The Influence of Exchange Rate Regimes on the Relationships between Financial liberalization, and Banking Crises and Credit Booms

BY

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A Dissertation submitted to the Faculty of Claremont Graduate University in partial Fulfillment of the requirements for the degree of Doctor of Philosophy in the Graduate Faculty of Economics

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Approved by:

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Dissertation Abstract

The Influence of Exchange Rate Regimes on the Relationships between Financial liberalization, and Banking Crises and Credit Booms

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Claremont Graduate University: 2011

During the past two decades or so, the controversial topic of the causes of currency and banking crises (financial crises) has received a great deal of attention from economists. Some attribute crises mainly to financial liberalization and exchange rate polices etc. via different channels, for instance, excessive domestic or international lending and borrowing (credit booms). As a result, lots of empirical studies of the financial liberalization effects on banking crises likelihood have been conducted. Likewise, the casual link between exchange rate regimes and banking crises has become a very popular topic of research. However, these two linkages have been investigated separately. This study is the first to investigate the interactions among these linkages.

Using the panel data from 1990-2005 for 77 countries, including 19 industrial countries, 28 emerging market countries, and 30 developing countries, this dissertation empirically investigates whether the relationships between the financial liberalization and banking crises, as well as credit booms or excessive credit growth, vary across different types of exchange rate regimes. Phrased alternatively, it asks what roles exchange rate regimes have on these relationships.

The results suggest that intermediate regimes seem to have the largest impacts on the causal link of financial liberalization and banking crises, which indirectly support the unstable middle hypothesis. However, the study doesn't find any significant differences of the effects on the relationship among hard pegs and independent floats. In addition, in the case of credit booms, only a few intermediate regimes have larger effects on the relationship between financial liberalization and credit boom relative to the two corners of fixed and flexible rates. The study also finds the independent floats tend to be associated with the least effect on the financial liberalization and credit booms relationship. This finding is in the line with a view that a greater flexibility of exchange rate regimes should reduce a moral hazard problem of excessive borrowing and lending.

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Table of Contents:

Chapter1: Introduction

1.1 Overview and Contribution of the Study

During the past decade or so, the controversial topic of the causes of currency and banking crises (financial crises) has received a great deal of attention from economists. Some attribute crises mainly to financial liberalization and exchange rate policies etc. via different channels, for example excessive domestic or international lending and borrowing.[1] Therefore, there has been a considerable increase literature on the subject. The conventional wisdom is that financial liberalization is frequently followed by credit booms and financial crises, but the strength of these relationships has been the subject of dispute. As a result, the relationship between financial liberalization and the likelihood of banking crises have been the subject of a good deal of theoretical and empirical analysis, for example the recent paper of Angkinang, Sawangngoenyuang, and Wilhlborg (2010) finds an inverse U-shaped relationship between financial liberalization and the likelihood of banking crises. Likewise, the causal link between exchange rate regimes and crises has greatly become a very popular topic among researchers particularly in international economy field, for example the paper by Angkinang and Willett (2010) investigates both direct and indirect effects of exchange rate regimes on banking crises likelihood. Surprisingly, however, these two linkages with financial liberalization and with exchange rate regimes have generally been investigated separately. Hence, the first main focus of this dissertation aims to fill this gap by combining and extending the two papers above to investigate whether there is any influence of the exchange rate regimes on the impact of financial liberalization on the probability of banking crises. In other words, this dissertation asks whether different types of exchange rate regimes weaken or strengthen the liberalization and crises linkage.

[1] I will discuss in more detail on the literatures of relationship between financial liberalization and banking crises , as well as relationship between exchange regimes and banking crises in the literature review section below.

Another focus of this dissertation is similar to the first focus by investigating how the relationship between financial liberalization and credit booms or excessive credit growth varies across different exchange rate regimes. Sawangngoenyuang (essay3) (2008) investigated the link between financial liberalization and credit but did not incorporate exchange rate regimes. Therefore, another contribution of this dissertation is to help explain some of controversial results of the previous studies by using different measurements of credit expansion or credit booms.

It should be noted that since there are substantial differences in how studies have defined credit booms or rapid credit growth, the empirical results of financial liberalization and credit boom linkage tend to be inconsistent. Moreover, the absence of a conventionally-accepted way of measuring a credit boom induces the empirical studies to use different measurements in order to reinforce the common view that increased financial liberalization tends to increase the credit boom likelihood or generate an unsustainable rapid credit growth. Similarly, the conventional view of the relationship between exchange rate regimes and credit booms is that less variability of exchange rate encourages borrowing and lending as well as excessive risk-taking by financial intermediaries since it implicitly guarantees against currency mismatches risk. Some degree of availability of credit is believed to be very conducive to economic growth as some good potential investments might not be realized due to capital scarcities for the financing of investment projects. As a result, some governments have recently reformed their domestic policies to boost the availabilities of credits in the economy. Particular polices such as macroeconomic policies, monetary policies, financial liberalization polices, exchange rate polices etc. are frequently adopted. Financial intermediaries, such as banks, are clearly one of the main sources in providing needed funds for the private sector or investors who need capitals to proceed or expand their project. However, the global economic crises of the last two decades have led many economists to reconsider the beneficial effects of the capital-flow-oriented policies on the economic performance. Information asymmetries, for instance,

may lead to a misallocation of capital which further results in loan defaults. Too many defaults of loans create instabilities and vulnerabilities in the banking system and economic performance etc.

To study these issues, the newly updated dataset of IMF de facto exchange rate regimes classification and a recently improved dataset of financial reforms from 1990 to 2005 for 77 countries are utilized. Other variables are also used which will be discussed in more detail later.

Results of this dissertation should help provide good policy recommendations for particular countries which have recently liberalized or attempt to liberalize their financial sectors with the rest of the world, to somewhat take exchange rate regimes into consideration for any possible outcomes of these financial reforms. For example, a developing country like Cambodia, has recently been trying to reform its financial regulations towards attracting foreign investments or capital. As a result, lots of new brands of foreign banks have seen opened in the country and there has been a huge increase in the number of investment project applications. Moreover, the Cambodian government recently has pledged to launch its security market for the first time by any means at the end of 2011. Therefore, one motivation of this dissertation is to provide some policy recommendations based on the results. Unfortunately, due to the lack of available data, I could not do a case study for Cambodia, but the general results should be of relevance.

1.2 Limitations of the Study

For the new set of behavior classifications of exchange rate regimes developed by the IMF, its earliest availability is in 1990 and the latest information report on de facto regime choice of IMF countries is in late 2005. Therefore, this study can only have a 16-year time span to examine. One more limitation is an absence of the generally-accepted way of identifying a credit boom episode or excessive credit growth which might undermine the reliabilities of results. Future updates can be made as data becomes available. Lastly, despite

these limitations, this research can serve as the base framework of the future analysis in this area.

1.3 Structure of the Study

After the introduction chapter, the subsequent chapters are organized as follows: Chapter 2 will provide a theoretical discussion on what possible common channels of financial liberalization and exchange rate regimes on the banking crises likelihoods. Chapter 3 is similar to the chapter 2 but focuses on the credit boom instead of banking crises. It also theoretically analyzes impacts of excessive credit growth or credit boom on the economic performances and investigates some channels that financial liberalization affects credit boom. A survey on previous measurements of credit boom is given, following by a review of the limited literature on the exchange rate regimes and credit boom link. Chapter 4 presents the three models this study uses as well as the detail descriptions of data. Next, the empirical results are reported in Chapter 5 and sensitivity checks of the results are also investigated in the chapter 5. Lastly, chapter 6 concludes and provides policy recommendations and suggestions for financial-liberalized countries to prevent or at least reduce adverse financial developments.

Chapter 2: Discussion of Possible Roles of Exchange Rate Regimes on the Relationship between Financial Liberalization and Banking Crises

Sections 2.1and 2.2 are literature reviews summarized from the papers of Angkinang and Willett (2010), and Angkinand, Sawangngoenyuang, and Wilhlborg. (2010); other additional studies are reviewed as well. Section 2.3 is a theoretical discussion on potential common channels which both financial liberalization and exchange rate regimes have on the banking crises likelihood.

2.1 Costs and Benefits of Financial Liberalization

Economic liberalization is generally defined as the opening up of economies to flows of goods, services, capital, and businesses from other nations that integrate their markets with those abroad. Particularly, a country typically can liberalize its financial system domestically (internally) or internationally (externally) by removing any related financial restrictions with the eventual aim of improving the standard of living of people (higher GDP per capita growth). However, according to the existing empirical literature, the outcomes are mixed.

Generally, most economic literatures that support the process of financial liberalization (FL) rest on the idea that FL will improve allocation of financial resources, promote saving and increase the overall supply of credit to the real sector. This specifically makes the funds available for financing the real sector which results in an increase in level and efficiency of sustained economic growth. For example, in the study of Levine (2001), the financial deepening as a presumable result of financial liberalization is very conducive to poverty reduction because it enhances sustainable economic growth via more efficient international allocation of capital.

Schmukler (2004) discusses the benefits of financial liberalization and shows that financial liberalization can stimulate the deepening of the financial system via two main channels. First, there is possibly an increase in the availability of funds in the economy for

borrowers (household, firms, and governments) who might have productive investment plans but they could not carry out because of capital scarcity issue which has usually been encountered before the emergence of liberalization. Second, financial liberalization can improve infrastructure or institutions, which can alleviate financial intermediaries' asymmetric information issues such moral hazard or adverse selection.

Regarding the first channel, in a financially liberalized world, funds or capital typically can flow freely across countries to where its marginal product of capital is higher or where there is a higher expected return of investment. Moreover, the positive effects of capital flows on financial development take place because new sources of funds and more capital become available. New and more sources of funds mean that borrowers do not only depend on funds provided by domestic institutions, but they also can access more easily to foreign funds provided by foreign banks, for example, who are willing to open their branches and invest in a domestic financial sector.

Moreover, the increase in the availability of capitals from new sources might enhance the strength of market disciplines both at macroeconomic level and at the financial sector level, as now both local and foreign investors enforce market discipline on private and public borrowers. However, it should be noted that if the markets don't behave efficiently it's possible to undermine market disciplines. Foreign capital is especially effective in imposing this kind of discipline because of its unattached nature. Mishkin (2006) argues that the entrance of foreign financial institutions forces a domestic financial sector to learn not only new risk management skills but also management techniques which alleviate information asymmetry problem. The potential benefit of removing foreign bank entry restrictions is that domestic banks have to be more efficient in order to survive by adopting an international accounting standard, thereby increasing transparency. In addition, if foreign banks dominate the banking sector, host governments are reluctant to bail out banks when they have solvency problem. A lower likelihood of bailouts encourages a more prudent behavior by banking

institutions, an increased discipline, and a reduction in moral hazard because banks are concerned with the increase of possible default loans which may deteriorate the bank balance sheet. A similar argument that financial liberalization may increase the efficiency in the banking sector and reduces asymmetric information is via competition within the financial market. Competition induces domestic banks to strengthen their management and to learn new risk-monitoring skills and techniques. Moreover, financial liberalization also allows the reduction of risk through greater diversification.

Given the benefits of financial globalization discussed so far, it seems as though domestically and internationally liberalizing the financial sector should have an unambiguously positive impact on economic growth and eventually the reduction of poverty. However, evidence from many empirical studies shows that there is no clear-cut relationship between international financial openness and economic growth. As noted, during 1980s and 1990s financial liberalization was usually followed by financial instability or crises, which adversely affect growth, particularly if during the transitional process, excessive risk taking is desirable or if a country does not manage the process properly. For example, the paper of Diaz-Alejandro (1985) shows financial crises are common following the financial liberalization. Even more, the most recent studies assert that almost all banking crises have been associated with financial liberalization (Kaminsky & Reinhart, 1999; Williamson et al, 1998). Caprio and Klingebiel (1996) and Eichengreen and Arteta (2002) similarly investigate the relationship between bank failure and financial liberalization under two different regimes : a liberalized-financial regime and a repressed-financial regime. They conclude that banks are more likely to fail under a liberalized regime than under financial repression. Demirguc-Kunt and Detragiache (1998) confirm the above results by finding that banking crises are more likely to occur in liberalized financial systems.

An argument for possible costs of financial liberalization is that the resulting increase in competition in the domestic financial market and intense competition might eventually

induce excessive risk-taking behaviors in the banking sector. On a negative point of view, competition can be very harmful for the stability of the domestic financial system because the lift of a deposit-rate ceiling reduces banks' profitability after the liberalization; and the cost of going out of business is thus not as high as before the occurrence of liberalization because of lower franchise value which results from higher degrees of competition. This generates a moral hazard problem through excessive risk-taking behavior. According to Noy (2004) in an inefficient financial market, banks with lower profit margins are very vulnerable to fluctuations in economic activities. In their influential paper, Demirguc-Kunt and Detragiache (2001) investigate a possible channel through which liberalization may affect bank fragility; they use bank-level data to examine the correlation between variables proxying bank franchise values and the financial liberalization dummy variable. They find similar evidence that franchise values tend to be lower when financial markets are liberalized, possibly because banks' monopolistic power is eroded. This suggests that the increased moral hazard often attributed to low bank franchise value may help explain why financial liberalization tends to make banking crises more likely. Furthermore, Hellmann et al (1998) similarly argue that financial market liberalization increases competition; competition erodes profits; lower profits imply lower franchise values; and lower franchise values reduces incentives for making good loans−increasing the moral hazard problem. With sufficient competition, banks will find it desirable to take greater risks to sustain levels of profitability previously ensured by government restrictions on competition in the banking sector. There is thus a greater chance for loan defaults, which can lead to fragility in the banking sector.

