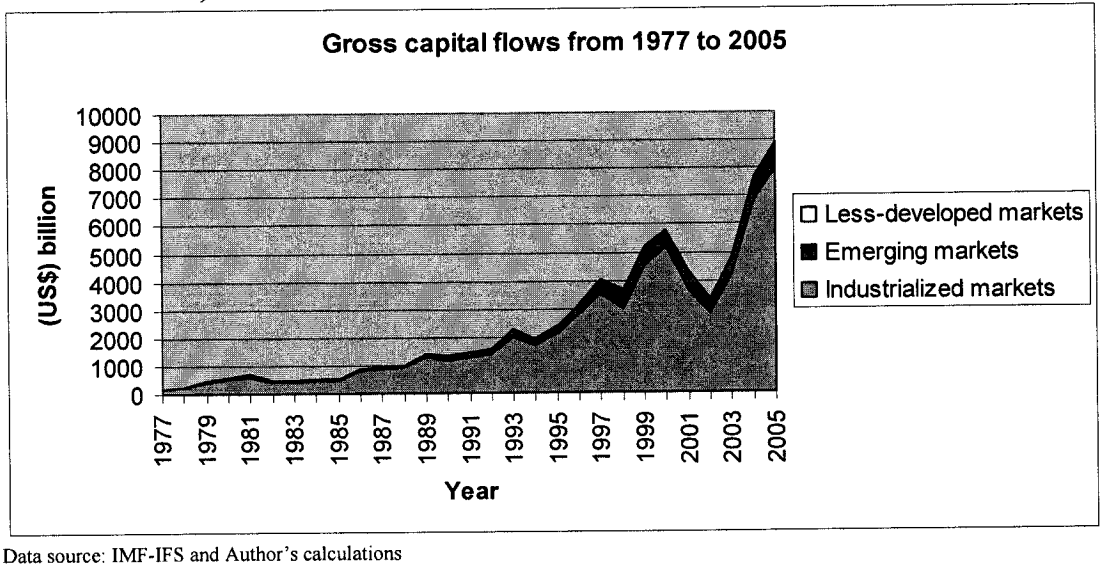
in the global economy dropped to $30 billion, down by over 85 % from 1997. The reemergence of global capital flows began again in 1999, but the destination of capital flows changed. Not only did the Asian financial crisis change investors' sentiments by encouraging them to seek safe places, but increased returns on investments, particularly in portfolio equities, also made industrialized countries a more favorable destination. As a result, capital flows suddenly shifted from emerging market countries, especially in Asia, toward industrialized countries (see table 2-1).

The collapse of the dot-com market again made the global economy experience a substantial decline in capital flows. Capital flows to the global market in 2001 shrank by over 40 % from 2000. However, since the dot-com crisis did not have a significant impact on the real economy in industrialized and emerging market countries, a large number of emerging markets strongly recovered from the financial crisis of 1997–1998. Also, as a result of the emergence of financial innovations such as Credit Default Swap (CDs) which helped investors reduce their exposure to default risks, capital flows to all economic regions began to increase rapidly during 2003–2005 (The World Bank 2006).

The structure of global capital flows has varied over time (Figures 2-4 and 2-5). From the 1970s to the early 1980s, the world economy depended heavily on external foreign debt. However, after the debt crisis of 1982 in Latin America, foreign loan flows became less important while FDI flows and portfolio investment flows maintained steady growth. Foreign borrowing rose again at a rapidly accelerating rate from 1989 to 1997 as a result of an increase in arbitrage opportunities from a decline in world interest rates and the rapid growth in infrastructure projects in emerging markets (The World Bank 1998). However, this pattern did not continue. The Asian financial crisis in 1997–1998 caused a

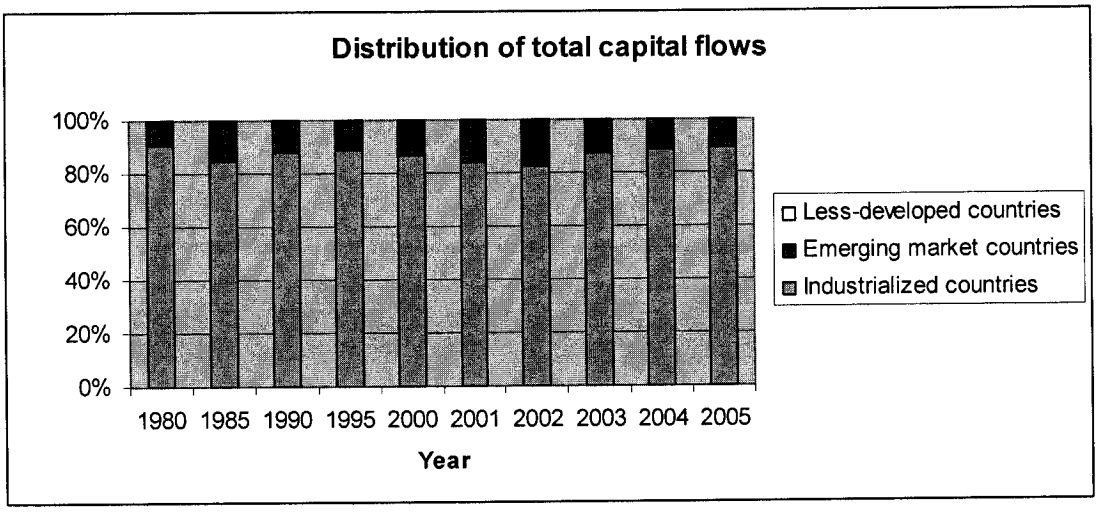
loss of confidence in the ability of borrowers to repay their debts which made foreign financial institutions reluctant to provide additional loans or roll over credits to emerging markets. In addition, domestic private corporations were financed through other types of funds, such as bonds and equity, rather than borrowing from abroad which made them vulnerable to default risks. After 2003, all categories of private capital flows turned positive again as investor sentiment toward the global economy improved due to the strengthening of macroeconomic conditions such as increased global economic growth, global price stability, and strengthening of the financial market due to an increase in global stock market values and financial innovations (The World Bank 2006). In addition, in 2004, the volume of foreign private loan flows was well above the peak of the 1990s as a result of an increase in debt quality, lower interest rate returns in industrialized countries, and the expectation of currency appreciation in emerging markets (The World Bank 2005).

Figure 2-1: Gross capital flows in the global economy from 1977 to 2005 (billion $ US)



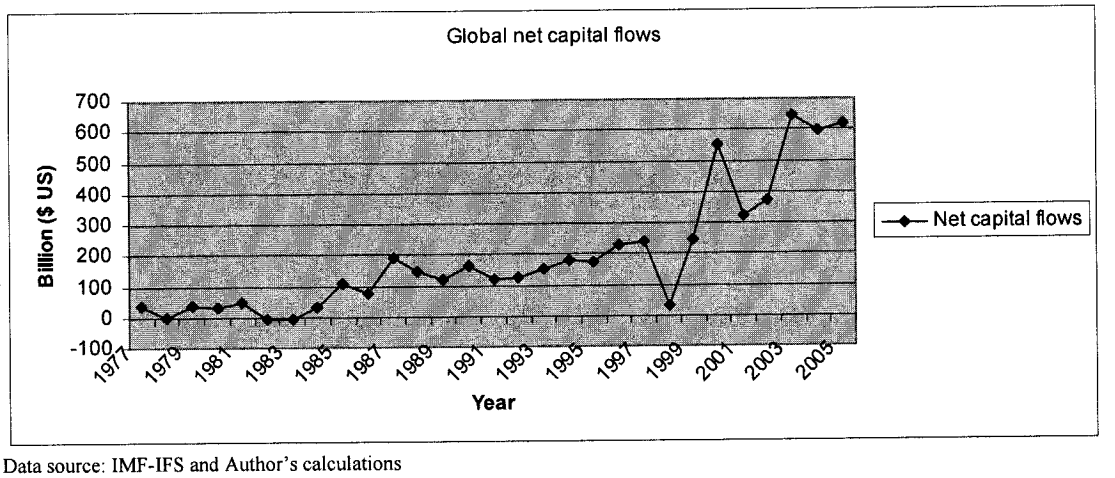
Data source: IMF-IFS and Author's calculations

Figure 2-2: The distribution of gross capital flows among economic regions from 1980-2005



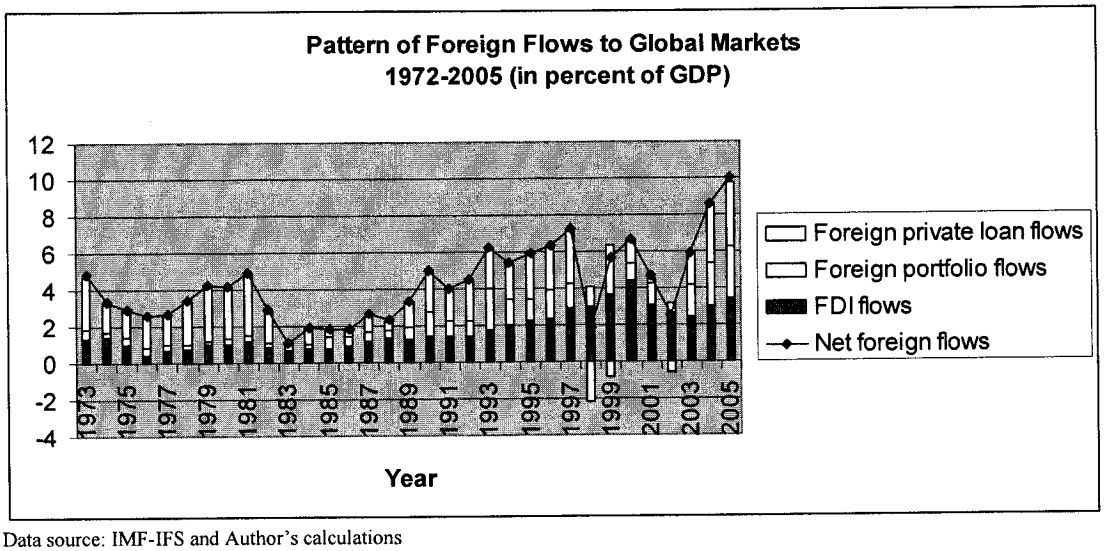
Data source: IMF-IFS and Author's calculations

Figure 2-3: The trend of global net capital flows from 1977 to 2005 (billion $ US)



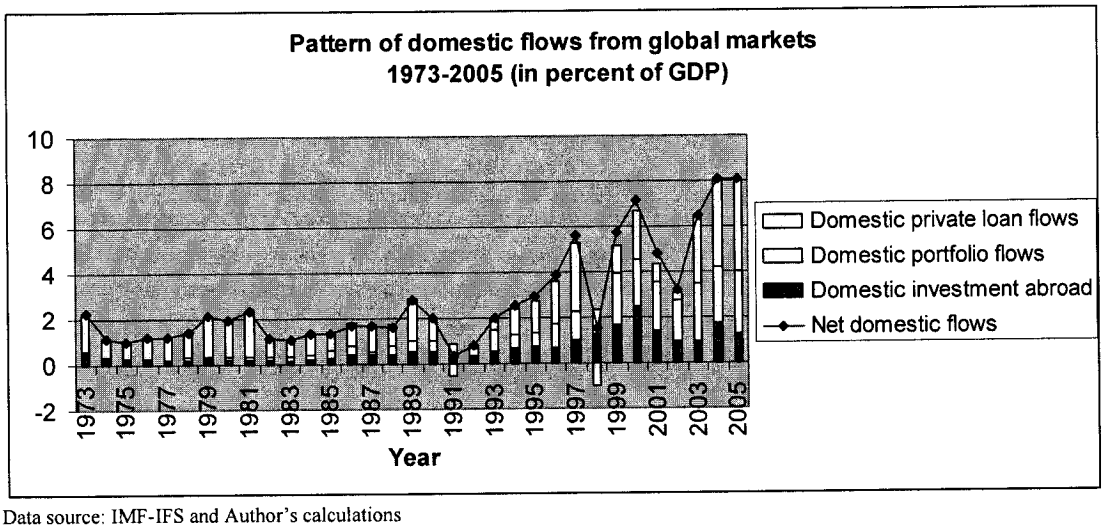
Data source: IMF-IFS and Author's calculations

Figure 2-4: Pattern of foreign flows to global markets from 1972 to 2005



Data source: IMF-IFS and Author's calculations

Figure 2-5: Pattern of domestic flows to global market from 1972 to 2005



Data source: IMF-IFS and Author's calculations

The global market appears to be too broad when the focus is on the whole market. The geographic distribution of flows may provide a clearer picture for analysis.

Industrialized countries

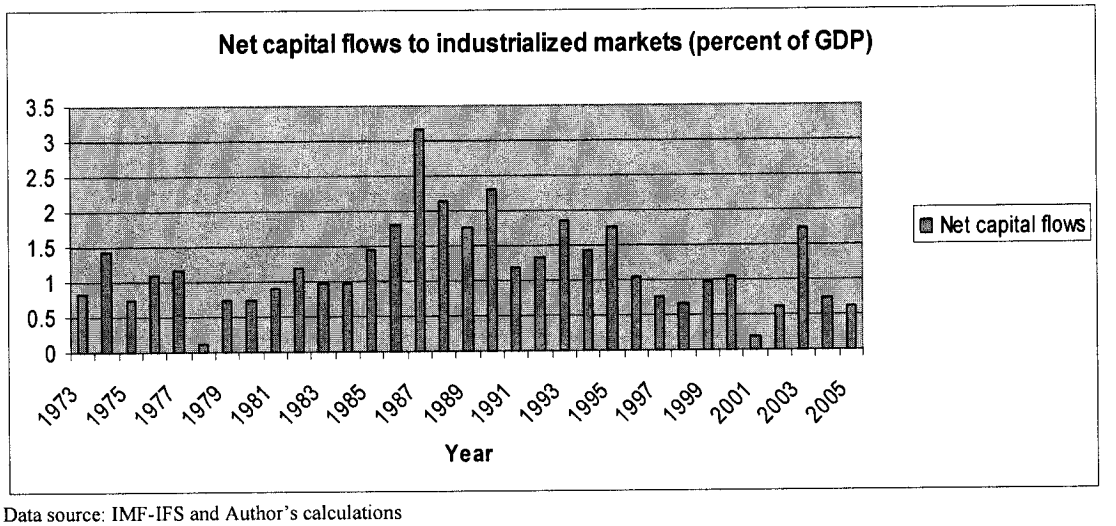
The net capital flows to industrialized countries maintained stability and gradually increased from 1977 to 1987 (Figure 2-6). However, in the late 1980s, the decline in

expected returns in many industrialized countries that was caused by a fall in world interest rates and recessions in the U.S. and Japan led investors to seek alternative investment markets (The World Bank 1997) Net capital flows to industrialized countries consistently dropped while net capital flows to emerging countries increased significantly. After the Asian financial crisis of 1997-1998, net capital flows in industrialized countries increased dramatically (see table 2-2). This resulted from higher profitable investment opportunities through the rapid expansion of stock markets in industrialized countries, portfolio adjustments, and the repatriation of loans which were made primarily to countries that were affected by the financial crisis, particularly in emerging markets. As mentioned previously, the effect of the dot-com bubble collapse in 2001 had a significant impact on investors which led to a slowdown in global investments. Although net capital flows during 2004 and 2005 were relatively small, this does not imply that investment in industrialized countries had become unattractive. Figures 2-7 and 2-8 show that industrialized countries had attracted a large number of foreign investors, and at the same time domestic investors in industrialized countries also played an important role by investing in other regions. The increase in foreign flows was mainly offset by the increase in domestic flows. As a result, net capital flows in industrialized countries declined considerably while gross capital flows continued to rise sharply.

The component of capital flows in industrialized countries changed over time, but it fluctuated less than that in other economic regions. From the 1970s to 1980s, most foreign capital flows to industrialized countries were dominated by foreign borrowing, while foreign portfolio investment flows started to rise in the middle of the 1980s due to

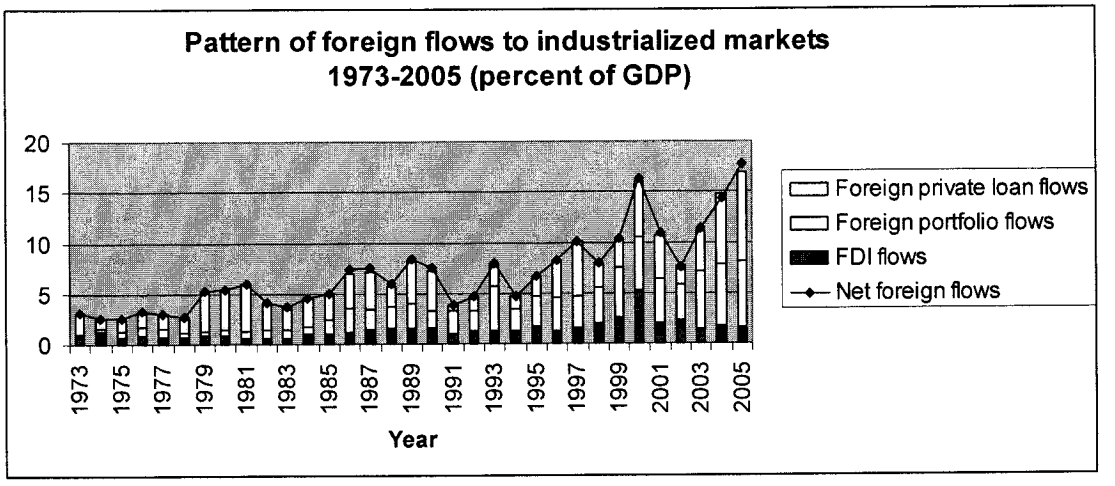
the rise in profitable investment opportunities through higher stock market returns. The level of FDI flows was stable compared to other types of capital flows. It is worth noting that industrialized countries experienced a wave of outward direct investment that reached its highest level in 2000. A collapse in asset values in many emerging market countries such as Korea and Thailand, along with the relaxation of restrictions on the quantitative limit of foreign ownership after the Asian financial crisis, encouraged foreign investors—particularly from industrialized countries—to purchase Asian companies or assets at "fire-sale prices" (Krugman 2000). Moreover, during the Asian financial crisis, industrialized and emerging market countries also experienced a considerable decline in foreign borrowing which suggests a possible contagion effect which not only spread within emerging markets but also into industrialized countries.

Figure 2-6: The trend of net capital flows to industrialized countries from 1977 to 2005 (in percent of GDP)



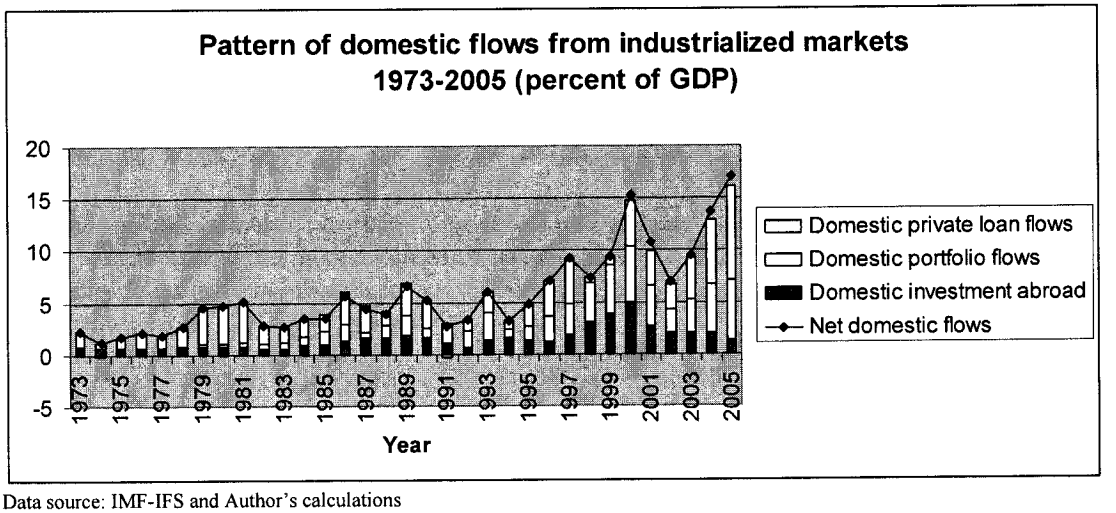
Data source: IMF-IFS and Author's calculations

Figure 2-7: Pattern of foreign flows to industrialized countries from 1972 to 2005



Data source: IMF-IFS and Author's calculations

Figure 2-8: Pattern of domestic flows from industrialized countries from 1972 to 2005



Data source: IMF-IFS and Author's calculations

Emerging markets

The wave of cross-border capital flows to emerging market economies started in the middle 1970s as a result of an excessive supply of capital in oil-exporting countries, an increased need for funds to finance a large number of infrastructure projects, and a

substantial increase in the trend toward liberalization of trade, domestic financial markets, and capital flows (Folkerts-Landau et al. 1997). Net capital flows to emerging markets rose rapidly from $10 billion in 1977 to $38 billion in 1980 (Table 2-2 and Figure 2-9). However, net capital flows to emerging markets ceased after the series of debt crises of 1981 in Latin America. A decline in the growth of mature markets led to the sharp deterioration of exports and terms of trade. Moreover, an increase in world interest rates made many Latin American countries, such as Mexico, Argentina, and Brazil—which had a huge accumulation of short-term debts with high variable interest rates—unable to service their debt obligations (Folkerts-Landau et al.1997) . Following the eruption of the crises, the confidence of foreign financial institutions deteriorated which resulted in capital flight.

Nevertheless, the surge in cross-border capital flows to emerging markets remerged in 1990 as a result of favorable external and domestic economic conditions in both Latin American and Asian countries. Relatively low interest rates in industrialized countries and the abundance of liquidity in industrialized countries led investors to seek higher yield markets (The World Bank 2007).[10] In addition, the increasing trend toward financial liberalization reduced the cost of capital allocation for both domestic and foreign investors. As a result, total net capital flows to emerging markets jumped dramatically from $246 billion in 1990 to $151 billion in 1993.

However, capital flows to emerging markets had a second interruption in 1994 due to another Latin American debt crisis (see figure 2-12). Large real exchange

[10] The World Bank (2007) mentioned that although short-term interest rates in many countries increased as a result of higher economic growth and inflationary pressure, long-term interest rates stayed relatively low. This not only lowered the borrowing costs for emerging market countries and developing countries, but also increased opportunities for investors to allocate their funds to higher risk adjusted return markets.

appreciation and currency and maturity mismatches followed a substantial surge in capital inflows to Latin America during the early 1990s. Also, the reluctance of the Mexican government to implement tough monetary and exchange rate policies led the Mexican economy into a fundamental disequilibrium. [11] And a substantial increase in default risks on government and bank liabilities after abandoning pegged exchange rates contributed to a loss of confidence and thus financial panic. Consequently, loans were withdrawn, the stock market plunged, and capital outflow substantially and rapidly increased (Figure 2-13 and 2-14). However, during the Mexican crisis of 1994-1995, the so-called Tequila crisis, overall capital flows in emerging markets did not significantly decline because of the emergence of "the Asian miracle."

Net capital flows in emerging Asian countries continued to rise from $27 billion in 1990 to $60 billion in 1996. The substantial increase in net capital flows was caused by rapid economic growth which was mainly driven by a successful export-oriented strategy, aggressive liberalization in both domestic financial systems and capital flows, and the decline in rates of return in industrialized countries such as the U.S. (Furman and Stiglitz 1998). Again, a large surge in capital flows without proper capital flow management, and the development of sound regulation and supervision left emerging Asian countries vulnerable to persistent economic imbalances caused by real exchange rate appreciation, large current account deficits, and the inflation of financial and non-financial asset prices such as equity and real estate prices (Reinhart and Rogoff 2009). In 1997, unsustainable economic conditions, along with speculative attacks targeting the Thai baht, made the Thai government abandon its pegged exchange rate. The devaluation of the Thai baht and

[11] The Mexico government was reluctant to increase interest rates and devalue its currency because these policies could have slowed down the economy, damaged the financial sector, and impacted the presidential election.

the collapse of Thai financial sectors was a wake-up call for foreign investors to adjust their portfolios, particularly in Thailand's neighboring countries such as Malaysia, Philippines, and Indonesia. The similarity of economic conditions such as large real exchange rate appreciations, considerable foreign debt, and weakening financial sectors led speculators to attack the currencies of these countries. Moreover, a loss of investors' confidence also led to a sudden withdrawal of foreign capital in the region and thus created a contraction in the credit markets. As a result, many of the financial and non-financial businesses became illiquid and ended up in bankruptcy (Radelet and Sachs 1998) The Asian crisis deteriorated not only the macroeconomic environment and financial systems, but also reversed the confidence of foreign investors about the Asian region as seen by the substantial increase in interest rate spreads (Furman et al.1998). The crisis reduced capital flows to all emerging markets from $127 billion in 1997 to $25.19 billion in 1998, an 80 % reduction.

After 2003, the strengthening of domestic economic growth, recovery of the financial markets[12], and sound fiscal and monetary policies in emerging markets renewed foreign investors' confidence. As a result, this led to a rebound in foreign capital flows to emerging market countries after the abrupt contraction in capital flows during the late 1990s (The World Bank 2007). Net capital flows to emerging markets jumped to $143 billion in 2005.

The composition of capital flows in emerging markets has dramatically changed over time. Due to the implementation of market-oriented reforms, increased capital market openness, and innovations in financial market in the U.S. and Europe, portfolio

[12] An increase in the stability of the financial markets can be shown as the narrowed and less volatile bond spreads and improved credit rating of sovereign debt issued by emerging markets (The World Bank, 2007)

investment caught up with foreign direct investment which was a major part of capital flows in emerging markets during the 1980s to early the 1990s (Sebastian 2000). Foreign debt, particularly in the form of foreign bank lending, which dominated other types of flows during the 1970s and early 1980s, became a less-favored external source of funds. Foreign private loan flows to emerging markets fell sharply from $101 billion in 1995 to $195 billion in 1998 due to the Asian financial crisis. During 1999–2002, the need for foreign borrowing continued to decline. This circumstance can be explained by the higher risk perception of foreign debt, the improvement in bond and equity markets, and the emergence of alternative financial instruments such as mutual and pension funds (The World Bank 2006). However, during 2003 and 2005, all types of cross-border private capital flows grew substantially. FDI flows increased strongly due to higher stock market values, favorable domestic conditions, an increased trend toward cross-border mergers and acquisitions, and privatization in both the financial and non-financial sectors (The World Bank 2006). Moreover, outward investments from emerging markets have increased over time as a result of financial liberalization and government policies that encourage domestic investors to invest abroad in order to absorb the wave of capital inflows[13] (Willett et al. 2009). Portfolio equity flows in many emerging Asian countries also increased strongly due to a significant rise in domestic corporate profits. Moreover, with the strengthening of financial conditions, relatively higher returns than in industrialized countries and the expected appreciation of currencies, many countries such as China, Mexico, Thailand, and Korea were able to issue debt securities, particularly in

[13] For example, after 2000, Korea experienced a surge of capital inflows which created a large surplus in capital accounts. As a result, it put pressure on foreign exchange rates that hurt its export sectors. Thus, to reduce the appreciation of the Korean wan, Korean authorities encouraged capital outflows by relaxing capital outflows restriction more in overseas real estate, portfolio investments, and direct investment abroad (Willett et al. 2009).

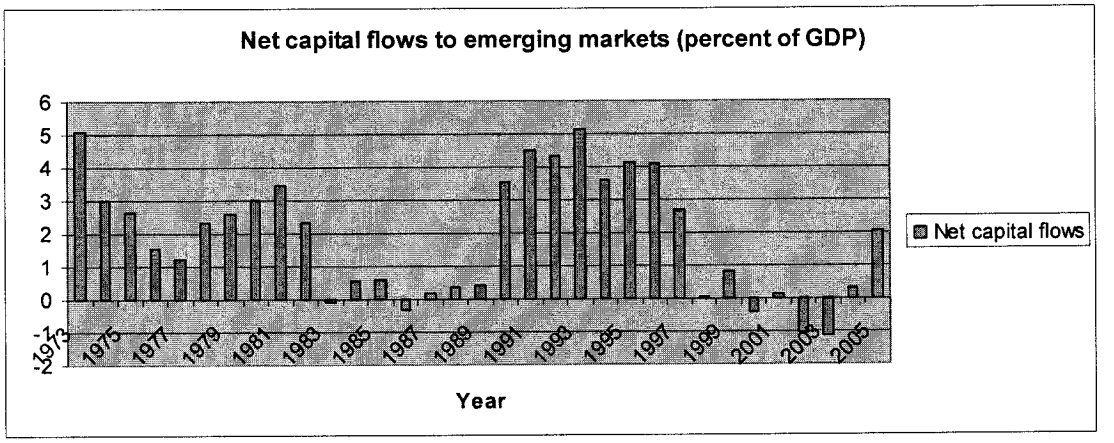
the form of local currency-denominated bonds with long-term maturity (The World Bank 2006). As a result, the quality of debt securities during 2005 was much better than that of debt securities during the 1990s. Furthermore, foreign private loan flows, especially in the form of syndicate bank lending, also rose as a result of relatively high interest rate differentials between emerging and industrialized market countries, and an improvement in the confidence of foreign creditors toward financial credits in emerging markets (The World Bank 2006).

For Asian countries in emerging markets, foreign private loan flows dominated other types of flows up until 1997. Due to the Asian crisis of 1997, foreign loans to emerging Asian countries fell dramatically, to $207 billion in 1998. In 1997-1998, foreign portfolio flows also shrank as a result of a weakening in economic growth and financial sectors, but they recovered rapidly due to undervalued pools of goods and financial assets in Asian markets which attracted more foreign investors. FDI flows in Asia even increased during the Asian economic turmoil with the fire sale of both financial and non-financial assets in countries such as Thailand and Korea. After 2002, as mentioned previously, private loan flows to emerging Asian countries also increased. Moreover, the capital markets in Asia were strengthened in 2003 while bond markets gradually developed.

Emerging Latin American countries relied heavily on short-term foreign debt from the 1960s to the early 1980s. The peak private loan flows level came in 1981, accounting for over 80 % of net foreign inflows. Massive lending made international creditors aware of the higher default risk in Latin American regions. An unwillingness to make additional loans to Latin America countries further reduced their ability to repay

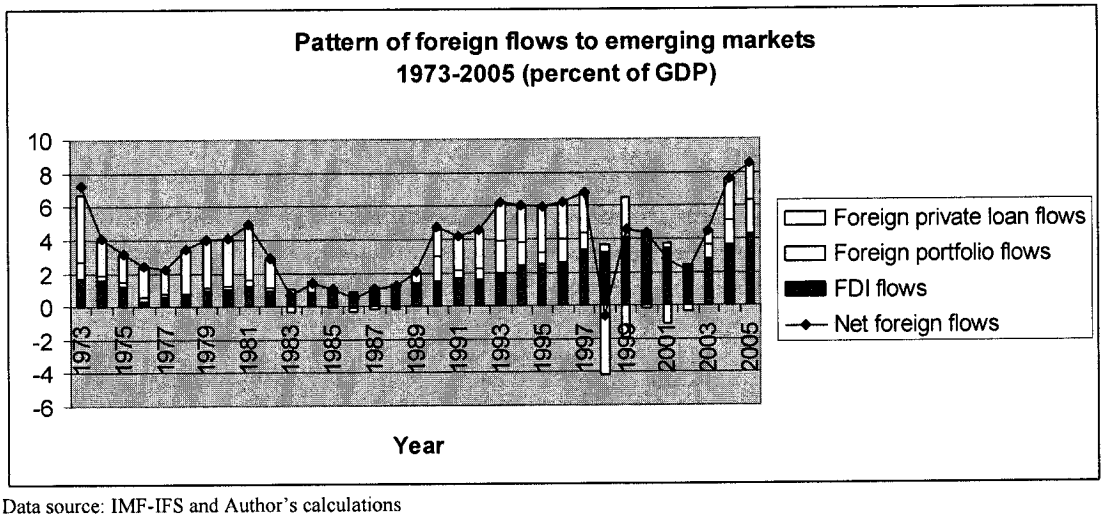
debts. The Mexican government was the first country to declare a default in 1982. The wake-up call from Mexico created a considerable contraction of international lending to other Latin American countries such as Argentina, Brazil, and Chile. Foreign private loan flows turned sharply negative in 1983 and continued to flow out until 1989. Latin America countries experience a surge in capital flows again in 1990 with the improvement of macroeconomic conditions and aggressive financial reforms (Folkerts-Landau et al. 1997). However, from 1990 to 1994, the structure of capital flows to emerging Latin American countries changed significantly. Portfolio investment, especially in the form of debt securities, became a major element of capital inflows. Foreign portfolio investment flows rose from $21 billion in 1990 to over $79 billion in 1993. Again, the second debt crisis in Latin America during 1994-1995 decelerated all types of capital flows except for FDI flows which tend to be recession-proof during all crisis periods. Moreover, after 2000, Latin American countries depended heavily on FDI flows. And thanks to a decline in the interest rates of industrialized countries, and the existence of credit default swaps which provided insurance against default risks to foreign investors, many countries in emerging Latin American countries were able take advantage of this situation by issuing local-currency denominated bonds with long-term maturity. As a result of the reduction of the vulnerability of currency and maturity mismatches, portfolio investment, particularly in the form of bonds, turned positive in 2005 (The World Bank 2006).

Figure 2-9: The trend of net capital flows to emerging market countries from 1977 to 2005 (in percent of GDP)



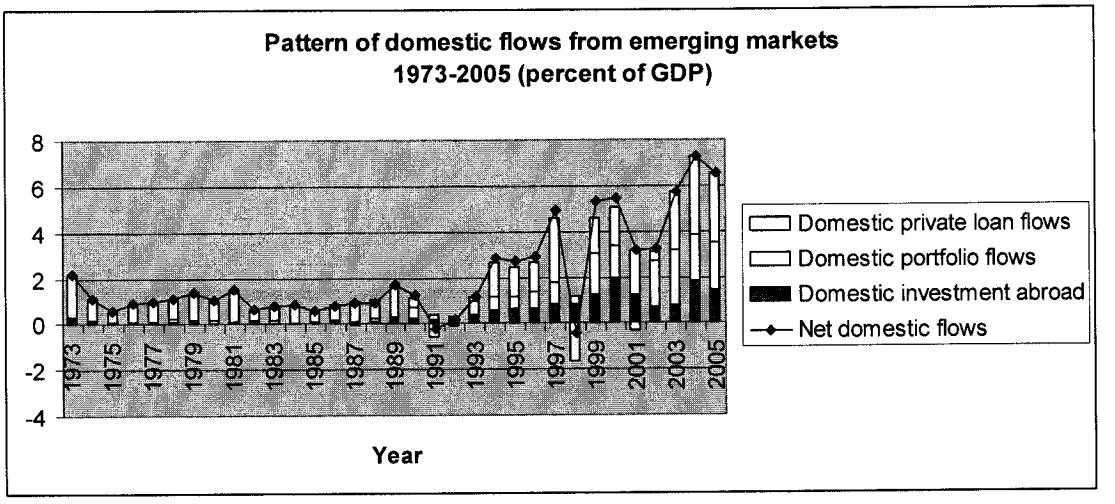
Data source: IMF-IFS and Author's calculations

Figure 2-10: Pattern of foreign flows to emerging market countries from 1973 to 2005 (in percent of GDP)



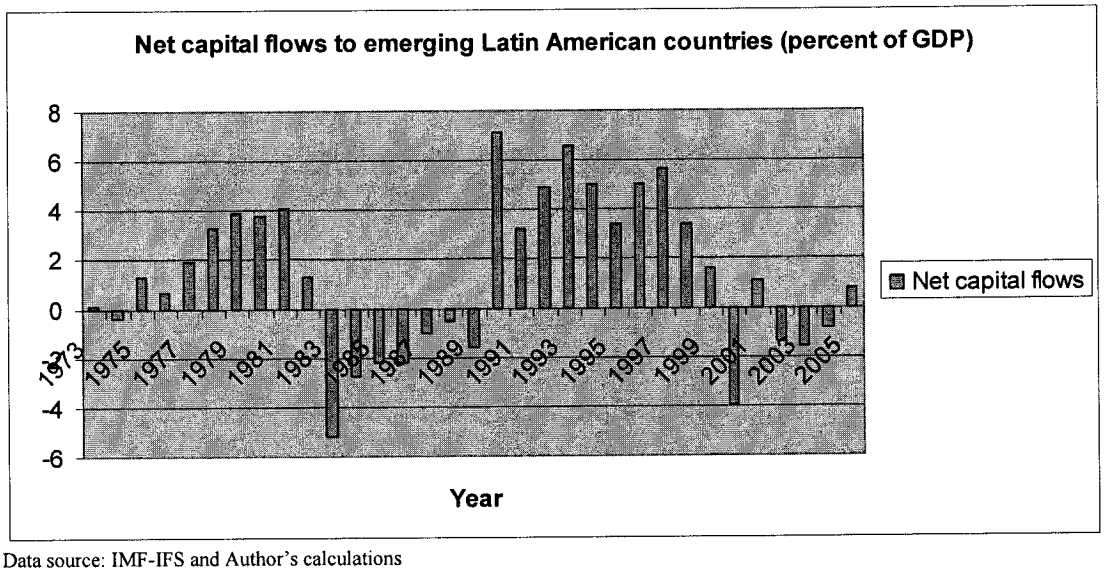
Data source: IMF-IFS and Author's calculations

Figure 2-11: Pattern of domestic flows from emerging market countries from 1973 to 2005 (in percent of GDP)



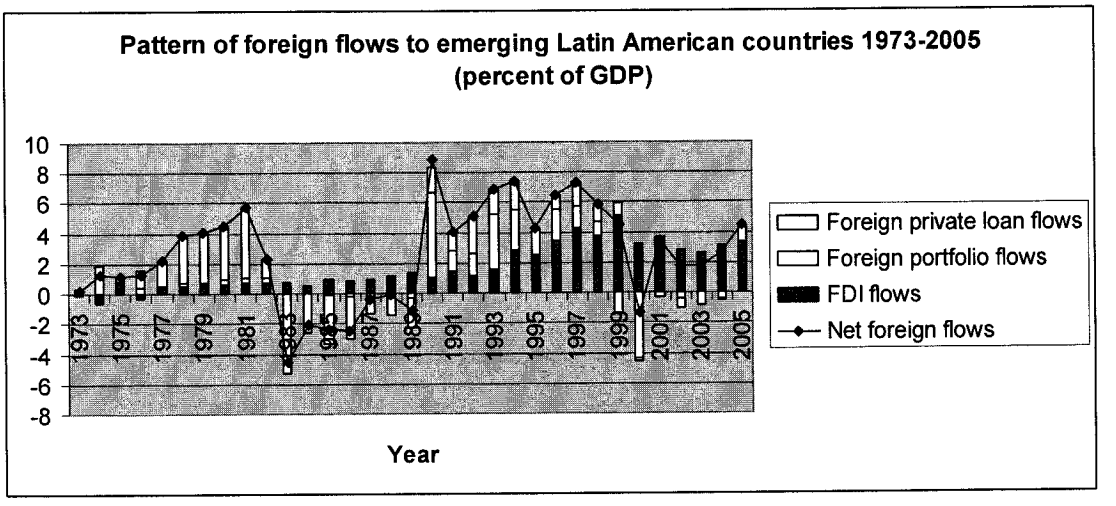
Data source: IMF-IFS and Author's calculations

Figure 2-12: The trend of net capital flows to emerging Latin American countries from 1973 to 2005 (in percent of GDP)



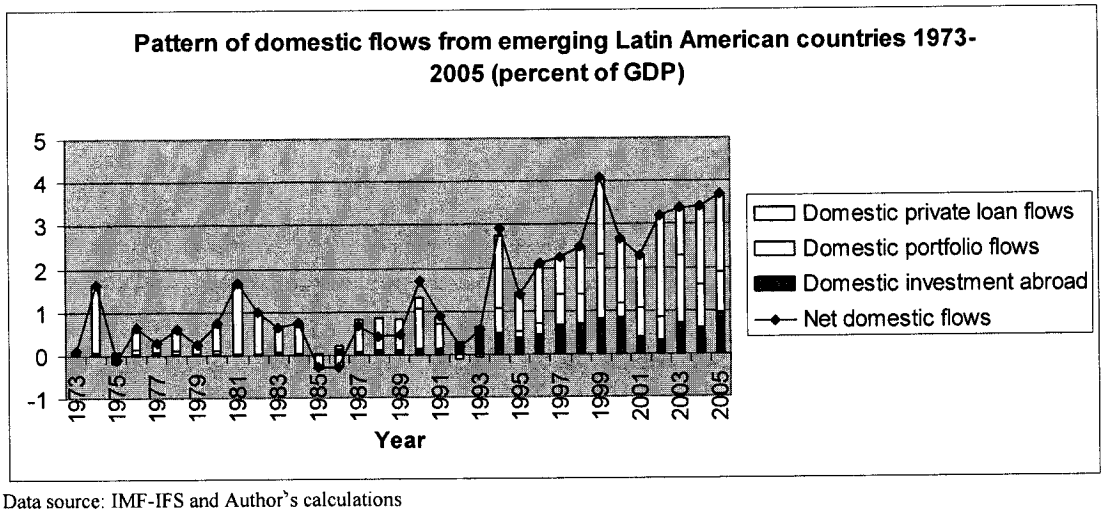
Data source: IMF-IFS and Author's calculations

Figure 2-13: Pattern of foreign flows to emerging Latin America countries from 1973 to 2005 (in percent of GDP)



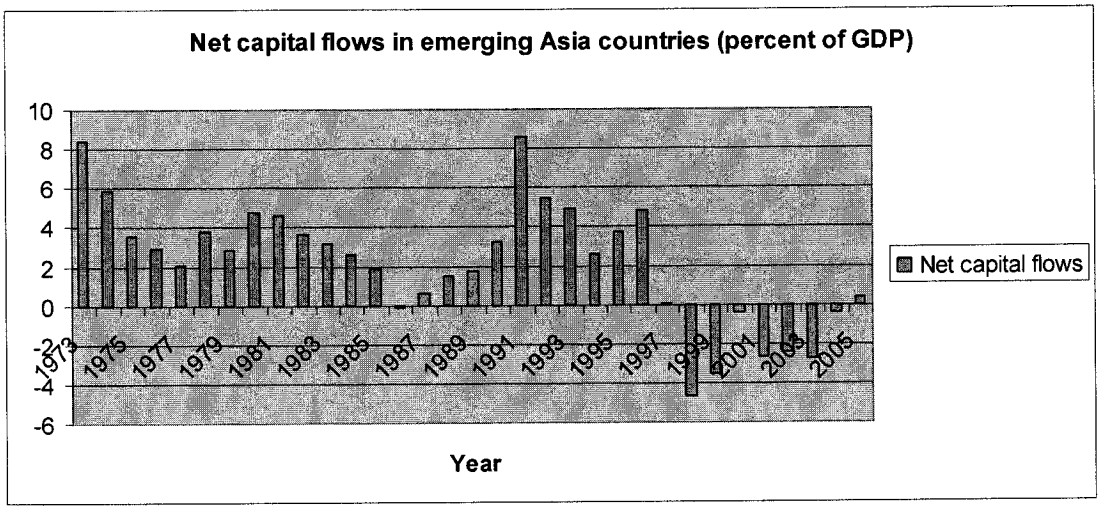
Data source: IMF-IFS and Author's calculations

Figure 2-14: Pattern of domestic flows from emerging Latin American countries from 1973 to 2005 (in percent of GDP)



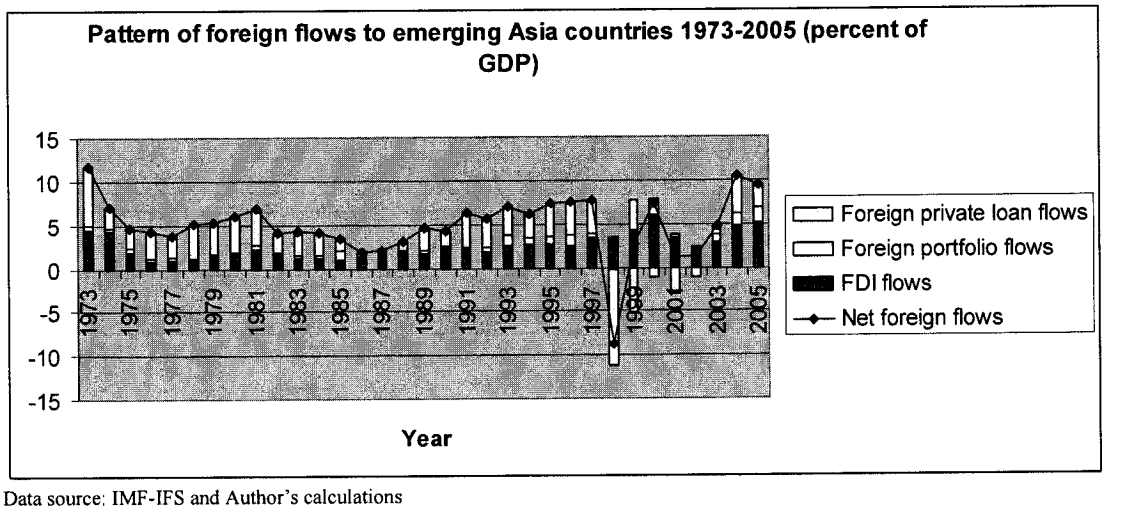
Data source: IMF-IFS and Author's calculations

Figure 2-15: The trend of net capital flows to emerging Asian countries from 1973 to 2005 (in percent of GDP)



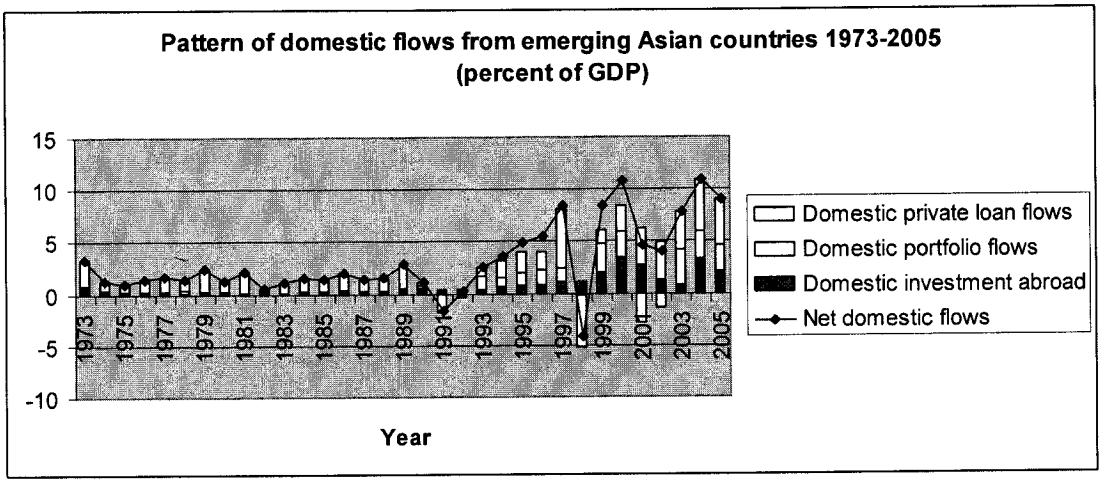
Data source: IMF-IFS and Author's calculations

Figure 2-16: Pattern of foreign flows to emerging Asian countries from 1973 to 2005



Data source: IMF-IFS and Author's calculations

Figure 2-17: Pattern of domestic flows from emerging Asian countries from 1973 to 2005 (in percent of GDP)



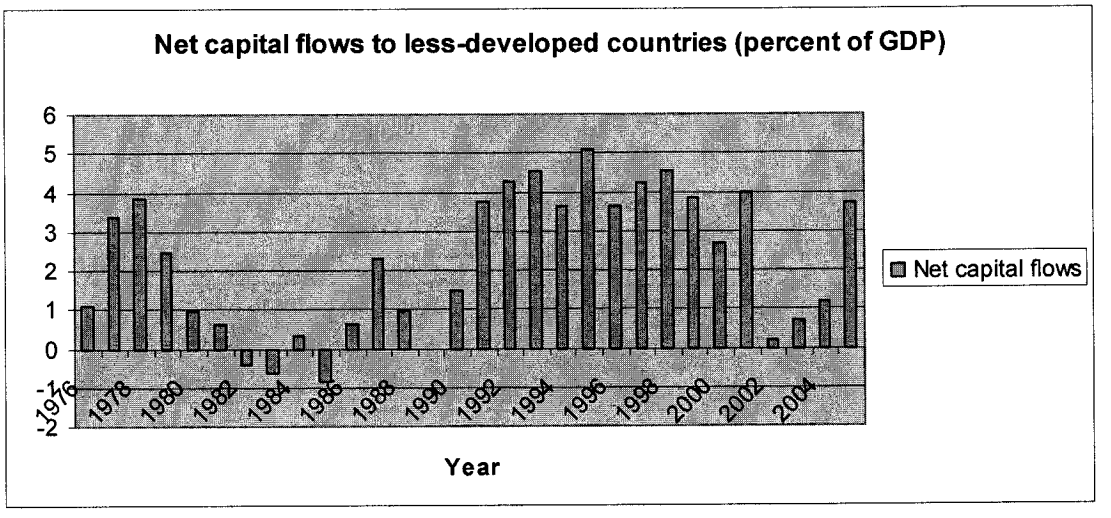
Data source: IMF-IFS and Author's calculations

Less-developed countries

The World Bank (1999) showed that during the1990s less-developed countries had received less than 10 % of the international capital that flowed into emerging market countries. This number suggests that the less-developed countries had difficulty accessing international capital funds which mainly resulted from poor economic conditions, underdeveloped financial systems, and the low quality of institutions. However, capital flows to less developed countries gradually increased in 1991, but were still relatively small in number compared to countries in emerging markets. Moreover, recently, less-developed countries have relied heavily on official finance from bilateral and unilateral creditors (The World Bank 2005). Interestingly, as with industrialized countries, less developed countries also experienced a decline in net capital flows, particularly in the form of foreign private loan flows as a result of lower commodity prices and the slowdown in world trade after the widespread financial turmoil in 1997 (The World Bank 1999).According to the capital flows structure, the less-developed countries relied heavily

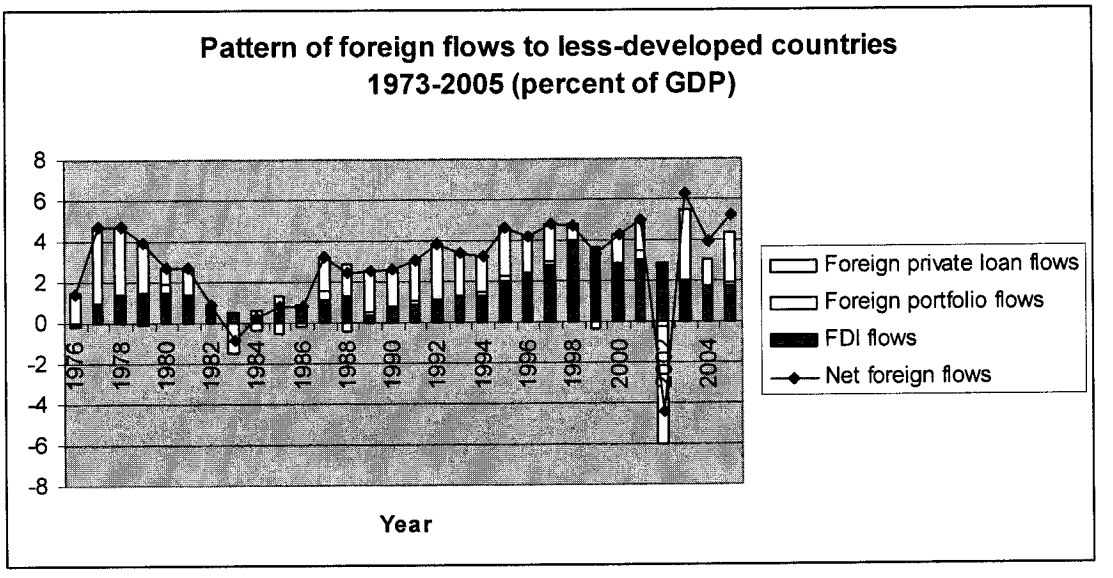
on foreign loans during the 1990s. However the trend toward the use of foreign debt was decreased, while FDI flows become more important due to an increase in the price of commodities and improvements in the infrastructures of less-developed countries (The World Bank 1999). Due to the underdevelopment of financial systems and capital markets, foreign investors did not to pay much attention to bond or stock markets in less-developed countries.