Another possible cost of financial liberalization is the lack of specialty or expertise in managing and monitoring new lending activities following the process of financial liberalization, especially during the transitional time, that might lead banking systems get into trouble. Mishkin (2006) argues that after liberalization, excessive-risk taking might not be prevented without the new risk-management skills not only because there is a huge increase in

the number of loan requests but also because of a new banking environment (for instance, new rules etc.) which is brought in by foreign banks. Noy (2004) similarly argues that bank supervisors and staff are deeply used to pre-liberalization business environments for a very long time. Therefore, when the economy opens its financial sector, banks have a lack of the capacities to properly assess and manage a potential rapid lending growth. Based on the article by Willer (2001) using data for 27 emerging economies from 1973 to 1998, univariate and multivariate analyses indicate that the likelihood of currency and banking crises increase after financial liberalization. In particular, liberalization allows more liquidity to enter an emerging economy, which finds its way into both productive and speculative projects. What is common to both types of crises is a significant increase in speculative financing, thereby increasing the chance of borrowers' defaults. However, a study by Kaminsky and Schmukler(2007) looks at time-varying effects of financial liberalization in an attempt to reconcile the conflicting views. They find that financial liberalization in emerging markets fuels financial instability only in the short run while markets stabilize in the long run. Angkinand et al (2010) find similar results that financial liberalization increases the probability of banking crisis up to a certain degree of liberalization. After this point increasing liberalization reduces the probability of crisis. They find an inverse U-shaped relationship between financial liberalization and the probability of banking crisis, which may be explained by dynamic learning effects.

It should be noted that the above discussions suggest that financial liberalization might have a positive growth effect through better functioning of financial system in allocating capital to most productive investment opportunities. In the opposing view, it creates volatilities in both outputs and consumptions, and induces excessive risk-taking, which frequently leads to financial crises. Recent papers in the financial liberalization area start to investigate the net effect of financial liberalization by investigating whether the positive growth effect can be offset with the negative crises effect because channels that financial

liberalization affects the growth also increase risk (occurrence of financial crises); therefore, the direct growth effect of financial liberalization might be overestimated if growth and risk are independently considered (Popov 2011). Ranciere, Tornell, and Westermann (2006) study the net effect of financial liberalization by decomposing the effects on economic growth and on the occurrence of crises. They find that the effect of the former outweighs the effect of the latter, meaning that financial liberalization stimulates the economic growth even it increases the likelihood of crises. However, Bonfiglioli (2008) find no impact of financial integration on investment and growth but the liberalization may raise the likelihood of banking crises. Similarly, a study of Henry (2007) finds a temporary growth effect of financial liberalization but in the long run the growth effect is not confirmed. Later on, an influential paper of Broner et al. (2010) which tries to explain seemingly contradictory results of previous studies of financial liberalization effects finds that since the effects of liberalization appear to be dependent on countries' characteristics such as their income levels, their levels of financial developments, and their quality levels of institutions. This finding implies that in order to fully reap the benefits of financial liberalization, some threshold conditions are met. For example, Prasad et al (2003) and Kose et al (2009) argue that net beneficial effects of financial liberalization can be clearly obtained when liberalized countries, especially developing countries, satisfy some prior conditions such financial system development, good institutions and governance, proper macroeconomic policies, strong prudential regulation and regulation etc. However, empirical studies of a potential role of proper exchange rate regime policies on the effects of financial liberalization have not been conducted, which this dissertation will investigate.

2.2 Impacts of Exchange Rate Regimes on Banking Crises

Surprisingly, the empirical literature that has examined the relationship between exchange rate regimes and banking crises is very small, while most of the controversial debates focus on the effect of exchange rate regimes on currency crises instead of banking

crises. However, the study of twin crises (banking crisis and currency crisis) has been empirically conducted as well. Most arguments on the interrelationships among the twin crises are the currency mismatch problem that happens in countries with a pegged exchange rate where banks borrow from abroad in foreign currency and lend out domestically in local currency. In cases like these, the unexpected depreciation of the domestic currency can lead to bank runs through the deterioration of bank balance sheets. Kaminsky and Reinhart (1999) and Glick and Hutchison (2001) find that in general banking crises increase the probability of currency crises but not vice versa. In contrast, Willett et al (2005) argue that banking crises can be attributed in part to currency crises in the case of1997 Asian crises. Therefore, below I review empirical literatures about the role of exchange rate regimes on both currency and banking crises interchangeably since they are theoretically highly interrelated.

The controversial debate over the appropriate exchange rate policies for countries to adopt has taken the center stage after the occurrence of crises in the past decades. However, there seems to be very conflicting results in finding which exchange rate policy should be adopted in order to avoid adverse effects on the economic performances. For example, in their paper "Exchange Rates and Financial Fragility", Eichengreen and Hausmann (1999) argue that pegged exchange rates are a form of implicit guarantees against currency fluctuations, which create moral hazard in the financial system. Therefore, countries that borrow heavily from abroad can fuel dangerous lending booms at home which can jeopardize the health of the banking system. To sustain the peg, authorities will insist that there is absolutely no prospect of it being changed. In this context, the authorities implicitly offer the private sector insurance against the risk of exchange rate volatility. This situation attracts more capital flows, but leaves the economy highly vulnerable to external shocks. Generally, under pegged regimes, borrowers have incentive to take on excessive risk. It is this excessive risk-taking that is at the root of financial fragility and possible banking crises. Sachs et al (1996) also find that countries with pegged exchange rate regimes tend to be more prone to crises than floating

regimes via a moral hazard problem generated by an implicit guarantee again exchange rate fluctuations. . However, Eichengreen and Rose (2000) analyze banking crises using a panel of macroeconomic and financial data for more than one hundred developing countries from 1975 through 1992 and conclude that the likelihood of banking crises is insensitive to alternative exchange rate regimes.

Husain et al (2005) who use new data and advances in exchange rate regimes' classification, conclude that effects of exchange rate choices do vary across country groups because some developing countries have high exposure to the international capital markets while some are not much integrated in global financial markets. Therefore, two different results have been found in their study: (1) countries with less integration tend to have lower inflation and low risk of crises; (2) crises are more likely to happen in developing countries with strong integration in the global capital market. Likewise, Demac and Peria (2003) empirically investigate the impact of the exchange rate regimes on the likelihood, cost, and duration of banking crises, in a large sample of developed and developing countries over the period of 1980-1997. One of their main conclusions that emerge from their study is that after controlling for a host of macroeconomic, financial and external fundamentals, a proper exchange rate regime is dependent on circumstances of particular countries and time. Banking crises is less likely to happen under a fixed exchange rate regime. However, once it occurs, its costs are higher relative to other alternative regimes. Moreover, as argued by Calvo (1999) random shocks that affect economies may be a function of the exchange rate regime. Thus the transparency and credibility associated with fixed exchange rates may insulate a country from contagion and rumors.

Later studies on this issue make use of an updated dataset of exchange rate classification which distinguishes exchange rate regimes into more than two classifications (not just only fixed and floating regimes). Bubula and Otker-Robe (2003), for instance, use de facto exchange rate regimes of the IMF members in analyzing the crisis proneness of various

exchange rate regimes from 1990 to 2001.[2] Their paper concludes that pegged regimes, as a whole, have been characterized by a higher likelihood of currency crises than floating regimes, for countries that are more integrated with international capital markets; and that intermediate regimes (mainly soft pegs and tightly-managed floating regimes) have been more crisis prone than both hard pegs and other floating regimes—a view consistent with the bipolar view of exchange rate regimes. A recent IMF study , however, by Rogoff et al. (2003) using the Reinhart and Rogoff classification finds no support for the two corners or bipolar view that countries will over time tend to move to the polar extremes of free float or rigid peg. Additionally, Angkinand, Chiu and Willett (2010) support the unstable middle hypothesis, which holds that narrow band adjustable pegs (soft pegs) should be the most crisis prone type of exchange rate regime, but do not agree with the two corners or bipolar hypothesis which states that one needs to go all the way to freely floating rates or hard fixes to substantially reduce the risks of currency crises. They also conclude the link between exchange rate regimes and crises can be quite sensitive to how exchange rate regimes are grouped into categories and the measures of currency crises that are used. Similarly, in their influential paper, Angkinand and Willett (2010) investigate both direct and indirect effects of exchange rate regimes on banking crises likelihood and their finding presumably confirms the unstable middle hypotheses and the flexible corner is associated with the least probabilities of banking crises. It should be noted that they use a recent IMF exchange rate classification, which again distinguishes the hard peg and the soft peg.

2.3 Banking Crises, Financial Liberalization and Exchange Rate Regimes

Probably the most frequently heard argument relating financial liberalization to banking crises is the creation of possible moral hazard problem via greater risk-taking

[2] Most previous studies relied on the former IMF classification system, which categorized, from 1975 to 1998, members' exchange rate regimes based on their official notifications to the IMF. This de jure classification system had one major shortcoming , namely its failure to capture the countries' actual policies. See Bubula and Otker-Robe (2002) for more detail.

incentives by bank managers after the liberalization takes place if the bankers are likely to receive government support if they run into trouble (Demirguc-Kunt and Detragiache 1998). As was discussed above, an increase of competition in the financial market, as a result of the liberalization of the financial system, can force banks to take more risks by lending more with less screening incentives for a sole purpose to sustain their profitability.[3] The theory suggests that financial liberalization should be accompanied by larger capital flows (both outflows and inflows). In the case of positive net capital flow in liberalized countries; these inflows, if not sterilized, boost bank deposits, bank liquidity, and tempt banks to increase lending.[4] Higher lending growth leads to the higher likelihood of loan defaults, which may create instability in the banking sector if debtors are insolvent or have difficult times of paying back the loans (a possibility of bank runs). Another problem related to financial liberalization and banking crises is the ability to freely borrow from abroad in a foreign currency and lend out in the domestic currency. This is likely to lead banks into trouble if there is an unexpected depreciation of the domestic currency.

To relate exchange rate regimes to the relationship between the banking crises and financial liberalization, I will discuss common mechanisms through which exchange rate regime and financial liberalization might impact the crises likelihood. Generally, less volatility of exchange rate regimes are perceived as implicit guarantees from governments against huge fluctuations which might create moral hazard incentives for financial market participants to undertake crises-prone aggressive activities in both borrowing and lending. However, as discussed above, countries which do not expose themselves to the international capital market might not be as prone to crises as countries that are fully liberalized financially with the global market even if the countries adopt fixed exchange rate regimes. One plausible

[3] " Fearing that they could lose ground in the vigorous competition touched off by liberalization, many banks, in particular some large ones, pursued aggressive lending policies as a preemptive response and were prepared to accept higher risk." Drees and Pazarbasioglu (1998), p.20

[4] See, Sachs et al 1996 and Ouyang, Rajan and Willett (2008) for sterilization ; see Chenard and Fisher (1997)for more detail on lending behaviour of agents; and see Dell's Arricia and Marquez (2004a, 2004b) for the link between the liberalization and lending .

reason might be limited access to capital. This argument also implies that capital flows as result of financial deregulation to the liberalizing countries, particularly emerging market countries, provide more opportunities for financial intermediaries, especially banks, to take on more risks and riskier investments due to the greater availability of capital and easier access to the global capital markets, and perhaps an implicit guarantee of pegged exchange rate regimes against major exchange rate changes.

Generally, a possible explicit guarantee in a form of bail-out and an implicit guarantee of less volatile exchange rate regimes from governments give incentives for banks not to hedge their foreign liabilities.[5] Once banks have large foreign liabilities, they are very vulnerable to both internal and external shocks, which might create financial fragilities. For example, banks can increase their domestic lending in a domestic currency by increasing their foreign borrowing due to the openness of financial sectors. Therefore, banks face high risks of having currency mismatch if a domestic currency heavily depreciates. Again, this leads to deteriorations of banks' balance sheets, which eventually increases the likelihoods of banking crises.

Based on the above explanation of fixed exchange rate regimes, more flexible exchange rate regimes should reduce the likelihood of banking crises which is perhaps a result of financial deregulations. More flexible regimes, for instances, might mitigate the moral hazard problem because banks have to pay more attention on the currency risks before they access the global market with ease for more capitals. Likewise, local firms who have access to the international market may not make riskier investments because they are now facing another risk of possible domestic currency depreciations. Since they borrow abroad in a foreign currency and receive returns in a domestic currency, their real profits are affected by fluctuations of domestic currencies.

[5] See Demac and Peria (2003) for more detail

Hard fixes may be expected to be less subject to financial crises than adjustable pegged rates, since the hard fixes are less likely to be subject to depreciation. On the other hand, the hard fixes may stimulate foreign borrowing more than adjustable pegs. As a result of these different theoretical considerations, we cannot draw strong a priori conclusion about the relationships—empirical investigation is required.

Chapter 3: Discussion of Possible Roles of Exchange Rate Regimes on the Relationship between Financial Liberalization and Rapid Credit Growth or Credit Boom

Sections 3.1 and 3.2 give literature reviews based on Sawangngoenyuang (essay3) (2008). Other updated articles are also reviewed. Section 3.3 is a discussion of the causal link between financial liberalization and excessive credit growth/ credit boom. Section 3.4 discusses common mechanisms that exchange rate regimes and financial liberalization generate credit boom or excessive credit growth.

3.1 Overview of Rapid Credit Growth

Rapid credit growth can be very tricky because if it is sustainable, it is very essential for the growth of economy via financial deepening. However, if it is unsustainable, it might deteriorate or weaken both macro and micro economic fundamentals via a possible currency crisis, banking crisis or financial crisis. The section below will discuss in more detail on these implications and characteristics.

3.1.1 Risks Associated with Credit Boom

This section discusses macroeconomic and financial implications of excessive capital growth or credit booms.

A. Weakened Current Account

One of the macroeconomic fundamentals which might be affected by credit boom is current account deterioration. Domestic consumption booms usually follow higher credit growth because increased capital availability reduces financial constraints particularly for firms and households. In European countries, for example, two mechanisms of credit booms which bring about deterioration in current account are an increase in domestic goods prices which erodes international competitiveness; and a high increase in demand for foreign goods (Duenward et al 2005; and Baker et al.2010). They observe that countries with the most rapid credit growth had the largest increase in domestic demand but an important portion of the

increase is through higher trade deficits, and in 2008 many European countries' external debts have increased tremendously which make those countries highly vulnerable with exogenous shocks.

B. Instabilities in Financial Systems

Credit booms might weaken the financial sector via a huge increase in investments and a decline in the quality of bank assets (Sa 2006, Deunward et al 2005). Abilities of individual consumers to borrow from banks are affected by their net asset worth considered as collaterals. During the credit expansion period, asset prices, particularly in real estate and stock markets, increase. As consumers' net worth increases, they are capable of borrowing more which increases exposures of banks to the real estate values. Hofmann (2004) suggests that property prices have influence on both consumers and banks because banks which usually use real estate as collaterals are willing to engage in excessive risk-taking by lending more or to extend loans if the collaterals have more values. However, according to Hilbers et al (2005), banks' abilities to monitor and manage risks are stretched by the increased volume and speed of credit growth. Substandard loan granting procedures and unrealistic projections of future repayment capacity of borrowers may distort the actual growth and allocation of credit. Such exuberance allows vulnerable exposures to expand, which can amplify real sector costs in the event of a negative shock. In a banking system, furthermore, property prices influence the value of bank capital via the value of loans secured by real estate properties. Therefore, in the event of an asset price collapse, banks' capital declines, creating fragility and instability in the banking system.

During a credit boom episode, the number of loan applications rises noticeably and this increase is one of many factors in explaining financial crises, in terms of the ability of the banks and supervisors to assess credit quality. Therefore, banks need to have well trained credit assessors to be able to determine which credit application should be approved. However, even if the assessors are skilled, the hugely increasing number of credit applications

in an upswing may be so large that the existing assessors might not be able to handle them. In that case, some credit requests which should not be considered might be honored. Credit bureaus might be a crucial answer for solving all these issues but may not be established or function properly.

3.1.2 What Is Rapid Credit Growth or Credit Boom?

There are lots of controversial arguments and debates over definitions of rapid credit growth. Many studies in the literature try to use different types of methodologies to define excessive credit growth or credit boom episode in their analyses. A strong correlation between credit growth and GDP growth makes the task even more difficult to distinguish between a healthy credit growth and unsustainable or excessive credit growth. Healthy credit growth is good for economy performances but excessive credit growth can be, according to existing literature, a strong warning indicator of a weakened financial sector or lead to financial crises. It should be noted much literature on the crises frequently uses some common proxies as a measure for credit such as: real credit to private sectors, private credit to GDP ratio, net domestic credit, private credit provided by banks to GDP ratio etc. However, while some studies use a simple method (credit growth rate), other studies have created their own slightly different criteria to identify excessive credit growth or credit boom episodes which they think are very compelling or promising for their analyses.

It should be noted since there is no generally-accepted best way to measure credit boom, each measurement of excessive credit growth or credit boom tends to have its own critiques; therefore, this dissertation uses different measurements to check robustness of results. Section 4.2.1 below will give statistical explanations on credit boom measurement used in this study.

Some existing literatures have used a simple measurement for credit growth. For example, Kaminsky, Lizondo, and Reinhart(1998); and Borio and Lowe (2002) investigate many macroeconomic variables to determine which variables provide better signals for

financial crises. They use annual percentage change in private credit-to-GDP as a proxy for credit growth and find that credit growth is a good warning indicator of financial vulnerability. Later studies argue that since these vulnerabilities happen over an extended period of time, it might be better to look at cumulative credit growth for certain durations. For instance, Sachs et al. (1996) observe the percentage change of the private credit-to-GDP ratio between 1990 and 1994[6]. Artet and Eichengreen (2002) use just a growth rate of real credit as a measure of credit growth to examine whether it explains the banking crises probability or not. However, the above proxies are continuous variables not a dichotomous variable, which takes a value of 1 on a credit boom period, and 0 otherwise.

Much empirical research on credit booms has sought to establish quantitative techniques to distinguish credit booms from episodes of rapid credit growth. In doing so, the studies look at deviations of actual values of credit, frequently measured by real private credit or private credit to GDP ratio, from either long-term trend or equilibrium. In other words, they define vulnerabilities (credit or lending boom) for a period when credit level deviates from its trend by a specified amount over a number of years For example, Ottens et al (2005) define a lending boom episode as two consecutive periods (year) in which the ratio of normal private credit to nominal GDP deviates from the trend by a certain threshold from 2 to 10 percentage points of GDP. They use a backward-looking rolling HP filter to compute the specific-country trend, with a smoothing factor of 100 for annual data. They argue that credit boom tend to last longer than one year. In the case of deviation from an equilibrium level, Boissay et al. (2005) model bank credit to the private sector (BCPS) growth as a function of its GDP growth and the interest rate, plus the gap between the actual ratio of BCPS to GDP and its equilibrium level which is defined as a function of real GDP, the real interest rate and a trend. A credit boom is detected when its credit level in the studied country grows over the observation

[6] Radelet et al. (1998) calculate change over 36 months prior to crises episode , and Willett et al. (2005) calculate change over 4-year period

period at a higher rate than that defined by its three determinants (GDP growth, interest rate and the gap between the observed ratio and its equilibrium level).

Furthermore, instead of using equilibrium levels, most empirical studies use trend calculated by either a rolling HP filter or a HP filter for a given threshold. The differences between a rolling HP filter and a HP filter are that the latter uses all information available over the entire sample while the former uses only information available up to the time the boom is detected. These two types have their drawbacks because they are very sensitive to start and end values of a series. For instance, a trend can be under-estimated if utilizing HP filter over the whole sample since after crises credit might decline significantly. However, a trend can be over-estimated by applying a rolling HP filter if there is a long period of strong credit growth because the rolling HP filter slowly adds a structural break into the calculation of the trend. This means that the end value is big which can distort the reality of the trend.

It is essential to learn that there is no one fixed threshold level for different empirical studies. The threshold level literally determines the number of boom periods. For example, in the influential paper of Gourncha s et al. (2001), there are two types of threshold definitions---absolute deviation and relative deviation. The former is defined as a difference between a ratio of real credit to GDP, which takes into account the economy's size, and the trend calculated by HP filter. In contrast, the relative deviation is measured by dividing the absolute deviation to actual ratio which implies that any countries can experience the boom regardless of the relative financial system situations. In determining the thresholds to detect the booms, they focus on three different thresholds which yield exactly 100, 80, and 60 cases for each type of measures. To yield 100, 80, and 60 cases, the thresholds for absolute deviations are 4.79%, 5.40%, and 6.45% of GDP, and the thresholds for relative deviations are 24.92%, 27.71%, and 31.15% of credit to GDP ratio, respectively. It should be noted, the number of booms decreases with the size of the thresholds under both measures.

In addition, Terrones et al. (2004) set their own criteria to determine a boom episode by using instead real private credit as a measure of credit. Since credit is a stock variable, real credit is computed by the average of two contiguous end-of-years stock deflated by a consumer price index. The credit boom occurs when the actual bank credit growth rate is greater than the trend, which is estimated by using the HP filter, by a factor of 1.75 times the standard deviation. Terrones et al. (2004) determine the threshold by making assumptions that the yearly credit deviations have normal distributions and there is a 5 percent probabilities that extreme values lie above 1.75 standard deviations. The outcomes of using 1.5 and 2 standard deviations in place of 1.75 standard deviations are robust.

A summary of the comments and critiques is shown in the table below.

Table 3-1: A Summary of Credit Boom Measurement

Study	Choice of Credit Measure	Methodology	Comment/Critique
Gournchas et al. (2001)	Use private credit to GDP ratio	*Define a creidt boom episode as a deviation of the ratio from a country-specific stochastic trend by certain threshold. Two alternative types of deviation : (1) relative deviation; (2) absolute deviation. *Trend is computed by using a rolling HP filter.	*Trends of real credit and GDP might not be the same when some countries might experience a process of financial deepening. Morever, using the credit to GDP ratio might wrongly dectect the boom in case of an occurance of output shock but credit remains unchanged (Hilbers et al 2005). *Using a rolling HP filter distorts the natural characteristic of credit cycles.
Dell' Ariccia (2006)	Uses private credit to GDP ratio. Focuses on both level and growth of the ratio.	*Defines a credit boom when either following conditions is met : +deviation from the trend is greater than 1.5 times standard deviation of the deviation and growth rate of the ratio is greater than 10%. Or + Growth of the ratio itself is greater than 20%. *Uses a rolling HP filter to calculate the trend.	*The same as above . And growth of the ratio alone is not a strong criteria to define a credit boom because the high rate can be driven by the cycle or trend.
Borio and Lowe (2002), Borio and Drehman (2009)	Use private credit to GDP ratio	Define a credit boom as a deviation from the rolling trend, computed by HP filter, by a certain threshold	

Mendoza and Terrones (2004, 2008)	Use private credit	*Assume the yearly credit deviations have normal distributions. *Defines a credit boom episode as a deviation from the trend is greater than 1.75 standard deviation. However, episodes of rapid or sustaintable credit grwoth are defined as those episodes for which average real credit growth exceeds 17% over a three-year period. *Use a HP filter to calculate the trend	*Using a private credit not a ratio to GDP may give a misleading information of credit boom because the high growth might be a sign of catching up process. *The standard HP filter is sensitive to the begin and end values of the series for which the trend needs to be determined. A trend might be under-estimated over the entire sample since credit faces sharp decrease after crises (Hilbers et al. 2005).
Hilbers et al. (2005)	Use private credit provided by banks to GDP ratio due to limited data availability	*Similar to Gournchas et al (2005) but using only relative deviation to detect the credit boom episodes.	*The same as in the study of Gournchas et al. (2005)
Ottens et al. (2005)	Use the ratio of normal private credit to nominal GDP	*Define a credit boom episode as deviations from the trend are greater than 2 to 10 percentage points of GDP for two consective periods. *Use backward-looing rolling HP filter to compute the trend.	

Cottarelli et al. (2003)	Use bank credit to the private sector as a ratio to GDP as Hilbers et al. (2005)	* Use similar criterias of Gourchas et al. (2005).	* A short range of the ratio makes results very sensitive to individual observations. * The idea of comparing the actual ratio with the rolling trend is based on the notion that such trend components portray the normal level of ratio. Therefore, detecting credit booms can be under-estimated or over-estimated depending on the actual level of ratio in any given point in time.
Hernandez and Landerretche (2002)	Use either bank private credit or capital inflow to GDP ratio (calculate the growth for bank private credit)	A year of rapid credit growth is defined as one that satifies one or both of the following criteria: + Growth of bank crdit is greater than X times growth of GDP for years t and t+1 where X >1, And + Private capital inflows are positive and increase in that year or the year before.	
Tornell and Westermann (2002)	Use private credit to GDP ratio	* Use similar criterias of Gourchas et al. (2005).	
Angkinad and Willett (2010)	Use private credit to GDP ratio	Calculate the growth rate of the ratio	
Arteta and Eichengreen(2002)	Use net domestic credit (in current local currency)	Calculate the growth of credit	
Brzoza-Brzezina (2005)	Use loans to the private sector	Annual Growth Rate Peaking at 30-45%	

3.2 Effects of Financial Liberalization on Rapid Credit Growth/ Credit boom

Generally, the purposes of liberalizing financial system are to make countries rich in capital and also to improve capital allocation in order to literally stimulate the economic growth via increased financial development or financial deepening. However, without prudential regulation and supervision as well improvements of the domestic legal system and transparency, the development of financial sector might not happen and credit might grow too fast which make it impossible to control and manage the allocation of capitals. The misallocation of capital may result in banking system vulnerabilities and further financial fragility. Many countries experience financial crises not long after liberalizing their financial sectors via unsustainable credit growth. Researchers blame financial liberalization by claiming that it leads to a credit boom which makes financial markets vulnerable to economic shocks. A credit boom analysis is crucial for policy makers for preemptive actions because credit boom is presumably a warning indicator for economic imbalances and financial fragility.

Next, in addition to the interesting studies of financial liberalization and a rapid credit growth relationship, the channels which financial liberalization impacts credit expansion should be studied thoroughly in order to understand clearly how financial liberalization generates credit expansion. According to Sawangngoenyuang (2008), financial liberalization causes greater credit growth via different channels as below:

A. Financial liberalization may lead to credit booms due to easier access to capital markets

In the financial system, financial intermediaries such as banks and other financial institutions are official places for deposits and lending of funds. Banks, for instance, generally take deposits and lend out a fraction of the deposits to customers with profits generally generating from the interest rate differences. However, there are other ways which banks can finance their credit expansion beside deposits through borrowing from other banks, reducing loans to government, reducing reserves or money held at the central bank; increasing net foreign liabilities (Sawangngoenyuang 2008). Therefore, when governments decide to liberalize their financial systems, banks can increase their lending because they find it easier to obtain more funds. Under a financial repression period, governments have full controls over bank activities and operations such as regulating interest rate ceilings, state-directed credits in prescribed sectors, and high reserve requirements. For example, Mckinon (1973), in his paper "Money and Capital in Economic Development", argues that governments believe that setting higher interest rates, one source of attracting deposits, can decrease economic growth. Therefore, they usually set interest rate lower than an equilibrium interest rate (a rate determined by demand and supply), which creates a credit rationing issue. In addition, a low interest rate makes banks carefully assess the risk because the project risk might be higher than the returns so banks prefer well-connected customers to unfamiliar customers. Moreover, in a repressed financial system, reserve requirements are high so banks have few funds to lend out.

Financial liberalization aims to improve the banks' ability to lend via low reserve requirements, market-determined interest rates, and undirected credit allocation. Leaven (2003), for instance, finds that financial constraints are reduced during the period of financial liberalization especially for small firms because they are financially constrained before the liberalization while it is opposite in the case of large firms because they already have better

access to well-connected lenders during the period before financial liberalization. In addition, financial liberalization allows capital to cross border to where returns are expected to be higher. Furthermore, letting interest rates be freely determined by markets and no ceiling allows banks to set higher rates for risky investment projects. As a result, banks may raise deposit rates in order to attract more funds to finance their risky projects

B. Financial liberalization can lead to credit expansion due to an increase in wealth

In this case, financial liberalization is assumed to be one of the determinants of financial development and growth (Tressel and Detragiache, 2008). And in the 1990s there was a wave of theoretical and empirical contributions about the effects of financial system development on economic growth.[7] If financial liberalization has positive effects on economic growth, people' living standard improve and their wealth also increases. The increase in wealth raises the borrowing capacity of households and firms since the borrowing ability is determined by households' collateral such as houses and real estates. According to a financial accelerator hypothesis, the interaction between credit and economic activity may lead to excessive credit growth because when firms or individuals can borrow more, they consume and invest more, hence raising economic growth. This self-reinforcing process amplifies business cycle fluctuations (Hofmann, 2001).

C. Financial liberalization may lead to credit expansion via competition

Financial liberalization, particularly in the forms of eliminating interest rate controls and entry barriers and restrictions, induces competition via a possible increasing number of banks and a narrowing of profit margins. For example, Noy (2004) argues that a pre-liberalized sector has only a small number of domestic banks operate. Foreign banks, and sometimes even new domestic banks, are restricted to enter in the financial intermediary sector. In contrast, under a more open financial system, banks' profit margins are reduced as banks start competing on deposits by increasing deposit rates or lowering lending rates and

[7] See examples of Geenwood and Jovanovic(1990), Bencivenga and Smith(1991, 1993), Obstfeld(1994) and Saint-Paul(1992).

the entry of foreign banks presents domestic banks with increased competition, which further creates moral hazard problems. A smaller profit margin encourages banks to be more aggressive in term of lending out to risky investments as the cost of bankruptcy is lower (low franchise values).