Figure 2-18: The trend of net capital flows to less-developed countries from 1973 to 2005 (in percent of GDP)



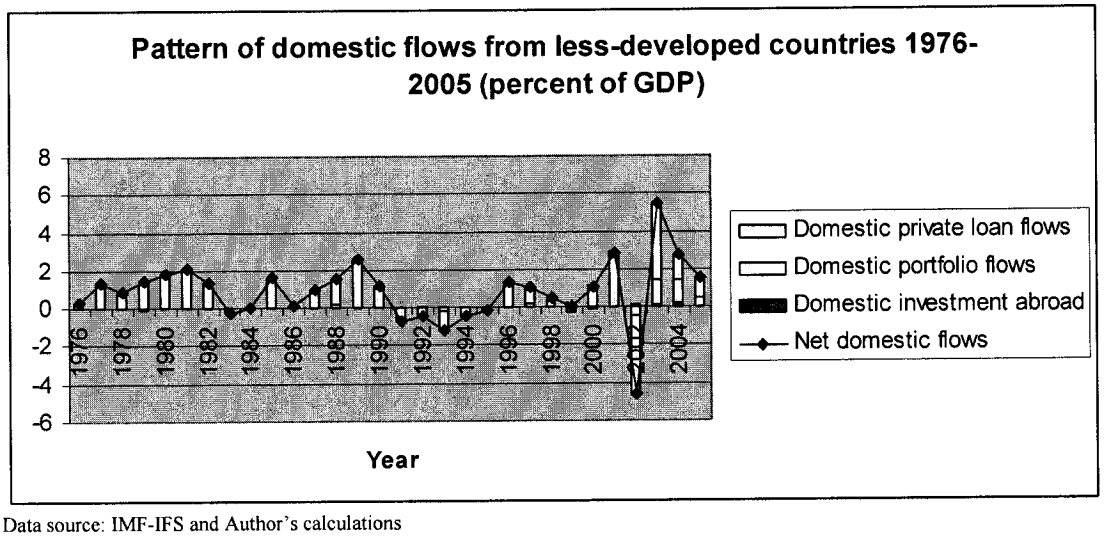
Data source: IMF-IFS and Author's calculations

Figure 2-19: Pattern of foreign flows to less-developed countries from 1973 to 2005 (in percent of GDP)



Data source: IMF-IFS and Author's calculations

Figure 2-20: Pattern of domestic flows from less-developed countries from 1973 to 2005 (in percent of GDP)

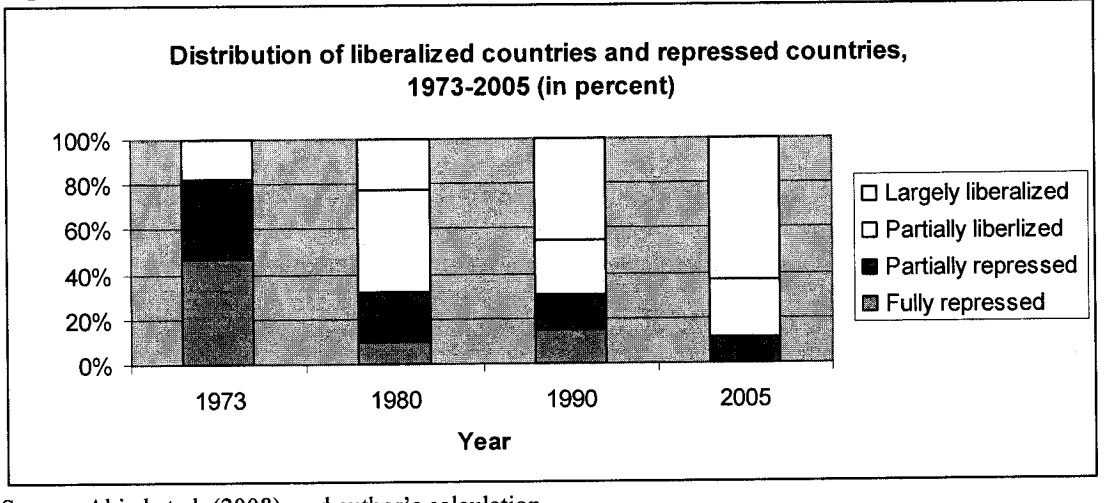


Data source: IMF-IFS and Author's calculations

2.2 The pattern of financial liberalization

During last 30 years, the trend toward financial liberalization has increased worldwide (Figure 2-21). The motivation for financial liberalization was mainly sparked by the efficiency of resource allocation which translated into an improvement of economic performance and thus growth (Johnston and Sundararajan 1999). The neoclassical view suggests that government intervention, including financial repression through monetary controls and financial restrictions, creates a lack of information and incentives that would allocate resources efficiently. This leads to the inefficiency of financial and economic systems (Haggard and Lee 1995). Moreover, some studies show that the inefficiency and instability of the financial and economic environment leads to reduced economic growth (Johnson and Sundararajan 1999). Thus, many liberal economists have encouraged policy makers to lift the financial restrictions that would be obstacles for economic development and growth.

Figure 2-21: Distribution of liberalized countries and repressed countries



Source: Abiad et al. (2008), and author's calculation.
Note: The financial liberalization index here ranges from 0 to 18. The higher value of index represents a greater degree of financial liberalization. 0-6 = fully repressed, 7-10 = partially repressed, 11-14 = partially liberalized and 15-18= largely liberalized This figure covers 44 countries, including 9 industrialized countries, 30 emerging market countries, and 5 less-developed countries, from 1973 to 2005 (including the US)

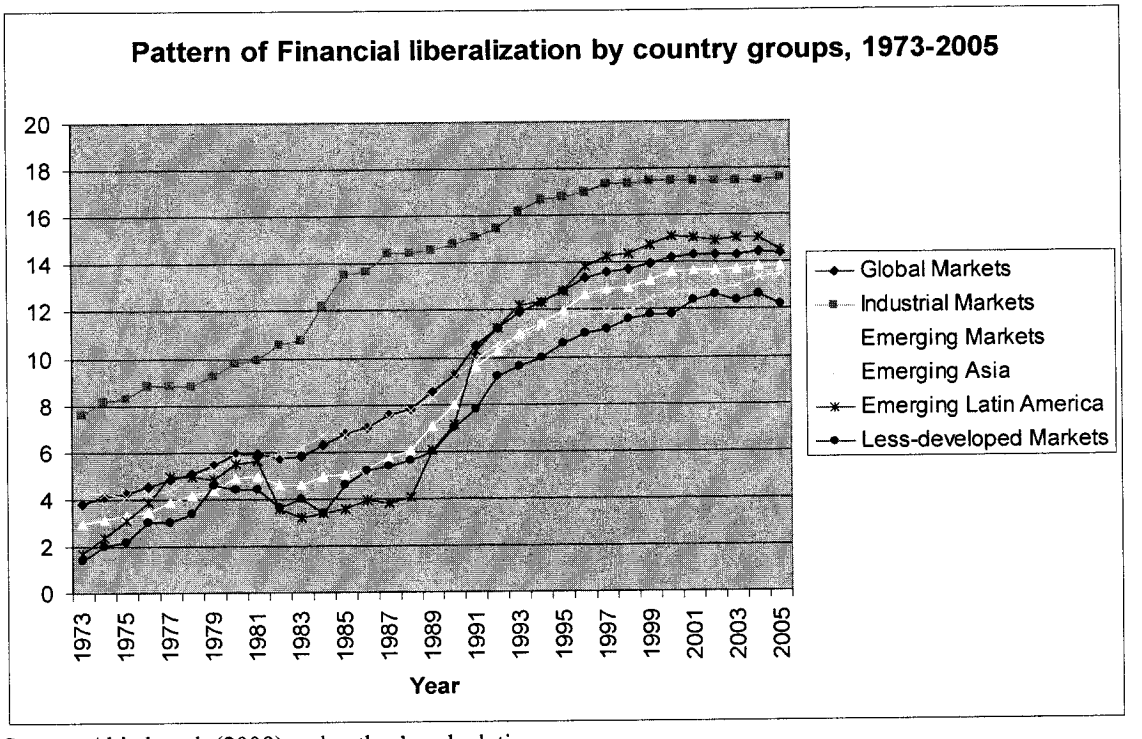
The trend toward increased financial liberalization has been identified by several economists as a major factor that led several countries, particularly in emerging markets, to experience financial crises during the1990s (Reinhart and Rogoff, 2009). In general, financial liberalization policies generate a large number of effects, including an increase in alternative channels of investments, a reduction of transaction costs, an enhancement of returns on investments, an increase in the quantitative limits on foreign ownership, and even a rise in investors' confidence, which tends to make foreign investors more willing to invest in liberalized countries (Campion and Neumann 2004). Thus, liberalized countries appear to have a substantial accumulation of international capital flows in their balance of payments. Although the entry of foreign capital helps countries finance their current account deficits, increase domestic investments, and generate economic growth, the benefit of financial liberalization does not come without a price. A surge in capital inflows tends to make countries experience real exchange rate appreciation, a deterioration of competitiveness, and therefore large current account deficits. In addition, increasing competition between financial institutions as a result of an increase in the number of participants in the financial markets may lead these financial institutions into more risk-taking behavior (Furman and Stiglitz 1998). As a consequence, this deteriorates economic fundamentals and weakens the stability of the financial sector which leaves liberalized countries vulnerable to financial crisis.

There are many questions about why financial liberalization leads some countries—particularly in emerging markets—to become prone to crisis, while other countries do not follow this pattern. Although there is no conclusive answer, the sequencing of financial liberalization and the initial economic and institutional conditions

have been mentioned as important factors in determining whether a country experiences improved economic performance or economic dysfunction after financial liberalization (McKinnon 1991, and Alfaro et al. 2006). The section aims at providing a survey of the pace, sequence, and incentives of financial liberalization in different economic regions.

The pace of financial liberalization is substantially different between industrialized, emerging market, and less-developed countries. Some industrialized countries such as the United States, Canada, and Germany largely liberalized their financial sector before the early 1970s, while the financial systems in most emerging market and less-developed countries were heavily controlled by governments (Williamson and Mahar 1998, and Abiad et al. 2008). In addition, figure 2-22 shows that, on average, the degree of financial liberalization is substantially higher over time in industrialized countries compared to other countries.

Figure 2-22: Pattern of financial liberalization by economic region from 1973 to 2005



Source: Abiad et al. (2008) and author's calculation
Note: Financial liberalization here is the combination of the six different types of financial liberalization constructed by Abiad et al. (2008). The six types of financial liberalization include elimination of credit controls and excessively high reserve requirements, elimination of interest rate controls, elimination of entry barriers in the financial system, privatization of state-owned banks, capital account liberalization and security market liberalization. Each index ranges from 0 to 3, thus the total degree of financial liberalization ranges from 0 to 18. The higher value of index represents the greater degree of financial liberalization. This figure covers 43 countries, including 8 industrialized countries, 30 emerging market countries and 5 less-developed countries, from 1973 to 2005.

The pace of financial liberalization in industrialized countries increased between 1973 and 1998 with few interruptions (Table 2-3). Moreover, most industrialized countries have largely completed their liberalization process since 1998. However, the implementation of financial liberalization policies among industrialized countries is quite different in terms of the timing, degree, and speed of reforms. For example, during the early 1970s, the credit ceiling and selective credit allocations in the United States and Germany were largely abolished, while the governments of Australia, France, and Italy still strictly controlled the allocation of credits (Table 2-3). However, most industrialized

countries were able to catch up with the United States and Germany during the late 1980s, except for Japan where, in 2005, the government still helped small and medium local enterprises, and even unproductive firms, which mostly were in the real estate and construction sectors, by encouraging commercial banks to provide additional loans to these enterprises (William and Mahar 1998, and Caballero et al. 2008).

In 2005, although most commercial banks in industrialized countries were owned by private investors, the state-owned banks in Germany and Japan still played a role in their financial systems as part of the development strategy that was inherent after World War II (Yeyati et al. 2004).[14] Although the German financial market is well developed and fairly transparent, the importance of state-owned banks creates a lack of competition in the German financial market as seen in a smaller proportion of foreign banks compared to the financial markets in most other European countries (Sheriff et al. 2003). Moreover, the European commission is concerned about the unfair competitive advantage in the banking sector where state-owned banks routinely receive funds with a lower cost of borrowing than private sector banks as a result of government guarantees (Sheriff et al. 2003 and Chakravarty and Williams 2006).

Although Australia and New Zealand reformed their financial systems very late, they pursued aggressive financial reform policies during 1984-1985 that moved them toward greater financial liberalization (Williamson and Mahar 1998). Moreover, table 2-4

[14]The state ownership of assets in the German banking system declined from 52 % in 1970 to 36 % in 1995, whereas the market share of assets in public banks in 1995 was 25 % for The European Union and 28 % for OECD countries (Sheriff et al. 2003). In addition, Japan's postal saving system is the largest financial institution in the world in terms of asset size. It accounts for $ 2.4 trillion of deposits or almost half of Japanese saving accounts (Amyx et al. 2005). However, in 2007, the Japanese government started to privatize the postal saving system by creating the Japan post bank which is a holding company but is still financed by the government. The Japanese postal bank system is expected to go public in 2010. All shares will be traded in the market, and the government will reduce its stake to about 33 % by October 2017 (Takahara 2007).

shows that both Australia and New Zealand took, on average, only 6 years and 10 years, respectively, to fully liberalize their financial systems and remove all capital controls, while France and Italy took, on average, 14 years. Moreover, the duration of the process of each financial liberalization policy is different. On average, the process of elimination of entry barriers in the banking sector tends to take 16 years to complete the whole process, while the elimination of interest rate controls normally takes only five years.

All industrialized countries have completely eliminated interest rate controls, entry barriers to financial systems, and capital flow restrictions, and have largely liberalized their security markets. However, administrative credit guidance still continues to be addressed by the Japanese government. In addition, the state-owned banks in Germany, Japan, and Italy still play an important role in their financial sectors.

In emerging markets, the trend toward financial liberalization began in the late 1970s and early 1980s with Latin American countries, especially Argentina, Chile, and Uruguay. These countries liberalized their financial sectors aggressively by removing all interest rate controls, privatizing state-owned banks, and relaxing banking restrictions. One motivation for this liberalization was to correct ongoing economic dysfunction as a result of hyper inflation (McKinnon 1991). However, after the debt crisis in the 1980s, most of the countries reversed their financial liberalization in order to stabilize their economies. For example, in 1981 and 1983, Mexico and Chile put ceilings on their interest rates and also nationalized their weak private financial institutions again (See table 2-3).

The speed of financial liberalization increased again during 1989–1996. One of the main objectives of financial liberalization, particularly decontrolling the movement of

capital, has been to attract the substantial international capital flows that have been increasing in the world market. Moreover, the rapid increase in the number of liberalized countries resulted from the fear of losing competitiveness, and also peer pressure (Calvo et al. 1993). However, the number of reversals in financial liberalization was considerably larger in emerging market countries and less-developed countries than it was in industrialized countries (Table 2-5). Among industrialized countries, only New Zealand, France, and Italy experienced a financial reform reversal.

Unlike industrialized countries, financial reform reversals appear to be a common process in most emerging market countries, especially when countries face both external and internal disturbances. For example, Argentina, Brazil, Venezuela, Indonesia, Malaysia, Philippines, and Thailand have occasionally opened their financial markets and capital accounts which mostly reflect the economic situations.[15] Moreover, occasionally these countries also impose aggressive financial controls (big bangs) particularly through credit allocation and capital accounts in order to help absorb the severity of both internal and external shocks. The imposition of directed credit controls helps these countries reallocate their credits to particular sectors that were hit by shocks. In addition, the controls on capital flows also helped stabilize their exchange rates or economies by prolonging their exchange adjustments or stopping capital reversals.

Financial liberalization in most emerging market countries began in the early 1980s. Hong Kong and Singapore, however, opened their financial markets even earlier than the other emerging market countries (table 2-3). Particularly in Hong Kong, directed

[15] Argentina, Brazil, Chile, and Mexico scaled back their financial reform, particularly in interest rate liberalization and capital account liberalization during the financial crisis of 1982. Indonesia and Thailand also nationalized their commercial banks and put some restrictions on capital flows during the financial crisis of 1997.

credit, capital controls, and security market restrictions for foreign investors were fully removed prior to 1973. In addition, all of the commercial banks in Hong Kong are privately owned. In Latin America, most countries have totally eliminated interest rate controls, and the barriers to entry particularly for foreign banks were significantly removed after 1990. Through 2005, Argentina, Brazil, and Colombia, still maintained a large number of state-owned banks. Similar to Latin America, most countries in Asia have totally removed their interest rate controls on both deposits and lending rates, except for India and Malaysia, which still retain some controls on interest rates. The share of total assets or deposits of state-owned banks in Indonesia, Korea, and Thailand is still relatively high which means that the state-owned banks in these countries still play an important role in their financial sectors. A great deal of capital account liberalization can be seen in Hong Kong, Singapore, Korea, and Taiwan, and these countries have never reversed their capital account liberalization. In contrast, Philippines, Malaysia, Indonesia, and Thailand, have reemployed capital controls several times. During the Asian financial crisis of 1997, these countries also experienced a sharp increase in the total assets of state-owned banks due to the acquisition of near-insolvent private sector banks by state-owned banks. However, some nationalized commercial banks were later sold to foreign banks. Although China still maintains heavy restrictions on its capital movement, India largely decontrolled its capital flows during the middle 2000s.

The difference in the pace of financial liberalization between emerging market countries and less-developed economic countries is in the initial period of liberalization. The introduction of financial reforms in less-developed countries tends to start very late and slowly, especially in the banking sectors and the security markets. Although many

less-developed countries deregulated the restrictions on the entry of domestic and foreign banks during the 1990s, the banking sectors continued to be monopolized by state-owned banks. In addition, through 2005, capital markets were still relatively weak and underdeveloped.

Chapter 3

The potential determinants of capital inflows

3.1 Push and Pull factors

In small open economy theory, the push and pull factors are frequently mentioned as the main factors that affect the direction and magnitude of capital flows (see Calvo et al. 1993, Calvo and Reinhart 1996, Campion and Neumann2004, and Alfaro et al., 2006). The push factors, or global factors, occur when investment in developed countries becomes relatively less attractive to developing countries and this effect pushes capital flows into relatively higher risk-adjusted-return countries, which normally are in the emerging markets. For instance, a decline in world interest rates or a recession in industrialized countries makes profit opportunities in emerging market countries relatively more attractive. Moreover, Montiel and Reinhart (1999) suggested that the increase in the role of foreign financial institutions such as mutual funds and pension funds also can act as a push factor because these institutions tend to diversify their portfolios by lending to or investing in emerging market countries.

The pull factors, or country-specific factors, are factors that help recipient countries attract capital from abroad by improvements in the risk-return characteristics of assets. These factors are typically influenced by domestic macroeconomic conditions, the effectiveness of monetary and fiscal policies, the exchange rate regime, creditworthiness, and financial and economic reforms. Furthermore, capital flows to a country also depend on political conditions and the quality of institutions (Alfaro et al. 2006).

Substantial studies have attempted to empirically investigate whether global factors or country-specific factors have more influence on the movement of capital flows

from developed countries to developing countries. For example, Calvo et al. (1993) investigated the determinants of capita flows in Latin America between 1988 and 1991 by using principal component analysis. The results showed that the role of business cycles in developed countries, particularly the sharp decline in U.S. short-term interest rates[16] and recessions in the U.S. and other industrialized countries, played an important role in attracting large capital inflows in Latin America.

However, Fernandez-Arias and Montiel (1995) found that country-specific factors such as creditworthiness can influence capital flows, and when the credit rating in a country is downgraded it may result in large capital outflows. In addition, Alfaro et al. (2006) found that capital flows are also strongly determined by institutional quality. Calvo and Reinhart (1996) suggested that regional location matters, i.e., when a large country receives capital flows, the capital flows to small countries located in the same region appear to increase.

Several studies have examined the determinant of different types of capital inflows, e.g., foreign direct investment, portfolio investment, and private loan flows. For example, Carlson and Hernandez (2001) found that countries with floating exchange rates appear to attract more short-term debt inflows, while countries with fixed exchange rates appear to attract more direct and portfolio investments. This is because the ability to export in a country, where its foreign direct investment concentrates on the export sector, declines when the nominal exchange rate appreciates. Calvo et al. (1996) showed that countries with sound domestic fundamentals and strong financial institutions are likely to

[16] During the 1990s, most Latin America external debts to commercial banks were tied to floating rates. The decline in U.S. short term interest rates led to a reduction in the external debt service which brought down the insolvency risks of Latin American debtors. As a result, Latin America debtors could borrow more external debts. (Calvo et al. 1993)

attract capital on a larger scale, and with a higher proportion of long-term investments. The World Bank (2007) also found that an increase in FDI inflows is sensitive to sound macroeconomic fundamentals such as high investment per GDP, low inflation, and low real exchange rates, but not for global interest rates. Therefore, FDI flows appear to rely heavily on pull factors rather than push factors.

Chuhan et al. (1993) found that equity and bond flows from the U.S. to Latin America have been equally influenced by global effects, mainly U.S. interest rates, U.S. industry production, and country-specific effects, particularly country creditworthiness. In contrast, in Asia, country- specific factors tend to induce more equity and bond flows than do global factors.

Calvo et al.(1993 and 1996) described the three main factors that shifted foreign lending to emerging markets in the early 1990's: 1) a substantial decline in world interest rates, along with a recession in several industrialized countries, 2) the trend toward international diversification of investments in financial sectors such as mutual funds and life insurance, and 3) the rapid trend toward trade and financial liberalization. These studies suggest that FDI flows tend to be determined mainly by the pull effect, or country-specific factors, while portfolio investment and loan flows are influenced by both the push and pull effects,

However, the World Bank (1997) suggested that the factors that determine capital inflow have changed over time. Calvo (1993) also confirmed this argument by finding that the importance of the role of domestic factors in driving capital inflow may be increasing. However, Montiel and Reinhart (1999) argued that both factors are important for inducing capital flow, but they play different roles. They suggested that while push

factors may help explain when the new capital flows would enter and how large the capital flows would be, pull factors may be necessary to explain where or which countries would absorb these capital flows.

3.2 Financial liberalization: the determinant of capital flows

Several studies have suggested that the trend toward financial liberalization in the early 1990s was a crucial factor in bringing enormous amounts of capital inflows into emerging markets (Furman and Stiglitz 1998 and Reinhart and Rogoff 2009). However, most empirical studies appeared to focus only on the effect of openness (or control) of a capital account on cross-border capital flows. But there is no one particular policy toward financial liberalization that leads to a change in the movement of capital flows. Many policies, such as the elimination of interest rates and directed credit controls, a relaxation in the entry barriers in the banking system, privatization in the financial sector, or even openness in the security market can change prices, transaction costs, returns on assets, and the quantitative limits on ownership and investment (Campion and Neumann, 2004). As a result, these policies tend to impact the behavior of foreign and domestic investors which affects the movement and structure of capital flows.[17]

These policies tend to lead to greater flows into liberalized countries, but how each policy induces and shapes different types of capital flows appears to be somewhat in question. Therefore, this section attempts to provide theoretical frameworks that explain

[17] For example, given that a country imposes a tax or fee on the capital flows into the country, if that country relaxes some restrictions, such as on bank entry barriers or equity markets, and these relaxations increase the return perception which exceeds the cost of capital restrictions. Foreign investors, then, would have an incentive to invest in the countries even if they have to pay a tax or a fee to bring funds into the country.

how capital flows behave in response to deregulation in the financial sector and the removal of capital flow restrictions.

3.2.1 Elimination of controls over credit allocations and the reserve requirement

The controls on credit allocations and reserve requirements were key financial policies that developing countries used to support export-oriented strategies, and finance fiscal balance (Montiel 2003).[18] The implementation of directed credit controls is normally accompanied by restrictions on interest rates. These policies appear to be initially successful for governments in reducing the cost of borrowing, allocating credit to priority sectors, and creating extra revenues that finance their fiscal balance (McKinnon, 1993). However, the inefficiency of resource allocation, moral hazard,[19] lack of competitive incentive, and lack of transparency are inherent consequences of these types of financial repression. This can lead to adverse effects on economic growth and welfare (Honohan and Stiglitz 2001). For example, during the 1990s, the Japanese government strongly encouraged banks to allocate their credits to unproductive firms, the so-called Zombie firms.[20] As a result, the misallocation of credit created negative externalities in terms of a reduction in the entry of new firms and investments (Caballero et al. 2008).

When credit controls and reserve restrictions are removed, financial institutions tend to respond by reducing their holdings of excessive reserves that were built up

[18] Governments may raise the level of the reserve requirement and require domestic financial institutions to purchase government securities with their reserves.
[19] "banks may have an incentive to offset the cost of maintaining minimum reserve requirement by investing in riskier projects." (Honohan and Stiglitz 2001)
[20] The loans appear to concentrate on the real estate or construction sectors, which tend to underperform, rather than the manufacturing sectors (Caballero et al. 2008).

through credit controls, and by allocating more funds to the private sectors that previously could not access credit but had a higher risk-adjusted return. In addition, market-based credit allocation can create an incentive for lenders to gather more information about borrowers in order to reduce their risk from information asymmetry, which could also improve the allocation of credit (Caprio et al. 2001). However, as a result of the reduction of financial constraints, this could turn into a rapid expansion of credit growth.

Foreign direct investment

Restrictions on directed credit control appear to provide a competitive advantage to subsidized firms against the foreign firms that are operation in the domestic market. The cost of investment for foreign firms may be high relative to that for the domestic firms that have been assisted by a government. The higher cost of investment for foreign firms relative to domestic firms discourages the entry of foreign investors. In addition, for the banking industry, foreign financial institutions tend to be reluctant to enter the market if they are obligated to keep a high portion of funds as reserve requirements, and their allocations of funds are based on government controls. The credit control and reserve requirement definitely become obstacles for foreign corporations and financial institutions to operate in repressed countries.

The removal of directed credit control can create equality of competition between domestic firms and foreign firms in the domestic market, which should lead FDI flows into liberalized countries. Furthermore, the policy can increase the willingness of foreign banks to participate in the banking sector as a result of market-based resource allocation and a cost reduction since the banks are not subject to high reserve requirements. In

addition, an expansion of credit following the deregulation of credit controls and reserve restrictions may generate sharp asset price increases in the real estate sector. An increase in housing prices can create alternative investment opportunities for foreign investors which would directly encourage FDI inflows. Thus, the removal or relaxation of directed credit controls and the reserve restrictions is expected to have a positive impact on foreign direct investment flows.

Portfolio investment flows

Besides the positive externalities in capital markets through an increase in the efficiency of credit allocation, equality of competitiveness, cost reduction and transparency, an expansion in lending resulting in the removal of directed credit controls, and the reserve requirement, can also have an impact on financial asset prices such as equity prices. The expectations of further price increases can attract more foreign investors into allocating their funds to the domestic capital market. The removal or relaxation of directed credit controls and the reserve restrictions is also expected to have a positive effect on foreign portfolio flows.

Private loan flows

A lower return on investment and an uncompetitive financial market associated with directed credit controls may encourage capital flight and discourage domestic banks from providing loans in domestic markets (Montiel 2003). The removal of these restrictions makes domestic banks free to provide loans to sectors which have higher risk-adjusted returns. The improvement in credit allocation and an expansion of credit markets may lead to an increase in a need of offshore borrowing.

Furthermore, the removal of directed credit controls can increase the ability of households to access credits. As a result, households have less incentive to save money to smooth the intertemporal patterns of their consumption (Jappelli and Pagano 1994). Therefore, the deregulation of credit controls appears to reduce saving and widen the gap between the growth of credit and the growth of deposits (Montiel 2003). A shortage in the supply of domestic credits provides an incentive for domestic banks and firms to borrow from abroad. As a result, this should have a positive impact on private loan flows.

However, many countries that depend heavily on directed credit appear to create highly leveraged and unproductive firms. The removal of these financial assistances increases the cost of borrowing to these firms, which previously enjoyed subsidized credits, and makes them more vulnerable to credit risks. Therefore, foreign creditors may be reluctant to provide additional loans or roll over their existing loans to these firms. In addition, the removal of reserve requirements directly increases the supply of domestic credit. As a result, foreign loans may decline. Thus, a lift in credit restrictions and reserve requirements may have both a positive and negative impact on private loan flows.

Net capital flows

Although the elimination of directed credit control and reserve requirement is expected to have a positive impact on FDI flows and portfolio flows, the effect of these policies on private loan flows is ambiguous, Thus, net capital flows might increase or decrease when the directed credit controls and reserve requirements are abolished.

3.2.2 Elimination of interest rate control

During the past three decades, governments, particularly in emerging markets, have tended to control interest rates by setting both deposit and lending rates well below the market-clearing rates for consumer protection, fiscal pressures,[21] growth-oriented strategies, and specific political purposes[22] (Montiel 2003 and Caprio et al.1999). However, interest rate controls typically lead to a shortage of supply and excessive demand for loans, and creates the likelihood of credit rationing. Controls on interest rates can generate a deterioration of economic performance through an underinvestment in good projects but have less of an ability to access credits.

Moreover, in terms of financial intermediaries, interest rate controls tend to reduce the willingness to borrow from abroad because the interest rate ceiling makes the cost of borrowing from abroad relatively more expensive than the cost of acquiring funds from domestic sources. Therefore, banks or other intermediaries have no incentive to increase the supply of funds to markets. A continuing shortage of funds also tends to increase the cost of capital, particularly for investors who have less ability to access capital or may have riskier projects.[23] In both cases, a rise in the cost of capital would cause a fall in domestic investments which would turn into a decline in economic growth.

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[21] Typically, governments in developing countries face a difficulty in raising revenue through conventional methods, so governments have to rely on implicit taxation of the financial sectors; for instance, governments can borrow at a lower interest rate. For more details on the motivation for financial repression see Montiel (2003)

[22] For example, Caprio et al. (1999) suggest that governments attempt to keep the cost of investment down by putting a ceiling on the lending rate in order to stimulate domestic investment or to allocate some funds at a subsidized rate to specific sectors. This paper also showed that financial repression in Europe appears to have lowered real interest rates by 150-200 basis points

[23] This is because a limitation in the supply of funds makes banks and financial institutions more concerned about the perceived risk of customers. Banks and financial institutions are more likely to lend funds to the most secure customers. (Caprio et al. 1999)

In developing market countries, the removal of interest rate controls tends to be followed by a rise in the volatility of interest rates. In the short run, after removing interest rate controls, artificially suppressed interest rates appear to increase to market-clearing rates. However, in the long run, after countries become more liberalized, their interest rates would theoretically converge to the world interest rate (Honohan 2001).

Foreign direct investment

Harrisona and McMillan (2003) suggested that an interest rate control policy appears to provide some advantages to multinational enterprises that invest in developing markets. In the credit market imperfection in which banks cannot distinguish between risky and safe borrowers, a shortage in the supply of loans caused by interest rate controls can create an incentive for local banks to lend to foreign firms that invest locally rather than lending to domestic firms. This is because it appears to be costly and risky to lend to domestic firms which normally are considered less profitable and have less collateral than foreign firms. In this scenario, the removal of interest rate controls may have an adverse effect on foreign direct investment flows.

However, Rodrik (1999) argued that most FDI flows go to countries that are economically more productive, faster growing, and more profitable. Therefore, the elimination of interest rate controls may have no impact on FDI flows. In addition, Montiel (2003) also suggested that, "FDI flows are not intermediated through the domestic financial system, they are not subject to misallocation as the result of any distortions that may exit in that system". The movement, then, of interest rates may not be a major concern of foreign investors in the decision to expand their businesses abroad.

However, The World Bank (2007) has shown that in recent years the FDI has grown faster in services than in goods. Given no entry barrier in banking sectors, the deregulation of interest rate controls may encourage foreign banks or financial institutions to enter the market due to increased opportunities for profit. Interest rate liberalization may provide a signal to foreign investors that governments are willing to open up additional financial markets in the near future. This should have a positive impact on the FDI flows. Thus, the removal or relaxation of interest rate controls should have either a positive effect or no effect on foreign direct investment.

Portfolio investment flows

From the microeconomic perspective, if companies are financed partially through domestic financial institutions, the upward pressure on interest rates due to the elimination of interest rate controls should lead to an increase in the cost of capital. As a result for larger leveraged firms, this can be translated into an increase in corporate costs and higher risk toward insolvency, which could lead to downward pressure on the stock price of companies. Therefore, foreign investors may be reluctant to invest in the stock markets.

However, an increase in the cost of borrowing may lead businesses to focus more on alternative sources of funding such as equity. Moreover, foreign investors may translate the removal of interest rate control as a signal that government would have a further financial reform in the future. This signal effect can increase the confidence of foreign investor to invest in the security market. Thus, it is unclear whether the elimination of interest rate controls has a net positive or negative impact on portfolio flows.

Private loan flows

As a result of interest rate liberalization, the increase in deposit and lending rates tends to make the cost of acquiring funds from domestic savings, and the cost of borrowing from domestic financial markets, relatively higher than before the removal of interest rate controls. In other words, interest rate liberalization makes the cost of borrowing from abroad cheaper. Therefore, banks or private corporations have an incentive to reduce their cost of capital by borrowing more from foreign financial institutions. In addition, the upward pressure on domestic interest rates after liberalization also leads to a rise in arbitrage opportunities for foreign financial institutions. As a result, foreign private loan flows should rise when a government liberalizes its interest rates. However, similar to portfolio flows, heavily indebted borrowers become more exposed to the risk of insolvency as the cost of borrowing rises. An increase in the risk of insolvency could put downward pressure on the rollover of credit from abroad, which would have a negative impact on private loan flows. Thus, the removal or relaxation of interest rate controls should have both a positive and negative impact on private loan flows. It is not clear to identify the net effect of the policy on private loan flows.

Net capital flows

The effect of the removal of interest rate controls on FDI, portfolio investment and private loan flows is inconclusive. Therefore it is ambiguous to identify the impact of this policy on net capital flows.

3.2.3 Elimination of entry barriers for banks

Monopoly power and collusive price-setting in the banking industries, mainly inherited from very strict regulation in bank entry, appears to distort the efficiency of resource allocations and reduce competitiveness in the financial market (Montiel 2003). Montiel (2003) also suggested that collusion in the banking industries tends to create substantial profit margins by setting low deposit rates and high lending rates. In addition, restrictions in bank entries tend to limit financial deepening because there is no incentive for existing banks to develop financial innovations or expand the scope of financial activities to compete within the market.

The absence of entry barriers in the banking sector can motivate new players, both domestic and foreign, to enter the financial market that can promote more competitive behavior in the financial system. The increase in competitiveness forces an incumbent to improve efficiency (reducing interest rate spreads), promote risk management, adjust risk-taking behavior, and reduce its operation costs or set prices at competitive levels (Caprio et al. 2001). Furthermore, a new entrant can help local firms or domestic residents increase their ability to access capital by targeting niche markets which the incumbent either cannot operate in or ignores. Thus, credit can be allocated more efficiently. Moreover, after the financial crisis of 1997-1998, deregulation in bank entries in order to allow foreign investors to participate in the bank system or increase their percentage of ownership, for example in Thailand and Korea, has increased substantial cross-border mergers and acquisitions in their banking systems (Rajan 2009).

Foreign direct investment

Newcomers can participate in the banking market in many forms, such as establishing totally new banks, mergers and acquisitions of existing banks, and even joint ventures with domestic banks. The relaxation of entry barriers in the banking sector has both direct and indirect impacts on the increase of FDI flows. This policy could increase the number of foreign banks operating in the banking industry directly. Moreover, the entry of foreign banks makes foreign corporations, which are skeptical about the performance and stability of local banks, more confident in the local financial system. In addition, the removal of entry barriers in the banking sector may act as a signal from authorities of further financial policy reforms, particularly in the banking sector. According to both effects, the removal of bank entry barriers could induce more foreign direct investments.

Portfolio flows

As with foreign direct investment, the removal of bank entry barriers encourages the mergers and acquisitions of local existing banks directly through the stock market. In addition to the direct effect, an increase in the number of domestic banks and foreign banks as a result of allowing foreign investors to participate in the banking sector may provide positive externalities to the stock market by increasing the size of the market, volume of trades, and liquidity in the market. Furthermore, Zhang (1995) showed that cross-border mergers and acquisitions in the banking system appear to increase the wealth gain of target firms. [24] Thus, an increase in size, liquidity, and wealth gains could

[24] Zhang (1995) found that mergers in the U.S. bank industry led to a significant increase in the stock prices of both targets and bidders after the merger announcement. Moreover, target shareholders benefited much more on a percentage basis than the acquiring shareholders

also attract additional foreign investors to invest more in the stock market. The removal or relaxation of entry barriers in banking sectors should have a strong positive effect on foreign portfolio flows.

Private loan flows

The effect of the internationalization of the banking sector on private loans tends to be ambiguous. Allowing foreign banks to participate in the domestic financial market may reduce off-shore borrowing due to an increase in the supply of domestic credits. However, although the removal of entry barriers in banking sectors could reduce credit constraints, new entrants, both local and foreign investors, also have the ability to indirectly create excessive credit consumption. New participants typically bring more competition into financial markets that could diminish the franchise value of a bank. To survive in an intensified competitive market, the existing financial institutions need to reduce their costs by searching for new low-cost sources of funds, which could be funds from abroad if the returns of borrowing outweigh the costs and risks. Furthermore, with high competition in the financial markets, financial institutions are likely to generate and increase their revenues by gaining more market shares by creating more loans and even encouraging more excessive risk-taking behavior. By doing so, it could easily lead to a credit boom, which could put upward pressure on the need for funds from abroad. Therefore, the removal or relaxation of entry barriers in the banking sector is expected to have either a positive or negative effect on foreign private loan flows.

Net capital flows

Although the removal of entry barrier in banking sector is expected to have a positive impact on FDI flows and portfolio flows, it is unclear whether this policy has a

positive or negative impact on private loan flows. Therefore, it is difficult to identify the effect of this policy on net capital flows.

3.2.4 Privatization of state-owned banks

State-owned banks tend to allow governments easy access to fiscal resources with the lower-than-market cost of capital. The objective of most state-owned financial institutions is not to concentrate on the profit margin but for social welfare or political reasons (Meggionson 2005). Undoubtedly, the transactions and performances of most state-owned banks are guaranteed either explicitly or implicitly by their government. Therefore, inefficiency and the unproductive the use of resources, moral hazard, and corruption appear to be the normally inherent consequences of state-owned banks.

The main motivations for the privatization of state-owned enterprises are different depending on the geographic region. In Latin America, the main objective of privatization was to generate more revenues after the debt crisis of 1980s. In Eastern Europe, privatization has been part of the transformation from socialism to capitalism. In Asia, moving toward globalization and reducing fiscal deficits as a result of the poor performance of public enterprises are the main motivations (Sader 1995). Although the motivations for privatization are different, the beneficial outcomes appear to be similar. The increase in revenues from the sale of public assets and the limitation of public sector expenditures are clearly seen as direct benefits. In addition to the improvement of efficiency and productivity, transparency and the limitation of rent seeking as indirect outcomes of privatization, privatization also acts as a clear signal that a country is more open to private investment.

Foreign direct investment

Privatization was an important factor in leading to the rapid increase in foreign direct investment in developing countries, particular in Latin America, during the 1980s and 1990s (The World Bank 1997). In addition, the number of foreign participants involved in privatization increased over time. However, the types of participation varied among the different geographic regions. In Eastern Europe, due to a lack of domestic investment capital, the governments seem to strongly encourage foreign investors to become involved in the many privatizations. In South Asia, most privatization transactions were dominated by domestic investors due to the unattractive economic environment (Sader 1995). In addition, according to many financial crises, the fire sale of insolvent state-owned banks appeared to attract foreign investors rather than domestic investors due to the lack of domestic financial support during the crisis.