D. Financial liberalization may lead to a credit expansion due to poor qualities of institutions

Governments which regulate some particular policies, such as deposit insurance and lender of the last resort, initially aim to prevent any possible deterioration in a banking system or a financial system. However, these regulations are instead perceived as strong explicit guarantee policies by financial market participants, which give more incentives for bankers to undertake aggressive or non-precautious lending to risky investments because if the projects work well, they take all profits and promotions. If the projects fail, governments will rescue them. Especially, low-profit-margin banks, presumably a result of financial liberation via competition, want to boost their revenues by giving more loans to risky projects even though they know there is a high probability that those loans are more likely to be defaults and insolvent. For example, Mckinnon and Pill (1977) state that when prudential supervision is insufficient to prevent moral hazard, risk neutral banks tend to be associated with more aggressive lending due to euphoria expectation about economic growth and deposit insurance. In addition, credit expansion in an inefficient financial market may give a wrong signal to uninformed customers about the economic prosperity which encourages domestic investors and customers to increase their borrowings to finance their credit constrains or possibly to expand their business operations because credit expansion distorts their views on the economic well-beings. Moreover, domestic banks and investors after liberalizing financial sectors can freely access capital in both domestic and foreign markets with ease.

Without deposit insurance, depositors are more cautious in making deposits because they are afraid of losing their savings if banks' asset qualities deteriorate. Depositors are less

concerned about bank conditions when they consider which banks are healthy or unhealthy as long as they receive high deposit rates because they're explicitly guaranteed from the government that they will get some compensation if the banks could not pay back the deposit. The lender-of-last-resort promise to provide liquidity in face of liquidity shortages might also introduce inefficiencies and, in addition, pose a practical problem to authorities to distinguish between liquid and insolvent banks.[8] All these activities and operations of banks and customers stimulate potential excessive credit growth.

Existing empirical studies on the link between financial liberalization and credit expansion seem to find a conventional view of the relationship that financial liberalization is usually followed by significant credit expansion (excessive credit growth).[9] However, the aim of this study is to investigate whether the economic integrations in the financial system have different impacts on the credit boom under different types of exchange rate regimes. It should be noted that the traditional channel which financial reform of a capital-recipient country may lead to credit boom is a surge in capital inflows if the surge is not fully sterilized. Ouyan, Rajan and Willett(2008) confirm the argument that capital inflows do not automatically have a positive impact on credit booms as domestic policies such as sterilization may be an important intervening policy choice, especially in emerging economies. In a related study, Hernandez and Landerretche (2002) contend that the surge in private capital inflows is often preceded by increases in financial integration of the recipient country.

In contrast, Sawangngoenyuang (2008) finds mixed results of the relationship between financial liberalization and credit booms. She distinguishes between the degree of liberalization and the change in liberalization—the move from less liberalized to more liberalized financial sector. Her results are sensitive to inflation levels, country groups, and the definition of financial liberalization. Sachs et al. (1996) find very little evidence to support

[8] The traditional view, as in Baghot's 19th century dictum, is that the lender-of-last-resorts should provide liquidity at high interest and only against good collateral (and thus only to illiquid banks). Diamond and Rajan (2002) challenge this view and provide a theoretical justification for last-resort-lending to insolvent banks as well.

[9] See Diaz-Alejndro(1985), Schmidt-Hebbel et al.(1996), and Schneider and Tornell(2000) for more details

the common view that financial liberalization necessarily leads to lending/credit booms.

3.3 Effects of Exchange Rate Regimes on Rapid Credit Growth/ Credit Boom

It should be noted that only a few empirical studies on a relationship between exchange rate regimes and credit booms have been conducted. The common argument of this relationship primarily concerns a moral hazard problem which might result from strong implicit and explicit guarantees in the forms of pegged exchange rate regimes and of bailing out from the government, respectively. The underestimation of currency mismatch risks by borrower and lenders can create a worsened liquidity issue, a deteriorated banking balance, and eventually a weakened financial sector if governments or central banks are out of control or face a potential huge trade-off in preventing pre-announced exchange rate regimes. Moreover, pegged exchange rate regimes might make it easier for a country to utilize foreign markets for additional credits (with access to additional foreign markets to finance its debts) and for the government to undertake irresponsible fiscal policies (Mishkin 2006).

Generally, the conventional view argues that pegged or tightly predictable exchange rates should provide the most incentives for borrowing and lending in foreign currencies (by banks and/or borrowers) and further lead to capital inflows which may generate credit expansion/boom. For instance, Demac and Martinez Peria(2003), using a two-way classification of exchange rate regimes, support the standard view that countries with a pegged exchange rate regime tend to have higher foreign liabilities than foreign assets via distorted exchange rate guarantees. Jeanneau and Micu (2002) conduct a similar study of the impact of the type of exchange rate regimes on short- and long-term international bank lending and conclude that the adoptions of pegged and intermediate regimes encourage lending flows, while floating ones prevent them. Moreover, according to Sachs et al. (1996), bank lending booms are more likely to appear in countries with a pegged exchange rate regime than more flexible regimes. In a related study, Hilbers et al. (2005) examine the

phenomenon of excessive rapid growths of the bank credits to the private sector in many Central and Eastern European countries as well as some countries in the East and South of the European Union. They find that the countries with a persistent deterioration of external balances face the increased risk of currencies under a prevailing exchange rate regime because these countries have low savings rates, meaning they finance their external imbalances via foreign borrowings and funds from abroad. In contrast, Hausmann and Paniz (2003) and Levy-Yeyati (2006) do not see any impacts of exchange rate choices on credit booms.

3.4 Financial Liberalization, Exchange Rate Regimes, and Credit Booms

Again, even though there are many studies of the relationship between financial liberalization and credit booms, and a few investigations on the impacts of exchange rate choices on credit booms, they are most of the time examined separately. Therefore, one contribution of this dissertation is to fill this gap by investigating these two links together in order to see whether different types of exchange rate regimes have any explanation over the impacts of financial liberalization on credit growth/boom. As was analyzed earlier, the elimination of interest rate ceiling is supposed to reduce the gap between the domestic interest rate with the world interest rate but the former is usually higher than the latter in an inefficient financial system which encourages capital to flow into an attracting capital-return country, for example emerging market countries. The flow of capital might get even stronger due to a possible moral hazard problem generated by pegged regime policies because investors underestimate a potential risk of currency mismatches.

Miskhin (2006) argues that pegged exchange rate regimes are subject to speculative attacks if countries do not show its strong credibility against the fluctuation of exchange rate regimes or their foreign reserves are not efficiently adequate. Notably, according to (Sachs et al. 1996; Ouyang, Rajan and Willett. 2008; Angkinand and Willett 2010) capital inflows do not automatically lead to credit booms due to the potential adoption of a sterilization policy

by central banks, but it should not create erroneous policy responses by assuming that a capital-recipient economy will face an increase in liquidity, which facilitates a surge in bank credit and further a lending boom because it's difficult or impossible to fully sterilize the inflows (Hernandez and Landerretche 2002). Therefore, a combination of wide interest rate margins resulting from financial deregulation in the domestic market and pegged exchange rate regimes should stimulate the credit expansion stronger.

A financial liberalization policy of eliminating capital account restrictions allows capital freely flow to any countries where the expected return of capital or investment is higher. With this policy, domestic firms, for instance, now have access to more capital markets with ease if they need more capital to expand their current businesses. However, in an inefficient market environment, investors face many different types of risks depending on types of business investments. At the international level, exchange rate risk is generally taken into consideration with any kind of businesses that is involved with foreign exchange markets. Sometimes, if potential investors speculate that a currency value of a country where they plan to do business is very volatile or not stable, they might change their minds because they think the expected returns of their investment might not be offset by possible exchange rate risks. Of course there are other types of risk that they might face but in this section I discuss only the currency mismatch issue. The above explanation should imply that a less-volatile currency or presumable fixes regime gives investors a lower risk of investment or implicitly guarantees the stability of the exchange rate against the dangerously large changes.

In the case of foreign borrowing and lending, for example, an implicitly-guarantee exchange rate regime induces more lending and borrowing (Jeanneau and Micu 2002). Financial liberalization policies regulated to lift any constraints on capital flows can make a large contribution in stimulating more lending and borrowing incentives for governments and all types of financial intermediaries. Governments can borrow abroad or domestic banks to

finance a country's huge budget deficits or stimulate economic growths while financial intermediaries, such as banks, access capitals abroad to increase their domestic lending.

Chapter 4: Empirical Methodology and Data

4.1 Methodologies

4.1.1. Probability of Banking Crises

In order to see whether the magnitude of the relationship between financial liberalization and the likelihood of banking crises varies with different exchange rate regimes, I will use Logit estimation based on the following initial model specification:

$$L_{i,t} = \ln\left[\frac{P_{i,t}}{1-P_{i,t}}\right] = \alpha + \beta FL_{i,t-1} + \sum_{j=1}^{5}\gamma_j \text{ Regime}_{j,i,t-1} + \sum_{j=1}^{5}\Theta_j \text{ Interaction term}_{i,j,t-1} + \delta X_{i,t-1} + \varepsilon_{i,t} \quad (1)$$

Where

$$P_{i,t} = \text{Prob}(BC_{i,t} \mid X) = \frac{1}{1+e^{-(\alpha+\beta FL_{i,t-1}+\sum_{j=1}^{5}\gamma_j \text{Regime}_{j,i,t-1}+\sum_{j=1}^{5}\Theta_j \text{Interaction term}_{i,j,t-1}+X_{i,t-1})}}$$

BC is a banking crisis dummy, which takes a value of one in a crisis year and 0 if there is no crisis. Following Angkinand et al.(2010), crisis observations following the onset of banking crises are excluded from the main regression to alleviate the simultaneity problem caused by the possibility that the occurrence of a banking crisis triggers financial liberalization policies. Moreover, this paper is only interested in looking at the probability that a crisis will occur but not at the duration of a crisis. It should also be noted that a crisis lasting more than one year would get excess weight in the analysis and possibly bias the results if all the crisis years are included. The subscript (i) refers to a country and (t) indicates time. Banking crises dates are taken from a new database of systemic banking crises by Caprio et al (2005) and Laeven and Valencia (2008).

The control variables (x) refer to a standard set of macroeconomic control variables such as : real GDP per capita, real GDP growth rate, inflation rate, deposit insurance coverage, growth rate of the ratio of domestic credit to the private sector to GDP, and a currency crisis dummy. The descriptive statistics of the variables used in the model (1) above

are reported in Table 1. The descriptions and sources of these variables are presented in Appendix A.

Following Demirguc-Kunt et al.(1998), and Angkinand and Willett (2010), to reduce the endogeneity problems, I lag all independent variables one year; and also to alleviate the problem of correlated error terms across countries and over time in the panel regressions, I use robust and clustering standard errors of estimates by country to correct the variance matrix of the estimates for heteroskedasticity and autocorrelation among the observations across time within each country. In addition, I do not introduce the conditional fixed-effects Logit model because by controlling for country dummies, countries not having experienced any banking crisis during the period of study; for example countries that have only 0s on the dependent variable; are automatically dropped from estimations. This is because they provide no information for the frequencies. Therefore, the study sample is limited to only countries that experienced at least one crisis, which may provide biased regression results.

4.1.2 Rapid Credit Growth/Credit Boom

I will use two different types of models to examine the empirical studies of rapid credit growth and credit boom. I use Logit model when the dependent variable is a dummy variable taking value either zero or one (credit boom) and use either fixed or random effect models depending on the result of the Hausmann test when the endogenous variable is a continuous variable (credit growth).

A. A Fixed or Random Effect Model

$$\text{Credit Growth}_{i,t} = \alpha + \beta \text{FL}_{i,t-1} + \sum_{j=1}^{5} \gamma_j \text{ Regime}_{j,i,t-1} + \sum_{j=1}^{5} \Theta_j \text{ Interaction term}_{i,j,t-1} + \delta X_{i,t-1} + \varepsilon_{i,t} \quad (2)$$

I measure credit growth as the annual percentage change of domestic private credit to GDP ratio as a continuous dependent variable. A Hausman test will be introduced to choose between fixed and random effect models.

B. Logit Model

$$L_{i,t} = \ln\left[\frac{P_{i,t}}{1-P_{i,t}}\right] = \alpha + \beta FL_{i,t-1} + \sum_{j=1}^{5}\gamma_j \text{ Regime}_{j,i,t-1} + \sum_{j=1}^{5}\Theta_j \text{ Interaction term}_{i,j,t-1} + \delta X_{i,t-1} + \varepsilon_{i,t} \quad (3)$$

Where

$$P_{i,t} = \text{Prob}(CB_{i,t} \mid X) = \frac{1}{1+e^{-(\alpha+\beta FL_{i,t-1}+\sum_{j=1}^{5}\gamma_j \text{Regime}_{j,i,t-1}+\sum_{j=1}^{5}\Theta_j \text{Interaction term}_{i,j,t-1}+X_{i,t-1})}}$$

CB is a credit boom dummy, which takes a value of one in a boom year (a peak year) that gives the largest deviation in the case of the boom episode lasts more than one year and zero if the year has no boom. The detailed discussion of the primary measurement of the credit boom is in the data analysis section below. The subscript (i) refers to a country and (t) indicates time. I will use the same methodologies as in the case of banking crises dummy.

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4.2 DATA

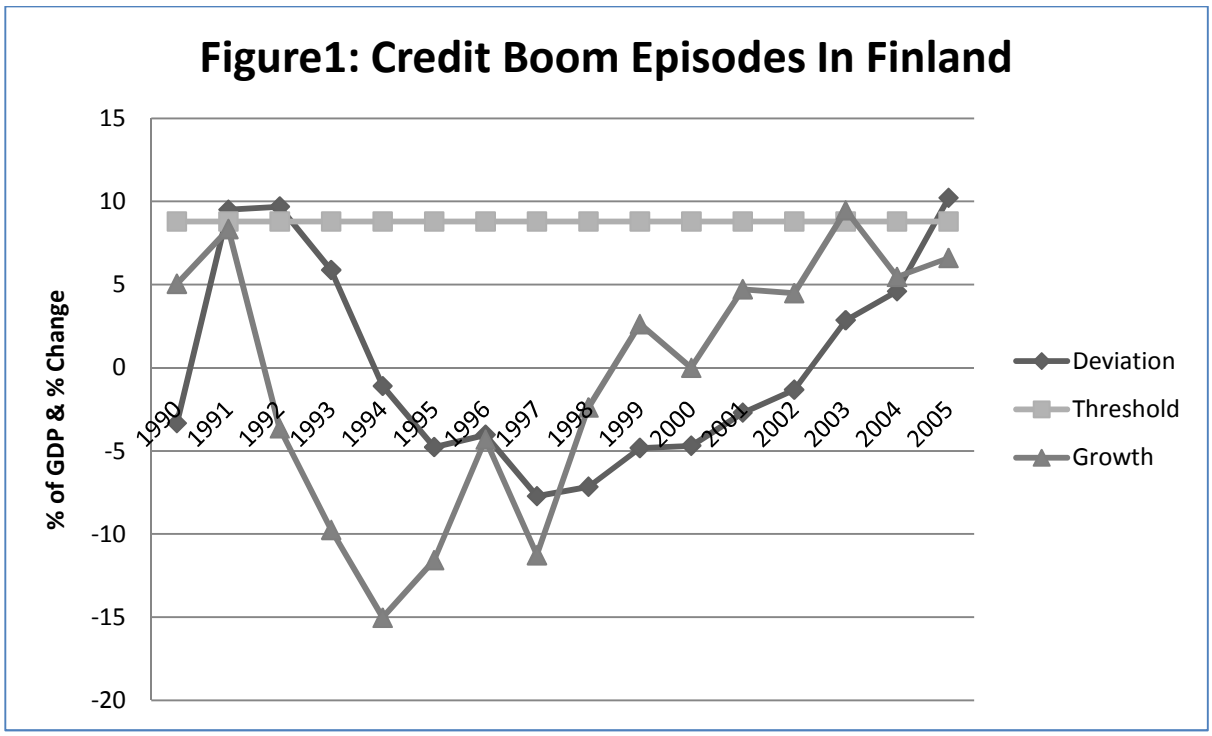
4.2.1 Credit Boom Measurement:

As discussed above, each methodology seems to have its critiques. Hence, a common generally-accepted way to identify a rapid credit growth episode as a credit boom episode still can't get a consensus among economists. As a result, different studies have determined their arguable levels of thresholds depending upon their data sample analysis and especially how many useful numbers of boom cases the studies want to examine because different levels of thresholds give different numbers of credit booms. In this study, I follow a similar method of Dell'Ariccia (2006) with a somewhat different threshold in detecting the credit boom episode, which I think is the most suitable and reasonable measurement for the empirical analyses given my data sample and of course a number of boom episodes examined. Other promising methods are also utilized for sensitivity checks of the empirical results. Notably, Dell' Ariccia's method is different from others in the sense that he focuses on both the actual level and annual growth rate of private credit to GDP ratio.

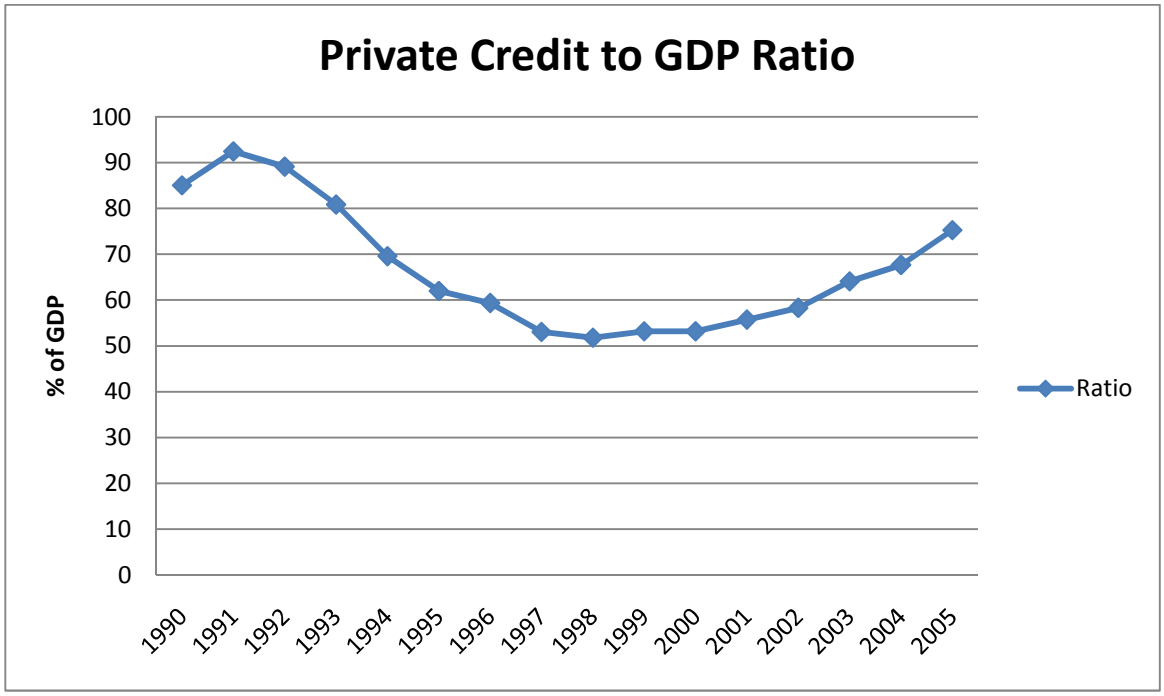
There are a number of reasons which support the notion that focusing on both deviations from a HP filter trend and a growth rate should give more robust results. A HP filter might give over-estimated or under-estimate trend depending on the end and start values of a series because the calculation of the trend by a HP filter is highly sensitive to these values. The trend is underestimated if the end values are low or the start figures are high, but is overestimated if the end figures are high and the start figures are low (Hilbers et al. 2005, and Tornell and Westermann 2002). Moreover, the HP filter might not generate a sensible smooth long-term trend if a series is not long enough, i.e., less than two decades for annual series (Gourinchas et al. 2001). Therefore, relying on deviations from the HP filter trend by a certain threshold alone in identifying credit boom episodes might not be a good indicator. An alternative indicator, usually used by other studies, simply looks at the credit growth rate.

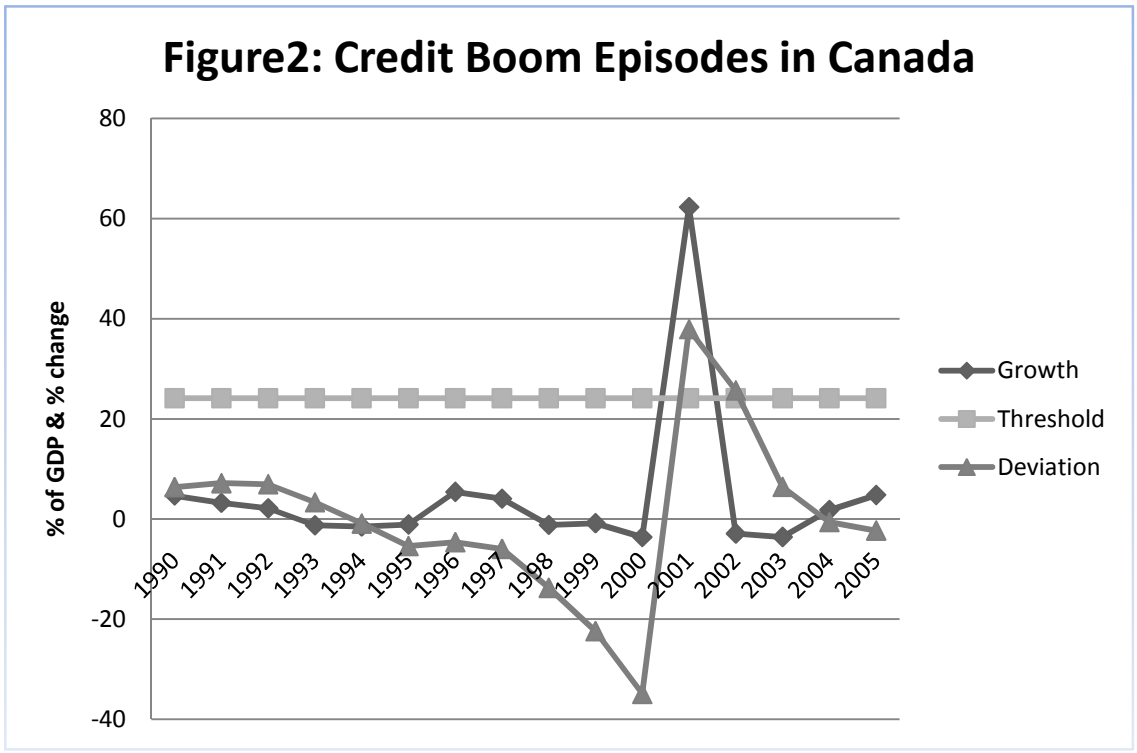
Dell' Ariccia (2006) defines a boom as a period which credit growth rate is greater than 20% (he uses the growth rate of private credit to GDP ratio), meaning that credit growth is above 1.2 GDP growths. However, high credit growth rate might distort true information of the actual level of credits availabilities in the market because some credit expansion occurs at relatively low levels of financial intermediation. Moreover, a high growth of credit can represent a catching-up process which actually should not be considered as a boom because this healthy and sustainable growth is very conducive to good economic performances. Slightly different from other measurements in the literature, this dissertation defines a boom as an episode where its deviation from a HP filter trend exceed 1.5 standard deviation of the deviations and the growth rate of credit is above 5% where Dell' Ariccia also sets 1.5 standard deviation but the threshold of credit growth greater than 10%. I also consider the 10% threshold of credit growth but it provides a small number of boom cases (30 cases) which do not empirically and statistically work in Stata. It should be noted that I use a private credit to GDP ratio as a proxy of credit, obtained from World Development Indicators (WDI), based on the argument for it that using the ratio helps control for inflation and economic growth

(Dell'Ariccia 2006). Next, I select six specific countries that meet the first criterion (deviation> 1.5Std) but do not fulfill the other criterion (5% credit growth) to illustrate with graphs. The following illustrations hope to provide reasonable explanations on the criteria I chose based on the data sample. Again, it should be noted that there is no best measurement of a credit boom because there are always unavoidable critiques on each measurement. I will discuss using growth values as % of GDP and % change in values.

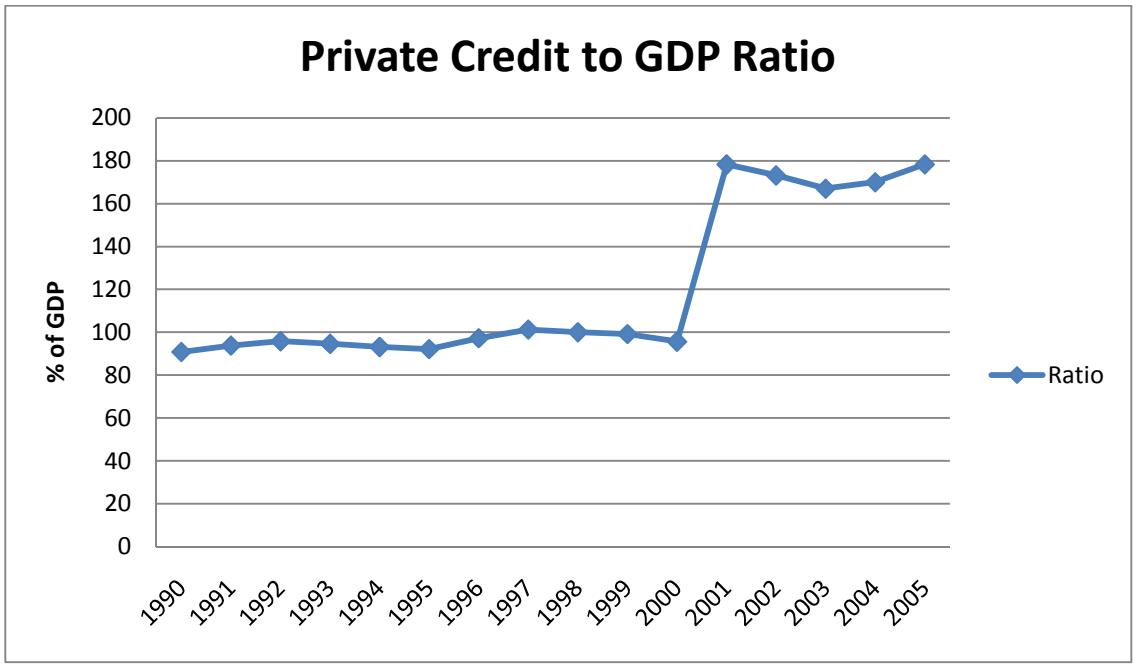


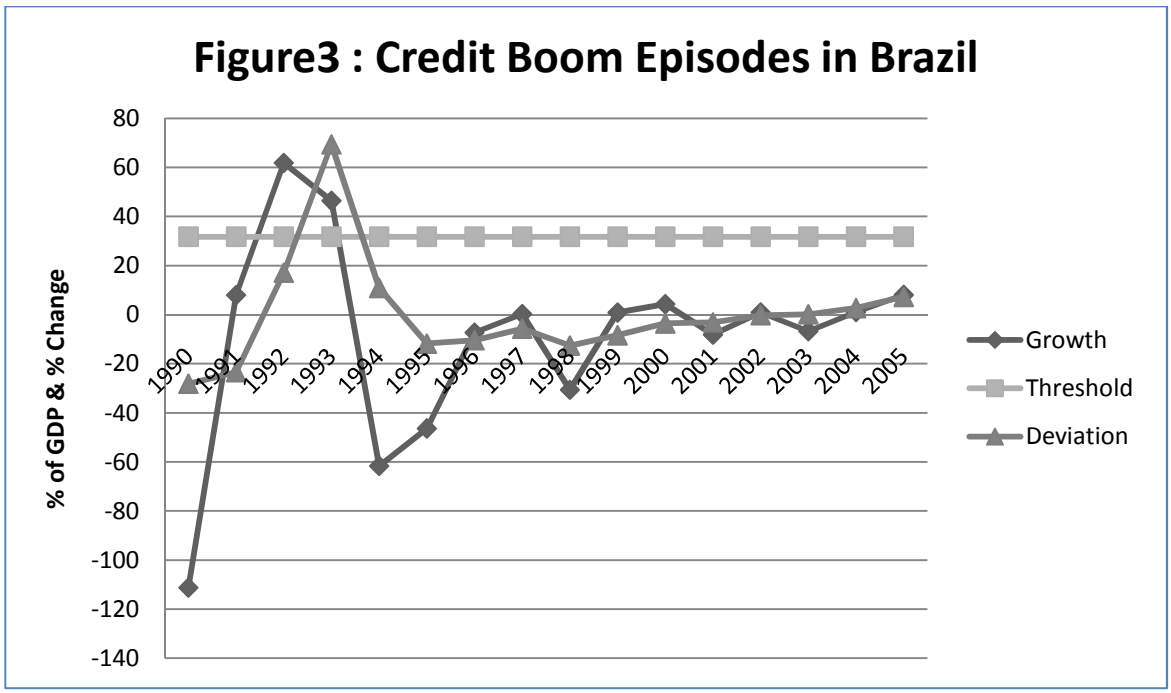
Source: World Development Indicator and author's calculation.
Note: Deviation refers to the difference of actual level of private credit to GDP ratio and its HP filter trend. Threshold equals 1.5 times the standard deviation of the deviations. Growth refers to annual growth rate of private credit to GDP ratio from 1990 to 2005.