Privatization of state-owned banks does not only have a direct impact on FDI flows through an increase in the number of foreign participations in the sales of public assets, but also it has an indirect impact through signaling effects that show that a government is open to more private economic activities. Thus, these direct effects and signaling effects may attract more foreign direct investment. The privatization of banking sectors is expected to have a strong positive impact on foreign direct investment flows.

Portfolio flows

As with FDI flows, privatization in banking sectors should also have a significant impact on portfolio flows. Privatization appears to attract foreign institutional investors, such as insurance companies and mutual funds that look for new opportunities to diversify their portfolios through investment in developing countries. Moreover, most

privatization transactions go through the direct sales of public assets to individual investors and public offerings on local or international stock exchanges (Sader 1995). Therefore, privatization should also lead to an improvement of capital market due to an increase in the number of shareholders, share trading volume, and stock market capitalization (Megginson and Boutchkova 2000).

Private loan flows

Sapienza (2003) found that in Italy, on average, borrowers from state-owned banks are charged a lower interest rate than borrowers from privately owned banks. Therefore, in the absence of government assistance after privatization, the cost of borrowing from privatized banks may increase. The borrowers, particularly large corporations, may have an incentive to borrow abroad if the cost of borrowing from abroad is lower. As with large corporations, a decline in government support may lead privatized banks to rely on foreign borrowing which leads to an increase in private loan flows. In addition, an increase in efficiency and productivity, and an improvement in transparency may increase the willingness of foreign creditors to lend to privatized financial institutions. On the other hand, the absence of explicit or implicit government guarantees may reduce the willingness of foreign creditors to lend to privatized banks if those banks are inherently poor performers due to previous nationalization. Therefore, the effect of privatization of banking sectors on private loan flows is ambiguous.

Net capital flows

Although an increase in the number of foreign participants in the sale of public assets and an improvement of capital market following privatization of state-owned bank should lead to a rise in FDI and portfolio investment flows, the reduction of the

willingness of foreign creditors to lend to privatized banks as a result of the absence of explicit or implicit government guarantees tends to decrease private loan flows. Therefore, it is not clear to identify the effect of privatization of state-owned bank on net capital flows.

3.2.5 Capital account liberalization

The main objective of capital account controls in emerging markets is to stabilize macroeconomic conditions from internal and external shocks, and to maintain the efficiency of monetary policies (Montiel 2003). Authorities typically impose controls on the quantitative limit of capital inflows or issue implicit or explicit taxes on the entry of capital inflows when a country faces abundant international liquidity and the exit of capital outflows when a country faces capital flight resulting from internal and external shocks (Herrera and Valdés 2001). Moreover, controls on exchange rates are normally accompanied by capital controls because a high fluctuation of capital flows makes the exchange rate difficult to manage (Montiel 2003).[25] Furthermore, a country with a fragile banking system appears to adopt capital controls as a buffer for short-term capital inflows reversals as a result of macroeconomic shocks and a sudden loss of investors' confidence (Prasad et al. 2003).

However, it is difficult to sustain the effectiveness of capital control in the context of increased trade integration, capital flows, high pressure from other domestic policies, or the policies of other countries (Aizenman 2002). The trend toward capital account

[25] Some industrial countries have imposed capital controls in order to cope with the Bretton Woods system of fixed exchange rates. In addition, many countries in Asia during the financial crisis of 1997, such as Thailand, Malaysia, and Indonesia also imposed controls on capital in order to decelerate the depreciation of their currencies (Montiel 2003).

liberalization has been increasing over time. The possible motivation lies in the enhancement of the efficient global allocation of capital that brings an increase in economic growth, employment opportunity, and living standards in developing countries (Prasad 2003)[26]. In addition, the openness of capital accounts can generate a signaling effect to foreign investors that a country has a strong commitment to provide efficient economic policies and market discipline. Otherwise, the deterioration of the economy that results in unsound policies and weak market discipline would put pressure on foreign investors to suddenly pull their capital out of the country.

Foreign Direct investment

Some developing countries, such as Chile, have used capital controls as a tool to tilt the capital flow structure toward more stable flows, such as FDI flows, which are less subject to the sudden stops and rapid reversals associated with changes in investor sentiment (Prasad et al. (2003). Montiel and Reinhart (1999), and Carlson and Hernandez (2002), found that capital control tends to increase the share of foreign direct investment.[27] However, Desai et al. (2006) found that multinational affiliates located in countries with capital controls face higher interest rates on local borrowing than do affiliates of multinational enterprises in countries without capital controls. As a result, capital controls could discourage FDI inflows. Montiel (2003) also argued that capital controls may not be effective for regulating the movement of FDI flows because multinational enterprises can avoid the controls by using transfer pricing.

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[26] The empirical evidence shows that there is no consensus on the effect of capital account liberalization on economic growth. Kose et al. (2006) found that a country with initial support conditions, such as strong financial market development, better regulation and supervision, and sound macroeconomic policy, experiences an increase in economic growth followed by capital account openness. On the other hand, the openness of capital account would make the country with weak financial market development and unsound economic environment prone to financial crisis.

[27] However, this study shows that capital controls do not have any significant effect on the volume of foreign direct investment flows.

Capital account liberalization appears to encourage foreign investors to allocate their funds to the domestic market by lower transaction costs or by welcoming more foreign investors. The removal of the quantitative limits of investments also directly increases the share of foreign transactions, not only in the goods industry, but also in the service industry. Moreover, the removal of capital controls may not have much impact on the foreign investors pulling out their investments because most foreign direct investments are associated with long term contracts or with long-term assets. Therefore, capital account liberalization is expected to have a strong positive and significant effect on foreign direct investment.

Portfolio flows

Montiel and Reinhart (1999) found that restrictions on capital movements were associated with a significantly lower share of short-term flows. The removal of capital controls seems to affect portfolio flows in two ways. First, this policy can provide opportunities for foreign investors to diversify their portfolio by investing in international stock markets. However, secondly, the cost of an exit declines as a result of the removal of capital outflows. Foreign investors who are reluctant to leave a market due to the higher cost of exit may sell their existing portfolio suddenly after the policies have been declared. Therefore, the effect of capital account liberalization on new portfolio flows is ambiguous, while it should increase gross flows in both directions.

Private loan flows

Many academics have blamed financial liberalization, particularly the opening of capital accounts, as one of the major causes of the financial crisis episodes during the 1990s. Relaxation in capital flows restrictions tends to impact the movement of capital

flows directly by reducing transaction costs and the quantitative limitation of foreign capital flows. For example, in Thailand, the establishment of the Bangkok International Banking Facilities (BIBF) which provided incentives such as tax benefits and the reduction of minimum reserve requirements, particularly to offshore borrowing, tended to encourage substantial short-term loan flows during 1993-1996 (Radelet and Sachs 1998). Moreover, the removal of capital controls, particularly in developing countries without prudential regulation and supervision, makes a country more prone to financial crisis by exposing it to unproductive capital flows or speculative flows (Radelet and Sachs 1998). Kawai and Takagi (2008) also suggest that a weak and ineffective regulatory framework, and less capacity to absorb large capital inflows in the banking system, lead to inappropriate lending decisions and thus send a financial system into a vulnerable zone. Moreover, most emerging Asian countries relied heavily on banks rather than capital markets as intermediaries for capital flows (Johnston and Sundararajan 1999). As a result, it increased the vulnerability to sudden stops and reversals of capital flows and eventually triggered the crisis. The effect of capital account liberalization should have a positive and significant impact on private loan flows.

Net Capital flows

In addition to a reduction of transaction costs, the removal of capital flow restrictions can attract additional foreign flows because this policy could signal that capital taxation would be less likely in the future (Montiel 2003). On the other hand, the deregulation of capital controls, particularly for outward flows, also reduces the cost of investment abroad by domestic investors which would lead to a decline in net capital

flows. Therefore, the effect of capital account liberalization on net capital flows is ambiguous.

3.2.6 Security market liberalization

The underdevelopment of the security market and a strict imposition of quantitative limits on foreign ownership tend to create a higher cost of capital and generate a direct negative impact on domestic investment. As mentioned previously, a poorly developed security market leads a country into relying heavily on short-term funds that are intermediated by banks as a result of the limitation of alternative source of funds.

Security market liberalization not only increases the size and liquidity of an economy by raising both foreign and domestic players in the domestic market, but also facilitates an improvement in international risk-sharing, and lessens the transaction costs which have a beneficial consequence on domestic investment and economic growth. Bekaert et al. (2003) found that equity market liberalization appears to have a positive impact on domestic investment and GDP growth in emerging markets. An increase in financial integration with global markets as a result of capital market liberalization also promotes financial deepening.

Foreign direct investment

Capital market liberalization can stimulate FDI directly by increasing alternative channels of investments and create opportunities for diversification to foreign investors. Also, capital market liberalization also makes the process of mergers and acquisitions easier, and increases alternative sources of capital for domestic companies. Foreign companies that invest in a liberalized country can acquire funds not only from their

headquarters, but also from an IPO, or issue bonds which can create an incentive for foreign investors to enter the domestic markets. The indirect benefit of capital market liberalization is to act as a signal of the further improvement of economic reforms. According to the above reasons, capital market liberalization should have a strong positive and significant effect on foreign direct investment.

Portfolio investment flows

The opening of the security market can directly cause an increase in the number of foreign participants in the security market. Furthermore, several studies, such as Henry (2000), found that using the event study in emerging markets, stock market liberalization generates, on average, a beneficial impact on stock prices. The liberalization can create abnormal returns of 3.3% per month on a country's aggregate equity price index as a result of the reduction of the cost of equity capital from risk sharing between domestic and foreign agents. Therefore, an increase in the expected return in stock markets as a result of the stock liberalization would attract foreign investors to participate in the stock market. Therefore, the security market liberalization is expected to have a positive and significant impact on portfolio investment flows.

Private loan flows

When a capital market is not well-developed, and foreign investors are not welcome, onshore and offshore borrowing appear to be the main source of funds for repressed countries. An increase in onshore and offshore borrowing has an endogenous effect on the default risk which pushes up the cost of future borrowing if financial institutions or corporations maintain higher levels of debt in their capital structure.

Therefore, improvements in the security market, and removal of restrictions on the number of foreign ownership, may not only create an alternative source of funds but also reduce the importance of funds that are intermediated through banks. The openness of security market should have a negative impact on private loan flows.

Net capital flows

Although security market liberalization is expected to have a positive effect on FDI and private loan flows, an increase in alternative investment channels should lead to a decline in the importance of private loan flows. As a result, it is unclear how to identify the effect of security market liberalization on net capital flows.

Summarization of the expected impact of financial liberalization policies on specific capital flows

	FDI	Portfolio flows	Private loan flows	Net capital flows
1. Elimination of controls over credit allocation and reserve requirements	+	+	+ and -	+ and -
2. Elimination of interest rate controls	+ or no effect	+ and -	+ and -	+ and -
3. Elimination of entry barriers in banking sector	+	+	+ and -	+ and -
4. Privatization of state-owned banks	+	+	+ and -	+ and -
5. Capital account liberalization	+	+ and –	+	+ and -
6. Capital market liberalization	+	+	-	+ and -

Chapter 4

Empirical Methodology and Data

4.1 Methodology

This study estimates a set of panel regressions that explain how financial liberalization affects international capital flows in terms of the direction, magnitude, composition, and probability of a surge in capital flows. My panel data comprise 43 countries, including 8 industrialized countries, 30 emerging market countries, and 5 less-developed countries, from 1973 to 2005. See appendix 1 for the list of countries.

4.1.1 Model I. Direction and magnitude of capital flows

The panel regression analysis in model I examines how the direction and magnitude of capital flows are affected by financial liberalization policies by controlling the push effect, the pull effect, the quality of prudential regulation and bank supervision and time effects. The methodology I adopt is similar to that used by Montiel and Reinhart (1999).

$$Capital\ flows_{i,t} = \alpha_i + \beta\ FL_{i,t} + Push\ effects_{i,t-1}\ '\rho + Pull\ effects_{i,t-1}\ '\theta + \delta\ institutional\ variable_{i,t-1} + time\ dummy\ variables + \varepsilon_{i,t}$$ [28]

$Capital\ flows_{i,t}$ is country i at time t which measures the volume of the different types of capital flows: foreign direct investment, portfolio investment, private loan flows, and net capital flows over GDP. These flows also can be segregated into foreign flows

[28] I estimate country fixed effects to correct the omitted variable bias which are inherent from differences in economic structures. I also use time dummy variables to capture time effects. Standard errors have been corrected for general forms of heteroskedasticity.

and domestic flows. (See the details of foreign flows and domestic flows in the data section)

$FL_{i,t}$ indicates country i stance in terms of financial liberalization policies over period t. Financial liberalization is segregated into six categories: the elimination of credit controls and reserve requirements, the elimination of interest rate controls, the elimination of entry barriers in the banking sectors, the privatization of state-owned banks, capital account liberalization, and security market liberalization (Abiad et al. 2008). I also include the degree of total financial liberalization which is the sum of six different types of financial liberalization policies mentioned above to examine the effect. I assume that changes in prices, returns on assets, or a limitation on foreign ownership as a result of financial liberalization should have a fairly prompt effect on the decisions of foreign and domestic investors regarding the allocation of capital, particularly in the form of portfolio investment and lending. Since we do not have information on the timing of liberalization during the year and there will be some lags in adjustment, we look at capital flows during both the contemporary year and the one following.[29] In addition, in this section, because most financial liberalization policies are highly correlated, all types of financial liberalization are investigated separately.[30]

The $Push\ effects_{i,t-1}$ represents a vector of one period lag of global factors that make the investment in developed countries less attractive relative to developing countries. I adopt two variables that are commonly used in the literature of the determinants of international capital flows. The first is U.S. GDP growth, and the second

[29] I also investigate the effect of one period lag of financial liberalization on capital flows, but the results are not much sensitive to the time lag.
[30] According to this methodology, we can also compare the magnitude of estimated coefficient among different types of financial liberalization policies. Therefore, we can see which types of financial liberalization have the most effect on capital flows.

is the interest rate differential which is the difference between domestic and U.S. short-term deposit rates, as proxies for the push effects.

Pull effects$_{i,t-1}$ represents a vector of one period lag of domestic factors that help recipient countries attract capital from abroad. I employ the common domestic macroeconomic indicators such as inflation, domestic credit over GDP, domestic GDP growth, and trade openness as proxies for the pull effect.

Institutional variable$_{i,t-1}$ represents the enhancement of prudential regulation and bank supervision of country i at time t-1.

Time dummy variables$_t$ is binary variables which takes value 1 at a given year and 0 otherwise. We put time dummy variables to capture the pattern of capital flows which often has both increasing and decreasing trend.

α_i is the fixed effect and ε_{it} is an error term.

The push and pull effects, and the quality of financial institution are lagged by one year in order to capture the delayed response of capital flows to macroeconomic variables, and avoid the problems associated with endogeneity.[31] The data description and sources are reported in appendix 2.

4.1.2 Model II. Composition of capital flows

The panel regression analysis in model II examines how the composition of capital flows is affected by financial liberalization policies by controlling the push and pull effects, and the quality of financial institution variables.

[31] I also checked the robustness of the model by using other variables such as US productivity, Japanese GDP growth, Japanese interest rates, and an average of OECD interest rate. But the effect of financial liberalization on capital flows is not sensitive to those variables.

$$\textit{Composition of Capital flows}_{i,t} = \alpha_i + \beta_1 FL_{i,t} + \textit{Push effects}_{i,t-1}\ '\rho + \textit{Pull effects}_{i,t-1}\ '\theta + \delta\ \textit{institutional variable}_{i,t-1} + \textit{time dummy variables} + \varepsilon_{i,t}$$

The *Composition of capital flows*$_{i,t}$ is a measure for country i at time t measure of the share of the specified type of private capital flows over gross flows. These flows are also segregated into foreign flows and domestic flows. For example, FDI flows over gross foreign flows, foreign portfolio investment flows over gross foreign flows, and foreign private loan flows over gross foreign flows. Since the value of foreign flows and domestic flows can have both a positive or negative value, the sum of the ratio of the specified type of foreign flows (domestic flows) to gross foreign flows (gross domestic flows) will not equal one if one of the particular types of foreign flows (domestic flows) has a negative value. To make the sum of the ratio equal one, this analysis excludes the data of foreign and domestic flows from the year that has negative value. Thus the ratio of the specified type of flows to gross flow is always positive. See Capion and Neumann (2004).

The variables for the financial liberalization index, the push and pull effects, and the institutional variable I adopted are the same as those in model I. Also, I estimate country-fixed effects to correct the omitted variable bias. In addition, standard errors have been corrected for general forms of heteroskedasticity.

4.1.3 Model III. The probability of a surge in capital flows

The panel regression analysis in model III examines whether financial liberalization policies are associated with the probability of a surge in capital flows. I estimate a probit model by using the model as follows[32]:

$$Prob[\,surge=1]_{i,t} = \Phi[\,\alpha + \beta_1 FL_{i,t} + Push\ effects_{i,t-1}\ 'p + Pull\ effects_{i,t-1}\ '\theta + \delta\ institutional\ variable_{i,t-1}]$$

Prob denotes the probability of a surge in different types of capital flows: FDI, foreign portfolio investment, foreign private loans and net capital flows. Φ is the cumulative distribution function of the standard normal distribution. Due to the lack of a substantial number of surges in domestic flows, I examine the financial liberalization effect only on foreign capital flows.

I follow the criteria of a surge in capital flows from Sula (2008). A surge in the capital flows dummy variable is equal to one when the following three criteria are satisfied in a given year, and zero otherwise.

$$\frac{K_{t-k} - K_t}{GDP_{t-k}} < -\eta \quad , \qquad \frac{K_t}{GDP_t} > \mu \quad , \text{and } Sudden\ stop_t = 0$$

Sula (2008) suggests that "the first criterion identifies abrupt and large increase in capital inflows over a k year period...the second criterion ensures that the size of capital flows is large enough relative to GDP." The last criterion also ensures that there is no sudden stop or capital reversal in the same year as a surge in capital flows occurs.

[32]I do not apply a fixed effect in this model because there are a number of countries that did not experience a surge in capital flows during 1973 and 2005. Thus, the use of fixed effects will drop one-third of the number of the counties in the sample and lead to biasness. Yet, I use robust and clustering standard errors of estimates by country.

Sudden stop$_t$ is the dummy variable that takes the value of one when the following two criteria are fulfilled in a given year, and zero otherwise. I also follow the criteria of a sudden stop or capital reversal from Sula (2008)

$$\frac{K_{t-1} - K_t}{GDP_{t-1}} > \tau \quad \text{and} \quad K_{t-1} > 0$$

The first criterion of sudden stop identifies an abrupt and large decline in capital flows. The second criterion ensures that there are no capital outflows in the precious year.

K is capital flows (FDI flows, foreign portfolio flows, foreign private loan flows and net capital flows) , η, μ and τ are the arbitrage ratio.

In this analysis, I also control for the effect of financial liberalization on the probability of a surge in capital flows by using the traditional variables for the determinants of capital flows. I assume that the factors that increase the probability of a surge in capital flows are the same factors that determine the movement of capital flows. Thus, I use the same control variables as in model I and model II to address model III.

For this study, I address k=3[33],and η, μ and τ = 3[34]

[33] Sula (2006) explains that, "the rationale for not using a single year lag is that the capital inflows may increase suddenly in one year and continue to be very high for consecutive years without another abrupt increase. In such a case, if the surge is defined as a one-year difference in capital inflows, the measure will only detect the beginning of the surge but will miss the end."

[34] I also investigated the criteria of a surge in capital flows with different thresholds (3%, 4%, and 5%). The signs of the coefficient in the study are not sensitive when the thresholds are 3% and 4%, respectively. But the 4% threshold makes the model less significant as a result of a lack of the number of surges in capital flows. When I adopted the 5% threshold, it became problematic due to a significant drop in the number of surges in capital flows, particularly in portfolio flows.

4.2 Data

Capital flows

I have acquired the annual capital flows, which include net capital flows, foreign direct investment, portfolio flows, and private loan flows, from the International Financial Statistics (IFS) issued by the International Monetary Fund (IMF). In this study, I break down the components of capital flows into two categories. The first is foreign flows and the second is domestic flows. Foreign flows are conventionally equivalent to the liabilities in the balance of payments (BOP) in the IFS database. It presents net purchases or sales of domestic securities by foreign residents. When the foreign flows are positive (negative), it presents a net purchase (sales) of domestic securities by foreign residents which are described as foreign inflows (foreign outflows). On the other hand, domestic flows are equivalent to the assets in the BOP in the IFS data. It presents the net purchases or sales of foreign securities by domestic residents. In order to make a conventional interpretation of the results, I multiply minus one to the original assets data set from IFS. When domestic flows are positive (negative), it presents an increase in the net purchase (sales) of foreign securities by domestic residents which can be described as domestic outflows (domestic inflows). See Schreyer (2009).

Financial liberalization

This dissertation utilizes the de jure measures of financial liberalization from Abiad (2008), which reflect the removal or relaxation of legal restrictions on capital movement and financial sectors. This new measurement classifies the degree of the financial liberalization index into six categories as follows.

1. Elimination of controls over credit allocation and reserve requirements

2. Elimination of interest rate controls

3. Elimination of entry barriers in the banking sectors

4. Privatization of state-owned banks

5. Capital account liberalization

6. Security market liberalization

Each of those policies is measured on a four-point scale: fully repressed (0), partially repressed (1), largely liberalized (2), and fully liberalized (3). The total degree of financial liberalization ranges from 0 to18.

The control variables

Domestic GDP growth

This variable is a proxy for the return on domestic investments or profitability. Higher domestic growth is likely to lead to greater inflows of foreign capital as investors take advantage of high returns and high-productivity projects in the economy which make investment in high-productivity countries more attractive. This proxy also illustrates the degree of economic fundamentals which should have a significant effect on all types of capital flows, particularly long term flows such as FDI.

US GDP growth

This variable is a proxy for the return on investments of industrialized countries. The decline in the U.S. GDP growth may make investment in the rest of the world more attractive as returns on investment in the U.S. are relatively lower than in other countries, leading investors to seek profit opportunities elsewhere that provide higher returns. For example, Calvo et al. (1993) found that the recession in the U.S. and other industrialized

countries played an important role in the large capital inflows in Latin America. However, the recession in the U.S. economy can be translated into a global slowdown. Therefore, foreign investors may be reluctant to invest abroad. The U.S. GDP growth should have both a positive and negative effect on all types of capital flows.

Trade openness

I employ trade openness, represented by the ratio of the sum of a country's export plus import to its GDP as a proxy for a country's openness (Campion and Neumann 2004 and Binici et al. 2009). Assuming that most foreign investments are in tradable sectors, an increase in openness to trade can be translated into an expansion of exported markets, higher competitiveness, and less transaction costs. Campion and Neumann (2004) also suggested that trade openness can be a proxy for financial development. Therefore, a country with more trade openness is expected to attract all types of capital flows[35].

Inflation

Inflation can work as a tax that reduces the return on capital (Alfaro et. al. 2008), and it can be a proxy for macroeconomic instability. Thus, a higher inflation rate should have a negative impact on all types of flows. The World Bank (2007) showed that higher inflation causes a decline in FDI. Campion et al. (2004) also suggested that inflation is expected to have a strong negative impact on debt flows because inflation is associated with the uncertainty of fixed-income securities.[36]

35 Note that this is not a measure of trade policy. Study of the effects of such polices is a useful area for future research.

[36] Note that inflation should have less of a negative effect when it is offset by fairly steady depreciation, reducing the variability of the real exchange rate.

Interest rate differential

I use an interest rate differential which is the domestic short-term deposit rate minus the U.S. short-term deposit rate as a proxy for the return on domestic investment relative to the return on world investments (Montiel and Reinhart 1999). When the investment in developed countries becomes relatively less attractive to developing countries, this effect pushes capital flow into relatively higher-risk-adjusted return countries, which normally are in emerging markets. The decline in the U.S. interest rate in 1990 pushed international capital flows into emerging economies. (See Calvo et al. 1993 and Montiel and Reinhart 1999).Therefore, due to an increase in arbitrage opportunities and a decline in the cost of foreign borrowing, a rise in interest rate differentials should have a positive impact on private loan flows.

Domestic private credits per GDP

I employ this variable as a proxy for the risk perception of foreign investors. The higher the ratio of domestic credits to GDP, the greater is the risk of default for a country. An increase in domestic credit should have a negative impact on all types of capital flows. However, some investors may identify the domestic private credit per GDP as a proxy for domestic financial development (Binici et al. 2009). Therefore, domestic private credit should have either a positive or negative coefficient on each the capital flow, which depends on the point of view of the investors on this variable.

Enhancement of prudential regulations and supervision over the banking sector

I adopt the variable called the enhancement of prudential regulation and supervision over the banking sector, from Abiad et al. (2008) as a proxy of the quality of financial institutions. The variable shows whether a country adopts a capital adequacy

ratio based on the Basel I, whether the banking supervisory agency is independent from the influence of an executive, and whether a banking supervisory agency conducts effective supervision through onsite or offsite examinations. Prudential regulation and supervision promotes the transparency of information and management in the banking sector. Overall, prudential regulation and bank supervision should attract international capital flows due to an increase in the confidence of both domestic and foreign investors in the banking system. However the higher degree of monitoring in the banking sector may reduce excessive short-term loan flows, particularly to emerging market and low-income countries, as a result of the reduction of excessive risk taking behavior. Thus, the strengthening of regulation and bank supervision could have either positive or negative impact on private loan inflows. The descriptive statistics are reported in Appendix 3.

Chapter 5

The empirical results

5.1 The effect of financial liberalization on the direction and magnitude of capital flows.

Table 5-1 shows the regression results for all samples. The results show that the degree of financial liberalization is associated with an increase in capital inflows in liberalizing countries. On average, net capital flows tend to increase by 6.6% of GDP when a country fully liberalizes its financial sector. However, after segregating capital flows into foreign flows and domestic flows, the results show that the increase in net capital flows during the liberalization of financial sectors mainly results from a substantial reduction in domestic outflows. In other words, financial liberalization leads to a decline in domestic investors' willingness to invest abroad. An increase in financial liberalization can translate into an increase in the development of a domestic financial market or a greater return on domestic investment compared to the return when the financial sector has been repressed. A rise in the confidence of domestic investors in the domestic financial system may increase the domestic investors' willingness to invest in the domestic market rather than allocate their funds internationally. As a result, a trend toward financial liberalization apparently leads to a substantial decline in offshore investments. Moreover, as expected, liberalization in the financial sectors also can play an important role in attracting foreign investors to allocate their funds to liberalizing countries. However, according to the size of the coefficients on financial liberalization, the magnitude of an increase in foreign inflows is much lower than the magnitude of a decline in domestic outflows. This result implies that a substantial increase in capital inflows during financial liberalization is mainly the result of a rise in the sales of foreign

securities by domestic investors and the repatriation of capital invested abroad rather than an increase in foreign investment. Much of the literature on this topic suggests that financial liberalization contributes to a substantial surge in foreign investments—an assertion that is quite overstated according to the results of this studies.

I also categorize both foreign and domestic capital flows into direct investment flows, portfolio investment flows, and private loan flows. Interestingly, the empirical results show that FDI flows, foreign portfolio investment flows, and foreign private loan flows do not respond to an increase in the degree of financial liberalization. In contrast, a removal of government influence in the financial sector tends to reduce domestic investment abroad and domestic portfolio outflows, but it is not related to the movement of domestic private loan flows.

For the control variables, the results show that the domestic macroeconomic instability that results from higher inflation discourages capital inflows, particularly in the form of foreign direct investment and, as expected, encourages domestic investors to invest directly in business and real estate abroad. However, interestingly, a country with a higher inflation rate appears to attract more foreign portfolio flows. In addition, an increase in domestic credit tends to increase foreign portfolio investments, but decreases FDI and foreign private loan flows. The impact of domestic credit on foreign portfolio flows and private loan flows reflects the ambiguous perception that foreign investors have of domestic credit. An increase in domestic credit tends to signal an increase in financial development in the view of foreign portfolio investors (Binici et al. 2009). It also signals an increase in the perception of risk from foreign creditors as a result of a loss of confidence in the ability of borrowers to repay their debts. The negative

coefficient of domestic credit on net foreign capital flows may suggest that the benefit of financial development appears to be outweighed by an awareness of the higher risks incurred by foreign investors.

As expected, a higher return on domestic investment or profitability, as seen in an increase in domestic GDP growth, tends to attract more capital inflows, particularly in the form of FDI flows and offshore borrowing. However, a rise in domestic GDP growth does not have a significant impact on any types of domestic flows. An increase in economic growth in industrialized countries, such as in the U.S., appears to induce more foreign direct investment. This occurs because foreign investors in high economic growth countries tend to expand their businesses abroad in order to take advantage of the large-scale economies. The higher growth of industrialized countries also encourages domestic investors to seek higher profit opportunities by investing abroad (an increase in direct investment abroad). However, studies by Calvo (1993) and The World Bank (2007) indicate that declines in economic growth or recessions in industrialized countries have partially contributed to a substantial increase in capital flows in emerging markets, particularly in the form of foreign portfolio investment. This is because investments in emerging market countries have become more profitable relative to advanced countries. Interestingly, the interest rate arbitrage opportunity, which is seen in the interest rate differential between domestic and U.S. short-term interest rates, does not have any influence on the movement of all types of capital flows.

As expected, greater trade openness is associated with an increase in foreign borrowing and trade credits, while surprisingly, an increase in international trade leads to a decline in foreign portfolio investment. Finally, the quality of financial institutions has

an effect in determining the direction of capital flows. A country with greater prudential regulation and supervision in the banking sector is more likely to be associated with an increase in FDI flows and foreign portfolio investments flows, thereby leading to a significant increase in net foreign capital inflows. Moreover, improving supervision and prudential regulation also influences domestic investors to invest overseas as seen in a substantial rise in direct investment abroad and domestic portfolio outflows.

Table 5-2 shows the effect of different types of financial liberalization on different kinds of capital flows for all of the samples. After segregating the financial liberalization into six catagorities, as expected, all types of financial liberalization policies have a positive and significant effect on the volume of net capital flows. However, the effects of financial liberalization policies on capital flows are varied. Removing controls on domestic credit allocation and interest rates, allowing domestic and foreign banks to enter the banking industry, as well as liberalizing the security market apparently, have a great deal of influence on domestic investors' decisions to invest in foreign securities. An increase in the efficiency of the domestic financial market and a rise in the confidence of domestic investors toward a favorable domestic economic environment may lessen their willingness to invest abroad. As a result, domestic outflows decline considerably when these policies are addressed. In contrast, the removal of controls on capital flows and privatization of state-owned banks apparently can play a significant role in attracting foreign investors to liberalizing countries. These policies induce foreign investors to diversify their risks with lower transaction costs. As a result, foreign flows rise significantly. Furthermore, according to the size of the coefficients, capital account liberalization tends to be the most crucial policy in attracting capital flows

into a country. After holding other control variables constant, capital flows increase by over 3.1% of GDP when capital control are fully removed.

After breaking down capital flows into direct investment flows, portfolio flows, and private loan flows, the empirical findings show that all types of financial liberalization policies, except for security market liberalization, do not have any significant effect on FDI flows. This result is consistent with Montiel (2003) suggesting that, "normally FDI flows are not intermediated through the domestic financial system, they are not subject to misallocation as the result of any distortions that may occur in the financial systems." Moreover, most FDI flows go to economically more productive countries that are faster growing and more profitable.

Although liberalization in a security market is the only effective policy that induces FDI flows into countries, this policy tends to have a large impact on the volume of FDI flows. Not only can security market liberalization stimulate FDI directly by making the process of mergers and acquisitions easier, but the policy also can increase alternative channels of investments and create the possibility of diversification for foreign investors. In addition, foreign investors may interpret the liberalization of the security market as a signal that a country is committed to further financial reforms. The signal may lead foreign investors to become more confident about investing in liberalizing countries.

Although Montiel (2003) suggests that the process of financial liberalization should have no direct impact on the movement of direct investment flows, a fall in the direct investment abroad during financial liberalization may be explained by the greater confidence of domestic investors in the liberalizing domestic markets. The signaling

effect can create an incentive for domestic investors to invest in businesses or real estate locally rather than spending their funds abroad.

In the case of portfolio investment flows, privatization of state-owned banks, and withdrawal of capital controls are associated with an expansion of foreign portfolio flows. The privatization of state-owned banks can contribute to an increase in the number of investment channels and an improvement in the capital market. Moreover, privatization appears to attract foreign institutional investors such as insurance companies and mutual funds that look for new opportunities to diversify their portfolios. In addition, a reduction in transaction costs and an increase in returns on investments as a result of capital account liberalization can make the security market seem more attractive. As a result, these two policies apparently encourage foreign investors to adjust their portfolios internationally. For domestic flows, most financial liberalization policies, besides capital account liberalization, lead to a decline in domestic portfolio investment outflows. Although the removal of credit controls and interest rate controls seem not to have a direct effect on domestic portfolio investors, an improvement in the efficiency of capital allocation and interest rates based on markets can create a favorable macroeconomic environment and raise the confidence of domestic portfolio investors. Moreover, as mentioned previously, in addition to the removal of bank entry barriers and the privatization of state-owned banks which can increase the market capitalization, allowing foreign investors to participate in the security market also can create more liquidity in the market. As a result, the willingness of domestic investors to adjust their portfolios internationally tends to decline greatly when the domestic security market becomes more attractive.

For private loan flows, similar to foreign portfolio investment flows, only the privatization of state-owned banks and capital account liberalization are associated with an increase in the volume of foreign private loan flows. In the absence of government assistances due to privatization, the operating costs of privatized banks become higher relative to the banks that were previously subsidized by a government. The operating costs without a government subsidy can translate into an increase in the cost of borrowing from the privatized banks. Borrowers may have more of an incentive to borrow from abroad if the cost of borrowing is lower than the domestic cost.

In conclusion, capital account liberalization tends to create substantial surges in unstable foreign flows; foreign portfolio flows, and foreign private loan flows, but not in FDI flows. This result may suggest that the removal of capital controls can make a country greatly exposed to highly volatile capital flows, thereby making the country more vulnerable to sudden stops and capital reversals.

The results in Table 5-3 show that all types of financial liberalization policies, except for the elimination of entry barriers in the banking sector, have no significant impact on net capital flows in industrialized countries. The reason may be that financial markets in industrialized countries are already mature, and the level of development of financial markets is not that different between industrialized countries. As a result, it may lead foreign investors to become more concerned with other variables such as economic conditions, wages, or productivity, instead of the openness of the financial sector. Thus, the results may not capture the effect of financial liberalization on net capital flows in industrialized countries.

It is interesting that the elimination of interest rate controls in industrialized countries tends to reduce foreign capital inflows and also discourage domestic capital outflows. The decline in foreign inflows largely results from a substantial reduction in foreign borrowing. Foreign borrowing declines by almost 2.4% of GDP when the ceilings on deposit and lending rates are removed. Heavily indebted borrowers become more exposed to the risk of insolvency as the cost of borrowing rises. An increase in the risk of insolvency can put downward pressure on the rollover of credit from abroad which would have a negative impact on private loan flows. In contrast, although the results are not statistically significant, the negative coefficient for interest rate liberalization in domestic private loan flows regression may imply that upward pressure on interest rates as a result of the removal of controls on interest rates can generate arbitraged opportunities for domestic investors in the domestic market. Therefore, domestic creditors become less willing to lend internationally. Moreover, eliminating the interest rate ceilings can create a positive signaling effect to domestic portfolio investors that a government is committed to further financial reforms. Therefore, domestic investors become less interested in adjusting their portfolio or providing loans abroad.

As expected, both foreign and domestic flows appear to increase considerably when capital controls are abolished. Although capital account liberalization is likely to make industrialized countries more exposed to macroeconomic imbalances as a result of a substantial increase in foreign flow—particularly in the form of highly volatile capital flows—this policy can encourage domestic investors to invest abroad. An increase in domestic outflows can alleviate the upward pressure on their exchange rates and the prices of financial or non-financial assets due to large capital inflows. Therefore the

offset effect between an increase in both foreign inflows and domestic outflows can help industrialized countries avoid a large appreciation in real exchange rates or asset price bubbles.

Table 5-4 presents the results for emerging market countries. Unlike industrialized countries, most financial liberalization policies appear to have a positive and significant impact on net capital flows in emerging markets. Moreover, the substantial increase in net capital flows is mainly caused by a significant decline in domestic investors' willingness to invest abroad. Furthermore, while most financial liberalization policies tend to reduce domestic outflows, the removal of capital controls appear to be the single most important policy in attracting foreign investors to invest in emerging markets. Holding other variables constant, on average, the foreign flows increase by 5.28% of GDP when a capital account becomes fully liberalized. Capital account liberalization that creates favorable conditions in the domestic market also can decrease domestic outflows—though this is not statistically significant. Contrasted with industrialized countries, the increase in foreign capital inflows in emerging markets is not offset by domestic outflows during the period of removing capital controls. As a consequence, emerging market countries tend to experience a large accumulation of foreign capital which often contributes to real exchange rate appreciation and an asset price bubble. Moreover, after breaking down the components of capital flows, the results show that the increase in foreign flows that result from capital account liberalization is mainly caused by a substantial rise in private loan flows and foreign portfolio flows. Particularly for private loan flows, "due to the illiquid nature of bank loans, their prices do not adjust automatically, and thus banks adjust the quantity of lending instead" (Sula

and Willett, forthcoming). Therefore, private loan flows tend to decline sharply when creditors lose confidence in their customers' ability to repay their debts as a result of financial turmoil. Moreover, due to sticky prices in the credit markets compared to the equity markets, it can take a longer period to restore the confidence of investors (Tornell and Westermann, 2005). Often these flows are in the form of syndicates or small groups of large creditors, thus they may be more subject to herding behavior than other flows (Campion and Neumann, 2004). Therefore, the removal of capital controls in emerging markets tends to make countries more vulnerable to financial crisis as a result of a large accumulation of highly volatile flows—particularly in the form of foreign private loan flows.

Table 5-5 reports the effect of financial liberalization on capital flows in emerging Asian countries. The results suggest that emerging Asian countries with a higher degree of financial liberalization typically experience an increase in the volume of net capital inflows. Moreover, an increase in the degree of financial liberalization appears to negatively affect the willingness of domestic investors to invest abroad which leads to a substantial decline in domestic outflows. While financial liberalization increases the opportunity for profit in the domestic market, it also reduces the return on overseas investment relative to the return on domestic investment. As a result, domestic investors tend to increase their investments locally and decrease the allocation of their funds abroad. In contrast, financial liberalization tends not to be a major concern for foreign investors who want to invest in emerging Asian countries.

However, the financial liberalization effect also depends on the types of financial liberalization policies and the forms of capital flows. In emerging Asian markets, most

types of financial liberalization policies, except for privatization of state-owned banks, tend to decrease domestic outflows. Only the deregulation of capital account transactions has a positive and significant effect on foreign inflows. Similar to the results in emerging markets, as expected, capital flows into emerging Asian markets appear to increase substantially when capital controls are removed. Moreover, the removal of capital controls tends to increase the ability of emerging Asian countries to access external borrowing, thereby leading to a surge in foreign private loan flows. Although not statistically significant, free capital movement tends to increase lending by foreign commercial banks as well as foreign currency deposits and trade credits by over 3.3% of GDP. Typically, foreign borrowing tends to make a country relatively more crisis-prone as a result of higher foreign-currency-denominated debts (Rajan 2009). Thus, the removal of capital controls, which results in an increase in offshore borrowing, also makes countries in emerging Asian countries more vulnerable to financial crisis.

Surprisingly, liberalization of the security market appears to be the most significant policy in reducing the willingness of domestic investors to invest overseas, thus contributing to large capital inflows. Not only does this policy make it easier for domestic investors to acquire ownership in local businesses through mergers and acquisitions, but it also creates positive externalities in the domestic security market by increasing the size of the market, the volume of trades, and the liquidity in the market. As a result, this leads to a substantial decline in direct investment abroad and domestic portfolio outflows.

Table 5-6 shows the regression results for Latin American countries. Interestingly, all types of financial liberalization policies are not associated with the movement of

capital flows. Moreover, after segregating financial liberalization policies into six categories, some financial liberalization policies, such as the elimination of interest rate controls and bank entry barriers, tend to reduce foreign investors' willingness to allocate their funds abroad. The decline in foreign flows as a result of removing interest rate controls mainly comes from a reduction in foreign private loan flows. As mentioned before, upward pressure on domestic interest rates after interest rate controls are removed can translate into greater insolvency risks for heavily indebted companies. Foreign creditors may have less of an incentive to provide additional loans to these businesses.

Moreover, the removal of bank entry barriers tends to encourage foreign and domestic banks to enter in the banking sectors and thus leads to greater competition. Consequently, the supply of domestic funds increases while the cost of borrowing declines. Therefore, domestic businesses may not need to rely so heavily on foreign credit. It is interesting that capital account liberalization in emerging Latin American countries plays an important role in attracting FDI flows and foreign portfolio flows, but not with foreign private loan flows. Surprisingly, none of the financial liberalization policies play a significant role in the increase in foreign borrowing in emerging Latin American countries.

The results from Table 5-7 show that although an increase in the degree of financial liberalization in less-developed countries leads to an increase in net capital flows, not all financial liberalization policies have such an effect. Surprisingly, the removal of capital controls has a significant adverse effect on FDI flows and net capital flows in less-developed countries. FDI flows and net capital flows tend to be reduced by almost 3% and 8% of GDP, respectively, when capital accounts are fully open. Why such

an effect occurs is unclear and should be the subject of further investigation. Moreover, FDI flows also negatively respond to the liberalization of the security market. Finally, security market liberalization rather than capital account liberalization appears to be the crucial policy that induces foreign private loan flows and net capital inflows in less-developed countries. Security market liberalization seems to play an important role in signaling the commitment of a government to an improved financial environment, thereby increasing the ability of a country to access external sources of funds.

5.2 The effect of financial liberalization on the composition of international capital flows.

Tables 5-8 investigates the effect of financial liberalization on the composition of international capital flows. The results for all samples show that financial liberalization is associated with a substantial change in the composition of foreign capital flows. A country with a higher degree of financial liberalization tends to raise the share of foreign portfolio investment flows while reducing the share of FDI flows. The possible reason for this lies in the substitution effect between foreign portfolio investment flows and FDI flows. Financial liberalization may lead to a greater development in the financial sector and create an additional number of investment channels. As a result, it will reduce the reliance on one particular type of investment—FDI —and increase alternative means of investment such as equities or bonds. Another possible reason is that, as suggested by Montiel (2003), FDI flows typically have less impact from a change in the financial system compared to other types of capital flows. Therefore financial liberalization tends to have a greater effect on portfolio flows or private loan flows than FDI flows. As a

result, the openness of the financial sector will tend to shift the capital flow away from FDI flows. However, financial liberalization does not have any significant effect on the change in composition of domestic capital flows.

According to the results of the control variables, the results seem to be consistent with Campion and Neumann (2004): Inflation tends to tilt capital flows structure away from foreign private loan flows and toward foreign portfolio flows. This is because equity is a better financial hedge against inflation. An increase in domestic credit expansion, which can be a proxy for either risk or financial development, appears to decrease the share of FDI flows. Also, surprisingly, it increases the share of foreign private loan flows. A recession in an industrialized economy such as in the U.S. tends to decrease the willingness of domestic creditors to lend internationally; meanwhile, a decline in the cost of production and property prices due to the recession creates an incentive for domestic investors to invest abroad. However, an improvement in transparency and a reduction in asymmetric information as a result of strengthening prudential bank regulation and supervision have no significant impact on the change in the composition of capital flows.

After segregating financial liberalization into six categories, although most results in table 5-9 are not statistically significant, most types of financial liberalization policies, except for the elimination of interest rate controls, tend to be associated with a higher share of foreign portfolio flows and a lower share of FDI flows. This finding suggests that financial liberalization tends to tilt the structure of capital flows away from stable flows and toward highly volatile flows.

Table 5-10 shows the regression results in industrialized countries. After controlling the push and pull effects, the quality of financial institutions, and time dummy

variables, the results show that financial liberalization does not have much of an impact on the composition of capital flows in industrialized countries. But if we look at the specific types of policies, these financial liberalization policies also play a different role in determining the composition of capital flows, particularly in the form of foreign flows. The abolishment of bank entry barriers, the privatization of state-owned banks, and the removal of capital controls can decrease the share of FDI flows. Moreover, the privatization of state-owned banks also plays an important role in raising the share of portfolio flows substantially. An increase in the number of alternative investment channels and an improvement in the capital market as a result of privatization can create favorable conditions in the security market. Foreign investors may change their investment strategies and invest in more liquid assets such as bonds or equity rather than allocating their funds to fixed assets. As a result, the capital flow structure tends to shift away from FDI flows and toward portfolio flows.

Table 5-11 shows the results of regressions for the emerging markets. Unlike in industrialized countries, financial liberalization in emerging market countries appears to have a strong influence on the composition of capital flow structure. The structure of capital flows is tiled away from FDI flows and toward foreign portfolio flows when financial sector liberalizes. A removal of government intervention or controls in the financial sector often reduces transaction costs, increases returns on investments, and can create opportunities for foreign investors, particularly for speculators, for investing in financial assets. If we look at the specific types of policies, only both the elimination of bank entry barriers and the security market liberalization have a strong influence in the change in the composition of capital flows. They tend to reduce the share of FDI flows

while increasing the share of foreign portfolio flows. A rise in the number of both domestic and foreign banks as a result of removal of bank entry barriers helps foreign investors create investment opportunities and diversify their portfolio. Moreover, security market liberalization also generates positive externalities such as increased participation, and the volume of trade and liquidity. Therefore, these policies tend to increase the share of foreign portfolio investment.

Tables 5-12, 5-13 and 5-14 show the effect of financial liberalization on the composition of capital flows in emerging Asian, Latin American, and less-developed countries. The results show that the degree of financial liberalization has no significant effect on changes in the composition of foreign capital flows in these economic regions. This lack of significance may be due to the lower number of observations. Moreover, looking at the specific types of policies, only a few of these policies have much of an impact on the composition of capital flows. Furthermore, it is interesting that in emerging Latin American countries, capital account liberalization tends to skew the capital flows structure away from foreign private loan flows and toward foreign portfolio flows, while in less-developed countries this policy has a significant impact on the share of capital flows by tilting capital flows structure away from FDI flows and toward private loan flows.