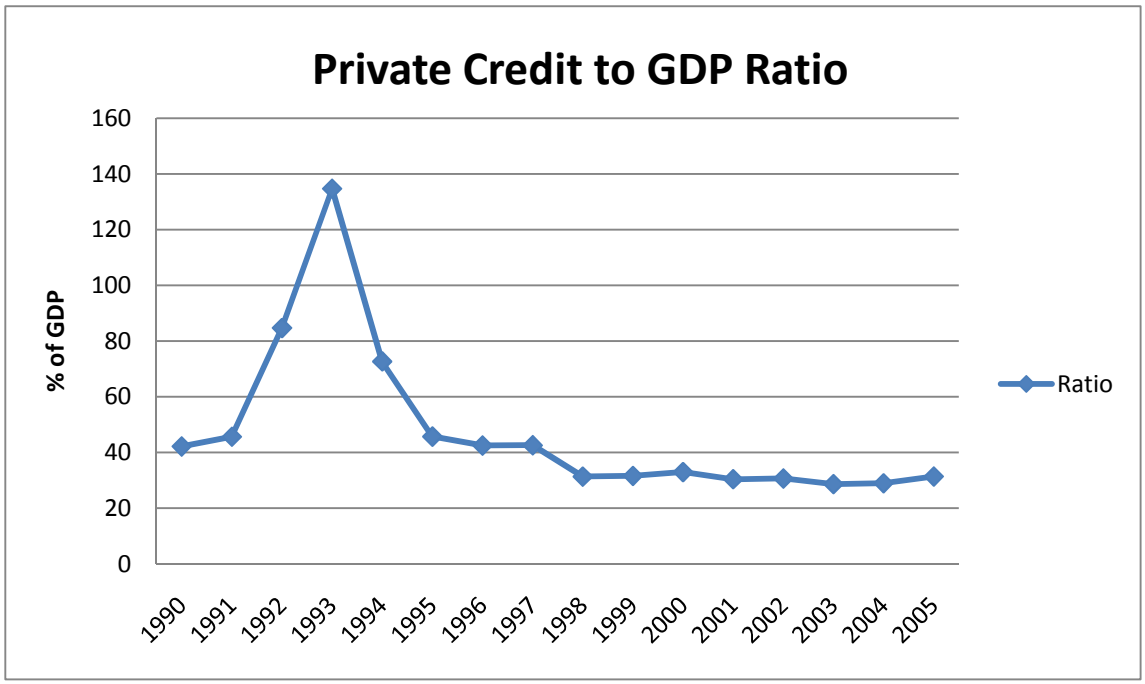


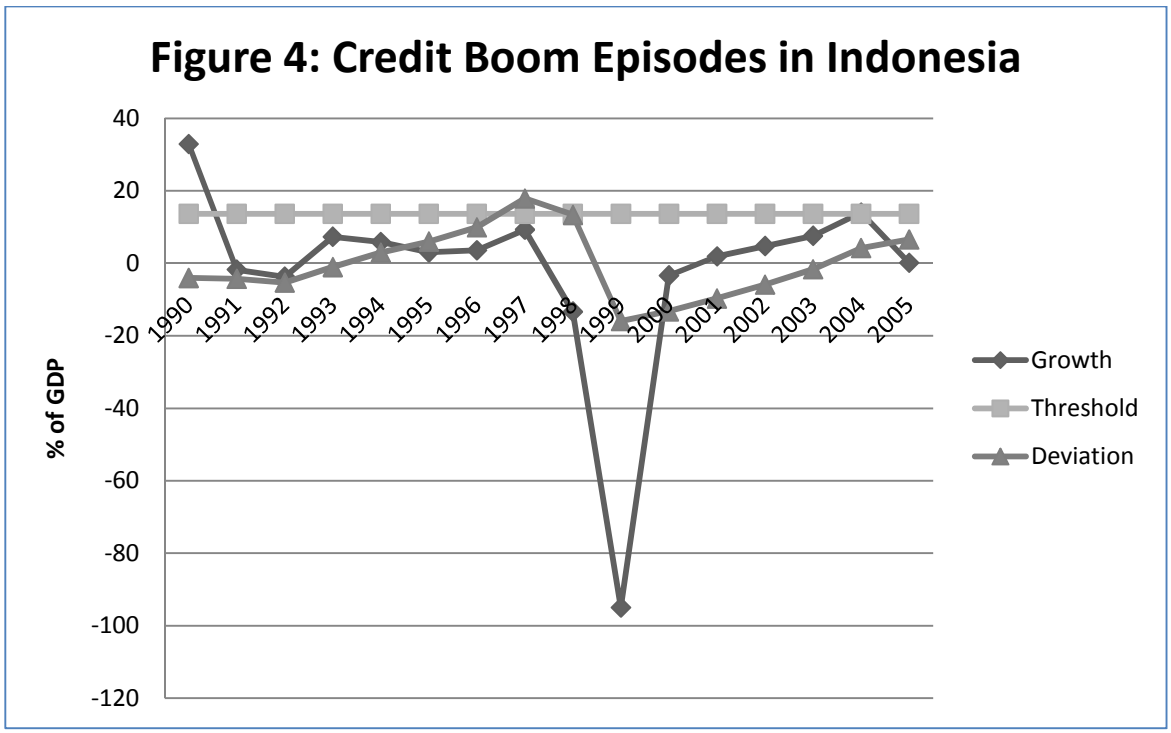
Source: World Development Indicator and author's calculation.
Note: Deviation refers to the difference of actual level of private credit to GDP ratio and its HP filter trend. Threshold equals 1.5 times the standard deviation of the deviations. Growth refers to annual growth rate of private credit to GDP ratio from 1990 to 2005.



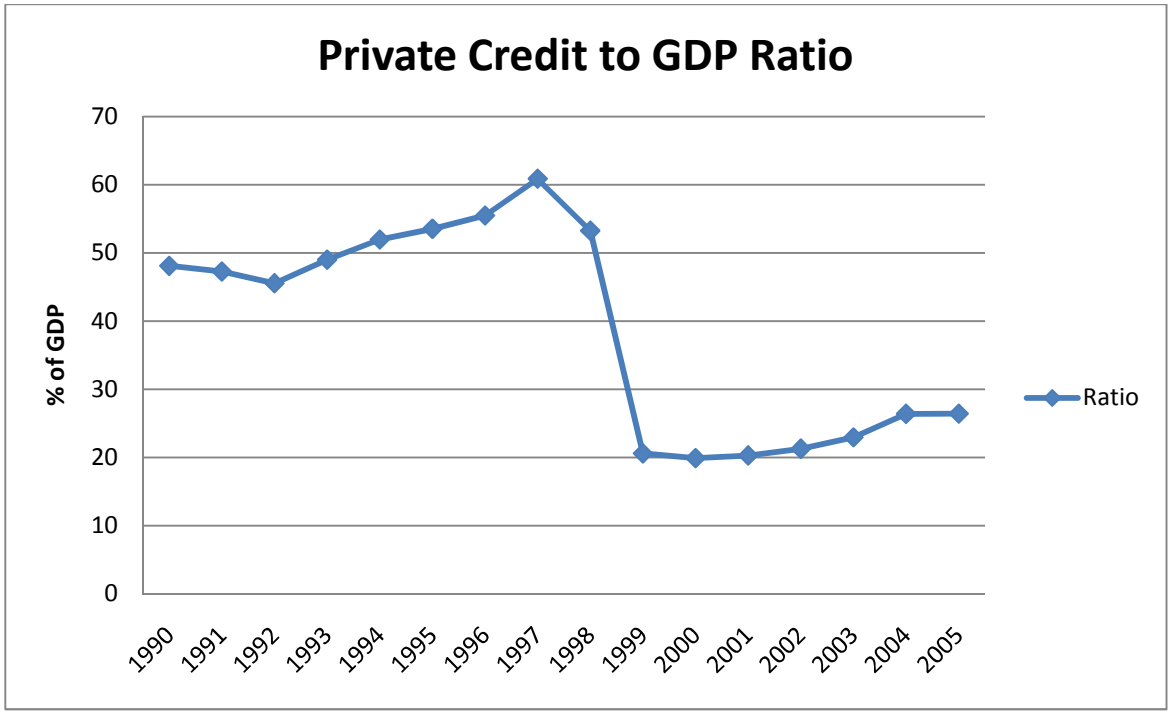


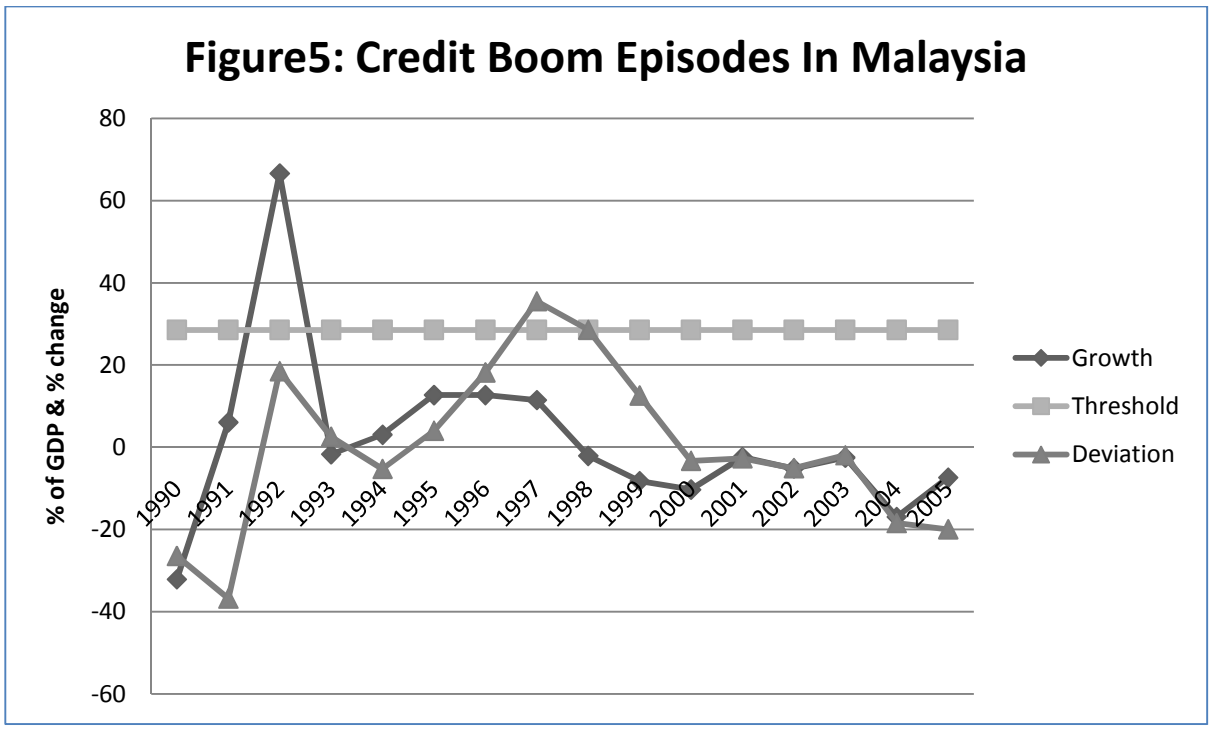
Source: World Development Indicator and author's calculation.
Note: Deviation refers to the difference of actual level of private credit to GDP ratio and its HP filter trend. Threshold equals 1.5 times the standard deviation of the deviations. Growth refers to annual growth rate of private credit to GDP ratio from 1990 to 2005.