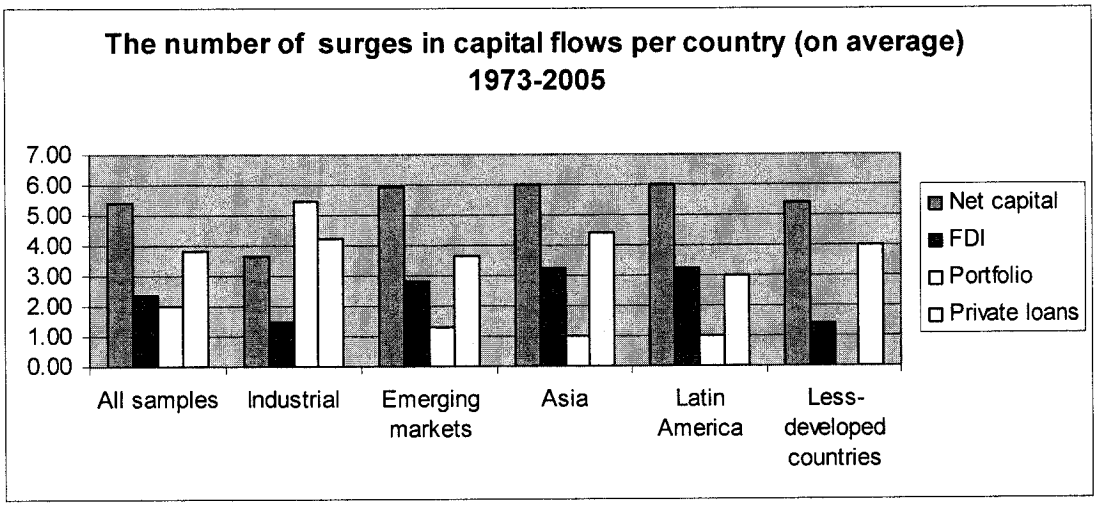
5.3 The effect of financial liberalization on the probability of a surge in capital flows.

Table 5-15 shows the number of surges in capital flows in 44 countries (including the U.S.) from 1973 to 2005 following the criteria of Sula (2008)[37]. The table suggests that as expected the number of surges in net capital flows is very high in emerging

[37] However, the regression results do not include the USA sample.

markets, while there are no surges in portfolio flows in less-developed countries. Moreover, on average, industrialized countries experienced a large number of surges in foreign portfolio flows while emerging Asian countries faced a large number of surges in both FDI flows and foreign private loan flows (see figure 5-1).

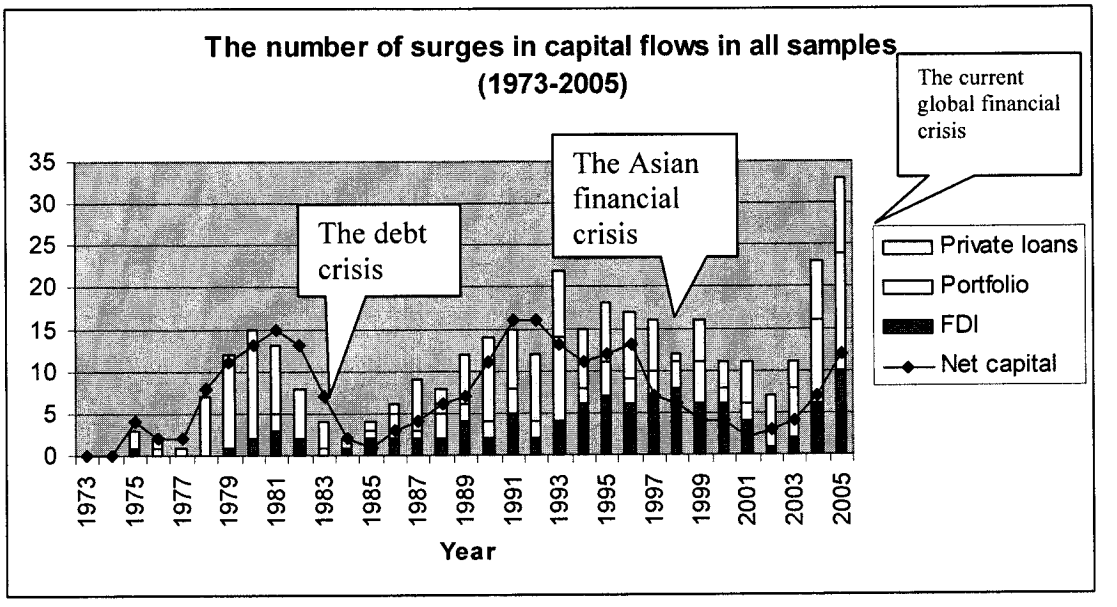
Figure 5-1: The number of surges in capital flows per country in different economic regions from 1973-2005



Source: IMF and author's calculations

Figure 5-2 shows that the global economy experienced a substantial surge in capital flows prior to the financial crises. A surge in capital flows in 1980-1981 appears to have caused the debt crisis of 1982 in Latin America. Also, the Asian financial crisis of 1997-1998 was followed by a large surge in capital flows in 1995 and 1996. There is no exception for industrialized countries. Many countries such as the U.S. and the U.K. also faced tremendous surges in portfolio flows during 2004 and 2005 and ended up with the current global financial crisis.

Figure 5-2: The number of surges in capital flows in all samples from 1973 to 2005



Source: IMF and author's calculations

Table 5-16 shows the regression results of the effect of financial liberalization on the probability of a surge in capital flows for all samples using the probit model. The results show that financial liberalization is likely to be associated with a surge in FDI, foreign portfolio investment, foreign private loan flows, and net capital flows. The findings suggest that financial liberalization and financial crises are related through the channel of a substantial surge in capital flows. The predicted probability of a surge in foreign private loan flows is 0.03 when the financial sector is fully repressed while the probability increases to 0.21 when the financial sector is fully liberalized. These results suggest that by holding other variables constant at their mean values, the predicted probability of a surge in foreign private loan flows will increase by about 18% when a country fully opens its financial sectors.

For the control variables, an increase in the risk perception of the credit market by foreign investors as a result of a higher level of domestic credit appears to reduce the

likelihood of a surge in FDI, foreign private loans, and net capital flows. A rise in inflation tends to be irrelevant to a surge in all types of capital flows. Higher domestic economic growth tends to cause a surge in foreign private loans and net capital flows while a recession in the world economy, as shown in a decline in U.S. GDP growth, appears to increase the probability of a surge in net capital flows. An increase in the interest rate differential between the domestic and the U.S. interest rate is related to an increase in the surge in portfolio investment and net capital flows. Furthermore, an increase in trade openness also increases the probabilities of a surge in FDI flows and private loan flows. In addition, an improvement in risk management and the reduction of asymmetric information as a result of an increase in prudential regulation and regulation in the banking sector do matter in reducing a flood of the most volatile flows, i.e., private loan flows. Similar to the macroeconomic effect on the movement and composition of portfolio flows, most macroeconomic variables tend not to be associated with a surge in portfolio flows.

Table 5-17 shows the results of the effect of financial liberalization policies on surges on capital flows for the whole sample. A surge in FDI flows appears to be associated mainly with domestic financial liberalization, such as the free movement of credit, interest rates in the domestic financial market, and the reduction of foreign participation barriers in the banking sector. In addition, deregulation of the interest rate, privatization of state-owned banks, capital accounts liberalization, and an improvement in the security market leads to an increase in the probability of a surge in portfolio and private loan flows.

Table 5-18 shows the results of the effect of financial liberalization on the surge of capital flows in industrialized countries. The results show that the degree of financial liberalization does not have a significant effect on the likelihood of a surge in all types of capital flows. After segregating financial liberalization into six catagorities, only the removal of capital controls is associated with an increase in the probability of a surge in portfolio flows.

Table 5-19 shows the empirical results for emerging markets. Unlike industrialized countries, the effect of financial liberalization on a surge in capital flows is very strong in emerging market countries. It is worth noting that an increase in the degree of financial liberalization tends to increase the probability of a surge in portfolio flows and private loan flows, but not in FDI flows. The results suggest that surges in volatile flows such as portfolio and private loan flows, which are often mentioned as problematic flows, are mainly caused by an increase in financial openness.

As expected, table 5-19 shows that the removal of capital controls tends to have the strongest influence on a surge in portfolio, private loan, and net capital flows in emerging countries. The results show that the elimination of all capital controls tends to increase the probability of a surge in portfolios, private loans, and net capital flows by 8%, 21% and 17%, respectively, after holding other variables constant at their mean value.

Table 5-20 shows the regression results for emerging Asian countries. An increase in the degree of financial liberalization tends to be associated with an increase in the likelihood of a surge in portfolio and private loan flows. The results also confirm that the openness of the domestic financial market does not contribute to a surge in FDI flows in

emerging markets. Moreover, capital account liberalization tends to have a substantial influence on the surge in short-term flows in emerging Asian countries compared to other types of financial liberalization policies.

The results of the effect on Latin American countries are shown in table 5-21. Interestingly, an increase in the degree of financial liberalization tends to increase the likelihood of a surge in only net capital flows. In addition, all types of financial liberalization policies do not have any significant impact on a surge in FDI flows and private loan flows. The results suggest that a surge in foreign borrowing in emerging Latin America is not related to financial liberalization. The privatization of state-owned banks, capital account liberalization, and security market liberalization are associated with a surge in portfolio flows in emerging Latin America countries, while the elimination of interest rate controls and capital account liberalization leads to a surge in net capital flows.

Nevertheless, it is interesting that in less-developed countries, table 5-22 shows that only the security market liberalization leads to a significant increase in the probability of a surge in private loan flows. Holding other variables constant at their mean values, the predicted probability of a surge in private loan flows tends to rise by 46% when the security market is fully developed and open to foreign investors. In addition, none of the financial liberalization policies in less-developed countries are related to a surge in FDI, portfolio investments, and net capital flows.

Figure 5-3 to 5-6 shows the predicted probability of a surge in FDI, portfolio investments, private loans, and net capital flows between different economic regions after controlling for other macroeconomic variables at their means. Figure 5-3 illustrates that

the effect of financial liberalization on the probability of a surge in capital flows is different among economic regions. The predicted probabilities of a surge in net capital flows in both industrialized and less-developed countries do not respond to an increase in the degree of financial liberalization as shown in the flat line of the predicted probability schedule. The figure is consistent with the results above that financial liberalization is not associated with surges in net capital flows in both industrialized and less-developed countries. However the probability of a surge in net capital flows appears to increase at an increasing rate in both emerging Asian and Latin America countries when the degree of financial liberalization rises. This figure also implies that financial liberalization plays an important role in a substantial surge in net capital flows in both emerging Asian and Latin American countries.

Figure 5-3: The predicted probability of a surge in net capital flows

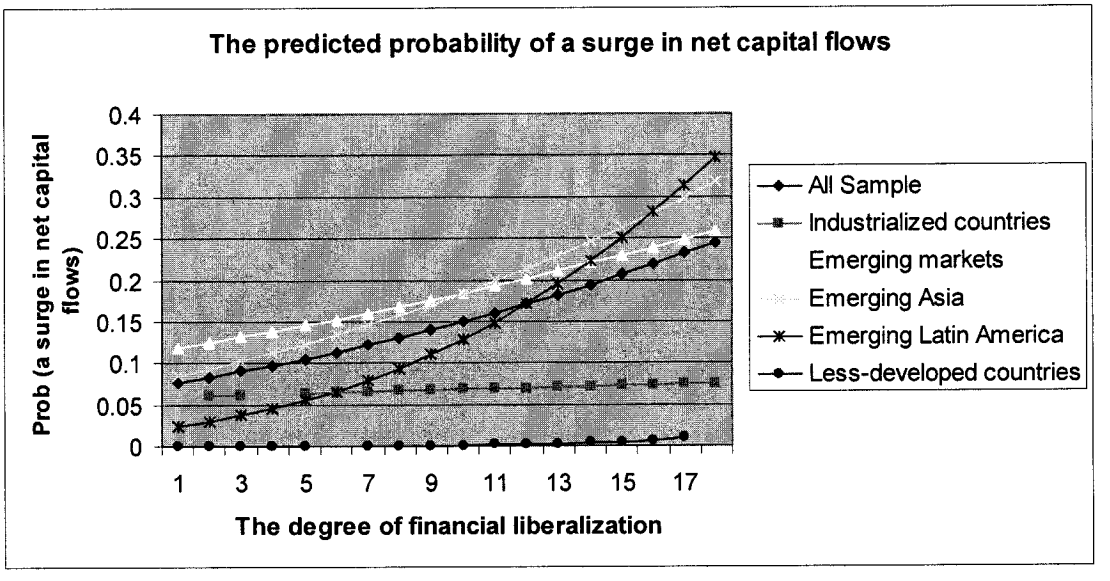


Figure 5-4 illustrates the predicted probability of FDI flows. As with net capital flows, financial liberalization tends not to be associated with a surge in FDI flows in both industrialized and less-developed countries. In addition, the surge in FDI flows in Latin

American countries does not result from financial liberalization policies. Although the results from table 24 show that financial liberalization does not have any significant effect on the probability of a surge in emerging market countries (the confidence level is at 85%), the figure shows the concave curve of the predicted line which implies that an increase in financial liberalization in emerging markets tends to increase FDI flows at an increasing rate. Therefore, an increase in financial liberalization appears to benefit emerging markets due to the substantial flood of FDI flows.

Figure 5-4: The predicted probability of a surge in FDI flows

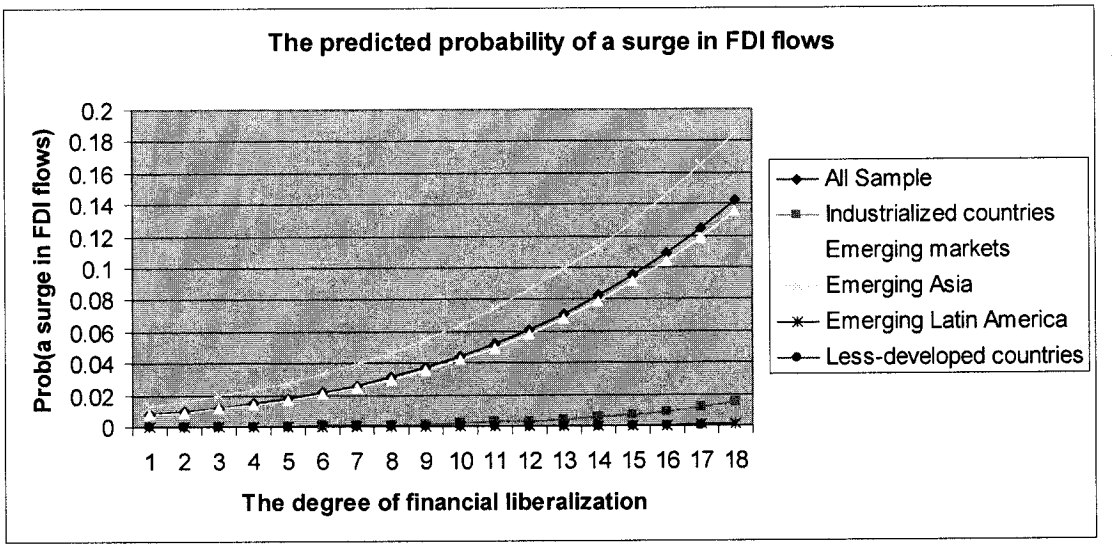


Figure 5-5 shows that financial liberalization tends to be associated with an increase in the likelihood of a surge in portfolio flows in all economic regions, except for less-developed markets.[38] It is interesting that in emerging Latin American and Asian countries, financial liberalization tends to have a small impact on a surge in portfolio investment flows when the degree of financial liberalization is relatively low, but when a

[38] According to the data in tables 23 and 26, although the coefficient of the effect of financial liberalization on the likelihood of a surge in industrialized and emerging Latin American countries is not statistically significant, the confidence level of those coefficients are over 85 %.

government opens its financial market a certain degree, the probability of a surge in portfolio flows appears to increase considerably.

Figure 5-5: The predicted probability of a surge in portfolio flows

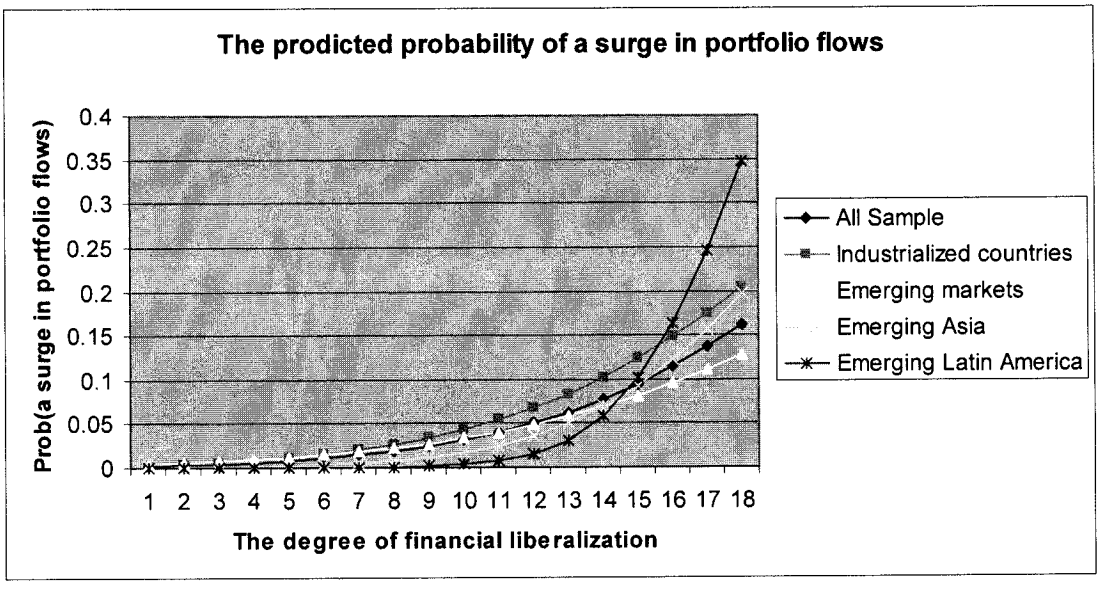
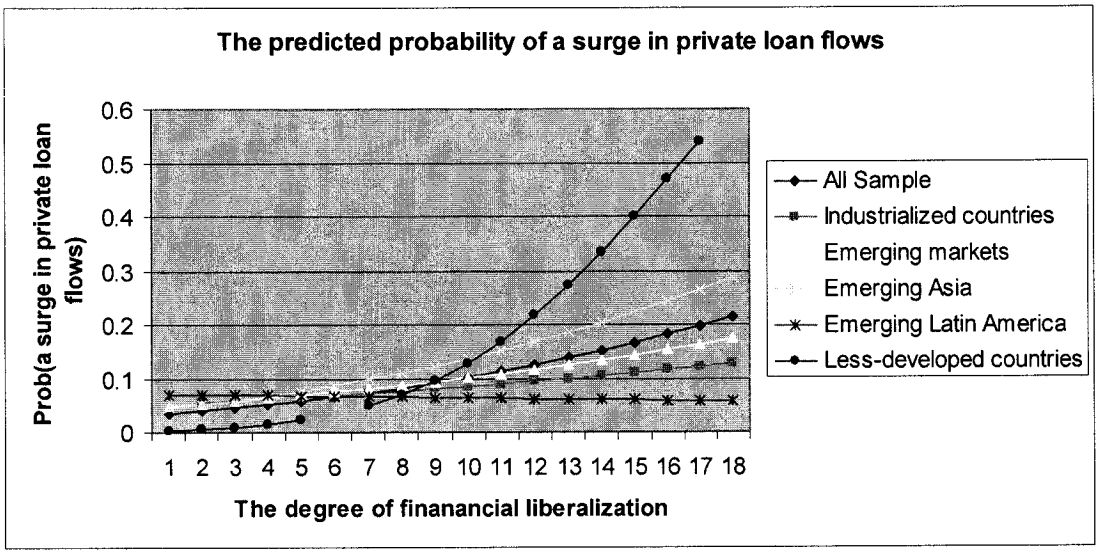


Figure 5-6 shows the effect of financial liberalization on the predicted probability of a surge in private loan flows. It is interesting that openness in the financial markets of less-developed countries has a substantial effect on the probability of a surge in private loan flows. In addition to less-developed countries, financial liberalization tends to greatly increase the likelihood of a surge in foreign borrowing in emerging Asian markets, while a surge in foreign borrowing in industrialized and Latin American countries is not associated with financial liberalization.

Figure 5-6: The predicted probability of a surge in private loan flows



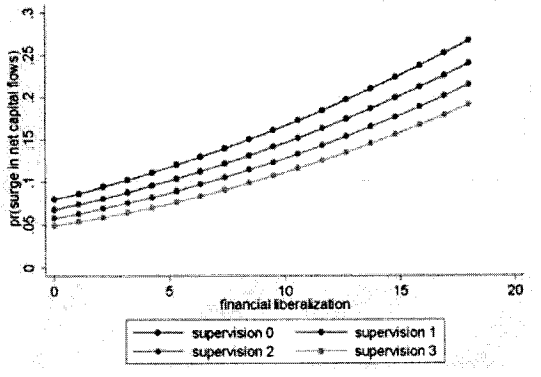
This section also investigates whether financial liberalization accompanied by prudential regulation and bank supervision has an important impact on the probability of a surge in cross-border capital flows. Figures 5-7 to 5-10 show the predicted probability of a surge in each type of capital flow that is associated with different degrees of financial liberalization and different levels of the quality of prudential regulation and bank supervision. The other control variables are held at their means.

Figure 5-7, based on tables 5-24 to 5-28, shows that although the result is statistically significant only in Latin American countries, the figure suggests that a country with low prudential regulation and bank supervision is more likely to be associated with a surge in net capital flows when its financial sector becomes liberalized. The probability of a surge in net capital flows in Latin America countries is around 53% when the degree of financial liberalization is at the maximum (18), and the quality of the institution is very weak (0), but when the quality of prudential regulation and supervision become stronger, reaching the highest level (3), the probability of a surge in net capital

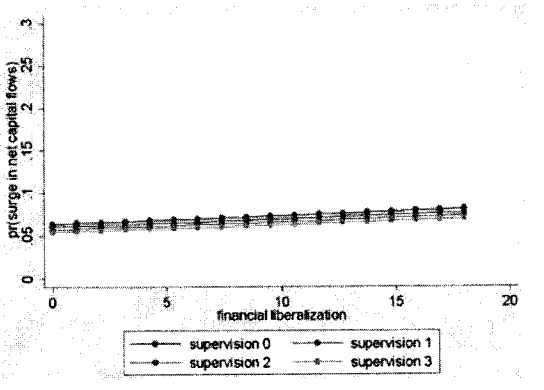
flows is reduced to only 7.8% by holding other variables at their means. The results suggest that the reduction of asymmetric information and an improvement in transparency resulting from strengthening regulation and bank supervision helps a country become less vulnerable to a surge in capital flows when the country liberalizes its financial sector.

Figure 5-7: The predicted probability of a surge in net capital flows at different levels of prudential regulation and bank supervision

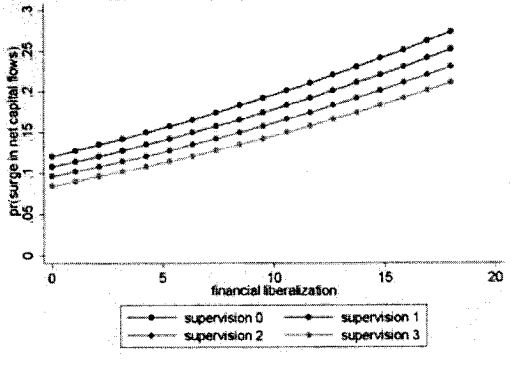
All samples



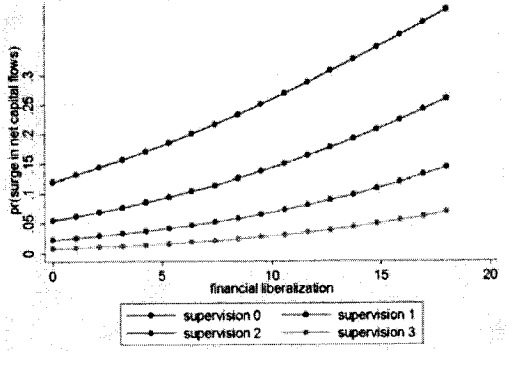
Industrialized countries



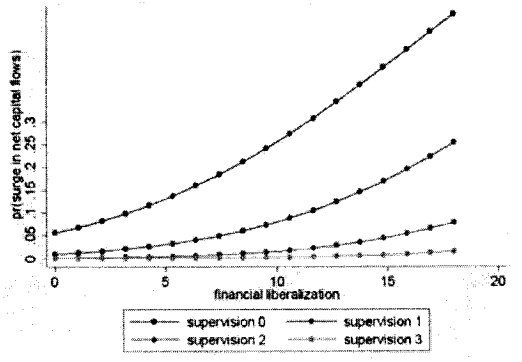
Emerging market countries



Emerging Asian countries



Emerging Latin American countries



Less-developed countries

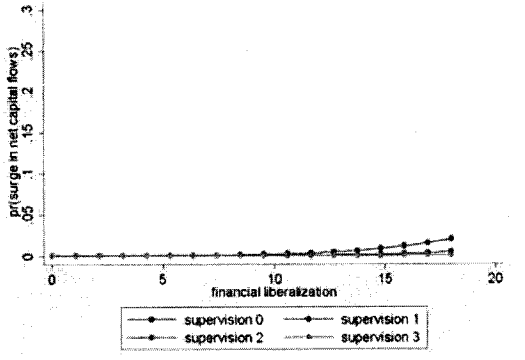
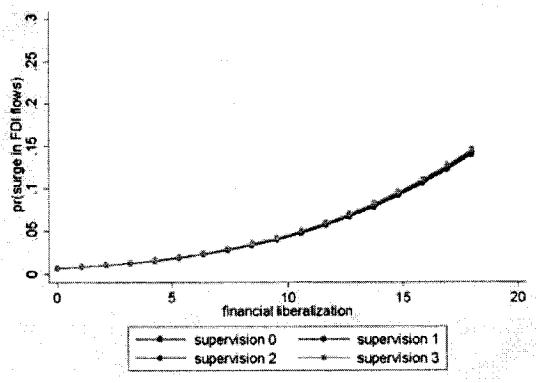


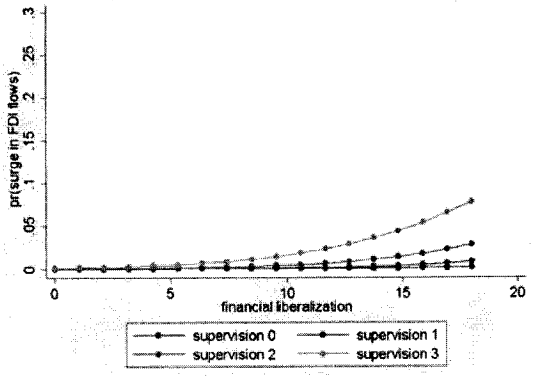
Figure 5-8 shows that the curves of the predicted surges in FDI flows in industrialized countries are relatively flat. This figure confirms the previous results that an increase in the degree of financial liberalization does not have a significant impact on the probability of a surge in FDI flows in industrialized countries. Moreover, a country with strong prudential regulation and bank supervision tends to have the same probability of a surge in FDI flows as a county with weak prudential regulation and bank supervision when financial liberalization policies are implemented. The results suggest that prudential regulation and bank supervision seem to be irrelevant to the surge in FDI flows.

Figure 5-8: The predicted probability of a surge in FDI flows at different levels of prudential regulation and bank supervision

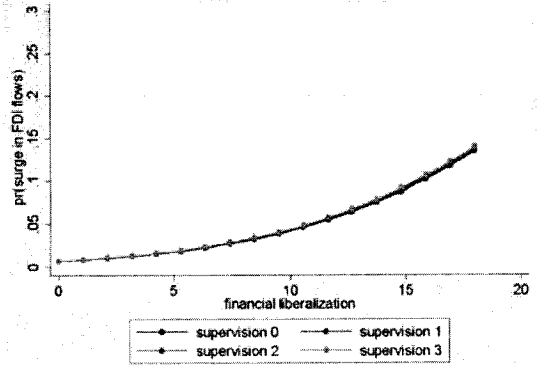
All samples



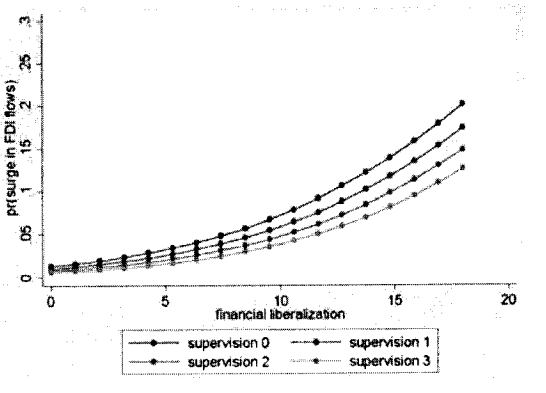
Industrialized countries



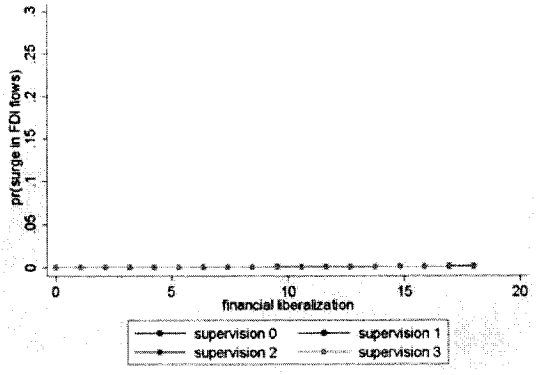
Emerging market countries



Emerging Asian countries



Emerging Latin American countries



Less-developed countries

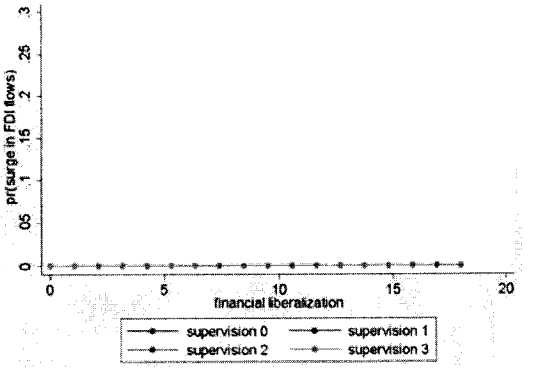
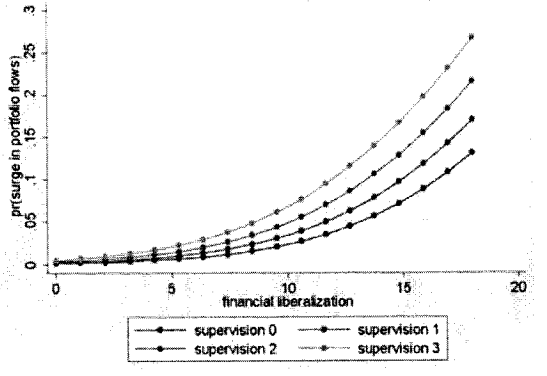


Figure 5-9 shows that in industrialized countries there is no difference between weak and strong financial regulation and supervision with respect to the probability of a surge in portfolio flows when a government liberalizes their financial sector. Unlike industrialized countries, in a country with poor financial regulation and supervision, the implementation of financial liberalization in emerging markets tends to reduce the probability of a surge in portfolios. But the results from emerging Asian and Latin American countries tell a different story. Although the results are not statistically significant, figure 31 shows that the probability of a surge in portfolio flows tends to increase substantially when financial liberalization is accompanied by weak financial institutions. Furthermore, it is interesting that in emerging Asian and Latin America countries, a country with a low degree of financial liberalization tends to have a low probability of a surge in portfolio flows. However, when a country liberalizes its financial sector to a certain point, financial liberalization tends to be associated with the higher probability of a surge in portfolio flows. In addition, after this certain point has been reached, financial liberalization in a country with weak regulation and bank supervision tends to substantially increase the likelihood of a surge in portfolio flows compared to a

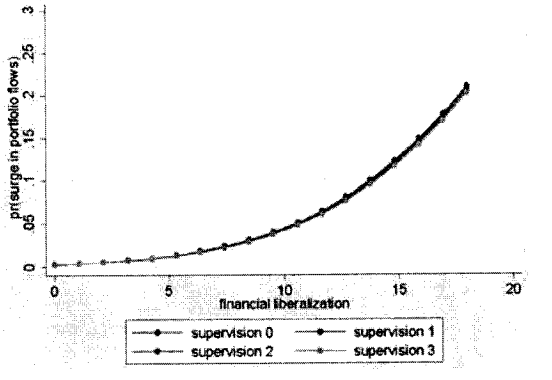
country with strong financial regulation and bank supervision. The results suggest that in both emerging Asian and Latin America countries, financial liberalization plays an important role in the substantial increase in portfolio flows when the financial sector is liberalizing at a certain threshold. Moreover, financial liberalization with poor monitoring in the financial market is more likely to increase the probability of a surge in portfolio flows.

Figure 5-9: The predicted probability of a surge in portfolio flows at different levels of prudential regulation and bank supervision

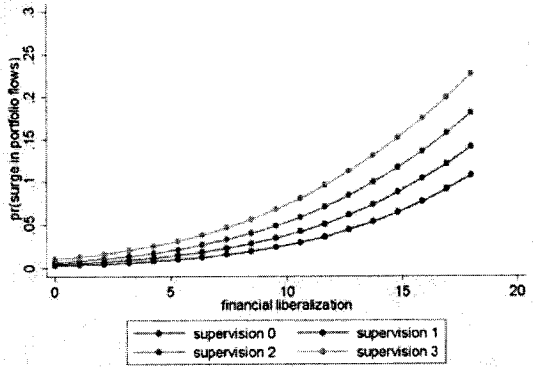
All samples



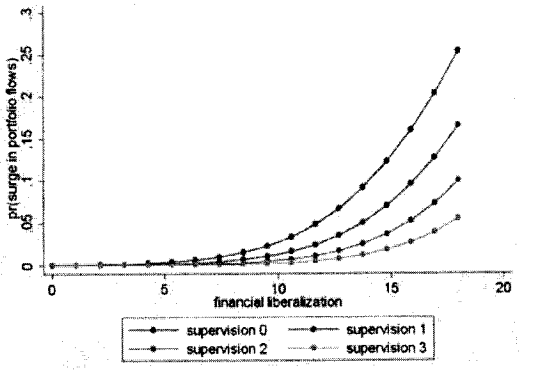
Industrialized countries



Emerging market countries



Emerging Asian countries



Emerging Latin American countries

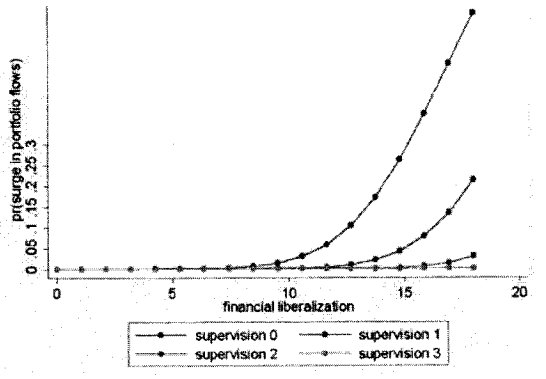
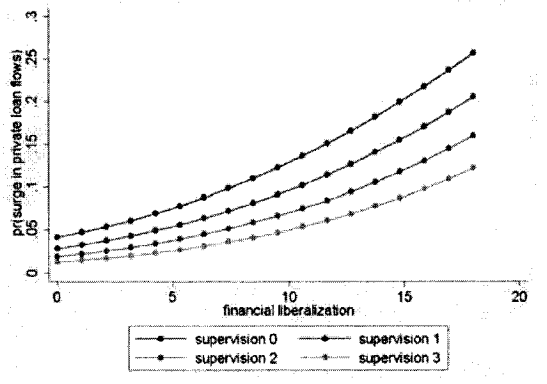


Figure 5-10 shows the effect of financial liberalization on a surge in private loan flows at different degrees of financial regulation and bank supervision. Although the results for industrialized countries are not statistically significant, the figure shows that financial liberalization in a country with higher prudential regulation and bank supervision is more likely to have a surge in private loan flows than a country with lower regulation and bank supervision. However, the results are quite different for emerging markets, particularly in emerging Asian countries. The results also support the view from Alfaro et al. (2006) which suggests that, "financial liberalization, when not followed by proper regulation and supervision can lead to both greater capital flows intermediated through banks and greater bank credit and later to abrupt reversals in capital flows." Figure 5-10 also shows that a country with weak financial institutions tends to have a high probability of a surge in private loan flows compared to a country with strong financial institutions. The probability of a surge in private loan flows in emerging Asian countries is around 13% when the degree of financial liberalization is at the maximum (18), and the quality of the institution is very strong (2); but when the quality of prudential regulation and supervision is weaker, reaching the lowest level (0), the probability of a surge in net capital flows increases to 37% by holding other variables at

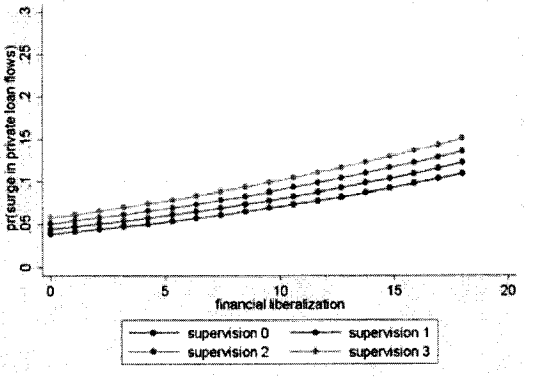
their means. Thus, as a result of the low level of the quality of financial regulation, a surge in foreign borrowing can occur in emerging Asian markets when governments liberalize their financial markets. As a result, the flood of highly volatile flows after financial liberalization causes those countries with improper regulation and bank supervision to become more vulnerable to financial crisis.

Figure 5-10: The predicted probability of a surge in private loan flows at different levels of prudential regulation and bank supervision

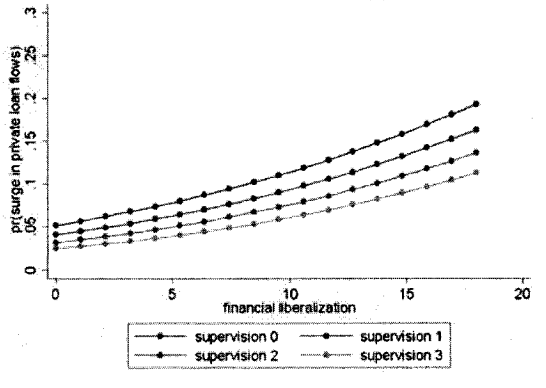
All samples



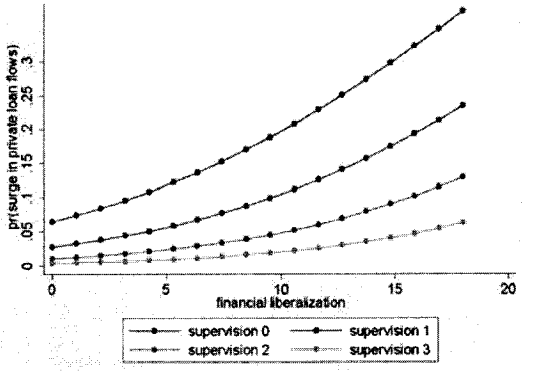
Industrialized countries



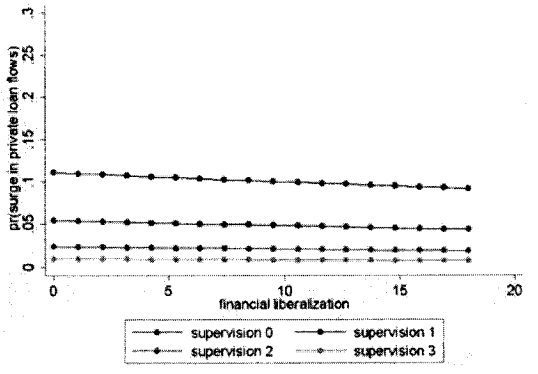
Emerging market countries



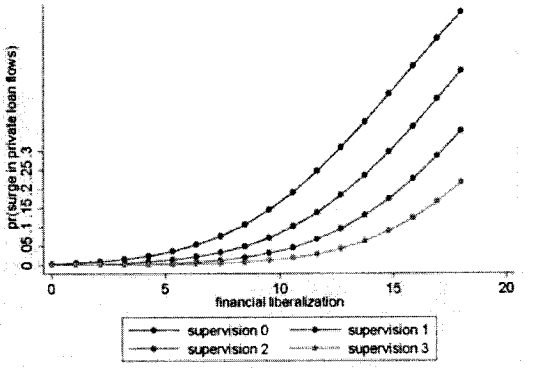
Emerging Asian countries



Emerging Latin American countries



Less-developed countries



Chapter 6

Grouping financial liberalization

Some domestic financial liberalization policies, such as the elimination of interest rate controls and directed credit controls, tend to be implemented at the same time as a complementary policy that supports other types of financial liberalization policies (McKinnon 1993). Moreover, financial liberalization policies appear to share a common trend, i.e., they increase or decrease over time at more or less the same rate. Therefore, the financial liberalization index may have a problem with multicollinearity. Accordingly, although the result of OLS estimators remains unbiased and the standard errors are correctly estimated after including all financial liberalization policies that are highly correlated in the model, multicollinearity tends to make precise estimation and inference very difficult since it creates large variances and covariances (Gujarati 2003). However, omitting some financial liberalization policies in the models could lead to specification bias (overestimation or underestimation), or specification errors because the influence of each policy on capital flows is quite different, as shown in chapter 3. This chapter investigates the effect of financial liberalization policies on capital flows, however, the methodology is different from that used in previous studies because I control for all types of financial liberalization policies rather than investigating them separately. Moreover, I group financial liberalization policies with respect to their characteristics and also the implications of financial liberalization policies into four groups, i.e., domestic financial liberalization, bank financial liberalization, capital account liberalization, and security market liberalization.

6.1 The Multicollinearity problem

The nature of the multicollinearity problem is more of a data problem than a statistical problem (Belsley et al. 1980). Thus, it is impossible to completely eliminate the multicollinearity problem and at the same time still maintain the same context of the data. Also, Kmenta (1986) suggests that, "multicollinearity is a question of degree not of kind. The meaningful distinction is not between the presence and the absence of multicollinearity, but between its various degrees....Since multicollinearity refers to the condition of the explanatory variables that are assumed to be nonstochastic, it is a feature of the sample and not of the population. Therefore, we do not test for multicollinearity but can, if we wish, measure its degree in any particular sample" (p. 431).

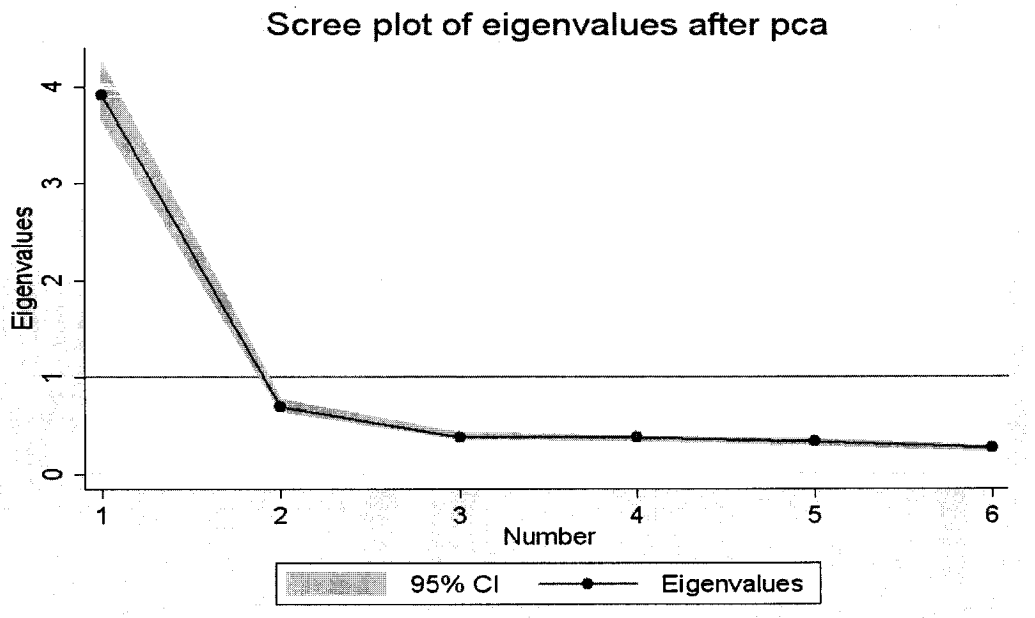
6.2 Principal components analysis

There are many methodologies that can be used to alleviate the problem of multicollinearity (see Belsley et al. 1980, and Gujarati 2003). One method involves grouping data or variables into different dimensions. A principal components analysis is one of the tools used by researchers in order to reduce a large number of original observed variables to a smaller number of components. Tabachnick and Fidell (2005) state that, "the goal of PCA (principal component analysis) is to extract maximum variance from a data set with a few orthogonal components" Therefore, after using this methodology, each component becomes uncorrelated with all others which provides the advantage of eliminating multicollinearity when performing further regression analysis (Lattin et al. 2003)

According to the results from the principal component analysis in table 6-1, the eigenvalue (variance) of the first principal component to the sixth principal component are 3.95, 0.67, 0.38, 0.36, 0.36 and 0.26, respectively.[39] However, according to Kaiser's rule, which recommends retaining only the components with eigenvalues that exceed 1, only the first principal component (3.95) has an eigenvalue greater than 1. While the first eigenvalue alone accounts for 65% of the variation, the next largest eigenvalue is 0.67, accounting for only 11% of the variation in the original data. Furthermore, based on the scree plot shown in figure 6-1, an obvious bend, the so-called "elbow" in the chart, occurs after the first component. According to the table and figure, the first principal component is preferable and accounts for nearly two-thirds of the variation in the six different types of financial liberalization data set. According to principal component loadings, there is not much deviation from equal weighting of the measures: the weights used to generate the first principal component range from a low of 0.33 (privatization) to a high of 0.44 (security market liberalization). Thus, the first principal component here is the linear combination of all six types of financial liberalization policies which are weighed nearly equally. The correlation between the first principal component and the equally weighted average is 0.993. This analysis implies that all the financial liberalization data in the set tends to be almost equally important.

[39] The factor with the largest eigenvalue has the most variance.

Figure 6-1: Scree plot of eigenvalues



According to the principal component analysis, there is only a single dimension that captures most of the information contained in the financial liberalization data. Therefore, the analysis of the effect of financial liberalization in this section should have a similar result as when constructing financial liberalization by using an equally weighted average of all financial liberalization policies, as shown in chapter 5.

6.3 Financial liberalization bloc

However, as mentioned previously, analyzing only one component does not capture or distinguish the influence of financial liberalization policies which tend to have a different impact on the various types of capital flows. Therefore, I group the financial liberalization policies into four categories based on the similarity of the policy effect on

the movement of capital flows, i.e., the price and amount of credit allocation, banking openness, the deregulation of capital controls, and the liberalization of security markets.

The first group summarizes the measurement of "domestic financial liberalization" which is composed of the elimination of interest rates controls and the elimination of directed credit controls and minimum reserve requirements. McKinnon (1993) suggests that governments tend to implement these two policies together in order to support their export-oriented strategies. Moreover, government also charges interest rates well below the market clearing rates and allocate credit to priority sectors in order to provide a competitive advantage to domestic enterprises against foreign enterprises. Also, Kaminsky and Schmukler (2008) construct a domestic financial sector liberalization index by including both the elimination of interest rates and credit controls. This group directly affects the prices and quantitative limits of credit allocations in domestic financial markets. Thus, domestic liberalization should somewhat influence how foreign investor allocate their funds or invest internationally. As a result, it has an impact on the movement of capital flows.

The second group is characterized as "bank liberalization" which includes policies related to the elimination of bank entry barriers and the privatization of state-owned banks. This group focuses on the scope of banks activities, the allowance for domestic and foreign banks to enter in the banking industries, and the degree of importance of private banks vs. state-owned banks. Bank liberalization can lead to a change in the number of players, the degree of competition, and even risk-taking behavior in the banking sector. These changes have an impact on the efficiency of credit allocations, transaction costs, and the number of financial innovations. Thus this group

should have an influence on how domestic and foreign investors allocate their funds both locally and internationally.

The third group measures the openness of capital accounts which has a direct influence on the movement of cross-border capital. The last group measures liberalization in the security markets. The openness in the security market to foreign investors allows both domestic and foreign investors to take advantage of portfolio diversification across countries. (These two policies were discussed in chapter 3).

6.4 Multicollinearility testing

As mentioned above, some domestic financial liberalization policies tend to be implemented at the same time as a complementary policy that supports other types of financial liberalization policies. Multicollinearity tends to be a common problem in the financial liberalization data set. In order to determine whether the financial liberalization data set is suitable for the models, I have tested the severity of multicollinearity by using several guidelines as follows.

6.4.1 Correlation among financial liberalization policies

Gujarati (2003) suggests that, "if the pair-wise or zero-order correlation coefficient between two regressors is high, say, in excess of 0.8, then multicollinearity is a serious problem." According to the correlation analysis from table 6-2, the correlations of each type of financial liberalization range between 0.6778 to 0.7472 which is considered to be moderate multicollinearity.

6.4.2 Variance inflation factor (VIF)

VIF measures how fast the variance of an estimator is inflated by the presence of multicollinearity.

$$VIF_i = \frac{1}{1 - R_i^2}$$

R^2 is the multiple correlation coefficient of X_i regressed (specific financial liberalization policy) on the remaining explanatory variables (the rest of the financial liberalization policies). The range of VIF is 1 to infinite. The higher the value of VIF, the more severity there is of the multicollinearity. The guideline by Belsley et al. (1980) suggests that if the value of VIF is greater than 5, then the multicollinearity is high. Another guideline from David (1998) suggests that if individual VIF is greater than 10, that variable should be carefully inspected. In addition, if an average VIF is greater than 6, those variables face serious multicollinearity. According to table 6-3, the VIF of all types of financial liberalization are between 2.42 to 2.97 with mean 2.62. According to both guidelines, the multicollinearity problem in this financial liberalization data set seems to be moderate.

6.4.3 Eigenvalues, condition number (k) and condition index (CI).(Belsley et al. 1980 and Gujarati 2003)

Belsley et al. (1980) suggest that multicollinearity occurs when the eigenvalue is small. But the authors do not clearly specify the definition of "small."

The condition number is defined as $k = \frac{Maximum \quad eigenvalue}{Minimum \quad eigenvalue}$

The condition index (CI) is

$$CI = \sqrt{\frac{Maximum \quad eigenvalue}{Minimum \quad eigenvalue}} = \sqrt{k}$$

The guideline by Belsley et al. suggests that if the condition number (k) is between 100 and 1000, there is moderate to strong multicollinearity, and if it is greater than 1000, there is severe multicollinearity. In addition, if the condition index (CI) is between 10 and 30, there is moderate to strong multicollinearity, and if it is greater than 30, there is severe multicollinearity. According to table 6-4, the condition number (k) is 55.5 and the condition index is 7.45 which suggests that there is a small multicollinearity among these financial liberalization variables.

Following the investigation of multicollinearity, it is clear that the degree of severity of muticollinearlity in the model is quite moderate (see table 6-5). Therefore, it would be appropriate to include all four policies in the models.

6.5 The effect of financial liberalization policies on the behavior of international capital flows

Model IV. Direction and magnitude of capital flows

$$Capital\ flows_{i,t}\ per\ GDP = \alpha_i + \beta_1\ Domestic\ financial\ liberalization_{i,t} + \beta_2\ Bank\ liberalization_{i,t} + \beta_3\ Capital\ account\ liberalization_{i,t} + \beta_4 Security\ market\ liberalization_{i,t} + Push\ effects_{i,t-1}\ 'p + Pull\ effects_{i,t-1}\ 'q + \delta\ institutional\ variable_{i,t-1} + time\ dummy\ variable + \varepsilon_{i,t}$$

Model V. Composition of capital flows

$$Composition\ of\ Capital\ flows_{i,t} = \alpha_i + \beta_1\ Domestic\ financial\ liberalization_{i,t} + \beta_2\ Bank\ liberalization_{i,t} + \beta_3\ Capital\ account\ liberalization_{i,t} + \beta_4 Security\ market\ liberalization_{i,t} + Push\ effects_{i,t-1}\ 'p + Pull\ effects_{i,t-1}\ 'q + \delta\ institutional\ variable_{i,t-1} + time\ dummy\ variable + \varepsilon_{i,t}$$

Model VI. The probability of a surge in capital flows

$$Prob[\,surge=1]_{i,t} = \Phi[\,\alpha + \beta_1\, Domestic\ financial\ liberalization_{i,t} + \beta_2\, Bank\ liberalization_{i,t} + \beta_3\, Capital\ account\ liberalization_{i,t} + \beta_4 Security\ market\ liberalization_{i,t} + Push\ effects_{i,t-1}\ '\rho + Pull\ effects_{i,t-1}\ '\theta + \delta\ institutional\ variable_{i,t-1} + \varepsilon_{i,t}$$

The variables for the push effect, the pull effect, the institutional variable, and the criteria of the probability of a surge in capital flows are the same as those used in chapter five. In Model IV and Model V, I employ country fixed effects to correct the omitted variable biases which are inherent from differences in the economic structures among countries. Standard errors have been corrected for general forms of heteroskedasticity. However, I do not apply the fixed effect in Model VI because there are a number of countries that did not experience a surge in capital flows between 1973 and 2005. Thus, the use of fixed effects will omit one-third of the number of countries in the sample and lead to biasness. However, I use robust and clustering standard errors of estimates by country. This research focuses on the panel data of 43 countries, including 8 industrialized countries, 30 emerging market countries, and 5 less-developed countries, from 1973 to 2005.

6.5.1 The effect of financial liberalization on the direction and magnitude of capital flows

Table 6-6 shows the regression results for all samples. The results suggest that only bank liberalization and the removal of controls on capital flows tend to affect an increase in the level of net capital inflows. Moreover, the increase in net capital flows as a result of these two policies comes from greater foreign inflows rather than domestic inflows. Although the results are not statistically significant, the empirical results in this

section are consistent with the results in chapter 5 which show that most financial liberalization policies reduce the willingness of domestic investors to invest abroad, thereby leading to an increase in domestic inflows.

After distinguishing capital flows into three categories, including direct investment, portfolio investment, and private loan flows, the results suggest that security market liberalization tends to be the single most important policy in attracting FDI flows. This policy makes it easier for foreign investors to own domestic businesses through mergers and acquisitions. Surprisingly, although both domestic financial liberalization and security market liberalization create an adverse effect on foreign portfolio flows, they appear to contribute to a substantial reduction of investing in the security market abroad by domestic investors. As expected, bank liberalization appears to attract foreign portfolio investment flows. A country that allows foreign banks to participate in its banking sector can attract more foreign portfolio flows since foreign investors can take advantage of portfolio diversification and the reduction of transaction costs. Moreover, an increase in financial innovation as a result of bank liberalization also increases alternative investment channels such as bonds or equities for foreign investors which would lead to an increase in foreign portfolio investment flows.

Another important finding in this section is that the removal of controls on capital flows has a positive and significant impact on foreign portfolio flows and private loans flows; however, it has no effect on FDI flows. The full liberalization of capital accounts tends to attract foreign portfolio flows and loan flows into liberalizing countries by around 1.7% and 2.2% of GDP, respectively, after holding other variables constant. The results appear to be consistent with many studies, such as Radelet and Sachs (1998), and

Reinhart and Rogoff (2009), which find that several countries in emerging markets experienced a surge in capital flows, particularly in the form of highly volatile flows after removing restrictions on capital flows.

The results in table 6-7 suggest that domestic financial liberalization and capital liberalization in industrialized countries have a significant effect on net foreign flows and net domestic flows, but the direction of the effect is different. Overseas investment by domestic investors declines substantially when restrictions on interest rates and credit allocation are removed. Domestic financial liberalization may create more favorable economic condition, thereby leading to greater confidence of domestic investors. As a consequence, domestic investors have less incentive to invest abroad. However, surprisingly, domestic liberalization has an adverse effect on foreign flows. The negative effect on foreign flows in industrialized countries is still somewhat in question.

As expected, a withdrawal of capital controls apparently increases both foreign investors and domestic investors' willingness to invest abroad. When costs of moving capital become less, domestic investors have more incentive to seek places that provide higher yields or to diversify their portfolio internationally. As with domestic investors, foreign investors can also take advantage of the cost reduction from the relaxation of capital controls.

The findings in table 6-7 also suggest that the regulatory changes supporting the free movement of capital flows seems not to create a substantial accumulation in capital flows in industrialized countries. This is because although the removal of capital controls increases foreign inflows substantially, it also plays a significant role in a rise in domestic outflows. This offset effect tends to reduce the accumulation of capital flows and also

cools down overheated economies in industrialized countries. As a result, there are very few financial crisis episodes that have occurred in industrialized countries as a result of a large buildup of capital flows.

In addition, the removal of bank restrictions tends to have a considerable impact on the volume of both foreign and domestic portfolio investment flows. Foreign portfolio inflows and domestic portfolio outflows increase by over 2.5 % and 2.1% of GDP, respectively, after a government fully liberalizes its banking sector. The benefit from bank liberalization, such as an increase in bank efficiency and financial innovations, makes it easier for foreign and domestic investors to allocate their funds abroad with relatively lower costs. As a result, it increases the willingness of foreign and domestic investors to invest or diversify their portfolios overseas.

The empirical results in table 6-8 show that as expected, capital account liberalization tends to be the most crucial policy for attracting capital flows into emerging market countries. However, in emerging markets, the effects of the removal of capital controls on capital flows are quite different from the effects in industrialized countries. Reducing controls on capital flows has a tremendous impact only on the decisions of foreign investors, but not on domestic investors. Therefore, the removal of capital control in emerging markets tends to bring a substantial surge in foreign capital inflows, but without creating domestic capital outflows. A large accumulation in capital flows often leads to a deterioration of macroeconomic fundamentals such as exchange rate overvaluation or an asset price bubble. As a result, financial crises tend to occur frequently in emerging market countries. Moreover, the results also show that the deregulation of capital account restrictions also has a positively significant effect on

foreign portfolio investment and foreign private loan flows, but not FDI flows. This suggests that the openness of capital accounts in emerging markets attracts highly volatile flows and leads the more vulnerable countries to sudden stops or capital reversals when there is a loss in foreign investors' confidence.

Not only liberalization in capital accounts, but liberalization in the security market also has a significant impact on net capital inflows in emerging markets. However, the magnitude of the effect of security market liberalization on net capital inflows is smaller to that of capital account liberalization. However, in contrast to capital account liberalization, security market liberalization has more influence on domestic flows than foreign flows. Although this policy tends to substantially increase the volume of net capital flows, the increase in net capital flows mainly comes from a rise in domestic inflows, not foreign inflows. Thus, not only is the liberalization of the security market a effective policy in attracting capital flows, but also make a country less exposed to the herding effect by foreign investors.

The main finding from table 6-9 suggests that as expected large capital flows tend to surge in emerging Asian countries with less regulation on capital movements. Moreover, the capital flows that flood into these countries are largely in the form of portfolio investment flows and foreign borrowing. In addition to the removal of controls on capital flows, both the liberalization of interest rates and the security market also bring capital flows into the countries. However, the increase in net capital flows is largely dominated by a large increase in domestic inflows rather than an increase in foreign inflows.

As with the results in emerging markets, table 6-10 shows that capital account liberalization is the most important policy that attracts capital flows into Latin American countries, particularly in the form of unstable flows. It is also worth pointing out that bank liberalization in Latin America tends to have a greater impact on the decision of domestic investors to allocate their funds abroad although it has no impact on domestic investors in Asia. Table 6-11 and 6-12 show that many Latin America countries paid much more attention to bank liberalization such as the elimination of bank entry barriers and the privatization of state-owned banks during 1980-1990 than Asian countries. Latin America had more foreign commercial banks and fewer state owned banks than Asia during this time period. An increase in alternative investment channels may lead domestic investors in Latin America to become less interested in investing abroad, and invest more in the domestic market.

Interestingly, although the effect of bank liberalization on the volume of foreign private loans flows is not statistically significant, the coefficients on bank liberalization are negative in both emerging Asian and Latin American countries. A rise in foreign ownership in the domestic banking sector, as well as an increase in the scope of the activities of both domestic and foreign banks, may lead to reduced offshore borrowing. As Rajan (2009) suggests:

> It is more likely that capital account in the forms of foreign bank lending makes a country relatively more crisis-prone than when a foreign bank establishes a separate entity in the host country, and lends domestically, especially in the form of a fully independent subsidiary (as opposed to a branch or representative office)....domestic lending via an onshore foreign bank would more likely be in

domestic currency, while offshore lending would be in foreign currency (such as the United States dollars), hence leaving the country comparatively more vulnerable to currency mismatches and financial crisis (that is, negative balance sheet effects).

Thus, bank liberalization tends to make countries in emerging market less vulnerable to financial crisis as a result of a decline in the most volatile flows and the reduction of currency and maturity mismatches.

Surprisingly, the results in table 6-13 show that liberalization in the banking sector in less-developed countries is associated with a substantial increase in capital inflows, while the removal of controls on capital flows appears to reduce capital inflows considerably. Net capital inflows decline by over 6% of GDP after a government fully removes restrictions on capital flows. The substantial decline in capital inflows is mainly caused by a sizeable reduction in net FDI flows. Foreign investors who have invested directly in domestic businesses, but can not move their funds out of the country due to capital controls, may suddenly repatriate their capital after capital controls are removed. Another surprise is that liberalization in the security market in less-developed countries appears to have a significant positive impact on private loan flows. Security market liberalization can act as a signal to foreign investors of increasing financial development, or of the commitment to further financial reform. As a result, the signaling effect increases the confidence of foreign creditors to lend to less-developed countries.

6.5.2 The effect of financial liberalization on the composition of capital flows

Table 6-14 shows the regression results for all samples. The results suggest that a country with a higher degree of security market liberalization tends to reduce the reliance on foreign borrowing while increasing the exposure to foreign portfolio flows. The share of purchasing bonds and equity by foreign investors is increased by over 15% of gross foreign flows, whereas the share of foreign borrowing is reduced by 18%. This shows there is a substitution effect between portfolio and private loan flows when the security market is more open and developed. A rise in the number of alternative investment channels, an increase in liquidity in the security market, and a relatively higher risk perception toward foreign debts tends to tilt the composition of capital flows away from foreign private loan flows and toward foreign portfolio flows.

As with security market liberalization, bank liberalization also tilts the composition of capital flows toward foreign portfolio flows. Moreover, the negative coefficient on bank liberalization, though not significant, suggests that an increase in the number of domestic and foreign banks participating in the domestic financial sectors may help increase the supply of domestic credits. As a result, it leads to a reduction of offshore borrowing.

Table 6-15 reports the results for industrialized countries. As expected, the share of foreign portfolio flows increases substantially when a government allows both foreign and domestic banks to enter into the banking industry. An increase in the number of commercial banks may increase the size, volume, and liquidity in the security market which can attract more foreign portfolio investors.

Surprisingly, table 6-16 shows that all financial liberalization policies are not associated with a change in the composition of foreign flows in emerging markets. However, after disaggregating emerging markets into emerging Asian countries and emerging Latin American countries, according to tables 6-17 and 6-18, the removal of capital controls in Latin American countries appears to raise the share of foreign portfolio flows, while decreasing the share of foreign private loan flows. The share of portfolio investment rises by over 27% of gross foreign flows, while the share of private loan flows declines approximately 48% of gross foreign flows after the capital accounts are fully liberalized. As with the results in emerging markets, financial liberalization policies do not have any significant impact on the structure of capital flows in emerging markets. Unlike the results in the emerging Latin American markets, the results in less-developed countries from table 6-19 show that capital account liberalization tends to shift the composition of capital flows away from FDI flows and toward private loan flows. The results may imply that an increase in financial liberalization tends to make less-developed countries become more accessible to external borrowing.

6.5.3 The effect of financial liberalization on the probability of a surge in capital flows.

The results in table 6-20 confirm that for all samples, capital account liberalization plays an important role in surges in capital flows. Holding other variables constant at their mean values, the predicted probabilities of a surge in portfolio and private loan flows are around 0.4% and 6%, respectively, when capital accounts are fully controlled; however, when a country fully liberalizes its capital movement, the predicted

probability of a surge in portfolio and private loan flows increases to 7% and 14%, respectively.

In addition, domestic financial liberalization is likely to be associated with a surge in FDI flows. An increase in the confidence of foreign investors as a result of domestic financial liberalization may play an import role in a surge in FDI flows. Moreover, bank liberalization tends to increase the probability of a surge in net capital flows. However, security market liberalization is not associated with a surge in all types of capital flows.

The empirical results in table 6-21 suggest that most financial liberalization policies are not associated with a surge in capital flows, except for domestic financial liberalization that increases the likelihood of a surge in portfolio flows for industrialized countries.

The results from table 6-22 show that although both domestic financial liberalization and bank liberalization have no impact on the probability of a surge in any type of capital flows, as expected, the removal of capital controls tends to create a surge in portfolio investment flows, short-term offshore borrowing, and net capital flows in emerging market countries. Holding other variables constant at their mean values, the predicted probabilities of a surge in portfolio, private loan flows and net capital flows increase by 8%, 12% and 16% respectively, when a country removes all capital controls. This is consistent with the research of Reinhart and Rogoff (2009) which shows that financial liberalization during the1990s played an important role in massive capital inflows, particularly in the form of short-term flows, in emerging markets. Moreover, substantial capital flows tend to make countries more crisis-prone. Often large capital flows lead to a deterioration of macroeconomic fundamentals and a rapid expansion of

financial and nonfinancial asset prices that are "far beyond their long run sustainable level." A sudden shift in investor's confidence as a result of an unsustainable economy will stop international capital flows into problematic countries and even create massive capital outflows. As a result, an illiquidity problem as well as a further downward turn in the real economy will make countries more crisis-prone. The security market liberalization, though not significant, tends to reduce the likelihood of a surge in all types of capital flows. The results may imply that security market liberalization helps reduce a country's vulnerability to economic imbalances as a result of a surge in capital flows.

The empirical results in table 6-23 show that all types of financial liberalization policies have an influence on the surge of capital flows in emerging Asian countries. As with industrialized countries, the elimination of restrictions on interest rates and credit allocation are likely to increase the probability of a surge in portfolio flows. Furthermore, the probability of a surge in portfolio investment flows and private loan flows tends to increase substantially when the banking sector becomes more liberalized.

Interestingly, the deregulation of the movement of capital flows is not only associated with a surge in short-term flows, such as foreign borrowing in emerging Asian countries, but it also increases the likelihood of a surge in long-term flows, as in FDI flows. Moreover, the predicted probability of a surge in FDI flows, private loan flows, and net capital flows increases by, on average, 10%, 21%, and 15%, respectively, when a country removes all restrictions on capital flows. Similar to the results in the case of emerging market countries, liberalizing the security market helps reduce a surge in net capital flows in emerging Asian countries. The benefits of the opening the security market is not limited only to foreign investors. The reduction in transaction costs and an

increase in alternative investment channels also can encourage domestic investors to invest or diversify their portfolios abroad. As a result, it reduces an overheated economy as a result of a surge in capital inflows.

Moreover, table 6-24 also shows that prudential regulation and bank supervision also play a significant role in reducing the probability of a surge in private loan flows and net capital flows.[40] The chance of a surge in private loan flows and net capital flows is likely to be reduced by 26% and 15%, respectively, when capital account liberalization is accompanied by strong prudential regulation and bank supervision compared to weak regulation and bank supervision.

Unlike in emerging Asian countries, financial liberalization in Latin American countries and less-developed countries is not associated with a surge in capital flows, as shown in tables 6-25 and 6-26.

[40] The results are statistically significant in private loan flows but not in net capital flows.

Chapter 7

Comparison between different measurements of capital account liberalization

This chapter compares the effect of capital account liberalization (controls) on cross-border capital flows by using several types of de jure measures of capital account liberalization (controls), such as those constructed by Abiad et al.(2008), Kaminsky and Schmukler (K-S) (2008), Potchamanawong-CGU (2007), Schindler(2009), and Chinn-Ito (2005). However, due to differences in time coverage and country samples across different indices, in order to compare the results of the effect of capital account liberalization (controls) on international capital flows by balancing the data, it is necessary to omit a large number of countries and years. In addition, each measure has a different focal issue on openness policy. The indices from Abiad and K-S focus on the reform policies in the financial sector which include banking deregulation, security market openness, and capital account liberalization, while Potchamanawong, Schindler, and Chinn- Ito concentrate only on the capital account policies. In order to see a broad picture of how different types of indices have different impacts on international capital flows, I use balanced data in terms of time coverage and country samples. Thus, this chapter tracks only 12 countries over the period of 1995–2004. In addition, this study focuses mainly on the capital account liberalization effect on capital flows. Thus, the other types of financial liberalization policies are not included in this chapter.

7.1 A brief review of the liberalization of capital account measurement.

7.1.1 Abiad et al. (2008)

This financial liberalization index constructed by Abiad et al. concentrates on seven different types of financial policy reforms: 1) elimination of controls over credit allocation and reserve requirements, 2) elimination of interest rate controls, 3) elimination of entry barriers in the banking sector, 4) privatization of state-owned banks, 5) capital account liberalization, 6) security market liberalization, and 7) enhancement of prudential regulation and supervision of the banking sector. All of these dimensions are based on the removal of legal restrictions or the improvement of government policies in the financial sector, except for the privatization of state-owned banks index which mainly relies on the de facto share of banking sector assets that are controlled by state-owned banks. The advantage of this index is that in addition to providing a large number of financial reform dimensions, this index can capture the degree of intensity of particular financial reforms and also illustrate the period when authorities support or discourage the liberalization. Each financial reform policy ranges between zero and three: 0 represents fully repressed, 1 represents partially repressed, 2 represents partially liberalized, and 3 represents fully liberalized. In addition, the Abiad et al. index covers 91 countries from 1973 to 2005.

7.1.2 Kaminsky and Schmukler (K-S) (2008)

The K-S financial liberalization index is classified into three categories: deregulation of the domestic financial sector, capital account liberalization, and stock market liberalization. The liberalization of the domestic financial sector includes the

deregulation of interest rate controls on deposits and lending as well as credit controls and the reserve requirement. The criteria for capital account liberalization is whether there are regulations on off-shore borrowing by domestic financial institutions, multiple foreign exchange markets, and capital inflows and outflows. The liberalization of the stock market is identified as the deregulation of the acquisition of the share of the domestic stock market by foreign investors, and the repatriation of interest and dividends. This index focuses on 28 countries from developing and developed countries from 1972 to 2005. Similar to the Abiad et al. index, the K-S index also captures the intensity of financial liberalization which ranges from one to three. A disadvantage of the K-S index is that the types of financial reforms covered is small relative to the Abiad et al. index. Moreover, the K-S index has a smaller number of countries that were studied.

7.1.3 Potchamanawong (2007)

Unlike the Abaid et al. and K-S financial reform indices, the Potchamanawong index focuses on the restrictions on capital flows. Potchamanawong constructed a measurement of capital control by utilizing data from The Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) published by the IMF. The Potchamanawong capital control index uses the equal weight average of 13 different types of capital restrictions, and the exchange rate arrangements (see more details from table 7-1). Drawing on the approach of Quinn (1997), Potchamanawong estimates the intensity of the controls. Each category ranges between 0 and 1 with 0.25 intervals. A higher value represents a higher degree of control. The advantage of the Potchamanawong index is not only that it captures the degree of intensity of capital

control like the other indices, but it also distinguishes capital controls into two catagorities, controls on inflows and controls on outflows. Potchamanawong suggests that separating the type of capital controls could provide a clearer picture of the effect of capital controls on macroeconomic issues. For example, the empirical results from Potchamanawong (2007) show that controls on capital inflows tend to reduce the likelihood of crises, while controls on outflows appear to increase the probability of crises. The controls on capital inflows could reduce the volatility of capital inflows by signaling an increase in the prudential regulation and supervision of inflows particularly for speculators, while controls on capital outflows could provide a misperception about the government policy for both domestics and foreign investors which could trigger a crisis. The Potchamanawong index covers 26 emerging and developing countries over the period of 1995-2004.

7.1.4 Schindler (2009)

As with the Potchamanawong index, the Schindler index focuses only on regulatory changes on capital flows. The Schindler's index provides disaggregated types of capital controls which include restrictions on capital inflows and capital outflows, restrictions on residents and non-residents, and restrictions on different asset categories, but it does not attempt to estimate the intensity of the controls. Both Schindler and Potchamanawong rely on the same source of information, i.e., AREAER, and apply the same methodology, an equally-weighted average of specific capital account transactions to construct their indexes. But they are not exactly the same. While Potchmanawong uses 13 categories of capital restrictions and one exchange rate arrangement to build his index,

Schindler chooses only six types of capital restrictions (see the table for more details). The coding is quite different from the Potchamanawong index. According to the Schindler index, each category is coded in binary form, 0 (unrestricted) or 1(restricted) while the Potchamanawong range is 0 and 1 but with 0.25 intervals. Schindler's index tracks 91 countries from 1995 to 2005.

7.1.5 Chinn-Ito (2005)

The Chinn-Ito index measures the degree of capital account openness of a country by using a principal component analysis of four major categories of external account restrictions. It includes multiple exchange rates, restrictions on current account transactions, an equally-weighted average of a five-year window of restrictions on capital account transactions, and a surrender of export proceeds. As with the Potchamanawong and Schindler indices, the Chinn-Ito index is based on AREAER. Chinn-Ito applied the first standardized principal component of four external account catagorities to score the index. The higher value represents a higher degree of openness. The index covers 163 countries from 1970 to 2004. Unlike the Potchamanawong and Schindler indices, Chinn-Ito does not provide any disaggregated types of capital account openness.

7.2 Correlation analysis

Table 7-2 shows the correlations between the groups of financial liberalization indices, such as Abiad et al. (2008) and K-S (2008), and the group of capital account liberalization (control) indices, such as Potchamanawong (2007), Schindler (2009), and Chinn-Ito (2005). All indices are normalized into 0 and 1 scales and the higher value

indicates a higher level of liberalization. The correlation table shows that in the financial liberalization bloc, both the Abiad and K-S indices are positively correlated ranging from a low of 0.19 and a high of 0.84. The correlation of overall financial liberalization between the two indices is high, 0.84, which shows that these indices are very similar. Moreover, the capital account liberalization between the two indices is highly correlated relative to other financial liberalization policies (0.79), because for this policy both indices tend to focus mainly on a similar range of capital account criteria, i.e., deregulation of financial credits for banks and corporations, and the elimination of multiple exchange rates. Furthermore, domestic financial liberalization in the K-S index appears to concentrate on the elimination of interest rate controls rather than the deregulation of credit allocation. Table 7-1 also shows that the correlation between domestic financial liberalization constructed by K-S and the elimination of credit controls built by Abiad are very high (0.79).

Compared to the group of financial liberalization indices, the correlations between the group of capital account liberalization indices, which includes Potchamanawong (2007), Schindler (2009), and Chinn-Ito (2005), are much higher, ranging between 0.6 and 0.90. The reasons lie in the source of data upon which these indices are based. All indices in this bloc are constructed from the same data which originally came from AREAER. In addition, although Potchamanawong (2007) and Schindler (2009) apply the equally-weighted average, while Chinn-Ito uses the first principal component, there is not much deviation between these three indices in terms of the correlation. According to the Potchamanawong index, the correlation between controls on inflows and outflows are higher, 0.88, compared to the Schindler index (0.74). However the Chinn-Ito index

appears to have a relatively low correlation with the Potchamanawong and Schindler's indices. This is in part because the Chinn-Ito index does not focus only on the capital account transactions, but it also concentrates on current account transactions.

Table 7-3 also shows the correlation matrix for all indices but focusing only on 12 countries with the coverage period of 1995 to 2004.[41]. After balancing the data with respect to time coverage and country samples across indices, the number of observations drops significantly. Moreover the correlations also differ dramatically particularly in the group of financial liberalization indices compared to the group of capital account liberalization indices. The financial liberalization policies indices constructed by Abiad et al. and K-S become less correlated after time coverage and the number of country samples change. The correlation between domestic interest rate liberalization and credit allocation liberalization in the Abiad index declines from 0.49 to 0.11, while the correlation between capital account and security market liberalization is reduced from 0.71 to 0.26. Moreover, the correlation between domestic interest rates and other types of financial reforms, excepting liberalization in credit allocation, are negative. Furthermore, the correlation between the Abiad and K-S indices also declines, such that the correlation of financial liberalization between the two indices decreases from 0.84 to 0.38. The correlation of security market liberalization in Abiad and the stock market liberalization in K-S substantially changes from 0.75 to -0.16. However, the correlation between Potchamanawong and Schindler remains high since they focus on similar periods and country samples. Potchamanawong originally covers the period from 1995 to 2004 while Shindler tracks the data from 1995 to 2005.

[41] The country samples are Argentina, Brazil, Chile, Hong Kong, Indonesia, Korea, Malaysia, Mexico, the Philippines, Thailand, and Venezuela. Due to unavailable data, for the Hong Kong case, I can investigate only a five-year period from 1995-1999

The study on the correlation suggests that the effect of financial liberalization on macroeconomic issue may vary depending on time coverage or country samples or even financial liberalization indices. As a result, this analysis supports the Eichengreen (2001) argument that the empirical results of the studies focusing on the impact of financial liberalization tend not to be conclusive.

7.3 Comparison of the effect of capital account liberalization on the magnitude of international capital flows by using different types of measurements.

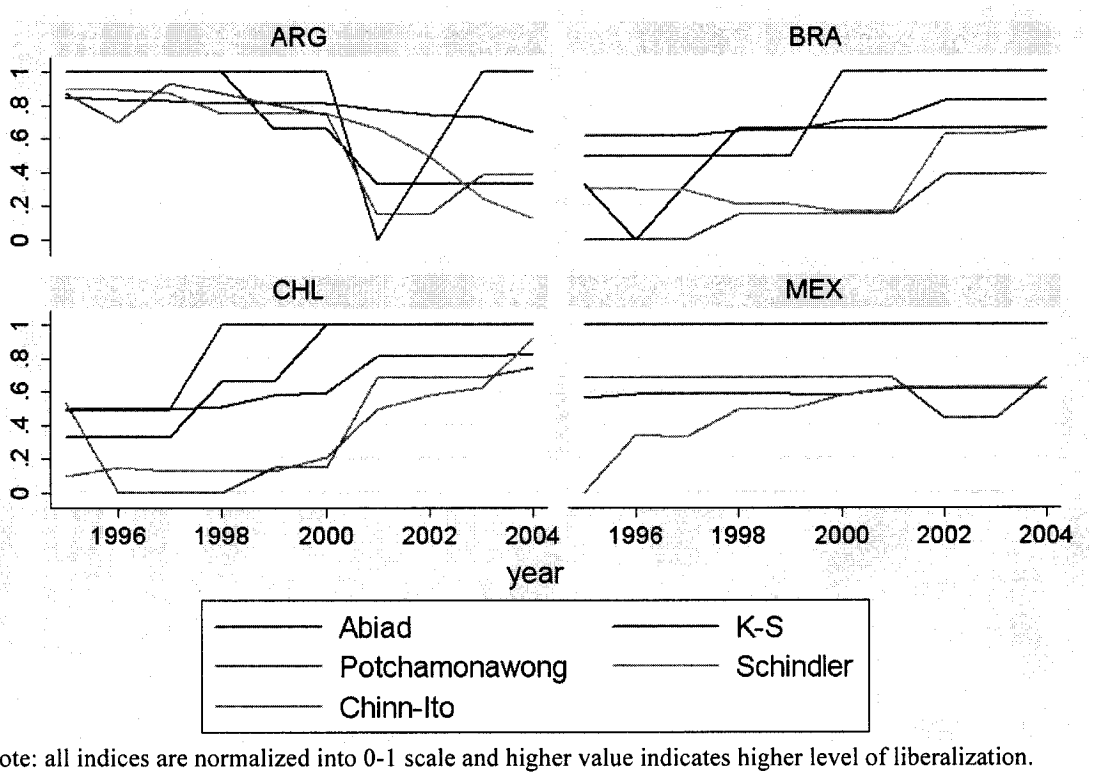
In this chapter I estimate the effect of capital account liberalization by applying the same models as in chapter four. However, this study focuses only on 12 sample countries from 1995 to 2004 and without controlling any other financial liberalization policies. The empirical results from tables 7-4 to 7-8 suggest that capital account liberalization plays an important role in determining capital flows into a country. According to the indices of Abiad, K-S, Potchamanawong, Schindler, and Chinn-Ito, a country tends to experience a substantial increase in net capital inflows when the restrictions on capital accounts are relaxed. However, after segregating net capital flows into foreign flows and domestic flows, the results show that only the Chinn-Ito capital openness index can detect a change in the volume of both foreign flows and domestic flows. Moreover, only the Chinn-Ito index can detect an increase in the volume of foreign portfolio flows and private loan flows when capital accounts become more open. However, the measurement of capital account openness used in the Chinn-Ito index is quite different from other indices in terms of the focus on a wide range of catagorities of capital transactions. The Chinn-Ito index does not focus only on capital account

transactions, but it also pays a great deal of attention to current account transactions and the surrender of export proceeds. Therefore, the Chinn-Ito index is suitable as a proxy for "openness to international financial markets" (Noy 2004), rather than capital account openness. In other words, the capital account liberalization indices of Abiad, K-S, Potchamanawong, and Schindler are a subset of the Chinn-Ito financial openness index. For example, although the withdrawal of restrictions on capital flows has a direct impact on the movement of capital flows, the liberalization of current accounts should also lead to an increase in capital flows as a means of financing current accounts. As a result, the Chinn-Ito index also can capture an increase in the volume of foreign private loan flows which partially consist of trade credits. This is something that most capital account liberalization indices are unable to detect. Therefore, the Chinn-Ito index is a good proxy for measuring financial openness, but it may not be an appropriate measurement of capital account liberalization.

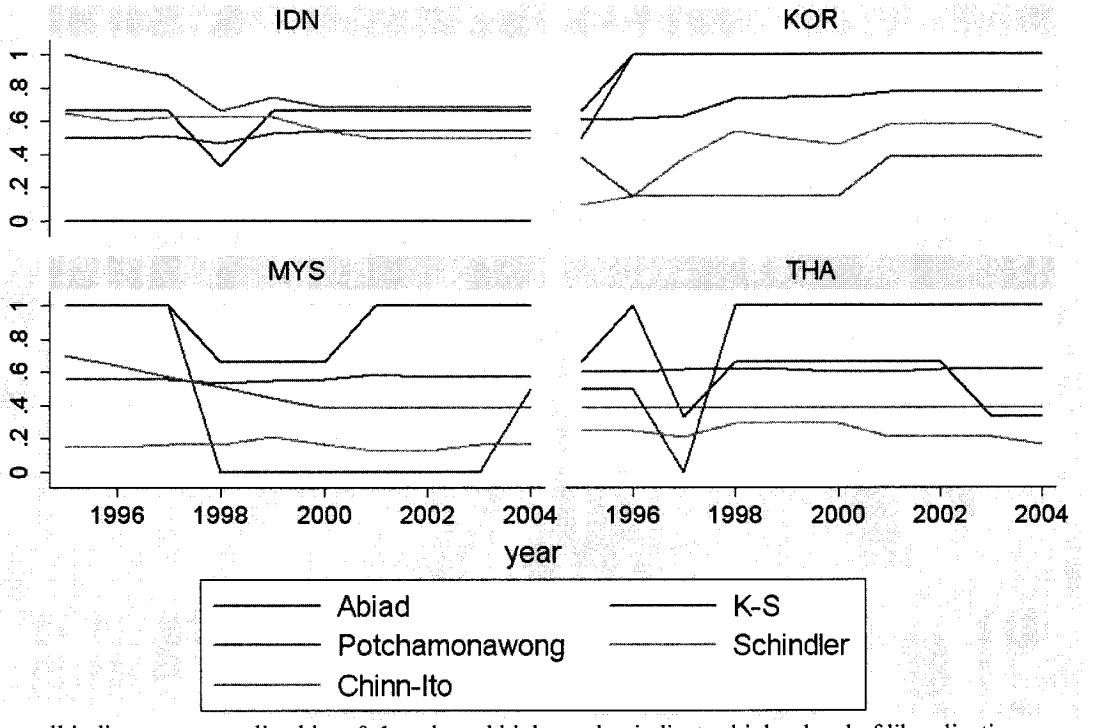
Interestingly, although the capital account liberalization indices from both Abiad et al. and K-S mainly focus on the same categories of capital account transactions, i.e., financial credits and the multiple exchange rates, the results of the effect are quite different. Moreover, according to figure 7-1, although the Abiad and K-S indices tend to move in the same direction, occasionally the K-S index either moves very aggressively compared to other indices, or is unable to capture some changes in the intensity of capital account openness. For example, the K-S index identifies Indonesia as a country that had very high restrictions on the movement of capital in1991, while the others indices classify Indonesia as a partially repressed country in 1991. Many restrictions on foreign borrowing were reinstated during the early 1990s in order to cool down the Indonesian

economy (Johnston et al. 1997). For instance, short-term foreign exchange liabilities were limited to 30% of capital in 1991. In addition, in 1994, commercial banks were required to have prior approval from The Bank of Indonesia in order to accept a loan from abroad (Aramaki and Karikomi 2007). Therefore, the K-S index scored Indonesia as a fully repressed country. However, after the financial crisis of 1997-1998 Indonesia did remove several regulations on capital flows, but mostly with respect to direct investment and portfolio investment, not foreign borrowing. Therefore, foreign borrowing is still highly regulated by the Indonesian central bank as seen in the K-S index.

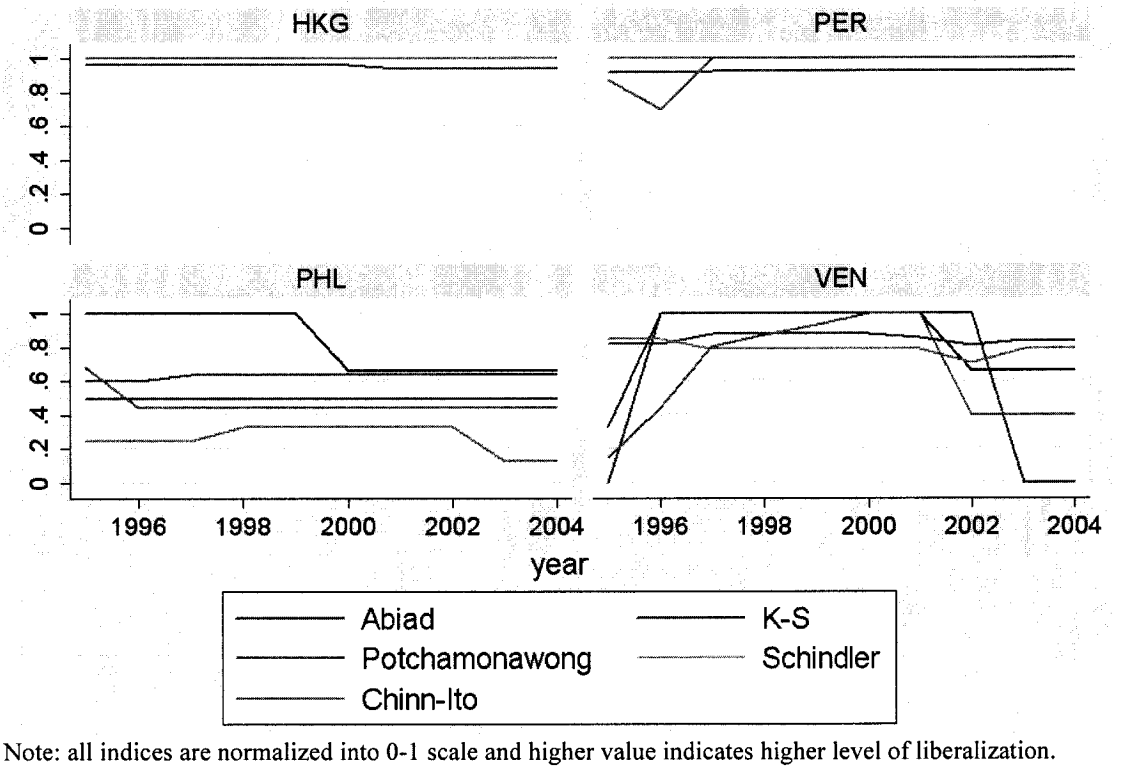
Figure 7-1: Comparison between different measurements of capital account liberalization from 1995-2004



Note: all indices are normalized into 0-1 scale and higher value indicates higher level of liberalization.



Note: all indices are normalized into 0-1 scale and higher value indicates higher level of liberalization.



Note: all indices are normalized into 0-1 scale and higher value indicates higher level of liberalization.

Tables 7-6 and 7-7 show that similar to the Abiad index, capital account liberalization from the Potchamanawong and Schindler indices tends to have a positive and significant impact on net capital flows and foreign portfolio flows. Therefore, we can conclude that capital account liberalization is associated with an increase in the volume of net capital inflows and foreign portfolio inflows, but the capital account liberalization effects on FDI flows and private loan flows are still ambiguous.

We can also investigate the effect of the liberalization of capital inflows and capital outflows by utilizing the Potchamanawong and Schindler indices. According to the correlation matrix, the correlation between inflows and outflows on the Potchamanawong index accounts for 0.80, while the Schindler index is only 0.58. This suggests that the Potchamanawong index is more likely than the Schindler index to have problems with multicollinearity when the liberalization of both capital inflows and capital outflows are included in the model.

According to the results generated by using the Potchamanawong index, it is interesting that after including the liberalization of both capital inflows and outflows in the model, the removal of controls on capital outflows tends to encourage substantial net capital inflows into the country. However, surprisingly, the liberalization of capital inflows does not have any significant effect on any types of capital flows. Moreover, due to the multicollinearity problem, the analysis of this effect may be biased. Also, we can investigate separately the effect of the liberalization of capital inflows and outflows. The results suggest that although withdrawal of controls on both capital inflows and outflows tends to be associated with a substantial increase in net capital inflows and foreign portfolio inflows, the magnitudes of the effects are quite different. According to the size

of the coefficients, the removal of controls on capital outflow appears to have a stronger impact on the capital flows than the removal of controls on capital inflows. In other words, the liberalization of capital outflows tends to attract more capital inflows than the liberalization of capital inflows. When the restrictions on capital outflows are removed, foreign investors are more willing to invest in a country because it reduces the period of time that foreign investors have to stay in the market (Labán and Larraín 1997). Moreover, Bartolini and Drazen (1997) also support the idea that removal of controls on capital outflows can also act as a signal to foreign investors that a government is committed to a favorable environment for future investment. As a result, capital inflows tend to increase substantially when controls on capital outflows are relaxed. Therefore, as Labán and Larraín (1997) suggested, "[liberalizing capital outflows] may not be the appropriate policy to defend the real exchange rate in the presence of massive capital inflows, because it is likely to strengthen those very capital inflows."

For the Schindler index, table 7-7 shows that the results from the Schindler index are similar to the previous results from the Potchamanawong index. Moreover, the results also confirm that the liberalization of capital outflows leads to a substantial surge in capital inflows.

In conclusion, the effect of capital account liberalization on the movement of net capital inflows is unambiguous. The removal of controls on capital flows is always accompanied by large inflows of capital. Moreover, the liberalization of capital outflows also creates a substantial surge in capital inflows. However, the effect of capital account liberalization on specific types of capital flows such as FDI flows and private loan flows is still unclear. Using different measurements of capital account liberalization tends to

create different outcomes. The ambiguous effects may be due to the differences in capital transactions that are employed to construct indices, the methodology, and the criteria used to score the indices. Moreover, the construction of the indices still heavily relies on the viewpoint of different authors.