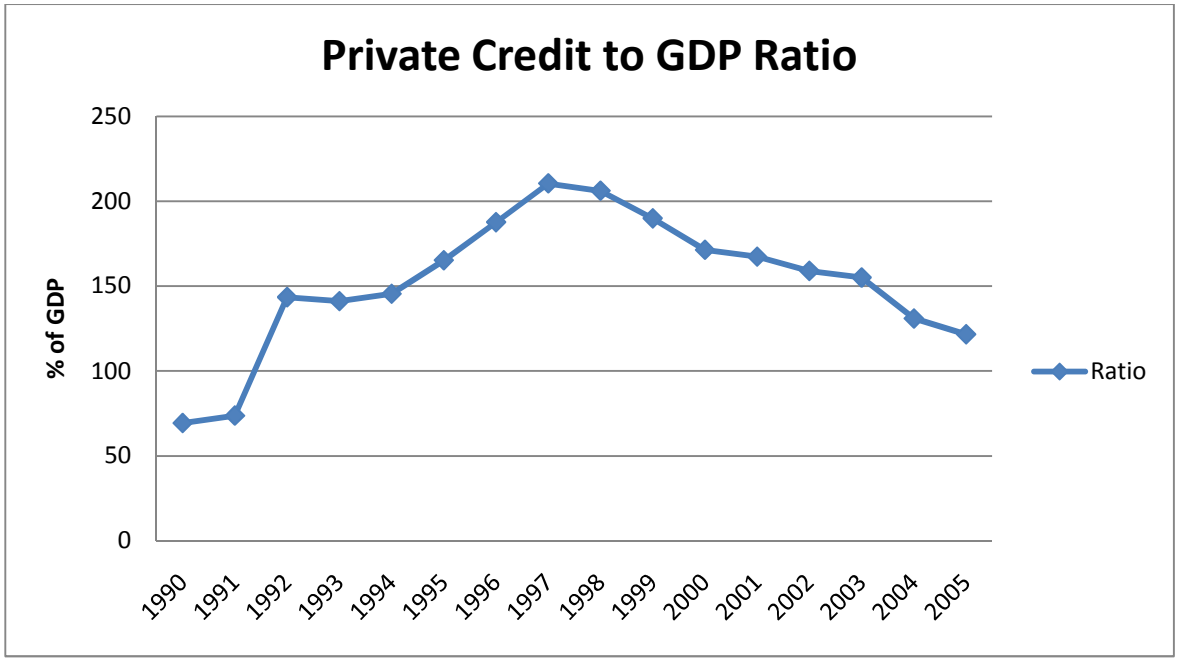


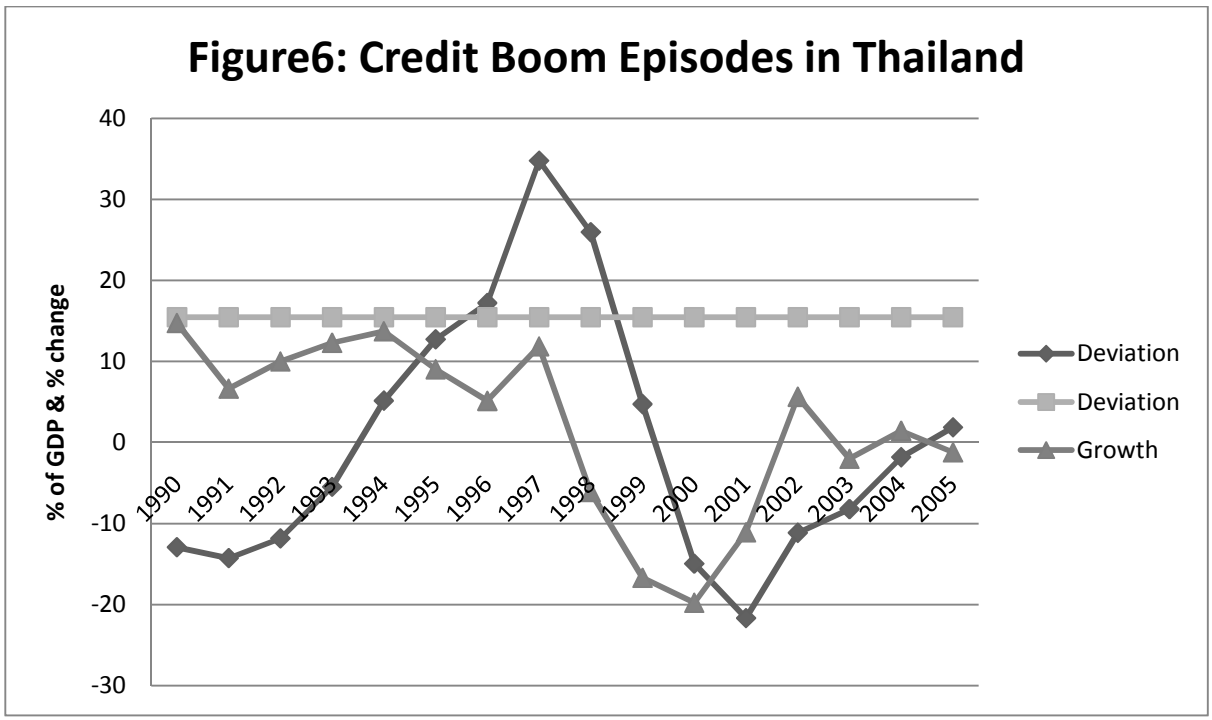
Source: World Development Indicator and author's calculation.
Note: Deviation refers to the difference of actual level of private credit to GDP ratio and its HP filter trend. Threshold equals 1.5 times the standard deviation of the deviations. Growth refers to annual growth rate of private credit to GDP ratio from 1990 to 2005.





Source: World Development Indicator and author's calculation.
Note: Deviation refers to the difference of actual level of private credit to GDP ratio and its HP filter trend. Threshold equals 1.5 times the standard deviation of the deviations. Growth refers to annual growth rate of private credit to GDP ratio from 1990 to 2005.





Source: World Development Indicator and author's calculation.
Note: Deviation refers to the difference of actual level of private credit to GDP ratio and its HP filter trend. Threshold equals 1.5 times the standard deviation of the deviations. Growth refers to annual growth rate of private credit to GDP ratio from 1990 to 2005.

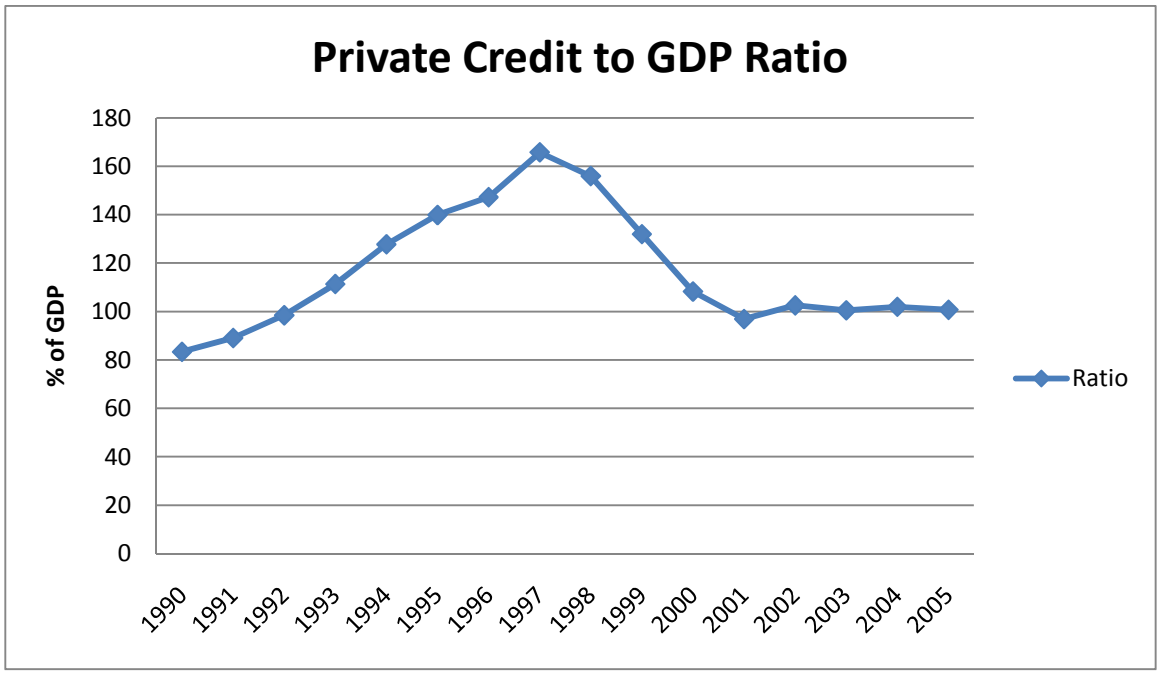


Figure 1 illustrates the evolution of credit in Finland from 1990 to 2005. The purpose of choosing Finland is to investigate some particular years which might give misleading identification of credit boom if either one of the two criteria above is required to be satisfied. In 1991, the deviation from the HP trend is greater than 1.5 times the standard deviation of the yearly credit deviations (the threshold equals 8.8 % of GDP) and the credit growth of credit (measured by private credit to GDP ratio) is greater than 5%; therefore, in this study, this year is considered as a crisis boom year. Interestingly, in 1992, even though the deviation level is still above the threshold level, it should not be identified as a boom because its credit growth is about -4% (in 1992 figure1). The year 1992 would have been a boom year had only the deviation criterion been required; therefore in this case a boom episode would have lasted for two years, from 1991 to 1992. The growth of credit in Finland started to drop after the boom episode until about -15% in 1994 and began to increase again until 2005 where another boom is detected based on the two criteria. The deviation level in 2005 is about 10% of GDP which exceeds the threshold and the credit growth also is about 6.6% of GDP. However, if I set the credit growth threshold at 10% as in Dell' Ariccia (2006), I would not be able to detect any boom during 1990 to 2005 in Finland, which might not be empirically estimated in stata due to the lack of a number of boom cases. This is one reason I chose the criteria.

There are some interesting points in Figure 2 of Canada to be analyzed. The credit growth pattern in Canada from 1990 to 2000 looks very stable and except for 2001 which the growth shot up to about 62% from the previous year (3%). This sharp increase might create some controversies in determining whether it should be considered as a boom or not because the growth rate dropped to about -5% in 2002; hence the deviation criterion might help determine the boom. As seen in the figure 2, the deviation level clearly exceeds the variable threshold. It should be noted that in 2002, its deviation level is still greater than the threshold but it doesn't satisfy the credit growth criterion. Again, without the second criterion the duration of the boom episode is two years, which supports a claim that a credit boom usually

persists for two or three years. However, this claim might not affect the timing of the credit boom in this study (2001 in this case) since I follow the timing method of Mendoza and Terrones (2004) that identifies the boom year in the boom episode as the year in which the credit expansion reaches its peak above the boom threshold or as the year which has the largest deviation. Empirically, I set the boom year 1 and others 0 in the case of the dichotomous variable.

Figure 3 depicts the pattern of the threshold level, the deviation, the growth of credit in Brazil, an emerging country. It shows some large fluctuations of the credit growth pattern. At the start of the study sample period, the credit growth dropped very sharply to about -110% and then it started increasing to about 7% in 1991. Interestingly, in 1992, it reached about 61%. Again, one might ask whether this year is a boom or not. Of course, this excessive growth satisfies the growth criterion[10], and should be a boom; but in this study it is not because it doesn't meet a requirement of the deviation criterion. One argument for this conclusion is that according to the credit growths back from 1985 to 1989 before a huge drop in 1990 (-110%), which do not show in the graph because they are not in the study sample, were on average negative. Therefore, the reason that the 61% credit growth in 1992 should not be considered as a boom is because it might represent the catching-up process of the credit in Brazil or simply argue that this credit expansion probably occurred at relatively low levels of financial intermediation (Hilbers. et al. 2005). What happened in Brazil is different from what happened in Canada in the sense that Canada has sustained a stable credit growth while Brazil seemed to have a bumpy credit growth, that's why the high credit growth in Canada could be considered as a boom. A credit boom in 1993 might reinforce the earlier arguments because the credit growth in 1993 was lower than in 1992 but still considered high (46%). This suggests that the credit boom happens after a period of a high level of financial intermediation.

[10] Dell'Arricia (2006) identifies a boom when the credit growth exceeds 20%.

Figure 4 refers to Indonesia, another emerging country. The credit growth pattern is very similar to Brazil in term of the growth fluctuations. In 1990, its growth was about 32% and dropped to about -1.5% in 1991. From 1991 to 1996 before the Asian financial crises, the credit growth has sustained a relatively smooth pattern at a positive rate. In 1997, the credit boom was detected because the deviation from the trend was greater than the threshold and its credit growth was about 9.5%. The timing of the boom was consistent with what really happened in Indonesia during that time. I would like to emphasize here the reason why I chose the 5% threshold. It would have been historically unsuitable not to detect any credit boom in Indonesia during that time if I set the credit growth threshold equal to 10%. Interestingly, in 1998, the growth was -13% and further dropped to -94% in 1999. This might be attributed to the Asian financial crisis. Surprisingly, the credit growth was still negative (-3%) in 2000, this probably reflected the persistent effects of the crises. However, from 2001 until the end of the study period, it started to increase. It could be a sign of recovery.

Figure 5 portrays the pattern of the credit in Malaysia. A few interesting matters can be usefully drawn such as a possible evidence of the catching-up hypothesis and a hypothesis of a pre-boom's sustainable positive credit growth. Before 1991, Malaysia witnessed a period of credit crunch where the credit growth experienced negative rates for a few years and it started somewhat recovering in 1991. There was a significant increase in 1992 when its growth was about 60% but it should not be identified as a boom probably because this expansion hit at a low level of credit. Again this incident provides a support of a catching-up process rather than a period of unsustainable growth rate. During 1994 and 1996, the average credit growth of these three years was about 10% and then there was a credit boom a year later whose credit grew at about 12% in 1997 before it started to drop a little bit after the boom. This might be a evidence of credit accumulation before the real credit boom was detected.

In figure 6, Thailand had a similar pattern of credit growth to Malaysia but what happened there might justify a hypothesis of a long-lasting credit boom episode. Thailand obviously experienced a credit boom episode before the Asian financial crises. Noticeably, the pattern of its credit growth was very smooth since 1990. Based on this study's criteria of credit boom measurement, the boom episode lasted about two years but the peak year (a boom year) was in 1997 when its deviation level from the trend was the largest.

4.2.2 Financial Liberalization Database

The new database, which is taken from Abiad, Detragiache and Tressel (2008), has time-series measures for the intensity of reforms in seven dimensions originally for 91 countries during the period 1973-2005. However, the data sample used in this paper consists of only 77 economies during the period of 1990-2005 due to the data limitation. The list of the studied countries is reported in Appendix B. This new measurement classifies the degree of the financial liberalization index into seven categories as follows : Credit controls and reserve requirements elimination , Interest rate control elimination, Entry barriers elimination, State Ownership reduction in the banking sector, Policies on securities markets, Elimination of capital account restrictions, and Capital regulations and prudential supervision of the banking sector.[11]

The advantage of this new database is it gives information on intensity and speed of reform which each dimension is measured on a scale from 0 to 3 where 0, 1, 2, 3 represent fully repressed, partially repressed, largely liberalized, and fully liberalized, respectively. In contrast, the scale is reversed for capital regulations and prudential supervision (CRS) where 0, 1, 2, 3 respectively represent unregulated and unsupervised, weakly regulated and supervised, largely regulated and supervised, and too strongly regulated and supervised. In the regression model, all types of liberalization policies should not be simultaneously included

[11] It should be noted that the seventh dimension of financial liberalization policies does not refer to liberalization per se, but to capital regulation and prudential supervision.

because they tend to have substantial correlations among them which might create a multi-collinearity problem. Following the combining of these dimensions of Anagkinand et all (2010), three types of liberalization are created: behavioral liberalization (elimination of credit control + elimination of interest control), competitive liberalization (elimination of entry barriers and activities + security market policies + elimination of capital account restrictions), and privatization (state ownership reduction).