Chapter 8

Conclusion and recommendations

A substantial surge in capital flows, particularly in emerging markets, has been blamed as a cause of a significant appreciation of real exchange rates and asset price bubbles, thereby leading to macroeconomic imbalances in many countries during 1990s (e.g. Calvo et al. 1993; Reinhart and Rogoff 2009). Moreover, financial liberalization has been cited in a significant amount of the literature as one of the most important factors that contribute to a flood in capital flows. However, while many authors have made statements about the effects of financial liberalization on the behavior of capital flows, there have been few systematic studies of this question. Of these studies, most researchers have studied the effectiveness of capital control. In addition to relaxing restrictions on capital movements, there are many types of financial liberalization policies that apparently impact the behavior of capital flows such as liberalization of interest rates and credit allocation, a removal of entry barriers for domestic and foreign banks, privatization of state-owned banks, and liberalization of the security market. Although these financial liberalization policies may not seemingly have a direct effect on the movement of capital flows, they tend to have an impact on prices, transaction costs, returns on assets, and quantitative limits of foreign ownerships. These impacts appear to have an influence on the decisions of domestic and foreign investors on whether to allocate their capital locally or internationally. As a result, apart from capital account liberalization, domestic financial liberalization policies may lead to a change in the movement and structure of cross-border capital flows.

The main findings of this dissertation suggest that first, financial liberalization is a crucial factor in determining the direction and volume of capital flows. However, the financial liberalization effects on capital flows are varied, depending on the economic region, the types of financial liberalization policies, and the forms of capital flows. Second, the empirical results show that while relaxing restrictions on capital flows attracts substantial funds from foreign investors, other financial liberalization policies, such as abolishment of restrictions on interest rates and credit controls, elimination of bank entry barriers, and liberalization of the security market, generally create a large reduction in the offshore investment by domestic investors. Third, financial liberalization policies tend to have a strong influence in changing the composition of capital flows by tilting the structure of capital flows away from the most stable flows: FDI flows. Fourth, in emerging markets, the removal of capital controls is likely to be associated with a surge in capital flows, particularly in the form of foreign portfolio flows and private loan flows. Finally, the empirical findings also suggest that in emerging markets, financial liberalization in a country with inadequate prudential regulation and bank supervision is more likely to stimulate a substantial surge in private loan flows than in a country with strong prudential regulation and bank supervision.

According to this study, although the removal of capital controls leads to a substantial increase in volatile flows, particularly in the form of offshore borrowing, the imposition of capital controls does not appear to be a good option. Not only do capital controls tend to reduce the supply of funds and raise the cost of financing, but restrictions on capital flows also make the country more vulnerable to crisis (Potchamanawong 2007). Moreover, relaxing controls on capital outflows, which is supposed to be used as a

policy to offset large capital inflows with increased outflows often accelerates a substantial surge in capital inflows instead (e.g. Labán and Larraín 1997; Bartolini and Drazen 1997).

Supplementary policies such as increasing development in the bond and equity market or allowing domestic and foreign banks to enter in the domestic banking industry are necessary. These policies can reduce the reliance on one particular source of financing which normally is in the form of offshore borrowing. Liberalization in the security market can increase the number of investment channels and create more opportunities for risk diversification for both domestic and foreign investors. As a result, domestic banks and firms can be financed by other financial instruments instead of relying heavily on foreign borrowing.

Furthermore, a rise in foreign ownership in the domestic banking sectors as well as an increase in the scope of activities of domestic and foreign banks tends to reduce offshore borrowing. Also, greater competition in the domestic credit market as a result of an increase in the number of participants in financial markets after the removal of restrictions on bank entry tends to increase the supply of domestic funds and reduce the cost of domestic borrowing. Consequently, domestic businesses may not need to rely so heavily on foreign credit which can cause a decline in foreign private loan flows. Typically, foreign borrowing tends to make a country relatively more crisis-prone as a result of higher foreign currency-denominated debt with short-term maturity (Rajan 2009). A removal of entry barriers in the banking sector not only contributes to a decline in offshore borrowing, but also makes a country less exposed to currency and maturity mismatches, thereby reducing vulnerability to financial crisis. Clarke et al. (2003)

provide an excellent survey on the cause and the consequence of the entry of foreign banks. They suggest that lending from foreign bank subsidiaries which are operating in a host country is not largely impacted when the host country is facing financial disturbances compared to cross-border lending. Therefore, encouraging foreign banks to enter in the domestic banking industry helps protect domestic firms or businesses from a sharp reduction of foreign loans during the period of financial distress.

Finally, the process of financial liberalization in emerging markets needs to be accompanied by a strengthening of prudential regulation and bank supervision in order to protect an economy from a substantial surge in capital flows, particularly in the form of foreign borrowing. For example, allowing foreign banks to enter can create greater competition and lead to a lowering of the franchise value of the banking system. As a result, without adequate regulation and supervision, agents (domestic banks) may have incentives to take greater risks by providing loans to unproductive sectors in order to offset a decline in their franchise values. A credit boom resulting from this often generates the need for foreign borrowing. As Noy (2004) states "Since agents (banks) are not yet familiar with their consequences [of financial liberalization], they may make on excessive risk in attempt to use the more flexible or open operating environment to increase profit." An enhancement in transparency, a reduction in asymmetric information and an improvement in risk management as a result of strengthening prudential bank regulation and supervision can translate into an increase in the capacity of a bank to distinguish productive loans from unproductive loans or limit risk-taking behavior. Therefore, financial liberalization in a country with efficient regulation and supervision

makes a country less prone to financial crisis by reducing its exposure to substantial surges in highly volatile flows or speculative flows.

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Appendix 1: The list of countries*

Developed countries (8 countries)

Australia, Canada, France, Germany Italy, Japan, New Zealand, United Kingdom, USA**

Emerging market countries (30 countries)

Argentina, Bangladesh, Brazil, Chile, China, Colombia, Ecuador, Egypt, Ghana, Hungary, Hong Kong, India, Indonesia, Israel, Jamaica, Jordan, Korea, Malaysia, Mexico, Morocco, Peru, Philippines, Singapore, South Africa, Sri Lanka, Thailand, Turkey, Uruguay, Venezuela, Rep. Bolivia., Zimbabwe

Less developed countries (5 countries)

Bolivia, Costa Rica, Guatemala, Nepal and Uruguay

*from the economist 2001
** I do not include USA in the empirical study due to I use USA economy as a control variable.

Appendix 2: Data descriptions and sources

Variable	Description and Sources
Foreign direct investment	This category includes reinvested earnings, other capital and financial derivatives associated with various inter company transaction between affiliated enterprises. FDI also include equity capital that a foreign enterprise purchased or acquire 10% of more of the equity stake. Source : IFS line 78 bed (domestic flows) and 78bdd (foreign flows)
Portfolio flows	Non-controllable blocks of equity shares and bonds, debentures, notes and money market or negotiable debt instrument. Source : IFS line 78 bgd (domestic flows) and 78 bfd (asset flows)
Private loan flows	All financial transactions in bank and non bank sector. They are not covered in direct investment, portfolio flow, financial derivatives or other assets. Include trade credits, loans, transactions in currency and posits and other assets. IFS line bank + other sector 78 bqd + 78 brd (domestic flows) and bank + other sector 78 bud + 78 bvd (foreign flows)
Net capita flows	Source: IFS line 78 bjd
Elimination of credit controls and reserve requirement	The index measures whether reserve requirement are restrictive, there are minimum amounts of credit that must be channeled to certain sector and there are any credits supplied to certain sectors at subsidized rates. The policy is measured on a four point scale from 0 to 3. [0] = fully repressed, [1] = partially repressed and [2] = largely liberalized and [3] = fully liberalized. Source: Abiad et al. (2008)
Elimination of interest rate controls	The index measures whether deposit and lending rates are determined by the central bank or not. The policy is measured on a four point scale from 0 to 3. [0] = fully repressed , [1] = partially repressed and [2] = largely liberalized and [3] = fully liberalized. Source: Abiad et al. (2008)
Elimination of entry barrier in banking sector	The index measures whether the government allows foreign banks to enter into a domestic market, the government allow the entry of new domestic banks or have they eased branching restrictions; the government allows banks to engage in a wider rage of activities. The policy is measured on a four point scale from 0 to 3. [0] = fully repressed, [1] = partially repressed and [2] = largely liberalized and [3] = fully liberalized. Source: Abiad et al. (2008)

Privatization of state-owned banks	The index measures whether state-owned banks exit or state-owned banks do not consist of any significant portion of banks. The policy is measured on a four point scale from 0 to 3. [0] = fully repressed, [1] = partially repressed and [2] = largely liberalized and [3] = fully liberalized. Source: Abiad et al. (2008)
Capital account liberalization	The index measures whether the exchange rate system is unified and a country have restrictions on capital inflows and outflows. The policy is measured on a four point scale from 0 to 3. [0] = fully repressed, [1] = partially repressed and [2] = largely liberalized and [3] = fully liberalized. Source: Abiad et al. (2008)
Security market liberalization	The index measures whether the security market are developed and a country's security market is open to foreign investors. The policy is measured on a four point scale from 0 to 3. [0] = fully repressed, [1] = partially repressed and [2] = largely liberalized and [3] = fully liberalized. Source: Abiad et al. (2008)
Financial liberalization	The sum of six different indices such that the elimination of credit control, the elimination of interest rate controls, the elimination of banking entry barrier, the privatization of state-owned banks, the capital account liberalization and the security market liberalization. The index is measured from 0 to 18. Source: Abiad et al. (2008)
Inflation	Consumer price index. Source: WDI
Domestic credit to private sectors	The domestic credits are provided to private sectors, in percent of GDP. Source: WDI
The Domestic GDP growth	The GDP growth. Source: WDI
The US GDP growth	The GDP growth of USA Source: WDI
Interest rate differential	The domestic short term deposit rate minus the rate of US 6 month deposit London offer. Source: WDI and IFS
Trade openness	The sum of export and import, in percent of GDP. Source: WDI and IFS
Bank regulation and supervision	The index measure whether a country has adopted a capital adequacy ration based on the Basle standard, banking supervisory agency is independent from the executives' influence and a banking supervisory agency conduct effective supervision through on-site and off-site examinations. The policy is measured on a four point scale from 0 to 3. [0] = fully repressed, [1] = partially repressed and [2] = largely liberalized and [3] = fully liberalized. Source: Abiad et al. (2008)Omori (2007)

Appendix 3: Descriptive statistics

Variable	Obs	Mean	Std. Dev.	Min	Max
a) Entire Sample					
Capital flows Per GDP					
Net capital flows	1322	2.0409	5.2547	-39.8936	50.0158
Foreign Direct investment	1322	1.7773	2.7640	-5.2757	36.6151
Direct investment abroad	1285	0.6605	2.0339	-5.0296	35.0945
Foreign Portfolio flows	1305	0.9816	2.8060	-35.0193	38.1224
Domestic portfolio flows	1278	0.8299	2.6117	-15.2730	26.0505
Foreign Private loans flows	1303	1.5512	5.5977	-90.7500	42.4991
Domestic Private loans flows	1248	1.2980	4.6690	-71.7941	41.1633
Financial Liberalization					
Total Financial Liberalization	1460	9.3233	5.7508	0	18
The Elimination of Credit Control	1460	1.5233	1.1897	0	3
The Elimination of Interest Rate Control	1460	1.8308	1.3260	0	3
The Elimination of Entry Barriers	1460	1.4158	1.1669	0	3
Privatization of State Owned Banks	1460	1.2534	1.1964	0	3
Capital Account Liberalization	1460	1.7514	1.1360	0	3
Security Market Liberalization	1460	1.5486	1.1050	0	3
Other Control Variables					
Inflation	1491	46.6556	404.6388	-23.4789	12338.66
Domestic Credit to Private / GDP	1436	52.2872	42.4892	1.5423	231.0819
Interest Rate Differentials	1203	0.5183	6.2434	-0.1672	172.2655
Domestic GDP growth	1491	3.9240	4.1468	-13.9737	24.3096
US GDP growth	1530	3.1417	2.0155	-1.9744	7.1979
Trade Openness	1489	63.2483	59.9803	6.3203	440.0390
Bank regulation and supervision	1460	0.7336	0.9371	0	3

Variable	Obs	Mean	Std. Dev.	Min	Max
b)Country groups					
I. Industrial countries					
Capital flows Per GDP					
Net capital flows	298	1.1884	2.9182	-5.8902	15.6756
Foreign Direct investment	298	1.3948	1.6601	-5.2757	11.0558
Direct investment abroad	298	1.4227	1.9833	-5.0296	16.9727
Foreign Portfolio flows	298	2.4073	2.7874	-4.0169	18.4776
Domestic portfolio flows	298	1.7776	2.5826	-3.0063	13.7958
Foreign Private loans flows	286	3.0350	5.1298	-6.0810	40.1427
Domestic Private loans flows	286	2.4563	4.6784	-6.3611	41.1633
Financial Liberalization					
Total Financial Liberalization	297	13.7113	4.4917	2	18
The Elimination of Credit Control	297	2.2231	1.0491	0	3
The Elimination of Interest Rate Control	297	2.5488	0.9718	0	3
The Elimination of Entry Barriers	297	1.7879	1.1235	0	3
Privatization of State Owned Banks	297	1.8788	1.1145	0	3
Capital Account Liberalization	297	2.5623	0.8405	0	3
Security Market Liberalization	297	2.7104	0.5037	1	3

Variable	Obs	Mean	Std. Dev.	Min	Max
II. Emerging market countries					
Capital flows Per GDP					
Net capital flows	878	2.2499	5.8811	-39.8936	50.0158
Foreign Direct investment	878	1.9423	3.1132	-2.7574	36.6151
Direct investment abroad	851	0.4947	2.1398	-2.9665	35.0945
Foreign Portfolio flows	865	0.6292	2.8536	-35.0193	38.1224
Domestic portfolio flows	839	0.6170	2.7350	-15.2730	26.0505
Foreign Private loans flows	871	1.1208	5.8912	-90.7500	42.4991
Domestic Private loans flows	827	0.9910	4.8162	-71.7941	39.0488
Financial Liberalization					
Total Financial Liberalization	998	8.3565	5.5615	0	18
The Elimination of Credit Control	998	1.3494	1.1423	0	3
The Elimination of Interest Rate Control	998	1.6513	1.3543	0	3
The Elimination of Entry Barriers	998	1.3567	1.1572	0	3
Privatization of State Owned Banks	998	1.1573	1.1706	0	3
Capital Account Liberalization	998	1.5210	1.1344	0	3
Security Market Liberalization	998	1.3206	1.0289	0	3

Variable	Obs	Mean	Std. Dev.	Min	Max
III. Less-developed countries					
Capital flows Per GDP					
Net capital flows	146	2.5238	4.7877	-13.8504	13.9053
Foreign Direct investment	146	1.5658	2.1965	-2.4989	12.1967
Direct investment abroad	136	0.0275	0.0589	-0.2152	0.3257
Foreign Portfolio flows	142	0.1368	0.8827	-4.7465	4.6788
Domestic portfolio flows	141	0.0936	0.7511	-3.3273	5.0831
Foreign Private loans flows	146	1.2123	3.9788	-35.4777	8.9715
Domestic Private loans flows	135	0.7249	3.0904	-16.9188	12.5389
Financial Liberalization					
Total Financial Liberalization	165	7.2727	4.9980	0	17
The Elimination of Credit Control	165	1.3152	1.2484	0	3
The Elimination of Interest Rate Control	165	1.6242	1.2705	0	3
The Elimination of Entry Barriers	165	1.1030	1.1510	0	3
Privatization of State Owned Banks	165	0.7091	1.0478	0	3
Capital Account Liberalization	165	1.6848	0.9292	0	3
Security Market Liberalization	165	0.8364	0.8359	0	2

Table 2-1: Gross private capital flows during 1977-2005 (US$ Billion)

Year	1977	1980	1985	1990	1993	1994	1995	1996	1997	1998
World	185.84	565.59	525.00	1328.06	2257.30	1947.75	2372.66	3164.38	4059.24	3691.04
Industrialized market	162.36	503.89	443.52	1180.76	1981.42	1680.64	2099.74	2796.81	3500.68	2973.51
Emerging markets	22.65	59.80	80.21	145.25	273.86	264.84	268.97	364.23	555.42	714.67
Emerging Asia	8.39	17.53	32.52	64.92	134.21	125.72	148.61	182.27	336.94	479.69
Emerging Latin America	9.48	36.86	38.92	69.99	122.16	114.60	90.10	141.33	161.22	181.04
Less-developed countries	0.83	1.90	1.27	2.06	2.02	2.27	3.96	3.35	3.14	2.86

Year	1999	2000	2001	2002	2003	2004	2005
World	5175.80	5808.02	4337.80	3342.29	4766.59	7687.43	8866.93
Industrialized market	4499.67	5175.48	3653.59	2786.50	4177.13	6862.50	7952.09
Emerging markets	672.79	627.94	675.64	543.06	581.77	819.11	906.12
Emerging Asia	421.47	404.02	428.69	335.29	395.29	554.07	599.12
Emerging Latin America	184.48	162.14	179.70	156.28	120.68	161.33	170.45
Less-developed countries	3.35	4.61	8.57	12.73	7.69	5.82	8.72

Source: IMF and Author's calculation. U.S.A is included for the calculation

Table 2-2: Net private capital flows during 1977-2005 (US$ Billion)

Year	1977	1980	1985	1990	1993	1994	1995	1996	1997	1998
World	38.47	33.77	110.89	160.87	149.36	181.39	172.06	227.53	240.74	30.84
Industrialized market	27.19	-5.67	113.93	113.73	-3.68	83.35	61.05	71.88	112.25	4.09
Emerging markets	10.78	38.95	-2.97	46.79	151.15	96.32	109.22	154.80	127.09	25.19
Emerging Asia	3.49	11.16	15.60	27.38	55.62	23.73	46.32	60.47	19.55	-50.79
Emerging Latin America	6.68	26.92	-18.27	18.78	87.37	65.12	45.03	79.86	84.63	66.22
Less-developed countries	0.50	0.50	-0.07	0.36	1.90	1.72	1.79	0.86	1.41	1.56

Year	1999	2000	2001	2002	2003	2004	2005
World	242.80	550.20	323.54	369.85	645.60	594.13	616.95
Industrialized market	192.41	474.26	276.29	372.78	609.70	459.32	470.15
Emerging markets	48.71	74.62	44.62	-3.32	34.66	133.94	143.91
Emerging Asia	-22.41	3.12	16.03	-3.08	20.64	101.34	46.22
Emerging Latin America	48.62	53.61	36.89	0.88	2.06	0.03	32.00
Less-developed countries	1.68	1.32	2.64	0.38	1.24	0.87	2.88

Source: IMF and Author's calculation. USA is included for the calculation

Table 2-3: The introduction of financial liberalization policies and the process of reforms from 1973 – 2005

Industrialized countries

Countries	Elimination of Direct credit control		Elimination of Interest rate control		Elimination of entry barrier in fn sector		Privatization of state owned banks		Capital account liberalization		Security market liberalization	
AUS	1973 1982 1987	0 2 3	1973 1981 1985 1986* 1987	0 1 3 2 3	1973 1982 1985 1997	0 1 2 3	1973 1994	0 3	1973 1983 1984	0 1 3	1973 1984	2 3
CAN	1973 1990	2 3	1973	3	1973 1980 1992 1994	0 1 2 3	1973	3	1973 1974	2 3	1973	3
GER	1973	3	1973	3	1973 1985 1993	1 2 3	1973	1	1973 1974	2 3	1973 1975	2 3
FRA	1973 1985 1987	0 2 3	1973 1984	1 3	1973 1984 1993	1 2 3	1973 1982* 1987 1993 1997	1 0 1 2 3	1973 1984 1990	1 2 3	1973 1985	2 3
ENG	1973 1980	2 3	1973 1981	2 3	1973 1981 1986	1 2 3	1973 1986	2 3	1973 1979	1 3	1973 1982	2 3
ITA	1973 1983 1986* 1989	0 1 0 1	1973 1974	1 3	1973 1982 1993 1995	0 1 2 3	1973 1993 1997 2005	0 1 2 3	1973 1982 1992	1 2 3	1973 1974 1987	1 2 3

	1993 1996	2 3										
JPN	1973 1991	1 2	1973 1979 1985	0 1 3	1973 1981 1991 1993	0 1 2 3	1973	2	1973 1979	2 3	1973 1976 1991	1 2 3
NZL	1973 1984 1985	1 2 3	1973 1976 1981** 1984	0 3 0 3	1973 1985 1987	0 2 3	1973 1987 1992	1 2 3	1973 1984	1 3	1973 1976 1986	1 2 3
USA	1973 1982	2.25 3	1973 1980	0 3	1973 1996 1999	1 2 3	1973	3	1973	3	1973	3

Source: Abiad et al. (2008)
Note: 0 = repressed, 1=partly repressed, 2= liberalized, 3= largely liberalized.
*gradual reversal, **big bang reversal

Emerging market countries

Countries	Elimination of Direct credit control		Elimination of Interest rate control		Elimination of entry barrier in fn sector		Privatization of state owned banks		Capital account liberalization		Security market liberalization	
ARG	1973 1977 1982** 1992 1995 2001*	0 2 0 2 3 2	1973 1975 1977 1982** 1987 1991	0 1 3 0 2 3	1973 1977 1993	0 1 3	1973 1992	0 1	1973 1977 1981* 1982* 1987* 1989 1990 1999* 2001*	0 3 2 1 0 2 3 2 1	1973 1989 1991	0 1 3

BGD	1973 1986 1987 2005*	0 1 2 1	1973 1990 1998	0 1 2	1973 1982 2005	0 1 2	1973 2005	0 1	1973 1980 1992	0 1 2	1973 1980 1990	0 1 2
BRA	1973	0	1973 1976 1979** 1980 1983** 1988 1989	0 3 0 3 0 1 3	1973 1988 1994	0 1 2	1973 1990* 1996	1 0 1	1973 1990 1991* 1995 1996* 1997 1998	0 1 0 1 0 1 2	1973 1988 1991	0 1 2
CHL	1973 1975 1982 1986	0 1 2 3	1973 1974 1976 1982** 1984	0 1 3 1 3	1973 1975 1981 1986	0 1 2 3	1973 1974 1982* 1985	0 2 1 2	1973 1977 1979 1982** 1985 1998 2000	0 1 3 0 1 2 3	1973 1976 1987 2001	0 1 2 3
CHN	1981 1985 1998	0 0.75 2.25	1981 2002 2004	0 1 2	1981 1999	0 1	1981	0	1981 1982* 1985 1988 1994	1 0 1 0 1	1981 1990 2004	0 1 2
COL	1973 1995	0 1	1973 1980 1991	0 1 3	1973 1975* 1990 1991	1 0 2 3	1973 1982* 1991 1993 1998* 1999	1 0 1 2 1 2	1973 1991 1992* 1998	0 3 2 3	1973 1989 1999	0 1 2
EGY	1973 1991	0 2	1973 1991	0 2	1973 1992	0 1	1973	0	1973 1991	0 1	1973 1991	0 1

	1992 2004	3 2	1993	3	1993 1996	2 3			1997 2004* 2005	2 1 2	1995	2
GHA	1973 1990 2001 2003*	0 1 2 1	1973 1987	0 3	1973 1988 2005	0 1 2	1973 1996	0 1	1973 1987	0 1	1973 1990 1998	0 1 2
GTM	1973 1979 1986* 1991 1993 1994	0 1 0 1 2 3	1973 1989 1990	0 1 3	1973 1993 2004	0 1 2	1973 1995 2005*	1 3 2	1973 1980* 1988 2002	2 1 2 3	1973 1990	0 1
HKG	1973	3	1973 1987 1994 1999	0 1 2 3	1973 1978	1 3	1973	3	1973	3	1973	3
HUN	1990 2001	1.5 2.25	1990	3	1990 1996	2 3	1990 1996 1998	0 2 3	1990 1991 1994 1996	0 1 2 3	1990 1995 1998	1 2 3
IDN	1973 1983 1989* 1990	0 2 1 2	1973 1983 1991	0 2 3	1973 1985 1988 1998	0 1 2 3	1973 1996 1998* 2003	0 1 0 1	1973 1978* 1979 1988 1989 1991* 1998* 1999	1 0 1 2 3 2 1 2	1973 1984 1989	0 1 2
IND	1973 1990	0 1	1973 1992	0 1	1973 1993	0 1	1973	0	1973 1993	0 1	1973 1988	0 1

	1998	2	2000	2					1996 2004	2 3	1997 1999	2 3
ISR	1973 1987 1989 1990	0 1 2 3	1973 1987	2 3	1973 1994 2003	1 2 3	1973 1983** 1991 2000	2 0 1 2	1973 1977 1979** 1987 1990 1998	0 2 0 1 2 3	1973 1987 1991 1995	0 1 2 3
JAM	1973 1985 1989 1991	0 1 0 1	1973 1978 1985 1990	0 1 2 3	1973 1993	1 2	1973 1986 1998* 2000 2002	0 1 0 1 2	1973 1977 1978 1983 1984 1991	2 0 1 0 1 3	1973 1988 2001	0 1 2
KOR	1973 1980 1982	0 1 3	1973 1984 1989* 1991 2001*	0 1 0 3 2	1973 1977 1981 1998	0 1 2 3	1973 1981 1997**	1 2 0	1973 1991 1996	1 2 3	1973 1991 2000	1 2 3
MAR	1973 1976 1983 1995 1998	1 0 1 2 3	1973 1989 1996	0 1 3	1973 1993	0 2	1973 1994	0 1	1973 1992 1993	0 1 2	1973 1989	1 2
MEX	1973 1989 1995	0 2 3	1973 1980 1981* 1989	0 1 0 3	1973 1974 1991 1999	0 1 2 3	1973 1982** 1987 1991 1995* 2000	3 0 1 3 2 3	1973 1982* 1991	2 1 3	1973 1975 1989 2000	0 1 2 3

MYS	1973 1975** 1980 1996**	3 1 3 1	1973 1978 1985** 1987 1998* 2004	0 2 0 3 2 3	1973 1985 1989	0 1 2	1973 1985 1989 1999	2 0 2 3	1973 1979 1994* 1995 1998* 2001	2 3 2 3 2 3	1973 1984 1987 2003	0 1 2 3
PAK	1973 1997	0 2	1973 1989 1995	0 1 3	1973 1991 1997*	0 1 0	1973 1975** 1990 2004	2 0 1 2	1973 1991 1994 1998*	0 1 2 1	1973 1991	0 2
PER	1973 1983 1985* 1990 1991 1992 1993	0 0.75 0 0.75 1.5 2.25 3	1973 1990	0 3	1973 1982 1987** 1993 1996	0 2 0 2 3	1973 1991 1995	0 2 3	1973 1974 1987* 1990 1991 1992	0 1 0 1 2 3	1973 1983 1992	0 1 2
PHL	1973 1982 1984 1994 1997	0 0.75 1.5 2.25 3	1973 1981 1982 1983	0 1 2 3	1973 1980 1993 1994	0 1 2 3	1973 1989 2005	1 2 3	1973 1976 1979* 1984 1987* 1988 1991 1994 2000*	0 1 0 1 0 1 2 3 2	1973 1986 1994	0 1 2
SGP	1973 1975 1987	1.5 2.25 3	1973 1975	1 3	1973 1999 2000	1 2 3	1973	3	1973	3	1973 1984	2 3
SRL	1973 1978	0.75 1.5	1973 1977	0 1	1973 1978	0 1	1973 2003	0 1	1973 1978	0 1	1973 1987	0 1

	1983* 1986 1989* 1992 1996	0.75 1.5 0.75 2.25 3	1995	3	1979 1980* 1988 2000	2 1 2 3			1992 1998	2 1	1992	2
TAI	1973	0.75	1973 1986 1992	0 1 3	1973 1984 1992 2003	0 1 2 3	1973 1998 2002 2003*	0 1 2 0	1973 1987 1997	0 2 3	1973 1976 1995 2003	0 1 2 3
THA	1973 1980 1984 1990* 1998	0.75 1.5 2.25 1.5 3	1973 1989 1992	0 1 3	1973 1990 1992	0 1 2	1973 1989 1998** 1999	1 2 0 1	1973 1983* 1984 1988 1992 1995* 1996 1997** 1998 2003	1 0 1 2 3 2 3 1 2 1	1973 1979 1990	0 1 2
TUR	1973 1985 1989 1990* 1994 1995*	0.75 1.5 2.25 1.5 2.25 1.5	1973 1980 1983* 1986 1988	0 2 1 2 3	1973 1980 1990 1991	0 1 2 3	1973 1996 1999* 2001	0 1 0 1	1973 1979 1989	0 1 3	1973 1981 1989	0 1 2
VEN	1973 1978 1980* 1984 1991* 1993	0.75 1.5 0.75 1.5 0.75 1.5	1973 1981 1984* 1989 1991 1993**	0 1 0 1 3 1	1973 1975 1993 1994	0 1 2 3	1973 1978* 1989 1991 1994** 1996	2 1 2 3 1 3	1973 1983** 1987* 1989 1994* 1996	3 1 0 2 1 3	1973 1975 1990 1997	0 1 2 3

	1997 2001*	3 2.25	1994* 1996	0 3					2002	2		
ZAF	1973 1976** 1977 1985	2.25 0 0.75 2.25	1973 1980 1982	0 2 3	1973 1983 1994	0 1 3	1973	3	1973 1979 1983 1985** 1993 1995	0 1 3 0 1 3	1973 1982 1995	0 1 2
ZWE	1973 1990 1995 1998*	0 0.75 1.5 0.75	1973 1990 1991 2003	0 1 3 2	1973 1993 2000 2002	0 1 2 3	1973 1997	2 3	1973 1993 1994 2002**	1 2 3 0	1973 1979 1993	0 1 2

Source: Abiad et al. (2008)

Note: 0 = repressed, 1=partly repressed, 2= liberalized, 3= largely liberalized.

*gradual reversal, **big bang reversal

Less-developed countries

Countries	Elimination of Direct credit control		Elimination of Interest rate control		Elimination of entry barrier in fn sector		Privatization of state owned banks		Capital account liberalization		Security market liberalization	
BOL	1973	0	1973	0	1973	0	1973	0	1973	2	1973	0
	1984	1	1985	3	1991	1	1992	3	1974	3	1989	1
	1985	2			1998	3			1982*	2	1990	2
	1987	3							1983	3		
									1984*	2		
									2003	3		
CRI	1973	0	1973	0	1973	0	1973	0	1973	0	1973	0
	1986	1	1978	1	1992	1			1975	1	1996	1
	1989*	0	1986	2	1999	2			1979	3		
	1991	2							1981*	2		
	1996	3							1983	3		
									1984**	1		
									1992	2		
ECU	1973	0	1973	0	1973	0	1973	0	1973	0	1973	0
	1991	2	1986	1	1992	1	1993	1	1975	1	1991	1
	1994	3	1988*	0	1994	3	1998*	0	1981	2	1993	2
	2005	2	1989	1			2001	1	1982*	1		
			1992	3			2003	2	1989*	0		
									1991	1		
									1999	2		
NPL	1973	1	1973	0	1973	0	1973	0	1973	0	1973	0
	1974*	0	1986	1	1983	1			1994	1	1989	1
	1986	1	2001	3	2001	2			2002	3		
			2003	2					2003*	2		
URY	1973	0	1973	0	1973	0	1973	1	1973	0	1973	0
	1976	1	1976	1	1974	1	1982*	0	1974	1	1974	1

	1979 1982** 1992 1995 2002*	2 0 2 3 2	1979 1983* 1984* 1985	3 2 1 3	1976 1981	2 3	1990 2002*	1 0	1978 1997	2 3	1976	2

Source: Abiad et al(2008)
Note: 0 = repressed, 1=partly repressed, 2= liberalized, 3= largely liberalized.
*gradual reversal, **big bang reversal

Table 2-4: The speed of completed financial liberalization in industrialized countries, on average (year)

	Elimination of credit controls	Elimination of interest rate controls	Elimination of bank entry barriers	Privatization of state-owned banks	Capital account liberalization	Security market liberalization	Average
AUS	5	6	15	1	1	11	6.50
CAN	17	-	14	-	1	-	10.67
GER	-	-	20	-	1	2	7.67
FRA	2	11	20	24	17	12	14.33
ENG	7	8	13	13	6	9	9.33
ITA	13	1	22	12	19	14	13.50
JPN	-	6	12	-	6	16	10.00
NZL	12	3	2	19	11	13	10.00
USA	11	1	26	-	-	-	12.67
Average	9.57	5.14	16.00	13.80	7.75	11.00	21.09

Source: Abaid et al. (2008) and author's calculation

Table 2-5: The number of reversals of financial liberalization from 1973 to 2005

Economic region(the number of countries)	Elimination of credit control	Elimination of interest rate control	Elimination of entry barriers in the banking sector	Privatization of state-owned banks	Capital account liberalization	Securities market liberalization	Total (Average)
Industrialized countries (9)	1	2	0	1	0	0	4 (0.44)
Emerging market countries (30)	19	12	4	14	30	0	79(2.63)
Less-developed countries (5)	4	3	0	3	7	0	17(3.4)
Total(Average)	24(0.54)	17(0.38)	4(0.39)	18 (0.4)	37(0.84)	0	100(2.27)

Source: Abaid et al. (2008) and author's calculation

Table 5-1: The effect of financial liberalization on the direction and magnitude of capital flows (All samples)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Financial liberalization t	0.3674 ***	0.1438 *	-0.2476 ***	0.0081	-0.0797 ***	0.0533	-0.108 ***	0.0843	-0.0444
	[0.0000]	[0.0732]	[0.0005]	[0.7490]	[0.0003]	[0.1176]	[0.0000]	[0.2095]	[0.3463]
Inflation t-1	-0.0003 **	0.0001	0	-0.0002 ***	0 *	0.0002 *	0.0001	0.0002	-0.0002
	[0.0339]	[0.4145]	[0.9112]	[0.0015]	[0.0856]	[0.0782]	[0.2222]	[0.1529]	[0.2609]
Domestic credit / GDP t-1	-0.0079	-0.0227 **	-0.0172 *	-0.0071 **	-0.0037	0.0118 ***	-0.0047	-0.0287 ***	-0.0095
	[0.3496]	[0.0392]	[0.0776]	[0.0289]	[0.1227]	[0.0091]	[0.1991]	[0.0021]	[0.1685]
Domestic GDP growth t-1	0.3138 ***	0.2457 ***	-0.0374	0.0448 ***	0.0143	0.034	-0.0077	0.1732 ***	-0.0406
	[0.0000]	[0.0016]	[0.4045]	[0.0036]	[0.2075]	[0.5260]	[0.6263]	[0.0005]	[0.2083]
US GDP growth t-1	0.0404	-0.1867	-0.3492	0.1123 **	-0.0585 *	-0.1293 *	-0.1328 *	-0.183	-0.1635
	[0.8007]	[0.3868]	[0.1395]	[0.0115]	[0.0610]	[0.0655]	[0.0834]	[0.3755]	[0.2651]
Interest rate differentiate t-1	0.0019	-0.0068	0.01	0.0021	0.0013	-0.0053	0.0043	-0.0029	0.0049
	[0.8490]	[0.6959]	[0.5681]	[0.6341]	[0.5685]	[0.6387]	[0.3298]	[0.8115]	[0.6743]
trade openness t-1	0.0056	0.0214	-0.0011	0.0002	0.0002	-0.0271 ***	-0.0113	0.0449 **	0.0104
	[0.7333]	[0.3994]	[0.9694]	[0.9732]	[0.9684]	[0.0008]	[0.1170]	[0.0477]	[0.5819]
Bank supervision t-1	0.5242	0.7355 **	0.4179	0.221 **	0.3003 ***	0.4368 **	0.369 ***	0.0397	-0.2792
	[0.1003]	[0.0431]	[0.1305]	[0.0262]	[0.0003]	[0.0188]	[0.0003]	[0.8807]	[0.1568]
constant	-1.292	-0.3424	3.0289 **	1.3482 ***	0.7576 **	0.6915	1.52 ***	-2.1863	0.5961
	[0.2935]	[0.8262]	[0.0447]	[0.0005]	[0.0144]	[0.1495]	[0.0005]	[0.1132]	[0.5667]
Number of observation	1052	1025	976	1052	1023	1040	1026	1037	987
Adj R-square	0.172	0.142	0.14	0.209	0.111	0.108	0.153	0.115	0.091
Prob > F	0	0	0	0	0	0	0	0	0

Dependent variables are net capital flows/GDP, net foreign flows/GDP, net domestic flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-2: The effect of financial liberalization on the direction and magnitude of capital flows (All samples)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Total Financial liberalization t	0.3674 ***	0.1438 *	-0.2476 ***	0.0081	-0.0797 ***	0.0533	-0.108 ***	0.0843	-0.0444
	[0.0000]	[0.0732]	[0.0005]	[0.7490]	[0.0003]	[0.1176]	[0.0000]	[0.2095]	[0.3463]
Elimination of credit control t	0.4867 **	-0.2803	-0.6237 ***	-0.0128	-0.1782 ***	-0.0785	-0.2693 ***	-0.1522	-0.1702
	[0.0447]	[0.2139]	[0.0003]	[0.8601]	[0.0005]	[0.4679]	[0.0002]	[0.3676]	[0.1688]
Elimination of interest rate control t	0.5835 ***	-0.1154	-0.7625 ***	-0.0457	-0.2352 ***	-0.0946	-0.3776 ***	0.0461	-0.1119
	[0.0083]	[0.6164]	[0.0002]	[0.4826]	[0.0000]	[0.3028]	[0.0000]	[0.8094]	[0.4057]
Elimination of entry barriers t	0.6862 *	-0.1639	-0.749 **	-0.0581	-0.119	-0.1038	-0.3166 ***	0.0138	-0.2931
	[0.0664]	[0.6871]	[0.0285]	[0.6162]	[0.1920]	[0.5627]	[0.0100]	[0.9654]	[0.2191]
Privatization of state owned banks t	1.0085 ***	1.0799 ***	-0.0547	0.0424	-0.0607	0.5313 ***	0.1618 *	0.4639 **	-0.12
	[0.0000]	[0.0001]	[0.8059]	[0.6871]	[0.4438]	[0.0001]	[0.0920]	[0.0289]	[0.4155]
Capital account liberalization t	1.0445 ***	1.2048 ***	-0.152	0.0461	-0.0903	0.4841 ***	-0.0653	0.6648 ***	0.0643
	[0.0000]	[0.0000]	[0.4342]	[0.5394]	[0.1116]	[0.0002]	[0.3744]	[0.0003]	[0.6275]
Security market liberalization t	0.8359 **	0.0657	-0.7341 **	0.2411 **	-0.3026 ***	-0.1417	-0.5397 ***	-0.0516	0.1177
	[0.0187]	[0.8672]	[0.0290]	[0.0346]	[0.0011]	[0.4305]	[0.0001]	[0.8674]	[0.6132]

Dependent variables are net capital flows/GDP, net foreign flows/GDP, net domestic flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-3: The effect of financial liberalization on the direction and magnitude of capital flows (Industrialized countries)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Total Financial liberalization t	-0.04	0.0337	0.0219	0.0258	-0.0198	0.1017	-0.0129	-0.0844	0.0624
	[0.6134]	[0.7874]	[0.8476]	[0.5889]	[0.6984]	[0.1141]	[0.8102]	[0.3651]	[0.4330]
Elimination of credit control t	-0.0071	-0.1724	-0.1308	-0.0203	-0.0582	0.1885	-0.2537	-0.3534	0.0643
	[0.9790]	[0.6902]	[0.7451]	[0.8738]	[0.6880]	[0.4158]	[0.2156]	[0.2629]	[0.8349]
Elimination of interest rate control t	0.1385	-0.7598 *	-1.0353 **	0.2459 **	-0.1604	-0.2069	-0.4016 **	-0.7913 **	-0.2746
	[0.6032]	[0.0843]	[0.0114]	[0.0367]	[0.2082]	[0.1849]	[0.0141]	[0.0221]	[0.3589]
Elimination of entry barriers t	-0.7549 **	-0.4915	-0.2077	-0.0367	-0.0513	0.0274	-0.4011	-0.3846	0.1614
	[0.0401]	[0.3815]	[0.7093]	[0.8499]	[0.8446]	[0.9266]	[0.1625]	[0.3787]	[0.6885]
Privatization of state owned banks t	-0.233	0.5854	0.5134	-0.0782	-0.1511	0.7896 ***	0.702 ***	-0.1077	0.1269
	[0.3471]	[0.2150]	[0.2401]	[0.6818]	[0.4752]	[0.0010]	[0.0009]	[0.7194]	[0.6413]
Capital account liberalization t	0.1547	1.2701 ***	1.1417 **	0.1581	0.1887	0.5016 ***	0.1225	0.6279 *	0.897 ***
	[0.5709]	[0.0031]	[0.0123]	[0.2748]	[0.1628]	[0.0079]	[0.4934]	[0.0756]	[0.0080]
Security market liberalization t	-0.2484	-0.1272	0.6729	0.1168	0.1169	-0.0942	-0.3371	-0.1942	-0.117
	[0.7545]	[0.9005]	[0.4834]	[0.6039]	[0.6423]	[0.8255]	[0.4278]	[0.8052]	[0.8732]

Dependent variables are net capital flows/GDP, net foreign flows/GDP, net domestic flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.

Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization

*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-4: The effect of financial liberalization on the direction and magnitude of capital flows (Emerging market countries)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Total Financial liberalization t	0.5285 ***	0.1593	-0.4374 ***	-0.0422	-0.1177 ***	0.0814 *	-0.1726 ***	0.1232	-0.123 *
	[0.0000]	[0.1740]	[0.0001]	[0.2326]	[0.0006]	[0.0861]	[0.0000]	[0.2281]	[0.0930]
Elimination of credit control t	0.4932	-0.2248	-0.7465 ***	-0.0113	-0.2013 ***	-0.09	-0.3511 ***	-0.0631	-0.1779
	[0.1482]	[0.4681]	[0.0019]	[0.9063]	[0.0018]	[0.5198]	[0.0001]	[0.7948]	[0.3074]
Elimination of interest rate control t	0.7252 **	-0.1355	-0.9589 ***	-0.1549 *	-0.3108 ***	-0.0293	-0.4171 ***	0.0762	-0.2311
	[0.0164]	[0.6829]	[0.0027]	[0.0738]	[0.0001]	[0.7961]	[0.0004]	[0.7823]	[0.2460]
Elimination of entry barriers t	0.8012	-0.8069	-1.4626 ***	-0.3558 ***	-0.2268 *	-0.2075	-0.5232 ***	-0.2027	-0.6358 *
	[0.1354]	[0.1394]	[0.0032]	[0.0086]	[0.0536]	[0.4067]	[0.0032]	[0.6414]	[0.0528]
Privatization of state owned banks t	0.8347 **	0.764	-0.4671	0.0173	-0.0262	0.4778 **	-0.0644	0.1748	-0.3059
	[0.0275]	[0.1217]	[0.2930]	[0.8876]	[0.8004]	[0.0372]	[0.6723]	[0.6603]	[0.2704]
Capital account liberalization t	1.8808 ***	1.7664 ***	-0.4439	0.0523	-0.1787 **	0.6144 ***	-0.1279	1.0651 ***	-0.093
	[0.0000]	[0.0000]	[0.1742]	[0.5877]	[0.0473]	[0.0025]	[0.2644]	[0.0001]	[0.6657]
Security market liberalization t	1.7074 ***	0.401	-1.0979 **	-0.0853	-0.4076 **	0.2618	-0.5789 ***	0.2505	-0.0621
	[0.0009]	[0.4196]	[0.0198]	[0.6030]	[0.0191]	[0.3341]	[0.0049]	[0.5241]	[0.8392]

Dependent variables are net capital flows/GDP, net foreign flows/GDP, net domestic flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-5: The effect of financial liberalization on the direction and magnitude of capital flows (Emerging Asian countries)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Total Financial liberalization t	1.0349 ***	-0.2246	-1.4593 ***	0.0172	-0.2933 ***	0.0811	-0.5213 ***	-0.2558	-0.5208 **
	[0.0000]	[0.4718]	[0.0002]	[0.8469]	[0.0001]	[0.2638]	[0.0000]	[0.3847]	[0.0352]
Elimination of credit control t	1.6921 ***	-0.256	-1.903 **	0.5267 **	-0.4676 ***	-0.1838	-0.6275 ***	-0.4558	-0.6603
	[0.0017]	[0.7195]	[0.0193]	[0.0171]	[0.0038]	[0.3866]	[0.0070]	[0.4445]	[0.2289]
Elimination of interest rate control t	1.1492 **	-0.6075	-1.8229 **	-0.0747	-0.5135 ***	0.0882	-0.6539 **	-0.4709	-0.5642
	[0.0123]	[0.3501]	[0.0274]	[0.6686]	[0.0007]	[0.5909]	[0.0166]	[0.4175]	[0.2750]
Elimination of entry barriers t	0.5473	-1.5445	-3.3577 *	0.0347	-0.0404	0.4036	-0.512	-1.8235	-2.6124 **
	[0.4957]	[0.3001]	[0.0888]	[0.9145]	[0.9120]	[0.2101]	[0.3723]	[0.1584]	[0.0253]
Privatization of state owned banks t	-0.4559	-0.6387	-0.6834	-0.2725	-0.0401	0.3071	-0.3226	-0.8792	-0.2087
	[0.5089]	[0.4865]	[0.5516]	[0.3186]	[0.8526]	[0.3734]	[0.3055]	[0.2772]	[0.7875]
Capital account liberalization t	3.6649 ***	1.4616 *	-2.1573 *	0.0431	-0.5247 ***	0.3687 *	-0.9901 ***	1.165	-0.2643
	[0.0000]	[0.0817]	[0.0544]	[0.8438]	[0.0069]	[0.0555]	[0.0018]	[0.1347]	[0.7123]
Security market liberalization t	2.7706 ***	-0.6687	-4.0955 ***	-0.4874	-1.0654 ***	-0.299	-2.0795 ***	0.2892	-0.8134
	[0.0042]	[0.5415]	[0.0014]	[0.1818]	[0.0028]	[0.3843]	[0.0000]	[0.7686]	[0.3607]

Dependent variables are net capital flows/GDP, net foreign flows/GDP, net domestic flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-6: The effect of financial liberalization on the direction and magnitude of capital flows (Emerging Latin American countries)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Total Financial liberalization t	0.0171	-0.1175	-0.2023 **	0.0156	-0.0657 **	0.1978 *	-0.0697	-0.3317 **	-0.1002
	[0.9273]	[0.6103]	[0.0420]	[0.7558]	[0.0113]	[0.0947]	[0.1594]	[0.0331]	[0.1241]
Elimination of credit control t	0.3586	-0.3102	-0.2313	0.0138	-0.1105	0.0735	-0.2467 *	-0.4527	-0.0022
	[0.5155]	[0.6064]	[0.3797]	[0.9215]	[0.1022]	[0.8414]	[0.0925]	[0.3079]	[0.9913]
Elimination of interest rate control t	-0.3399	-1.2077 *	-0.6037 **	0.0351	-0.1505 **	-0.1869	-0.234 *	-1.0919 **	-0.367 *
	[0.5320]	[0.0913]	[0.0321]	[0.7918]	[0.0380]	[0.6639]	[0.0614]	[0.0167]	[0.0641]
Elimination of entry barriers t	-1.1882	-2.946 ***	-1.1511 ***	-0.5099 **	-0.4695 ***	-0.7669	-0.7026 ***	-1.669 ***	0.0437
	[0.1808]	[0.0013]	[0.0055]	[0.0268]	[0.0001]	[0.2171]	[0.0031]	[0.0067]	[0.8686]
Privatization of state owned banks t	0.697	1.1021	-0.6024 **	0.072	-0.082	1.0066	-0.1934	-0.0134	-0.3596
	[0.3599]	[0.2215]	[0.0409]	[0.6225]	[0.2057]	[0.1186]	[0.1384]	[0.9778]	[0.1181]
Capital account liberalization t	0.539	1.319 **	0.086	0.3344 **	0.0681	1.3174 ***	0.2936 **	-0.3713	-0.344
	[0.3729]	[0.0494]	[0.7707]	[0.0273]	[0.2812]	[0.0049]	[0.0439]	[0.3544]	[0.1456]
Security market liberalization t	-0.5011	0.0978	-0.2318	-0.0255	-0.3219 *	1.0066	0.0872	-0.8434	0.1004
	[0.5139]	[0.9315]	[0.6541]	[0.9284]	[0.0570]	[0.2238]	[0.7780]	[0.2280]	[0.7086]

Dependent variables are net capital flows/GDP, net foreign flows/GDP, net domestic flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-7: The effect of financial liberalization on the direction and magnitude of capital flows (less-developed countries)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Total Financial liberalization t	0.8207 ***	0.3666	-0.1141	-0.1505	0.0004	0.0231	-0.0263	0.5249 *	-0.0864
	[0.0018]	[0.2454]	[0.6641]	[0.1175]	[0.9133]	[0.7130]	[0.7010]	[0.0964]	[0.7004]
Elimination of credit control t	1.8591 ***	0.6163	-0.0604	-0.0955	-0.004	-0.0677	0.0561	0.6592	-0.1203
	[0.0060]	[0.2694]	[0.8717]	[0.6427]	[0.6542]	[0.6458]	[0.6668]	[0.1473]	[0.7262]
Elimination of interest rate control t	0.7732	0.4036	-0.2676	-0.3121	0.0143	0.2766	-0.0676	0.621	-0.1992
	[0.2782]	[0.4243]	[0.5293]	[0.1140]	[0.1051]	[0.1998]	[0.3950]	[0.2598]	[0.6189]
Elimination of entry barriers t	2.9789 ***	1.0492	-0.3034	-0.0659	-0.0097	-0.0032	-0.1116	1.1334	-0.1848
	[0.0032]	[0.3906]	[0.7710]	[0.8984]	[0.4831]	[0.9849]	[0.7027]	[0.2964]	[0.8341]
Privatization of state owned banks t	1.9804 ***	1.3265	0.0183	-0.126	-0.0042	0.0081	-0.1101	1.2479	0.178
	[0.0047]	[0.2509]	[0.9849]	[0.6319]	[0.6642]	[0.9406]	[0.5510]	[0.1911]	[0.8266]
Capital account liberalization t	-2.6577 **	-2.0008	-0.5357	-0.9737 **	0.0029	-0.0581	-0.1525	0.6932	-0.4479
	[0.0378]	[0.1043]	[0.5382]	[0.0330]	[0.8951]	[0.8471]	[0.5793]	[0.6161]	[0.5875]
Security market liberalization t	3.9056 ***	1.9493	-0.8981	-0.9956 **	-0.0001	-0.1261	-0.0447	2.835 **	-0.9059
	[0.0072]	[0.2117]	[0.4541]	[0.0360]	[0.9934]	[0.5828]	[0.8675]	[0.0355]	[0.3758]

Dependent variables are net capital flows/GDP, net foreign flows/GDP, net domestic flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-8: The effect of financial liberalization on the composition of international capital flows. (All samples)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Financial liberalization t	-0.9434 **	0.291	0.9052 ***	0.2485	0.0382	-0.5395
	[0.0317]	[0.3632]	[0.0052]	[0.4214]	[0.9370]	[0.2056]
Inflation t-1	0.0099	-0.0002	0.0609 *	-0.0016	-0.0708 **	0.0019 *
	[0.7531]	[0.5111]	[0.0698]	[0.1509]	[0.0322]	[0.0907]
Domestic credit / GDP t-1	-0.1611 ***	-0.0652 **	-0.0052	-0.0623	0.1663 ***	0.1275 ***
	[0.0004]	[0.0483]	[0.9010]	[0.1030]	[0.0017]	[0.0040]
Domestic GDP growth t-1	0.1487	-0.1049	-0.512	-0.3011	0.3633	0.406
	[0.5743]	[0.5965]	[0.1565]	[0.2121]	[0.3392]	[0.1718]
US GDP growth t-1	-0.9682	-3.6783 **	0.7268	-0.5583	0.2414	4.2366 ***
	[0.2640]	[0.0299]	[0.4718]	[0.4692]	[0.8198]	[0.0084]
Interest rate differentiate t-1	-1.1386	-0.2465 **	-2.1031	0.0587	3.2416 **	0.1878
	[0.4346]	[0.0435]	[0.1679]	[0.7060]	[0.0298]	[0.2598]
trade openness t-1	0.091	0.1052 **	-0.1256 **	-0.1974 ***	0.0345	0.0922
	[0.1824]	[0.0176]	[0.0192]	[0.0001]	[0.6599]	[0.1701]
Bank supervision t-1	1.3645	-1.2344	-0.4424	3.5375 **	-0.9221	-2.3031
	[0.3645]	[0.3573]	[0.7669]	[0.0170]	[0.6321]	[0.2198]
constant	37.6099 ***	24.4091 **	21.9789 ***	15.4008 ***	40.4113 ***	60.1901 ***
	[0.0000]	[0.0122]	[0.0002]	[0.0007]	[0.0000]	[0.0000]
Number of observation	614	676	614	676	614	676
Adj R-square	0.172	0.097	0.296	0.243	0.314	0.26
Prob > F	0	0	0	0	0	0

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-9: The effect of financial liberalization on the composition of international capital flows. (All samples)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Total Financial liberalization t	-0.9434 **	0.291	0.9052 ***	0.2485	0.0382	-0.5395
	[0.0317]	[0.3632]	[0.0052]	[0.4214]	[0.9370]	[0.2056]
Elimination of credit control t	-1.7994	-0.3318	1.2493	-0.0399	0.5502	0.3717
	[0.1832]	[0.7652]	[0.2681]	[0.9680]	[0.7301]	[0.7983]
Elimination of interest rate control t	-1.0379	0.2559	-0.2032	-0.1102	1.2411	-0.1457
	[0.4264]	[0.8069]	[0.8473]	[0.9177]	[0.4215]	[0.9184]
Elimination of entry barriers t	-3.5108 **	1.6289	3.0948 **	0.1387	0.416	-1.7676
	[0.0454]	[0.2045]	[0.0195]	[0.9279]	[0.8301]	[0.3614]
Privatization of state owned banks t	-2.3954 *	0.7723	3.9027 ***	2.1619	-1.5072	-2.9342 *
	[0.0807]	[0.4849]	[0.0017]	[0.1345]	[0.3345]	[0.0676]
Capital account liberalization t	-1.7054	1.2643	2.0758 *	0.2159	-0.3704	-1.4802
	[0.1844]	[0.2922]	[0.0831]	[0.8577]	[0.8141]	[0.3638]
Security market liberalization t	-3.1425	0.9387	3.4373 **	1.731	-0.2948	-2.6697
	[0.1043]	[0.4704]	[0.0393]	[0.2433]	[0.8925]	[0.1523]

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-10: The effect of financial liberalization on the composition of international capital flows. (Industrialized countries)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Total Financial liberalization t	-0.6105	0.0054	0.5878	0.4622	0.0227	-0.4676
	[0.3017]	[0.9941]	[0.4124]	[0.4177]	[0.9820]	[0.5792]
Elimination of credit control t	-1.2268	2.6815	0.826	1.9098	0.4009	-4.5913
	[0.4877]	[0.2808]	[0.7616]	[0.3705]	[0.9009]	[0.1547]
Elimination of interest rate control t	3.754 **	0.6211	-1.5278	-2.5003	-2.2262	1.8792
	[0.0470]	[0.7954]	[0.5009]	[0.1723]	[0.4904]	[0.5255]
Elimination of entry barriers t	-4.1868 *	1.3632	1.914	0.2995	2.2728	-1.6627
	[0.0573]	[0.6322]	[0.5106]	[0.9084]	[0.4858]	[0.6603]
Privatization of state owned banks t	-3.1369 *	-2.9357	4.9875 **	3.2572	-1.8506	-0.3216
	[0.0549]	[0.1780]	[0.0401]	[0.1288]	[0.5218]	[0.8922]
Capital account liberalization t	-3.7932 **	-1.382	2.252	2.0749	1.5412	-0.693
	[0.0399]	[0.5757]	[0.3898]	[0.2631]	[0.6585]	[0.8108]
Security market liberalization t	-6.4556	1.1848	-1.4076	3.6568	7.8632	-4.8416
	[0.1304]	[0.8261]	[0.8207]	[0.4309]	[0.3104]	[0.5316]

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-11: The effect of financial liberalization on the composition of international capital flows. (Emerging market countries)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Total Financial liberalization t	-1.3206 *	0.1344	0.9557 **	0.3666	0.3649	-0.5009
	[0.0733]	[0.7966]	[0.0283]	[0.4317]	[0.6209]	[0.4624]
Elimination of credit control t	-2.1414	-0.5463	2.105	-0.279	0.0364	0.8253
	[0.3192]	[0.7457]	[0.1233]	[0.8361]	[0.9867]	[0.6954]
Elimination of interest rate control t	-1.52	-1.3099	-0.1305	2.0005	1.6506	-0.6907
	[0.4189]	[0.4004]	[0.9271]	[0.2124]	[0.4055]	[0.7436]
Elimination of entry barriers t	-5.7782 **	2.0024	3.1004 *	-2.0725	2.6778	0.0701
	[0.0406]	[0.3397]	[0.0965]	[0.3042]	[0.3521]	[0.9801]
Privatization of state owned banks t	-1.1528	2.7341	2.6988	1.4426	-1.5461	-4.1768 *
	[0.6137]	[0.1265]	[0.1644]	[0.4554]	[0.5413]	[0.0727]
Capital account liberalization t	-1.7735	1.3269	1.1602	0.6615	0.6133	-1.9884
	[0.3780]	[0.4358]	[0.4582]	[0.7022]	[0.7826]	[0.3912]
Security market liberalization t	-5.1085 *	-2.1097	4.5885 **	2.077	0.52	0.0327
	[0.0711]	[0.3652]	[0.0453]	[0.3547]	[0.8599]	[0.9914]

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-12: The effect of financial liberalization on the composition of international capital flows. (Emerging Asian countries)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Total Financial liberalization t	-0.0394	-2.2191 **	0.3839	0.4822	-0.3445	1.7369
	[0.9750]	[0.0114]	[0.5301]	[0.6398]	[0.8077]	[0.1670]
Elimination of credit control t	-1.6209	-3.7618 *	1.9054	-1.1768	-0.2845	4.9386
	[0.6360]	[0.0725]	[0.2624]	[0.6646]	[0.9379]	[0.1154]
Elimination of interest rate control t	2.2178	-3.5375 *	0.9913	6.559 ***	-3.2091	-3.0216
	[0.3511]	[0.0738]	[0.5480]	[0.0064]	[0.2547]	[0.2675]
Elimination of entry barriers t	-1.9924	-3.806	-2.163	-1.765	4.1554	5.571
	[0.6049]	[0.2948]	[0.4075]	[0.6534]	[0.3736]	[0.2785]
Privatization of state owned banks t	0.5132	3.7851	1.0298	-5.7598	-1.5429	1.9746
	[0.8859]	[0.1940]	[0.7142]	[0.1194]	[0.6838]	[0.6745]
Capital account liberalization t	-0.1221	-5.1249 *	0.8074	-0.6704	-0.6853	5.7953
	[0.9714]	[0.0819]	[0.6956]	[0.8690]	[0.8640]	[0.1937]
Security market liberalization t	-1.2731	-6.359 *	-0.6325	0.5778	1.9056	5.7812
	[0.7628]	[0.0813]	[0.8276]	[0.8863]	[0.7133]	[0.2878]

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-13: The effect of financial liberalization on the composition of international capital flows. (Emerging Latin American countries)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Total Financial liberalization t	0.5667	1.0107	0.3468	0.315	-0.9135	-1.3257
	[0.6987]	[0.4118]	[0.7234]	[0.7638]	[0.5276]	[0.3130]
Elimination of credit control t	1.1599	4.1911	-5.3883	-1.0682	4.2284	-3.1229
	[0.8195]	[0.2852]	[0.1165]	[0.7635]	[0.4829]	[0.4959]
Elimination of interest rate control t	4.5771	3.5834	-1.2163	-0.9677	-3.3608	-2.6158
	[0.3214]	[0.1605]	[0.7388]	[0.6926]	[0.4177]	[0.4201]
Elimination of entry barriers t	-3.4945	-2.8164	-1.2947	-4.5005	4.7892	7.3169
	[0.5444]	[0.6739]	[0.7666]	[0.4312]	[0.3153]	[0.3839]
Privatization of state owned banks t	-1.8193	3.3302	5.5189	-0.2671	-3.6996	-3.0631
	[0.7840]	[0.4766]	[0.3068]	[0.9391]	[0.5811]	[0.5457]
Capital account liberalization t	5.3884	-1.4454	8.1583 *	2.6852	-13.5467 *	-1.2398
	[0.5195]	[0.6335]	[0.0885]	[0.3880]	[0.0659]	[0.7391]
Security market liberalization t	-1.8198	-0.2979	2.9072	6.2746	-1.0874	-5.9767
	[0.8326]	[0.9551]	[0.6124]	[0.1749]	[0.8933]	[0.3412]

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-14: The effect of financial liberalization on the composition of international capital flows. (Less-developed countries)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Total Financial liberalization t	-3.0401	-0.0177	0.3114	-0.8067	2.7287	0.8244
	[0.2170]	[0.9849]	[0.8844]	[0.6520]	[0.3777]	[0.6813]
Elimination of credit control t	2.6274	-1.6689	-0.3997	-1.9171	-2.2277	3.586
	[0.6030]	[0.5899]	[0.9515]	[0.6203]	[0.7448]	[0.4689]
Elimination of interest rate control t	-8.0611	0.8735	-3.8201	-8.633 *	11.8812 *	7.7594
	[0.1769]	[0.5544]	[0.3341]	[0.0952]	[0.0642]	[0.1478]
Elimination of entry barriers t	3.0176	-0.5191	-3.9975	12.4136 *	0.9799	-11.8944
	[0.6210]	[0.8188]	[0.4403]	[0.0988]	[0.8914]	[0.1338]
Privatization of state owned banks t	-2.8314	3.7568	3.8323	3.2126	-1.0009	-6.9694
	[0.5158]	[0.1747]	[0.1497]	[0.5451]	[0.8426]	[0.2484]
Capital account liberalization t	-24.9709 *	-3.5465	-2.649	-12.2863	27.6198	15.8327
	[0.0732]	[0.4600]	[0.7408]	[0.3243]	[0.1001]	[0.2433]
Security market liberalization t	-10.5937	-3.0609	19.0799 *	-0.3225	-8.4862	3.3834
	[0.3743]	[0.6877]	[0.0888]	[0.9664]	[0.5443]	[0.7438]

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
Financial liberalization here is the sum of six different types of financial liberalization policies. Thus financial liberalization ranges from 0-18. The higher value of the financial liberalization index represents the greater degree of financial liberalization
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-15: The number of a surge in capital flows from 1973 to 2005

	Net capital	FDI	Portfolio	Private loans
All Samples	239	104	87	168
Industrialized markets	33	13	49	38
Emerging markets	179	84	38	110
Emerging Asia	78	42	13	57
Emerging Latin America	48	26	8	24
Less-develop market	27	7	0	20

Source: IFS and author's calculations

Table 5-16: The marginal effect of financial liberalization on the probability of a surge in net capital flows (All samples).

	Surge in net capital flows	Surge in FDI flows	Surge in foreign portfolio flows	Surge in Foreign Private loan flows
Financial liberalization t	0.0105 ***	0.0082 **	0.009 ***	0.0113 ***
	[0.0049]	[0.0140]	[0.0000]	[0.0038]
Inflation t-1	0	0	0	-0.0002
	[0.4519]	[0.8464]	[0.1250]	[0.2702]
Domestic credit / GDP t-1	-0.0015 ***	-0.0005 **	0.0001	-0.0008 **
	[0.0013]	[0.0409]	[0.3199]	[0.0371]
Domestic GDP growth t-1	0.0258 ***	0.0048	0.0008	0.0093 **
	[0.0000]	[0.1843]	[0.5831]	[0.0246]
US GDP growth t-1	-0.0299 ***	0.008	-0.0013	-0.0074
	[0.0000]	[0.1168]	[0.6150]	[0.1183]
Interest rate differentiate t-1	0.0019 **	-0.0215	0.0006 *	0.0025
	[0.0146]	[0.5274]	[0.0628]	[0.4250]
trade openness t-1	0.0002	0.0005 **	0	0.0007 ***
	[0.4061]	[0.0114]	[0.5074]	[0.0000]
Bank supervision t-1	-0.0202	0.0008	0.0137	-0.0322 *
	[0.4016]	[0.9381]	[0.2589]	[0.0775]
Number of observation	1079	1079	1079	1079
Prob of BC	0.157	0.05	0.038	0.11
Wald Chi-Square	96.137	117.769	72.108	128.045
Prob > Chi-Square	0	0	0	0
Pseudo-R2	0.107	0.185	0.167	0.089
Log-Likelihood	-464.652	-271.307	-237.573	-386.065
AIC	947.303	560.614	493.146	790.129
BIC	992.157	605.468	538.001	834.983

Dependent variables are a surge in net capital flow, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.

*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 5-17: The marginal effect of financial liberalization on the probability of a surge in international capital flows (All samples).

	Net capital flow/GDP	FDI flows / GDP	Foreign Portfolio flows / GDP	Foreign Private loan flows / GDP
Financial liberalization t	0.0105 ***	0.0082 **	0.009 ***	0.0113 ***
	[0.0049]	[0.0140]	[0.0000]	[0.0038]
Elimination of credit controls t	0.0075	0.0275 **	0.0087	0.0112
	[0.6579]	[0.0366]	[0.3293]	[0.3809]
Elimination of interest rate controls t	0.0432 ***	0.0289 **	0.032 ***	0.0378 ***
	[0.0006]	[0.0332]	[0.0014]	[0.0080]
Elimination of entry barrier t	0.0209 *	0.021 *	0.0178 *	0.024
	[0.0876]	[0.0553]	[0.0913]	[0.1620]
Privatization of state-owned banks t	0.0418 ***	0.0183	0.0171 *	0.0279 *
	[0.0043]	[0.1017]	[0.0577]	[0.0797]
Capital account liberalization t	0.0369 ***	0.0164	0.0403 ***	0.0462 ***
	[0.0050]	[0.2442]	[0.0000]	[0.0035]
Security market liberalization t	0.0146	0.0122	0.0355 ***	0.0408 **
	[0.4983]	[0.3190]	[0.0003]	[0.0237]

Dependent variables are a surge in net capital flows , FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 5-18: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Industrialized countries).

	Net capital flow/GDP	FDI flows / GDP	Foreign Portfolio flows / GDP	Foreign Private loan flows / GDP
Financial liberalization t	0.001	0.0015	0.0203	0.0054
	[0.8997]	[0.2734]	[0.1109]	[0.5460]
Elimination of credit controls t	0.0035	0.0072	0.0156	0.0101
	[0.8639]	[0.1074]	[0.5224]	[0.7541]
Elimination of interest rate controls t	-0.0086	N.A.	N.A.	0.0193
	[0.7197]			[0.4680]
Elimination of entry barrier t	-0.0105	0.0025	0.0403	0.0518
	[0.7072]	[0.6930]	[0.2394]	[0.2641]
Privatization of state-owned banks t	0.0221	-0.0006	0.0065	0.0015
	[0.2251]	[0.7746]	[0.8378]	[0.9384]
Capital account liberalization t	-0.0209	N.A.	0.0873 *	-0.0144
	[0.5179]		[0.0705]	[0.7066]
Security market liberalization t	0.0022	-0.0091	0.1125	0.0748
	[0.9735]	[0.3159]	[0.1618]	[0.2178]

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 5-19: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Emerging market countries).

	Net capital flow/GDP	FDI flows / GDP	Foreign Portfolio flows / GDP	Foreign Private loan flows / GDP
Financial liberalization t	0.0084 *	0.0069	0.0064 ***	0.0074 **
	[0.0631]	[0.1397]	[0.0056]	[0.0396]
Elimination of credit controls t	-0.0135	0.0271 *	0.0033	0.0029
	[0.5304]	[0.0961]	[0.6648]	[0.8257]
Elimination of interest rate controls t	0.0453 ***	0.0146	0.0218 **	0.0259 *
	[0.0041]	[0.3805]	[0.0230]	[0.0574]
Elimination of entry barrier t	0.0186	0.0189	0.0187	0.0199
	[0.3158]	[0.1615]	[0.1073]	[0.2278]
Privatization of state-owned banks t	0.0355 *	0.0161	0.0155 *	0.0237
	[0.0591]	[0.2355]	[0.0946]	[0.1831]
Capital account liberalization t	0.0524 ***	0.0201	0.0304 ***	0.0424 ***
	[0.0001]	[0.1199]	[0.0002]	[0.0033]
Security market liberalization t	-0.0111	0.0205	0.0193	0.0046
	[0.6951]	[0.1879]	[0.1178]	[0.8179]

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 5-20: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Emerging Asian countries)

	Net capital flow/GDP	FDI flows / GDP	Foreign Portfolio flows / GDP	Foreign Private loan flows / GDP
Financial liberalization t	0.0142	0.01	0.0072 ***	0.0148 **
	[0.1321]	[0.2875]	[0.0027]	[0.0412]
Elimination of credit controls t	-0.0112	0.0248	0.0206 ***	-0.0129
	[0.7634]	[0.4344]	[0.0010]	[0.6150]
Elimination of interest rate controls t	0.0669 **	0.0423 *	0.0194 **	0.014
	[0.0188]	[0.0565]	[0.0497]	[0.5779]
Elimination of entry barrier t	-0.0031	-0.0129	0.0267 **	0.0216
	[0.9290]	[0.5628]	[0.0214]	[0.5212]
Privatization of state-owned banks t	0.0827 **	0.019	0.0134	0.1004 ***
	[0.0419]	[0.5485]	[0.2791]	[0.0019]
Capital account liberalization t	0.062 ***	0.0469	0.0292 **	0.0793 *
	[0.0081]	[0.1594]	[0.0345]	[0.0508]
Security market liberalization t	-0.0246	0.0383	0.0126	0.0447
	[0.4775]	[0.3748]	[0.5952]	[0.2963]

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 5-21: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Emerging Latin American countries)

	Net capital flow/GDP	FDI flows / GDP	Foreign Portfolio flows / GDP	Foreign Private loan flows / GDP
Financial liberalization t	0.0213 **	0	0.0054	-0.0008
	[0.0455]	[0.9408]	[0.1540]	[0.8710]
Elimination of credit controls t	0.0435	0	0.0183	0.0076
	[0.1932]	[0.9428]	[0.2150]	[0.6089]
Elimination of interest rate controls t	0.1158 ***	N.A.	0.0186	0.0242
	[0.0010]		[0.2222]	[0.2503]
Elimination of entry barrier t	0.0627	0	0.026	-0.0179
	[0.2459]	[0.9581]	[0.1774]	[0.2887]
Privatization of state-owned banks t	0.031	0	0.0261 ***	-0.0078
	[0.2948]	[0.9407]	[0.0001]	[0.6713]
Capital account liberalization t	0.0634 ***	0	0.022 **	0.0059
	[0.0078]	[0.9532]	[0.0155]	[0.7691]
Security market liberalization t	0.0185	0	0.0345 ***	-0.0473
	[0.7207]	[0.9426]	[0.0025]	[0.3330]

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 5-22: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Less-developed countries)

	Net capital flow/GDP	FDI flows / GDP	Foreign Portfolio flows / GDP	Foreign Private loan flows / GDP
Financial liberalization t	0.0002 [0.8763]	N.A.	N.A.	0.0261 * [0.0506]
Elimination of credit controls t	0.001 [0.8870]	N.A.	N.A.	0.0498 [0.2678]
Elimination of interest rate controls t	0.0006 [0.8408]	N.A.	N.A.	0.0817 [0.1929]
Elimination of entry barrier t	0.001 [0.8719]	N.A.	N.A.	0.0563 [0.4693]
Privatization of state-owned banks t	0.0001 [0.8960]	N.A.	N.A.	0.047 [0.4037]
Capital account liberalization t	-0.0001 [0.8532]	N.A.	N.A.	0.0584 [0.3775]
Security market liberalization t	0.0014 [0.8636]	N.A.	N.A.	0.2109 * [0.0902]

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 5-23: The summary of the results of the financial liberalization effect on a surge in different types of capital flows

Economic region	Net capital flows	FDI flows	Foreign portfolio flows	Foreign private loan
All samples	✓	✓	✓	✓
Industrialized countries	✗	✗	✗	✗
Emerging market countries	✓	✗	✓	✓
Emerging Asia	✗	✗	✓	✓
Emerging Latin America	✓	✗	✗	✗
Less-developed countries	✗	✗	✗	✓

Table 5-24: The marginal effect of financial liberalization on the probability of a surge in international capital flows (All samples)

	Surge in Net capital flows	Surge in FDI flows	Surge in foreign portfolio flows	Surge in foreign private loans flows
Financial liberalization t	0.0105 ***	0.0082 **	0.009 ***	0.0113 ***
	[0.0049]	[0.0140]	[0.0000]	[0.0038]
Inflation t-1	0	0	0	-0.0002
	[0.4519]	[0.8464]	[0.1250]	[0.2702]
Domestic credit / GDP t-1	-0.0015 ***	-0.0005 **	0.0001	-0.0008 **
	[0.0013]	[0.0409]	[0.3199]	[0.0371]
Domestic GDP growth t-1	0.0258 ***	0.0048	0.0008	0.0093 **
	[0.0000]	[0.1843]	[0.5831]	[0.0246]
US GDP growth t-1	-0.0299 ***	0.008	-0.0013	-0.0074
	[0.0000]	[0.1168]	[0.6150]	[0.1183]
Interest rate differentiate t-1	0.0019 **	-0.0215	0.0006 *	0.0025
	[0.0146]	[0.5274]	[0.0628]	[0.4250]
trade openness t-1	0.0002	0.0005 **	0	0.0007 ***
	[0.4061]	[0.0114]	[0.5074]	[0.0000]
Bank supervision t-1	-0.0202	0.0008	0.0137	-0.0322 *
	[0.4016]	[0.9381]	[0.2589]	[0.0775]
Number of observation	1079	1079	1079	1079
Prob of BC	0.157	0.05	0.038	0.11
Wald Chi-Square	96.137	117.769	72.108	128.045
Prob > Chi-Square	0	0	0	0
Pseudo-R2	0.107	0.185	0.167	0.089
Log-Likelihood	-464.652	-271.307	-237.573	-386.065
AIC	947.303	560.614	493.146	790.129
BIC	992.157	605.468	538.001	834.983

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 5-25: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Industrialized countries)

	Surge in Net capital flows	Surge in FDI flows	Surge in foreign portfolio flows	Surge in foreign private loans flows
Financial liberalization t	0.001	0.0015	0.0203	0.0054
	[0.8997]	[0.2734]	[0.1109]	[0.5460]
Inflation t-1	-0.0021	0.0016	-0.0191 **	0.0158 ***
	[0.5868]	[0.2621]	[0.0278]	[0.0000]
Domestic credit / GDP t-1	-0.0009	-0.0001	-0.0006	-0.0003
	[0.1976]	[0.5246]	[0.3966]	[0.6275]
Domestic GDP growth t-1	0.0393 ***	0.0017	0.0219 *	0.0094
	[0.0000]	[0.1637]	[0.0740]	[0.4231]
US GDP growth t-1	-0.0269 **	0.0041 **	-0.0188	0.0042
	[0.0122]	[0.0318]	[0.1271]	[0.6043]
Interest rate differentiate t-1	1.9631 ***	0.0887 ***	0.9132	-0.4217
	[0.0005]	[0.0066]	[0.3236]	[0.5344]
trade openness t-1	0.0013	0.0005	-0.0002	0.0027
	[0.4335]	[0.2261]	[0.9459]	[0.1531]
Bank supervision t-1	-0.0036	0.0081	-0.0018	0.0119
	[0.8919]	[0.1471]	[0.9515]	[0.7496]
Number of observation	259	259	259	259
Prob of BC	0.072	0.006	0.104	0.106
Wald Chi-Square	.	.	.	.
Prob > Chi-Square	.	.	.	.
Pseudo-R2	0.198	0.262	0.145	0.094
Log-Likelihood	-77.676	-33.608	-99.527	-89.482
AIC	171.352	83.217	215.053	194.965
BIC	199.806	111.671	243.508	223.42

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 5-26: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Emerging market countries)

	Surge in Net capital flows	Surge in FDI flows	Surge in foreign portfolio flows	Surge in foreign private loans flows
Financial liberalization t	0.0084 *	0.0069	0.0064 ***	0.0074 **
	[0.0631]	[0.1397]	[0.0056]	[0.0396]
Inflation t-1	0.0000	0.0001	0.0000	-0.0002
	[0.6662]	[0.5982]	[0.2222]	[0.4459]
Domestic credit / GDP t-1	-0.0014 **	-0.0001	0.0000	-0.0011 **
	[0.0323]	[0.5290]	[0.9408]	[0.0345]
Domestic GDP growth t-1	0.0258 ***	0.0027	0.0001	0.0122 **
	[0.0000]	[0.3794]	[0.9351]	[0.0163]
US GDP growth t-1	-0.0312 ***	0.0054	-0.0002	-0.0057
	[0.0001]	[0.3655]	[0.9531]	[0.3839]
Interest rate differentiate t-1	0.0016 *	-0.0496 *	0.0001	0.0036
	[0.0749]	[0.0753]	[0.8222]	[0.4872]
trade openness t-1	0.0003	0.0003	0.0000	0.0009 ***
	[0.3199]	[0.2640]	[0.8136]	[0.0000]
Bank supervision t-1	-0.0177	0.0008	0.0119	-0.0201
	[0.6494]	[0.9456]	[0.4921]	[0.3899]
Number of observation	691	691	691	691
Prob of BC	0.184	0.041	0.033	0.1
Wald Chi-Square	104.1	64.226	44.265	294.015
Prob > Chi-Square	0	0	0	0
Pseudo-R2	0.093	0.18	0.121	0.13
Log-Likelihood	-322.089	-206.312	-126.794	-234.084
AIC	662.177	430.625	271.588	486.168
BIC	703.02	471.468	312.432	527.011

Dependent variables are a surge in net capital flow, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 5-27: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Emerging Asian countries)

	Surge in Net capital flows	Surge in FDI flows	Surge in foreign portfolio flows	Surge in foreign private loans flows
Financial liberalization t	0.0142	0.01	0.0072 ***	0.0148 **
	[0.1321]	[0.2875]	[0.0027]	[0.0412]
Inflation t-1	0.0106 **	-0.0016	0.0003	0.0012
	[0.0254]	[0.7572]	[0.8048]	[0.7662]
Domestic credit / GDP t-1	0.0002	0.0003	0.0001	-0.0009
	[0.8128]	[0.6777]	[0.4637]	[0.2271]
Domestic GDP growth t-1	0.0327 ***	0.013 *	0.0016	0.0181 *
	[0.0040]	[0.0767]	[0.2075]	[0.0869]
US GDP growth t-1	-0.0422 ***	0.0035	0.0022 **	-0.0149
	[0.0029]	[0.7404]	[0.0486]	[0.1763]
Interest rate differentiate t-1	-0.3858	-0.698	-0.1575	0.0224
	[0.4864]	[0.3867]	[0.4875]	[0.9750]
trade openness t-1	0	0.0005	0	0.001 ***
	[0.9992]	[0.2500]	[0.9154]	[0.0003]
Bank supervision t-1	-0.1128 *	-0.0133	-0.0142	-0.0898 *
	[0.0975]	[0.5478]	[0.3873]	[0.0780]
Number of observation	284	284	284	284
Prob of BC	0.187	0.066	0.019	0.14
Wald Chi-Square	57.242	606.805	519.528	117.483
Prob > Chi-Square	0	0	0	0
Pseudo-R2	0.148	0.338	0.167	0.171
Log-Likelihood	-130.143	-76.389	-43.976	-109.577
AIC	278.287	170.779	105.952	237.155
BIC	311.127	203.62	138.792	269.995

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 5-28: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Emerging Latin American countries).

	Surge in Net capital flows	Surge in FDI flows	Surge in foreign portfolio flows	Surge in foreign private loans flows
Financial liberalization t	0.0213 **	0.0000	0.0054	-0.0008
	[0.0455]	[0.9408]	[0.1540]	[0.8710]
Inflation t-1	0.0000	0.0000	0.0000	0.0000
	[0.6842]	[0.9347]	[0.4635]	[0.7866]
Domestic credit / GDP t-1	-0.0011	0.0000	0.0003	-0.0003
	[0.3985]	[0.9412]	[0.2396]	[0.7404]
Domestic GDP growth t-1	0.0287 ***	0.0000	-0.0009	0.0076
	[0.0003]	[0.9409]	[0.4767]	[0.2195]
US GDP growth t-1	-0.02	0.0000	-0.0036	-0.0094
	[0.2017]	[0.9411]	[0.2271]	[0.4116]
Interest rate differentiate t-1	0.0015	-0.0002	-0.0001	-0.0022
	[0.1360]	[0.9348]	[0.5582]	[0.7499]
trade openness t-1	0.0009	0.0000	-0.0007	0.0023 *
	[0.5499]	[0.9413]	[0.2009]	[0.0657]
Bank supervision t-1	-0.1721 ***	0.0000	-0.0199	-0.047
	[0.0002]	[0.9376]	[0.3416]	[0.3077]
Number of observation	185	185	185	185
Prob of BC	0.146	0	0.006	0.063
Wald Chi-Square	.	.	.	.
Prob > Chi-Square	.	.	.	.
Pseudo-R2	0.217	0.222	0.295	0.131
Log-Likelihood	-73.53	-58.449	-23.229	-51.309
AIC	161.059	130.898	60.457	116.617
BIC	183.602	153.44	83	139.16

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 6-1: The principal component analysis

Principal components/correlation — Number of obs = 1460; Number of comp. = 6; Trace = 6; Rotation: (unrotated = principal); Rho = 1.0000

Component	Eigenvalue	Difference	Proportion	Cumulative
Comp1	3.95086	3.27945	0.6585	0.6585
Comp2	.671411	.288917	0.1119	0.7704
Comp3	.382494	.0127594	0.0637	0.8341
Comp4	.369734	.00632499	0.0616	0.8957
Comp5	.363409	.101314	0.0606	0.9563
Comp6	.262095	.	0.0437	1.0000

Principal components (eigenvectors)

Variable	Comp1	Comp2	Comp3	Comp4	Comp5	Comp6	Unexplained
creditcont~s	0.4205	-0.0968	-0.5880	-0.1622	0.6074	0.2697	0
intratecon~s	0.4000	-0.4364	-0.0004	0.7907	-0.1518	0.0363	0
entrybarri~s	0.4141	-0.2180	0.7657	-0.2932	0.2421	0.2239	0
privatizat~n	0.3376	0.8577	0.1475	0.3300	0.1398	-0.0132	0
intlcapital	0.4245	0.1106	-0.2004	-0.3104	-0.7236	0.3840	0
securityma~s	0.4444	-0.0698	-0.0774	-0.2394	-0.0787	-0.8533	0

Note: the table is based on six different types of financial liberalization policies from Abiad (2008): elimination of credit controls, elimination of interest rate controls, elimination of bank entry barriers, privatization of state-owned banks, capital account liberalization, security market liberalization.

Table 6-2: Correlation matrix among four groups of financial liberalization policies

	Domestic financial liberalization	Bank Liberalization	Capital liberalization	capital market liberalization
Domestic financial lib	1			
Bank Liberalization	0.6806	1		
Capital liberalization	0.6778	0.6768	1	
capital market liberalization	0.7472	0.7053	0.7083	1

Table 6-3: Variance inflation factor (VIF)

Variable	VIF	Sqrt - VIF T	Tolerance	R-Squared
Domestic financial liberalization	2.67	1.63	0.3745	0.6255
Bank liberalization	2.42	1.56	0.4130	0.5857
Capital account liberalization	2.43	1.56	0.4123	0.5877
Capital market liberalization	2.97	1.72	0.3565	0.6635
Mean VIF	2.62			

Table 6-4: Eigenvalue and Condition index (CI)

	Eigenvalue	Condition Index (CI)
constant	4.4776	1.0000
Domestic financial liberalization	0.2309	4.4039
Bank liberalization	0.1129	6.2974
Capital account liberalization	0.0980	6.7591
Capital market liberalization	0.0806	7.4544
Condition Number		7.4544

Table 6-5: .Summarization of multicollinearity testing

Test	Result
1. Correlation	Moderate to High
2. Variance inflation factor (VIF)	Moderate
3 Eigenvalue, Condition index (CI) and Condition number (k)	Small to moderate

Table 6-6: The effect of financial liberalization policies on the direction and magnitude of capital flows (All samples)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Domestic financial liberalization	0.297	-0.7767 **	-0.9937 ***	-0.1053	-0.2749 ***	-0.3169 **	-0.4671 ***	-0.3155	-0.2334
	[0.3175]	[0.0101]	[0.0001]	[0.2515]	[0.0000]	[0.0133]	[0.0000]	[0.1865]	[0.1622]
Bank liberalization	1.0914 **	0.9054 **	-0.2008	-0.0514	-0.0005	0.4889 ***	0.1849	0.4175	-0.3655
	[0.0106]	[0.0430]	[0.5971]	[0.7569]	[0.9954]	[0.0011]	[0.2014]	[0.2625]	[0.1728]
Capital account liberalization	0.7713 ***	1.3695 ***	0.2495	0.0234	0.0316	0.5793 ***	0.1393 **	0.757 ***	0.1367
	[0.0029]	[0.0000]	[0.1997]	[0.7765]	[0.4901]	[0.0000]	[0.0470]	[0.0002]	[0.3394]
Security market liberalization	0.1363	-0.4735	-0.4458	0.2821 **	-0.219 **	-0.3967 **	-0.4866 ***	-0.3615	0.2321
	[0.7254]	[0.2645]	[0.2217]	[0.0201]	[0.0126]	[0.0338]	[0.0011]	[0.2673]	[0.3641]
Inflation t-1	-0.0002 *	0.0002	0	-0.0002 ***	0.0001 *	0.0002 *	0.0001	0.0002	-0.0002
	[0.0755]	[0.3269]	[0.9885]	[0.0031]	[0.0651]	[0.0746]	[0.1765]	[0.1856]	[0.2706]
Domestic credit / GDP t-1	-0.0089	-0.0232 **	-0.0176 *	-0.0068 **	-0.0042 *	0.011 **	-0.006 *	-0.0288 ***	-0.0082
	[0.2973]	[0.0313]	[0.0650]	[0.0350]	[0.0898]	[0.0181]	[0.0967]	[0.0017]	[0.2316]
Domestic GDP growth t-1	0.3077 ***	0.237 ***	-0.0427	0.0461 ***	0.0122	0.0283	-0.0132	0.1682 ***	-0.037
	[0.0000]	[0.0016]	[0.3365]	[0.0026]	[0.2802]	[0.5906]	[0.3991]	[0.0006]	[0.2522]
US GDP growth t-1	0.0557	-0.131	-0.3276	0.1109 **	-0.054 *	-0.1051	-0.1237 *	-0.1507	-0.1533
	[0.7368]	[0.5353]	[0.1498]	[0.0238]	[0.0749]	[0.1602]	[0.0877]	[0.4522]	[0.2784]
Interest rate differentiate t-1	-0.0013	-0.0156	0.0061	0.0015	0.0005	-0.0088	0.0025	-0.0075	0.0034
	[0.8884]	[0.5084]	[0.7648]	[0.7507]	[0.8620]	[0.5229]	[0.6936]	[0.6371]	[0.7710]
trade openness t-1	0.0058	0.0228	-0.0004	-0.0004	0.0003	-0.0264 ***	-0.011	0.0462 **	0.0107
	[0.7258]	[0.3744]	[0.9881]	[0.9466]	[0.9572]	[0.0014]	[0.1415]	[0.0442]	[0.5772]
Bank supervision t-1	0.3712	0.4003	0.2784	0.2656 ***	0.2357 ***	0.2456	0.201 *	-0.1287	-0.175
	[0.2683]	[0.2742]	[0.3212]	[0.0095]	[0.0024]	[0.1751]	[0.0528]	[0.6331]	[0.3931]
constant	-1.3592	-0.6747	2.8784 *	1.242 ***	0.7732 **	0.628	1.5825 ***	-2.3256 *	0.3754
	[0.2586]	[0.6572]	[0.0508]	[0.0014]	[0.0131]	[0.2048]	[0.0002]	[0.0829]	[0.7117]
Number of observation	1052	1025	976	1052	1023	1040	1026	1037	987
Adj R-square	0.176	0.159	0.144	0.212	0.116	0.127	0.166	0.123	0.093
Prob > F	0	0	0	0	0	0	0	0	0

Table 6-7: The effect of financial liberalization policies on the direction and magnitude of capital flows (Industrialized countries)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Domestic financial liberalization t	0.1494	-2.0126 ***	-2.3701 ***	0.1464	-0.4064 **	-0.5133 **	-0.8447 ***	-1.7075 ***	-0.9051 *
	[0.6759]	[0.0036]	[0.0009]	[0.3674]	[0.0317]	[0.0280]	[0.0022]	[0.0033]	[0.0803]
Bank liberalization t	-1.1694 **	-0.4436	-0.2211	-0.3096	-0.4136	0.8615 **	0.7097 *	-0.8688	-0.3423
	[0.0293]	[0.5676]	[0.7612]	[0.3157]	[0.2783]	[0.0473]	[0.0511]	[0.1264]	[0.5375]
Capital account liberalization t	0.6103	2.8594 ***	2.4478 ***	0.2132	0.5302 **	0.6267 **	0.3967	1.959 ***	1.8335 ***
	[0.1439]	[0.0001]	[0.0006]	[0.2413]	[0.0175]	[0.0177]	[0.1496]	[0.0016]	[0.0024]
Security market liberalization	-0.4654	-1.4737	0.1001	-0.0846	0.1019	-0.7121	-0.365	-0.4585	-1.3462
	[0.6258]	[0.2281]	[0.9283]	[0.7713]	[0.7380]	[0.1985]	[0.4714]	[0.6115]	[0.1915]
Number of observation	255	243	243	255	255	255	255	243	243
Adj R-square	0.233	0.491	0.493	0.422	0.361	0.525	0.509	0.305	0.295
Prob > F	0	0	0	0	0	0	0	0	0.02

Dependent variables are net capital flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 6-8: The effect of financial liberalization policies on the direction and magnitude of capital flows (Emerging market countries)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Domestic financial liberalization	0.3103	-0.5988	-1.0481 ***	-0.1075	-0.3328 ***	-0.2541	-0.5023 ***	-0.1842	-0.2037
	[0.4132]	[0.1420]	[0.0035]	[0.3332]	[0.0000]	[0.1079]	[0.0002]	[0.5759]	[0.3854]
Bank liberalization	0.3907	-0.5211	-1.0792	-0.2858 *	0.0141	0.0831	-0.2372	-0.4127	-0.7762 *
	[0.4940]	[0.4478]	[0.1180]	[0.0961]	[0.9085]	[0.7511]	[0.2738]	[0.4744]	[0.0790]
Capital account liberalization	1.6294 ***	1.9327 ***	-0.005	0.1175	-0.0707	0.6353 ***	0.0718	1.1556 ***	0.0431
	[0.0000]	[0.0000]	[0.9869]	[0.2095]	[0.3374]	[0.0028]	[0.4816]	[0.0000]	[0.8379]
Security market liberalization	1.0077 **	0.0392	-0.5955	-0.023	-0.3056 *	0.0915	-0.4291 **	0.0343	0.1637
	[0.0473]	[0.9352]	[0.1534]	[0.8864]	[0.0528]	[0.7309]	[0.0232]	[0.9254]	[0.5737]
Number of observation	669	656	615	669	648	659	646	666	625
Adj R-square	0.261	0.18	0.141	0.241	0.105	0.104	0.126	0.158	0.106
Prob > F	0	0	0	0	0	0	0	0	0

Dependent variables are net capital flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 6-9: The effect of financial liberalization policies on the direction and magnitude of capital flows (Emerging Asian countries)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Domestic financial liberalization	1.4952 **	-0.971	-2.5434 ***	0.3233	-0.6869 ***	-0.1322	-0.7887 **	-0.9325	-0.8785
	[0.0141]	[0.2314]	[0.0058]	[0.1903]	[0.0006]	[0.5646]	[0.0110]	[0.1931]	[0.1727]
Bank liberalization	-0.1133	-1.7254	-3.0275	-0.2472	-0.004	0.6454	-0.6658	-2.1963	-2.146
	[0.8925]	[0.3286]	[0.1983]	[0.5187]	[0.9912]	[0.1802]	[0.3279]	[0.1607]	[0.1412]
Capital account liberalization	3.1176 ***	1.9253 **	-0.8849	0.0985	-0.2067	0.5029 **	-0.474 *	1.3694 *	0.0824
	[0.0000]	[0.0186]	[0.3920]	[0.6376]	[0.1814]	[0.0125]	[0.0906]	[0.0696]	[0.9041]
Security market liberalization	1.1973	-1.349	-3.4322 ***	-0.5743	-0.8734 ***	-0.512	-1.744 ***	-0.1305	-0.7287
	[0.1856]	[0.1955]	[0.0032]	[0.1094]	[0.0070]	[0.1540]	[0.0000]	[0.8888]	[0.3897]
Number of observation	275	269	248	275	273	272	268	272	250
Adj R-square	0.475	0.276	0.232	0.224	0.167	0.169	0.212	0.275	0.214
Prob > F	0	0	0	0	0.039	0	0.373	0	0

Dependent variables are net capital flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 6-10: The effect of financial liberalization policies on the direction and magnitude of capital flows (Emerging Latin American countries)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Domestic financial liberalization	-0.0006	-1.383	-0.3578	0.0801	-0.0606	-0.7573	-0.3226 *	-0.7927	-0.1953
	[0.9993]	[0.1296]	[0.2672]	[0.6325]	[0.4497]	[0.2909]	[0.0590]	[0.1359]	[0.4340]
Bank liberalization	-0.2248	-0.802	-1.2221 ***	-0.4165 *	-0.349 ***	0.3188	-0.6342 ***	-0.6162	-0.1582
	[0.8089]	[0.4282]	[0.0028]	[0.0984]	[0.0024]	[0.6003]	[0.0057]	[0.3996]	[0.5810]
Capital account liberalization	0.5734	1.5479 **	0.2405	0.3567 **	0.1258 *	1.365 ***	0.3926 ***	-0.1641	-0.2979
	[0.3469]	[0.0257]	[0.4186]	[0.0206]	[0.0783]	[0.0060]	[0.0092]	[0.6824]	[0.2217]
Security market liberalization	-0.506	0.7397	0.1012	-0.0119	-0.257	1.1591	0.2675	-0.3726	0.2424
	[0.5305]	[0.5334]	[0.8337]	[0.9663]	[0.1001]	[0.2227]	[0.3738]	[0.5558]	[0.3969]
Number of observation	183	181	172	183	172	181	175	183	176
Adj R-square	0.441	0.443	0.472	0.584	0.42	0.28	0.339	0.533	0.365
Prob > F	0	0	0	0	0	0.138	0.063	0	0

Dependent variables are net capital flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.

*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 6-11: Share of foreign bank assets in emerging Asia and emerging Latin America

The share of banking assets in Asia (Percent)				The share of banking assets in Latin America (Percent)			
Country	1990*	2000*	2007-2008**	Country	1990*	2000*	2007***
China	0	1	2.3	Argentina	10	49	19.2
India	5	8	8.4	Brazil	6	23	16.8
Indonesia	4	7	47	Chile	19	54	40.3
Korea	4	3	15.7	Colombia	8	26	21.8
Malaysia	24	18	23	Mexico	0	24	85.4
Philippines	9	15	13.2	Peru	4	40	50.6
Thailand	5	12	12.6	Venezuela	1	42	1.8
Average	7.2	9.1	17.4	Average	6.8	36.8	33.7

* compiled by Hawkins and Mihaljek (2001) souces: Central banks; world bank; BIS
** complied by Gopalan and Pajan(2009) source: EIU country Finance Reports
*** compiled by Galindo et al. (2010) source: Bankscope

Table 6-12: Share of state-owned bank assets in emerging Asia and emerging Latin America

The share of banking assets in Asia (Percent)			The share of banking assets in Latin America (Percent)		
Country	1990*	2000*	Country	1990*	2000*
China	100	99	Argentina	36	30
India	91	91	Brazil	64	43
Indonesia	55	57	Chile	16	12
Korea	21	30	Colombia	45	13
Malaysia	21	30	Mexico	100	0
Philippines	7	12	Peru	55	3
Thailand	13	31	Venezuela	6	5
Average	44	50	Average	46	15.1

* Compiled by Hawkins and Mihaljek (2001) souces: World Bank; etc

Table 6-13: The effect of financial liberalization policies on the direction and magnitude of capital flows (Less-developed countries)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Domestic financial liberalization	0.7669	0.0024	-0.011	-0.0515	0.0089	0.2072	0.0289	0.0638	-0.0351
	[0.3111]	[0.9970]	[0.9830]	[0.8838]	[0.3432]	[0.4499]	[0.7969]	[0.9050]	[0.9409]
Bank liberalization	3.1612 ***	1.8764	0.102	0.0919	-0.0132	0.0036	-0.1998	1.5053	0.3618
	[0.0023]	[0.3005]	[0.9466]	[0.8482]	[0.3619]	[0.9841]	[0.5388]	[0.3185]	[0.7775]
Capital account liberalization	-2.1068	-1.809	-0.7357	-1.175 **	0.0043	-0.0636	-0.15	1.1831	-0.622
	[0.1111]	[0.1311]	[0.4039]	[0.0230]	[0.8561]	[0.8200]	[0.6173]	[0.4233]	[0.4511]
Security market liberalization	1.311	0.7895	-1.0815	-1.2592 **	-0.0021	-0.3312	-0.0104	2.3782 **	-1.1219
	[0.3209]	[0.5510]	[0.2887]	[0.0343]	[0.8895]	[0.2746]	[0.9607]	[0.0369]	[0.2116]
Number of observation	128	126	118	128	120	126	125	128	119
Adj R-square	0.514	0.347	0.338	0.631	0.351	0.174	0.299	0.309	0.328
Prob > F	0	0	0	0	0.22	0.917	0.995	0	0

Dependent variables are net capital flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.

*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 6-14: The effect of financial liberalization on the composition of international capital flows (All samples)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Domestic financial liberalization	0.794	1.3899	1.7321	1.4811	-2.5262	-2.871 *
	[0.6029]	[0.2142]	[0.2856]	[0.2816]	[0.2419]	[0.0856]
Bank liberalization	-2.9824	1.31	5.4852 ***	1.8305	-2.5028	-3.1405
	[0.1404]	[0.4308]	[0.0018]	[0.3961]	[0.2805]	[0.1981]
Capital account liberalization	0.0413	0.0603	0.0232	-0.2279	-0.0645	0.1676
	[0.9789]	[0.9637]	[0.9868]	[0.8737]	[0.9743]	[0.9289]
Security market liberalization	1.0646	1.7972	5.0088 ***	4.4965 ***	-6.0734 ***	-6.2937 ***
	[0.5807]	[0.2907]	[0.0023]	[0.0045]	[0.0087]	[0.0036]
Inflation t-1	-0.007	0.0000	0.0579 *	-0.001	-0.0509	0.001
	[0.8231]	[0.9989]	[0.0713]	[0.2807]	[0.1916]	[0.2064]
Domestic credit / GDP t-1	-0.0941 **	-0.045	0.0349	0.0014	0.0591	0.0436
	[0.0270]	[0.1622]	[0.4313]	[0.9680]	[0.2503]	[0.2890]
Domestic GDP growth t-1	0.1821	0.0173	-0.4902	-0.4471 **	0.3081	0.4298
	[0.4682]	[0.9259]	[0.1491]	[0.0490]	[0.3966]	[0.1323]
US GDP growth t-1	0.5467	0.0866	0.1536	0.1923	-0.7003	-0.2789
	[0.1218]	[0.7791]	[0.6936]	[0.6286]	[0.1509]	[0.5556]
Interest rate differentiate t-1	-0.3885	-0.1944 *	-2.0824	0.0354	2.4708	0.1591
	[0.7887]	[0.0830]	[0.1573]	[0.7525]	[0.1622]	[0.2178]
trade openness t-1	0.1488 **	0.0832 **	-0.1215 **	-0.1667 ***	-0.0272	0.0835
	[0.0267]	[0.0439]	[0.0132]	[0.0027]	[0.7197]	[0.2203]
Bank supervision t-1	5.9413 ***	-0.527	1.0542	7.1031 ***	-6.9955 ***	-6.5761 ***
	[0.0000]	[0.6556]	[0.4492]	[0.0000]	[0.0000]	[0.0002]
constant	17.0481 ***	7.0567 **	6.7026 *	10.217 ***	76.2494 ***	82.7263 ***
	[0.0002]	[0.0236]	[0.0558]	[0.0086]	[0.0000]	[0.0000]
Number of observation	614	676	614	676	614	676
Adj R-square	0.111	0.006	0.333	0.101	0.206	0.235
Prob > F	0	0	0	0	0	0

Table 6-15: The effect of financial liberalization on the composition of international capital flows. (Industrialized countries)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Domestic financial liberalization	7.7028 ***	4.6784	-2.8894	-3.4016	-4.8134	-1.2767
	[0.0044]	[0.2000]	[0.4468]	[0.2380]	[0.3197]	[0.7775]
Bank liberalization	-4.2515	-2.0829	6.6613 *	3.5846	-2.4098	-1.5017
	[0.1003]	[0.6035]	[0.0954]	[0.3610]	[0.5907]	[0.7359]
Capital account liberalization	-5.3322 **	-3.3911	2.8478	1.4569	2.4844	1.9342
	[0.0204]	[0.3384]	[0.4534]	[0.6132]	[0.5920]	[0.6708]
Security market liberalization	-4.114	1.9392	-6.0204	3.5396	10.1343	-5.4788
	[0.4023]	[0.7779]	[0.4589]	[0.5462]	[0.2466]	[0.5811]
Number of observation	198	185	198	185	198	185
Adj R-square	0.429	0.227	0.485	0.607	0.473	0.503
Prob > F	0	0.001	0	0	0	0

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 6-16: The effect of financial liberalization on the composition of international capital flows. (Emerging market countries)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Domestic financial liberalization	-1.3749	-2.5605	0.2229	1.3735	1.152	1.187
	[0.5956]	[0.2474]	[0.9119]	[0.5144]	[0.6750]	[0.6805]
Bank liberalization	-4.2644	5.1939 *	3.8795	-1.2836	0.3849	-3.9104
	[0.2225]	[0.0737]	[0.1430]	[0.6452]	[0.9215]	[0.2865]
Capital account liberalization	-0.3612	1.568	0.0903	0.242	0.2709	-1.81
	[0.8709]	[0.3932]	[0.9590]	[0.9007]	[0.9112]	[0.4742]
Security market liberalization	-3.6145	-3.2436	3.4846	2.004	0.1299	1.2397
	[0.2071]	[0.2444]	[0.1613]	[0.3968]	[0.9662]	[0.7168]
Number of observation	351	406	351	406	351	406
Adj R-square	0.234	0.152	0.359	0.238	0.383	0.299
Prob > F	0	0	0	0	0	0

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 6-17: The effect of financial liberalization on the composition of international capital flows (Emerging Asian countries)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Domestic financial liberalization	1.055	-5.5973 **	2.3441	6.6556 **	-3.3991	-1.0583
	[0.7878]	[0.0434]	[0.2872]	[0.0410]	[0.4517]	[0.7981]
Bank liberalization	-1.5161	0.8763	-1.6341	-7.9263	3.1503	7.05
	[0.7187]	[0.8497]	[0.6395]	[0.1705]	[0.5403]	[0.3295]
Capital account liberalization	0.0284	-2.1177	0.5399	-2.5428	-0.5682	4.6605
	[0.9939]	[0.5145]	[0.8164]	[0.5938]	[0.8962]	[0.3620]
Security market liberalization	-1.2403	-4.7142	-0.8057	-0.0249	2.046	4.7391
	[0.7854]	[0.2269]	[0.7925]	[0.9956]	[0.7087]	[0.4206]
Number of observation	151	179	151	179	151	179
Adj R-square	0.338	0.367	0.639	0.375	0.504	0.391
Prob > F	0	0.007	0	0	0	0

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 6-18: The effect of financial liberalization on the composition of international capital flows. (Emerging Latin American countries)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Domestic financial liberalization	6.2887	6.1524 *	-9.728 *	-2.8187	3.4393	-3.3337
	[0.2659]	[0.0970]	[0.0600]	[0.5226]	[0.6189]	[0.5204]
Bank liberalization	-9.8386	2.9011	6.2124	-2.531	3.6263	-0.3701
	[0.2779]	[0.7377]	[0.3933]	[0.6629]	[0.6450]	[0.9646]
Capital account liberalization	6.1402	-2.3987	9.9791 **	2.8654	-16.1192 *	-0.4668
	[0.5190]	[0.4848]	[0.0447]	[0.3989]	[0.0526]	[0.9117]
Security market liberalization	-4.2723	-0.7861	0.1334	5.8914	4.1389	-5.1054
	[0.6119]	[0.8895]	[0.9822]	[0.2605]	[0.5957]	[0.4557]
Number of observation	80	103	80	103	80	103
Adj R-square	0.639	0.336	0.765	0.49	0.802	0.485
Prob > F	0	0	0	0	0	0

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 6-19: The effect of financial liberalization on the composition of international capital flows (Less-developed countries)

	FDI flows / gross foreign flows	Direct investment abroad flows /gross domestic flows	Foreign Portfolio flows / gross foreign flows	Domestic Portfolio flows / gross domestic flows	Foreign Private loan flows / gross foreign flows	Domestic private loan flows / gross domestic flows
Domestic financial liberalization	-5.8105	-0.0556	-4.4194	-8.3933	10.2299	8.4489
	[0.3966]	[0.9804]	[0.4602]	[0.1244]	[0.2361]	[0.1598]
Bank liberalization	-3.481	4.183	-1.4019	11.6453	4.8829	-15.8283 *
	[0.4818]	[0.2601]	[0.7530]	[0.1895]	[0.4474]	[0.0921]
Capital account liberalization	-25.5342 *	-3.7275	-4.0105	-12.829	29.5447 *	16.5565
	[0.0699]	[0.4873]	[0.6042]	[0.2960]	[0.0817]	[0.2075]
Security market liberalization	-6.6229	-4.0226	20.0888 *	5.3862	-13.466	-1.3636
	[0.5356]	[0.6299]	[0.0733]	[0.5874]	[0.3084]	[0.9148]
Number of observation	65	85	65	85	65	85
Adj R-square	0.845	0.331	0.581	0.61	0.793	0.585
Prob > F	0	0	0	0	0	0

Dependent variables are, FDI/gross foreign flows , domestic investment abroad/gross domestic flows, foreign portfolio flows gross foreign flows, domestic portfolio flows/ gross domestic flows, foreign private loan flows gross foreign flows and domestic private loan flows/ gross domestic flows.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.

Table 6-20: The marginal effect of financial liberalization on the probability of a surge in international capital flows (All samples)

	Surge in Net capital flows	Surge in FDI flows	Surge in foreign portfolio flows	Surge in foreign private loans flows
Domestic financial liberalization t	0.019	0.0408 **	0.0025	0.0061
	[0.3752]	[0.0167]	[0.7766]	[0.7457]
Bank liberalization t	0.0472 **	0.018	0.0081	0.0208
	[0.0368]	[0.1871]	[0.3822]	[0.3526]
Capital account liberalization t	0.0195	-0.0021	0.0302 ***	0.0302 *
	[0.3523]	[0.8825]	[0.0025]	[0.0920]
Security market liberalization t	-0.0261	-0.0183	0.0108	0.0126
	[0.3094]	[0.1620]	[0.2635]	[0.5629]
Inflation t-1	0	0	0	-0.0002
	[0.4512]	[0.8186]	[0.1276]	[0.2735]
Domestic credit / GDP t-1	-0.0014 ***	-0.0003	0.0001	-0.0008 **
	[0.0021]	[0.1114]	[0.5442]	[0.0300]
Domestic GDP growth t-1	0.0257 ***	0.0042	0.001	0.0094 **
	[0.0000]	[0.1762]	[0.4815]	[0.0249]
US GDP growth t-1	-0.0302 ***	0.008 *	-0.0011	-0.0074
	[0.0000]	[0.0843]	[0.6313]	[0.1158]
Interest rate differentiate t-1	0.002 **	-0.0216	0.0005	0.0028
	[0.0228]	[0.4378]	[0.3210]	[0.3971]
trade openness t-1	0.0002	0.0005 **	0	0.0006 ***
	[0.4235]	[0.0167]	[0.4757]	[0.0000]
Bank supervision t-1	-0.0187	0.0056	0.0144	-0.0316 *
	[0.4480]	[0.5487]	[0.1937]	[0.0811]
Number of observation	1079	1079	1079	1079
Prob of BC	0.157	0.041	0.034	0.109
Wald Chi-Square	116.111	141.796	108.203	171.855
Prob > Chi-Square	0	0	0	0
Pseudo-R2	0.112	0.205	0.181	0.092
Log-Likelihood	-462.111	-264.662	-233.639	-384.939
AIC	948.222	553.325	491.278	793.877
BIC	1008.028	613.13	551.083	853.683

Table 6-21: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Industrialized countries).

	Surge in Net capital flows	Surge in FDI flows	Surge in foreign portfolio flows	Surge in foreign private loans flows
Domestic financial liberalization t	0.0173	0.0245	0.0462 *	0.0441
	[0.7153]	[0.1903]	[0.0751]	[0.4827]
Bank liberalization t	0.0436	-0.0011	0.0214	0.0435
	[0.1658]	[0.7705]	[0.5885]	[0.2534]
Capital account liberalization t	-0.0572	N.A.	0.0426	-0.0845
	[0.3380]		[0.4169]	[0.2791]
Security market liberalization t	0.0456	-0.0248	0.0345	0.1074
	[0.5909]	[0.3302]	[0.5431]	[0.3455]
Number of observation	259	208	259	259
Prob of BC	0.066	0.004	0.096	0.099
Wald Chi-Square	.	.	.	.
Prob > Chi-Square	.	.	.	.
Pseudo-R2	0.215	0.297	0.147	0.118
Log-Likelihood	-75.991	-30.242	-99.357	-87.177
AIC	167.983	76.485	214.715	190.353
BIC	196.437	103.185	243.169	218.808

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 6-22: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Emerging market countries)

	Surge in Net capital flows	Surge in FDI flows	Surge in foreign portfolio flows	Surge in foreign private loans flows
Domestic financial liberalization t	0.0175	0.0334	0.0006	0.0069
	[0.5398]	[0.2180]	[0.9535]	[0.7712]
Bank liberalization t	0.0351	0.0045	0.0079	0.0208
	[0.2436]	[0.7174]	[0.4998]	[0.3352]
Capital account liberalization t	0.0557 **	0.0041	0.0276 ***	0.0422 **
	[0.0158]	[0.7141]	[0.0012]	[0.0456]
Security market liberalization t	-0.0736 **	-0.0111	-0.0029	-0.0357
	[0.0276]	[0.4162]	[0.7919]	[0.1402]
Number of observation	691	691	691	691
Prob of BC	0.178	0.033	0.029	0.09
Wald Chi-Square	239.319	83.498	97.886	469.12
Prob > Chi-Square	0	0	0	0
Pseudo-R2	0.111	0.196	0.147	0.147
Log-Likelihood	-315.74	-202.409	-123.136	-229.718
AIC	655.479	428.818	270.272	483.436
BIC	709.937	483.276	324.729	537.894

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 6-23: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Emerging Asian countries)

	Surge in Net capital flows	Surge in FDI flows	Surge in foreign portfolio flows	Surge in foreign private loans flows
Domestic financial liberalization t	0.0301	0.0404	0.0171 *	-0.0733
	[0.4475]	[0.3235]	[0.0960]	[0.1568]
Bank liberalization t	0.0479	-0.0325	0.0113 *	0.0946 ***
	[0.3520]	[0.2770]	[0.0874]	[0.0011]
Capital account liberalization t	0.0591 *	0.0403 *	0.0143	0.0805 *
	[0.0849]	[0.0987]	[0.3055]	[0.0991]
Security market liberalization t	-0.0889 **	0.0064	-0.0139	0.0032
	[0.0117]	[0.8650]	[0.1329]	[0.9376]
Number of observation	284	284	284	284
Prob of BC	0.185	0.061	0.013	0.118
Wald Chi-Square	.	.	.	.
Prob > Chi-Square	.	.	.	.
Pseudo-R2	0.163	0.359	0.194	0.211
Log-Likelihood	-127.868	-73.988	-42.525	-104.293
AIC	277.737	169.976	107.051	230.585
BIC	317.875	210.115	147.19	270.724

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 6-24: The predicted probability of a surge in capital flows in emerging Asian countries

Capital flows	The degree of prudential regulation and supervision / The degree of capital account liberalization	0	1	2
FDI flows	0	0.0127	0.0167	0.0217
	1	0.0285	0.0364	0.0459
	2	0.0583	0.072	0.088
	3	0.1082	0.1296	0.1539
	The degree of prudential regulation and supervision / The degree of capital account liberalization	0	1	2
Private loan flows	0	0.0506	0.0154	0.0037
	1	0.1092	0.0399	0.0115
	2	0.2054	0.0895	0.0311
	3	0.3393	0.1747	0.0725
	The degree of prudential regulation and supervision / The degree of capital account liberalization	0	1	2
Net capital flows	0	0.124	0.0783	0.0466
	1	0.1753	0.116	0.0726
	2	0.2383	0.1651	0.1084
	3	0.312	0.2261	0.1554

Note: The higher value represents a higher degree of openness

Table 6-25: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Emerging Latin American countries)

	Surge in Net capital flows	Surge in foreign portfolio flows	Surge in foreign private loans flows
Domestic financial liberalization t	0.1048 ***	-0.0009	0.0212
	[0.0073]	[0.6360]	[0.7385]
Bank liberalization t	0.0421	0.0016	0.0059
	[0.6352]	[0.4062]	[0.8201]
Capital account liberalization t	0.0163	0.0016	-0.0007
	[0.6476]	[0.6040]	[0.9134]
Security market liberalization t	-0.063	0.0015	-0.0394
	[0.4251]	[0.5582]	[0.7546]
Number of observation	185	185	185
Prob of BC	0.133	0	0.014
Wald Chi-Square	.	.	.
Prob > Chi-Square	.	.	.
Pseudo-R2	0.243	0.431	0.258
Log-Likelihood	-71.073	-18.736	-43.806
AIC	156.145	51.472	101.612
BIC	178.688	74.015	124.154

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 6-26: The marginal effect of financial liberalization on the probability of a surge in international capital flows (Less-developed countries).

	Surge in Net capital flows	Surge in foreign private loans flows
Domestic financial liberalization t	0.0001 [0.9378]	-0.0071 [0.8206]
Bank liberalization t	0.0001 [0.9342]	0.0582 [0.3558]
Capital account liberalization t	-0.0002 [0.9360]	0.0647 [0.3113]
Security market liberalization t	0.0002 [0.9359]	0.1148 [0.4118]
Number of observation	129	129
Prob of BC	0	0.072
Wald Chi-Square	.	.
Prob > Chi-Square	.	.
Pseudo-R2	0.292	0.233
Log-Likelihood	-44.908	-42.655
AIC	97.816	93.31
BIC	109.256	104.75

Dependent variables are a surge in net capital flows, FDI flows, foreign portfolio flows and private loan flows dummy variables. Dummy is equal to 1 if there is a surge in specific capital flows and 0 otherwise. Estimation method is the probit model.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively.

Table 7-1: Summarization of five different financial liberalization and capital account measurement

measures	Methodology	information	Source	Data detail
1. Abiad et al. 's financial liberalization index	Equally weight average	Comprising seven types of financial reforms. 1. Elimination of controls over credit allocation and reserve requirements. 2. Elimination of interest rate controls. 3. Elimination of entry barriers in the banking sector 4. Privatization of state-owned banks. 5. Capital account liberalization 6. Capital market liberalization. 7. Enhancement of prudential regulations and supervision of the banking sector Capital account liberalization - multiple exchange rates for various transactions - focusing on restrictions on financial credits.	1. The IMF's Recent Economic Development (Credit control and reserve requirement), 2. AREAR, Recent Economic Development and Williamson and Mahar (1998) (Entry barrier) 3. Hall(2003) and IMF's Recent Economic Development (Interest rate controls) 4. AREAR and Kaminsky and Schmukler (2003) (Capital account restrictions) 5. Hawkins and Mihaljek (2001), Barth, Cario and Lavine (2001), The World Bank and Recent Economic Development (Privatization) 6. Recent Economic Development and AREAR and Harvey's website (securities market) 7. Recent Economic Development, Financial system stability assessments and Bath 2003) (bank regulation and supervision) International source The Bank for International Settlements, the International Finance Corporation, the International Monetary Fund, Organization for Economic Cooperation and Development ant the World Bank	- 91 countries from 1973-2005 - Each index ranges between 0 and 3 - fully repressed (0), partially repressed (1), largely liberalized (2), and fully liberalized (3) - yearly basis

			Domestic source Annual reports of central banks, finance ministries and, stock exchanges	
2. Kaminsky and Schumkler 's financial liberalization index	Equally weight average	Being classified into three categories, such that deregulation of domestic financial sector, capital account liberalization and stock market liberalization. Domestic financial sector → regulation on domestic interest rates in both deposit and lending, restriction on credit allocation and reserve requirement in the banking sector Capital account liberalization → - the regulations on offshore borrowing by domestic financial institutions - offshore borrowing by non-financial corporations (inflows → restriction on borrowing oversea, restriction of minimum maturity on capital inflows and non-interest reserve requirement on foreign borrowing) - multiple exchange markets - controls on capital outflows Stock market → elimination of foreign investors' participation in stock markets, regulation of capital and repatriation of interest and dividends	- From international institutions such as Bank for International Settlements, the International Finance Corporation, the International Monetary Fund, the Organization for Economic Cooperation and Development, and the World Bank. - From domestic institution, such as annual reports of central banks, finance ministries, and stock exchanges	- 28 countries from 1972-2005 - each index range from 1 to 3. - fully liberalized (1), partially Liberalized(2), and repressed(3). - monthly basis
3. Potchamanawong-CGU 's capital control index	Equally weight average	- Consisting of 13 types of capital restrictions and one exchange rate arrangement 1.Controls on capital market securities 2.Controls on money market instruments 3.Controls on collective investment securities 4.Controls on derivative and other instruments 5.Controls on commercial credits	The Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)	- covering 26 emerging markets and the period of 1995 to2004 Intensity - coding for each variable 0 = capital transaction is allowed freely (no restriction) 0.25 = Prior approval is not required; but require supporting evidence or registration 0.5 = Prior approval is not required, but quantitative

		6.Controls on financial credits 7.Controls on guarantee, sureties, and financial back up facilities 8.Controls on direct investment 9.Controls on repatriation of profit and liquidation of direct investment 10.Controls on real estate transactions 11.Controls on personal capital movements 12.Provision specific to commercial banks and other credit institutions 13.Provision specific to institution investors 14.Multiple exchange rate arrangements		restrictions exits 0.75 = Prior approval is required before engaging in any transaction 1 = Not allowed or transactions is not permitted - 1995-2005 - This index can be distinguished between control on inflows and control on outflows and between asset categories. In addition, this capital control indices can also capture the degree of restriction on capital transactions. - yearly basis
4. Schindler's capital control index (New IMF capital control index)	Equally weight average	- covering 6 types of capital restrictions 1.Controls on capital market securities 2.Control on bonds and other debt securities 3.Controls on money market instruments 4.Controls on collective investment securities 5.Controls on financial credits 6.Controls on direct investment and liquidation of direct investment	The Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)	- tracking 91 countries from 1995-2005 - coding for each variable 0 = capital transaction is allowed freely or consisting merely of registration or notification requirements 1 = Not allowed or imposing very strict control - Inflows and outflows - Asset categories - Residents and non-residents - Yearly basis
5. Chinn-Ito's capital openness index	- Equally weight average on capital a five year period of capital account restriction. - The first Principal component on four types of external account restrictions	- Consisting of four categories of external account restrictions, such that multiple exchange rates, restrictions on current account transaction, equally weight average of a five-year window of restriction on 13 categories of capital account transaction, and surrender of export proceeds.	The Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER)	- 163 countries from 1970-2004 - yearly basis

Table 7-2: The correlation matrix

Financial liberalization bloc

Obs = 693		*Abiad (2008)*							*Kaminsky and Schmukler(2008)*			
		Financial liberalization	Elimination of credit controls	Elimination of interest rate controls	Elimination of bank-entry barriers	Privatization of state-owned banks	Capital account liberalization	Security market liberalization	K-S financial liberalization	domestic financial liberalization	Capital account liberalization	Stock market liberalization
Abiad (2008)	Abiad financial liberalization	1										
	Elimination of credit controls	0.8383	1									
	Elimination of interest rate controls	0.735	0.4908	1								
	Elimination of bank-entry barriers	0.8016	0.6222	0.5692	1							
	Privatization of state-owned banks	0.6782	0.5475	0.2552	0.4031	1						
	Capital account liberalization	0.8329	0.648	0.5107	0.5514	0.5627	1					
	Security market liberalization	0.871	0.673	0.6038	0.6624	0.5038	0.7174	1				
Kaminsky and Schmukler 2008	K-S financial liberalization	0.84	0.5988	0.7656	0.6461	0.4361	0.7781	0.7583	1			
	domestic financial liberalization	0.5945	0.3824	0.7907	0.4982	0.1924	0.4463	0.4669	0.7895	1		
	Capital account liberalization	0.7202	0.5462	0.4416	0.5225	0.5065	0.7906	0.6427	0.835	0.4742	1	
	Stock market liberalization	0.7484	0.5412	0.6529	0.5669	0.3695	0.6719	0.7521	0.8327	0.4721	0.5728	1

Sources: Abiad et al. (2008) and Kaminsky and Schumkler (2008) and author's calculations
Note: Abiad financial liberalization is constructed by using an equally weighted average of six different types of financial reforms. K-S financial liberalization is also the equally weighted average of three types of financial liberalization.
All indices are normalized into 0-1 scale and higher value indicates higher level of liberalization.

Capital control (liberalization) boc

Obs=222

		Potchamanawong (2007)			*Schindler (2009)*					*Chinn-Ito (2005)*
		Pot capital flows	Pot inflows	Pot outflows	Schindler capital flows	Schindler inflows	Schindler outflows	Schindler non residence	Schindler residences	Chinn-Ito KA
Potchamanawong (2007)	Pot capital flows	1								
	Pot inflows	0.9675	1							
	Pot outflows	0.9735	0.8841	1						
Schindler (2009)	Schindler capital flows	0.9062	0.8448	0.9111	1					
	Schindler inflows	0.8745	0.8416	0.8554	0.9281	1				
	Schindler outflows	0.8192	0.7392	0.8458	0.9383	0.7421	1			
	Schindler no residence	0.851	0.8418	0.8118	0.9125	0.9324	0.7767	1		
	Schindler residences	0.8445	0.7543	0.8789	0.9534	0.8177	0.957	0.7527	1	
Chinn-Ito (2005)	Chinn-Ito KA	0.6315	0.5428	0.6764	0.7027	0.6092	0.6992	0.6027	0.6937	1

Sources: Potchamanawong (2007), Schindler (2009) and Chinn-Ito (2005) author's calculations
Note: Pot capital flows and Schindler capital flows are the equally weighted average of each index's capital inflows and capital outflows
All indices are normalized into 0-1 scale and higher value indicates higher level of liberalization.

Table 7-3: The correlation matrix (balance)

obs = 115

		Abiad (2008)							*Kaminsky and Schmukler(2008)*			
		Financial liberalization	Elimination of credit controls	Elimination of interest rate controls	Elimination of bank-entry barriers	Privatization of state-owned banks	Capital account liberalization	Security market liberalization	K-S financial liberalization	domestic financial lib	Capital account lib	Stock market lib
Abiad (2008)	Financial liberalization	1										
	Elimination of credit controls	0.7518	1									
	Elimination of interest rate controls	0.161	0.1188	1								
	Elimination of bank-entry barriers	0.6101	0.548	-0.0026	1							
	Privatization of state-owned banks	0.6513	0.18	-0.0397	0.1472	1						
	Capital account liberalization	0.6947	0.3985	-0.0338	0.2084	0.4003	1					
	Security market liberalization	0.4997	0.2684	-0.1408	0.4565	0.1628	0.261	1				
Kaminsky and Schmukler(2008)	K-S financial liberalization	0.381	0.3431	0.3549	0.1877	0.0226	0.4264	0.1007	1			
	domestic financial lib	0.1697	0.129	0.5343	0.2499	-0.1334	0.1488	-0.0335	0.6415	1		
	Capital account lib	0.4608	0.4114	0.2212	0.1353	0.1372	0.4408	0.283	0.8264	0.258	1	
	Stock market lib	0.0945	0.1138	0.0638	0.0355	-0.0349	0.2674	-0.1621	0.6828	0.3134	0.3104	1
Potchamanawong (2007)	Pot capital flows	0.4833	0.2332	-0.1332	0.4148	0.3299	0.3836	0.4665	0.2959	-0.0224	0.4968	-0.0041
	Pot inflows	0.3734	0.2352	-0.1528	0.3376	0.1579	0.3266	0.4401	0.2634	-0.0482	0.4938	-0.0604
	Pot outflows	0.5468	0.2082	-0.1002	0.4519	0.4713	0.4035	0.4472	0.2996	0.006	0.4508	0.0532
Schindler (2009)	Schindler capital flows	0.4983	0.3061	-0.0827	0.5105	0.2596	0.377	0.4192	0.2121	0.0525	0.2684	0.0739
	Schindler inflows	0.5598	0.3536	-0.1039	0.4792	0.3266	0.4404	0.4539	0.2122	-0.0364	0.3571	0.0154
	Schindler outflows	0.3401	0.2003	-0.0467	0.4321	0.1461	0.2423	0.3013	0.1679	0.1205	0.1338	0.1104
	Schindler non residence	0.3915	0.1903	-0.1419	0.3404	0.2773	0.3862	0.2624	0.1555	-0.0993	0.2576	0.088
	Schindler residences	0.5122	0.3507	-0.024	0.5642	0.2107	0.3233	0.4847	0.2294	0.1591	0.2441	0.0562
Chinn-Ito (2005)	Chinn-Ito KA	0.5721	0.3975	0.0524	0.2955	0.3884	0.5038	0.2432	0.2265	0.0739	0.1828	0.2308

		Potchamanawong (2007)			*Schindler (2009)*					*Chinn-Ito (2005)*
		Pot capital flows	Pot inflows	Pot outflows	Schindler capital flows	Schindler inflows	Schindler outflows	Schindler non residence	Schindler residences	Chinn-Ito KA
Potchamanawong (2007)	Pot _capital flows	1								
	Pot inflows	0.9515	1							
	Pot outflows	0.9503	0.8085	1						
Schindler (2009)	Schindler capital flows	0.8086	0.6934	0.8454	1					
	Schindler inflows	0.7944	0.7257	0.7854	0.8751	1				
	Schindler outflows	0.6532	0.5205	0.7229	0.903	0.5822	1			
	Schindler non residence	0.817	0.7586	0.7954	0.8848	0.8993	0.6879	1		
	Schindler residences	0.6912	0.5496	0.7662	0.9354	0.7257	0.927	0.6659	1	
Chinn-Ito (2005)	Chinn- Ito KA	0.4706	0.3281	0.5684	0.6865	0.6045	0.6166	0.6258	0.6328	1

Note: all indices are normalized into 0-1 scale and higher value indicates higher level of liberalization.

Table 7-4: The effect of capital account liberalization on the direction and magnitude of capital flows (Abiad et al)

		Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Abaid (2008)	Capital account liberalization	10.3018 ***	7.9525	-2.3584	0.3323	0.1424	3.4713 **	1.3449	3.5648	-3.4473
		[0.0000]	[0.1186]	[0.6534]	[0.7201]	[0.8267]	[0.0349]	[0.3004]	[0.4785]	[0.3278]
	Number of observation	105	102	94	105	104	105	104	102	94
	Adj R-square	0.598	0.281	0.284	0.152	0.119	0.331	0.201	0.458	0.298
	Prob > F	0	0.001	0.823	0.021	0.915	0.027	0.289	0.03	0.714

Dependent variables are net capital flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
Independent variables include inflation, domestic private credit per GDP, domestic GDP growth, the U.S. GDP growth, interest rate differential, trade openness and prudential regulation, bank supervision variables and time dummy variables.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.
Note: all indices are normalized into 0-1 scale and higher value indicates higher level of liberalization.

Table 7-5: The effect of capital account liberalization on the direction and magnitude of capital flows (Kaminsky and Schmukler)

		Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
K-S (2008)	Capital account liberalization	3.3327 **	-2.4458	-4.4603	1.4806 ***	-0.5663	0.4666	0.3523	-4.74 *	-3.1905
		[0.0351]	[0.4244]	[0.1799]	[0.0083]	[0.2497]	[0.6838]	[0.6094]	[0.0753]	[0.1888]
	Number of observation	105	102	94	105	104	105	104	102	94
	Adj R-square	0.515	0.274	0.29	0.165	0.121	0.316	0.198	0.465	0.302
	Prob > F	0	0.009	0.794	0.001	0.906	0.057	0.316	0.027	0.684

Dependent variables are net capital flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
Independent variables include inflation, domestic private credit per GDP, domestic GDP growth, the U.S. GDP growth, interest rate differential, trade openness, prudential regulation and bank supervision variables and time dummy variables.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.
Note: all indices are normalized into 0-1 scale and higher value indicates higher level of liberalization.

Table 7-6: The effect of capital account liberalization on the direction and magnitude of capital flows (Potchamanawong)

		Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Potchamanawong (2007)	Pot capital acccount	27.3603 ***	-1.6053	-29.9239	3.9804	1.4385	14.4911 ***	-2.9566	-20.687	-26.939 *
		[0.0002]	[0.9445]	[0.2169]	[0.3450]	[0.7258]	[0.0080]	[0.6383]	[0.2712]	[0.0866]
	Number of observation	105	102	94	105	104	105	104	102	94
	Adj R-square	0.563	0.272	0.297	0.156	0.12	0.342	0.199	0.464	0.319
	Prob > F	0	0.007	0.794	0.021	0.91	0.084	0.387	0.02	0.647
	Pot inflows	-12.061	-29.8808	-16.2992	8.8519	-3.9533	8.2267	-8.4669	-46.2625	-3.4583
		[0.4670]	[0.3673]	[0.6231]	[0.3022]	[0.6635]	[0.5296]	[0.3308]	[0.1008]	[0.8833]
	Pot outflows	41.1994 **	30.6888	-13.4865	-5.3452	5.7161	6.1966	5.9953	28.5565	-24.516
		[0.0380]	[0.4022]	[0.7417]	[0.4994]	[0.4657]	[0.6365]	[0.4977]	[0.3872]	[0.4064]
	Number of observation	105	102	94	105	104	105	104	102	94
	Adj R-square	0.576	0.275	0.297	0.158	0.121	0.342	0.201	0.469	0.32
	Prob > F	0	0.012	0.856	0.026	0.924	0.127	0.394	0.028	0.74
	Pot inflows	23.121 ***	-4.0467	-27.5355	4.2873	0.9278	13.5184 **	-3.3474	-22.2234	-23.884 *
		[0.0004]	[0.8490]	[0.2041]	[0.3014]	[0.8238]	[0.0119]	[0.5698]	[0.1902]	[0.0857]
	Number of observation	105	102	94	105	104	105	104	102	94
	Adj R-square	0.548	0.272	0.297	0.157	0.12	0.341	0.2	0.466	0.317
	Prob > F	0	0.007	0.789	0.02	0.906	0.08	0.394	0.018	0.643

	Pot outflows	29.498 ***	1.4012	-29.8822	3.2422	1.8785	14.1775 ***	-2.2237	-16.7876	-27.9949 *
		[0.0002]	[0.9517]	[0.2367]	[0.4163]	[0.6158]	[0.0079]	[0.7203]	[0.3831]	[0.0924]
	Number of observation	105	102	94	105	104	105	104	102	94
	Adj R-square	0.574	0.272	0.296	0.154	0.12	0.341	0.199	0.461	0.32
	Prob > F	0	0.006	0.804	0.022	0.914	0.091	0.368	0.023	0.665

Dependent variables are net capital flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
Independent variables include inflation, domestic private credit per GDP, domestic GDP growth, the U.S. GDP growth, interest rate differential, trade openness, prudential regulation and bank supervision variables and time dummy variables.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.
Note: all indices are normalized into 0-1 scale and higher value indicates higher level of liberalization.

Table 7-7: The effect of capital account liberalization on the direction and magnitude of capital flows (Schindler)

Schindler (2009)

	Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Schindler capital account	7.4619 **	-1.4675	-7.8254	0.0395	0.2105	4.5175 **	0.2327	-6.0936	-7.8644
	[0.0166]	[0.8544]	[0.3090]	[0.9800]	[0.9021]	[0.0351]	[0.8925]	[0.3601]	[0.1140]
Number of observation	105	102	94	105	104	105	104	102	94
Adj R-square	0.521	0.272	0.289	0.152	0.119	0.33	0.198	0.46	0.307
Prob > F	0	0.007	0.801	0.021	0.92	0.041	0.31	0.03	0.689
Schindler inflows	3.3567	-2.9234	-8.9694	0.344	-0.6244	1.6688	-0.9322	-4.9945	-6.254 *
	[0.2117]	[0.5451]	[0.1229]	[0.7213]	[0.5297]	[0.2880]	[0.4130]	[0.2181]	[0.0926]
Schindler outflows	4.366	2.9564	4.6823	-0.5305	1.3465	3.2596	1.9	0.2357	0.0142
	[0.4342]	[0.7036]	[0.5599]	[0.7562]	[0.4314]	[0.2374]	[0.2940]	[0.9736]	[0.9982]
Number of observation	105	102	94	105	104	105	104	102	94
Adj R-square	0.521	0.273	0.294	0.152	0.121	0.331	0.2	0.461	0.309
Prob > F	0	0.008	0.827	0.034	0.938	0.035	0.282	0.04	0.724
Schindler non-resident	2.3629	-1.4553	-9.7111	0.9094	-1.0848	1.1007	-0.4939	-3.5685	-6.6879
	[0.4864]	[0.7834]	[0.2137]	[0.4502]	[0.4392]	[0.5178]	[0.7445]	[0.4572]	[0.1635]
Schindler resident	5.0884	0.1361	1.6324	-0.8531	1.2668	3.4538 *	0.7223	-2.4537	-1.3444
	[0.1378]	[0.9845]	[0.8216]	[0.5539]	[0.3483]	[0.0631]	[0.6397]	[0.6938]	[0.8027]
Number of observation	105	102	94	105	104	105	104	102	94
Adj R-square	0.524	0.272	0.292	0.153	0.122	0.333	0.198	0.46	0.309
Prob > F	0	0.013	0.83	0.021	0.938	0.059	0.359	0.045	0.728

Schindler inflows	4.7017 **	-2.0254	-7.439	0.1806	-0.1975	2.673 *	-0.3298	-4.9229	-6.2493 *
	[0.0147]	[0.6986]	[0.1789]	[0.8574]	[0.8570]	[0.0652]	[0.7812]	[0.2444]	[0.0629]
Number of observation	105	102	94	105	104	105	104	102	94
Adj R-square	0.513	0.273	0.293	0.152	0.119	0.325	0.198	0.461	0.309
Prob > F	0	0.009	0.788	0.021	0.92	0.092	0.327	0.03	0.645

Schindler outflows	6.6	1.0666	-1.7785	-0.3015	0.9135	4.3703 *	1.2535	-2.993	-4.4907
	[0.1375]	[0.8940]	[0.8067]	[0.8595]	[0.6148]	[0.0787]	[0.4792]	[0.6665]	[0.3895]
Number of observation	105	102	94	105	104	105	104	102	94
Adj R-square	0.511	0.272	0.284	0.152	0.121	0.328	0.199	0.456	0.298
Prob > F	0	0.005	0.827	0.02	0.912	0.018	0.253	0.033	0.748

Dependent variables are net capital flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
Independent variables include inflation, domestic private credit per GDP, domestic GDP growth, the U.S. GDP growth, interest rate differential, trade openness, prudential regulation and bank supervision variables and time dummy variables.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.
Note: all indices are normalized into 0-1 scale and higher value indicates higher level of liberalization.

Table 7-8: The effect of capital account liberalization on the direction and magnitude of capital flows (Chinn-Ito)

		Net capital flow/GDP	Net foreign flows/ GDP	Net domestic flows / GDP	FDI flows / GDP	Direct investment abroad flows / GDP	Foreign Portfolio flows / GDP	Domestic Portfolio flows / GDP	Foreign Private loan flows / GDP	Domestic private loan flows / GDP
Chinn-Ito	Chinn-Ito Ka openness	10.5718 ***	9.4502 ***	0.0762	0.9151	-0.3638	4.0502 ***	1.353	3.8733 **	-1.46
		[0.0000]	[0.0007]	[0.9764]	[0.3195]	[0.4289]	[0.0078]	[0.1557]	[0.0233]	[0.4164]
	Number of observation	100	97	89	100	99	100	99	97	89
	Adj R-square	0.621	0.328	0.208	0.333	0.254	0.266	0.142	0.291	0.228
	Prob > F	0	0	0.743	0.002	0.141	0.01	0.507	0.011	0.52

Dependent variables are net capital flows/GDP, FDI/GDP, domestic investment abroad/GDP, foreign portfolio flows/GDP, domestic portfolio flows/GDP, foreign private loan flows/GDP and domestic private loan flows/GDP.
Independent variables include inflation, domestic private credit per GDP, domestic GDP growth, the U.S. GDP growth, interest rate differential, trade openness and prudential regulation and bank supervision variables.
*,**,*** indicate the significance level of 10 percent, 5 percent, and 1 percent respectively. The numbers in parentheses are p-values.
Note: all indices are normalized into 0-1 scale and higher value indicates higher level of liberalization.