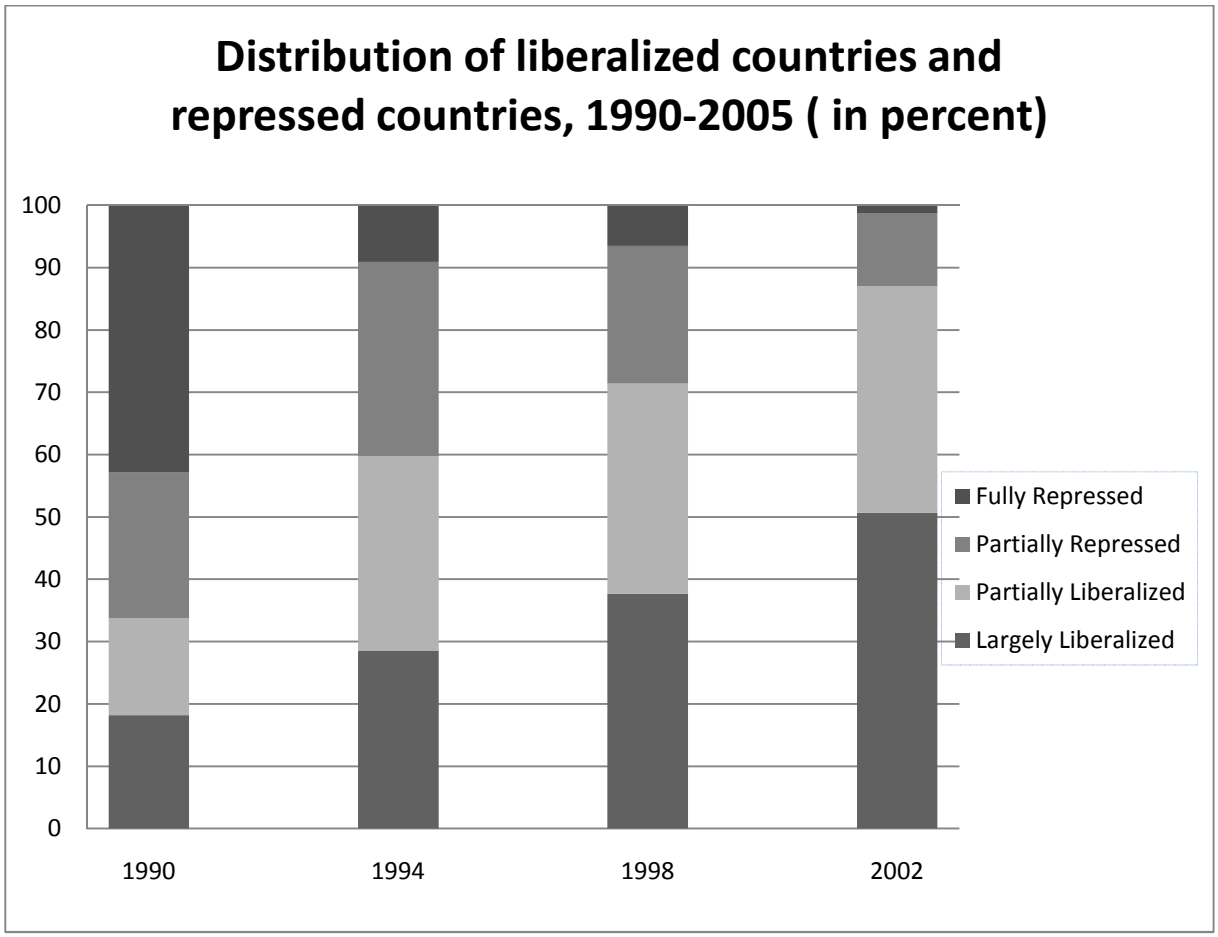
The Process of Financial Liberalization

In this section the patterns of financial liberalization are examined across the country groups to see whether they are different or the same. Due to the limited dataset, this section analyzes the process from 1990 to 2005 even though the strongest trend towards financial liberalization exists during 1970s and 1980s. Figure 4.7 depicts the distributions of largely liberalized, partially liberalized, partially repressed, and fully repressed countries in the whole sample. There is evidence of an increase in full liberalization distributions during the study period.. One motivation for financial liberalization was probably inspired by the potential efficiency of resource allocation which is believed to ease financial constraints. According to Johnston and Sundararajan (1999), the efficient allocation of resource (financial deepening) translates to better economic performance and further improves economic growth.

In general, financial liberalization policies create a number of effects, including an increase in alternative channels of investments, an increase in the quantitative limits on foreign ownership, and also an increase in investors' confidence, which tends to make foreign investors more willing to invest in liberalized countries (Campion and Neumann 2004). However, financial liberalization has at the same time been identified as a major contribution to most financial crises that happened during the last three decades. For example, financial liberalization can lead capital-recipient countries to face exchange rate risks (experiencing real exchange rate appreciation), causing a deterioration of external competitiveness, and therefore large current account deficits. Moreover, an intense competition, a result of an

increased number of participants in the financial markets, might generate more risk-taking behavior (Furman and Stiglitz 1998). As a result, this deteriorates and weakens economic fundamentals and the stability of the financial sector.

Figure 7: Distribution of liberalized countries and repressed countries

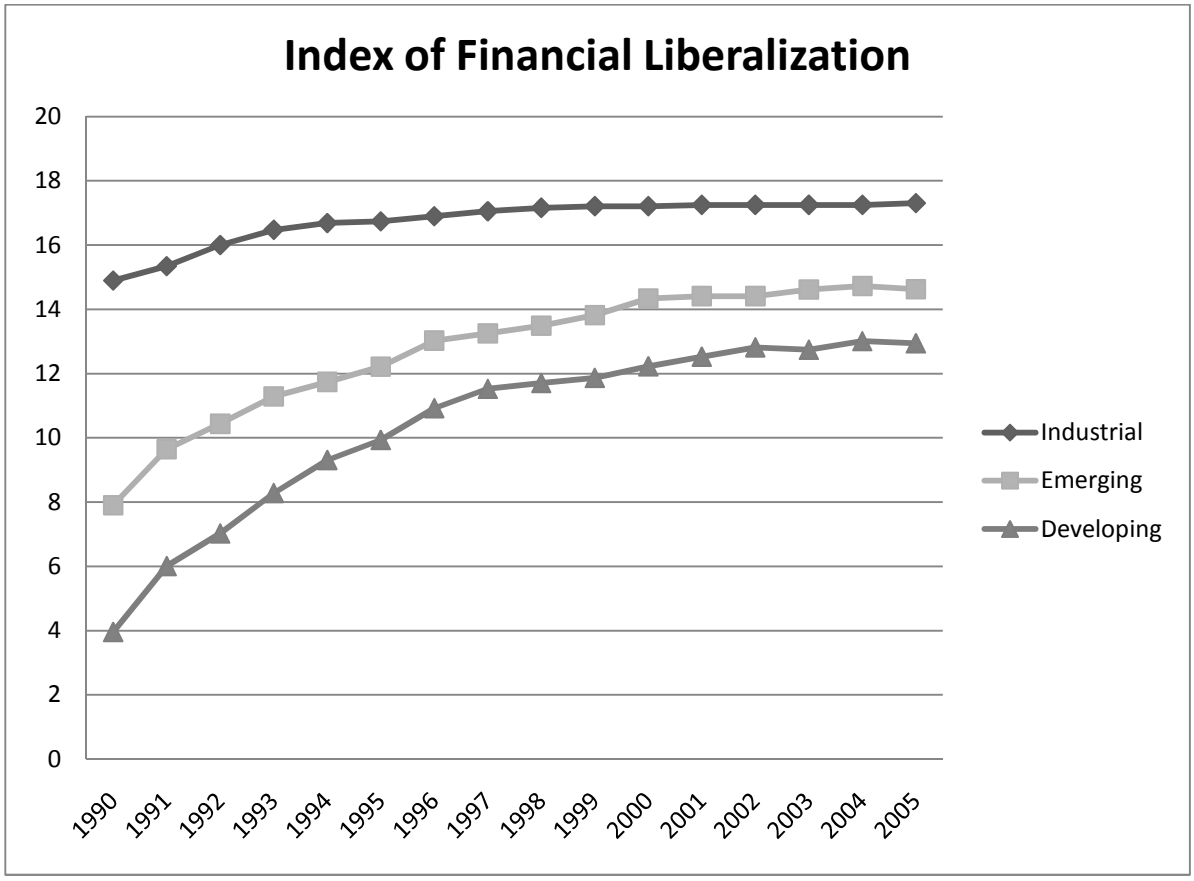


Source: Abiad et al. (2008), and author's calculation.
Note: The financial liberalization index here ranges from 0 to 18. The higher value of index represents a greater degree of financial liberalization. Following Sompornserm (2010), 0-6= fully repressed, 7-10= partially repressed, 11-14= partially liberalized and 15-18= largely liberalized. This figure covers 77 countries, including 19 industrialized countries, 28 emerging market countries, and 30 developing countries, from 1990-2005.

Figure 8 depicts the process of financial liberalization across country groupings over time. Each line is a cross-country average of the aggregate of six dimensions of financial liberalization- credit, interest, capital, entry, security, and privatization. Hence, the value of financial liberalization ranges from 0 and 18. Zero represents a fully repressed financial sector

where government controls all kinds of aspects of banking activities while 18 shows a fully-liberalized financial sector where banks have no control or can not intervene in banking operations by letting the market determine interest rate by itself. The three lines in Figure 8 represent each country group. The industrial country group seems to have a stable pace but had the highest degrees of financial liberalization over time compared to other country groups. The positive slope of the industrial country group is very flat which means that there is not much changes in financial liberalization policies within the study sample period. Sompornserm (2010) argues that most industrial countries largely liberalized their financial sectors during the early 1970s and becomes very steady during 1990s. This figure confirms his claim. During 1990 to 2005, the emerging markets group on average does not show a stronger pace of financial liberalization than the developing country group process even its extent is higher because they begin financial liberalization process during early 1980s which is not in the study sample. The strong pace of financial liberalization explains the possible capital inflows from developed countries to high-return countries of investment during the 1990s.

Figure 8: Pattern of financial liberalization across country groupings from 1990 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 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 77 countries, including 19 industrialized countries, 28 emerging market countries and 30 developing countries, from 1990 to 2005.

4.2.3 Exchange Rate Regime Classifications

This chapter uses a new dataset of exchange rate regime classifications which is compiled by Bubula and Otker-Robe (2003), BOR hereafter. They classify IMF de facto exchange rate regimes into 13 categories for all IMF country members originally available from 1990-2003. [12] Since there is a recent update on the information of de facto exchange rate regimes on the IMF website, I extended BOR's exchange rate regime dataset two more years for all the 77 countries investigated in the study from 1990-2005. I follow the regrouping of Angkinand and Willett (2010) on BOR's initial 13 sub-categories into only six groups : (1) Hard Pegs, (2) Soft Pegs (Adjustable Parities), (3) Crawls, (4) Tightly Managed Floats, (5) Other Managed Floats, (6) Independent Floats. [13] The exchange rate regimes regrouping creates a lot of controversies in the area of exchange rate regime classification, but Angkinand and Willett (2010) find that the differentiation between hard and soft pegs provides a quite important result and helps explain some of the controversial results of the previous studies of exchange rate regimes and crises (currency and banking crises).

This chapter follows most common researches which simply classify exchange rate regimes into only three groups: Hard fixes, Intermediate, and Floating regimes.[14] Regime $_j$ in the model (1) represents an exchange rate regime dummy, where j is one of many exchange rate regime groups. A possible perfect-multicollinearity problem will appear if one regime is not dropped from the regression model. The resulting coefficients of other exchange rate regimes are interpreted as a probability of credit boom under the j^{th} regime compared with an omitted regime.

In order to answer the research question above, I include the interaction terms between the financial liberalization index and different types of exchange rate regimes in the model (1) to empirically investigate whether they are statistically significant. The statistical

[12] See for more details for DATA description and source in Appendix A
[13] The detailed descriptions on how the BOR's 13 types are classified are reported in Appendix A
[14] Hard fixes refer to hard pegs as one corner ; Intermediate regimes refer to soft pegs, crawls and tightly managed floats; and the other corner (freely floats) refers to other managed floats and independent floats.

significance of the interaction terms should allow me to see whether there is any role for exchange rate regimes explaining the relationship between financial liberalization and credit boom frequencies. As with the exchange rate regime dummy, one of the interaction terms has to be dropped from the model to avoid a perfect-multicollinearity problem. An interpretation of a coefficient of the interaction term is similar to a regime dummy's interpretation by comparing the actual regime with an omitted regime. For example, if a hard fix is an omitted regime, a coefficient of the interaction term (FL*Intermediates) reflects the different effects of financial liberalization index on the credit boom likelihood under a hard peg and intermediate regimes.

4.2.4 Banking Crises

Banking crisis data is taken from both Caprio and Klingebiel (2005) and Laeven and Valancia (2008). These two sources are not the same in term of banking crises timing and types of crises. Caprio and Klingebiel (2005) record both a start and end date of each crisis episode, and both systemic and non-systemic banking crises while Laeven and Valancia (2008) record down only a start date of a crisis episode and a systemic banking crisis.[15] A banking crisis dummy is set to 1 on the first year of the crisis episodes and 0 otherwise. I follow the method of Angkinand et al. (2005) in checking the dates of crisis episode between the two sources. If a start date of the same crisis episode is different, I use the one from Laeven and Valancia (2008) whose database covers the universe of systemic banking crisis until 2007. Based on the above description in dating banking crises, this study has detected a total number of 73 banking crisis episodes. There are 11, 31, and 31 episodes for industrial, emerging, and developing countries, respectively. The numbers of banking crisis episodes are consistent with what actually happened during the 1990-2005 period.

[15] A systemic banking crisis is defined as the situation when much or all of bank capital is exhausted, while a non-systemic or smaller banking crisis is identified when there is evidence of significant banking problems such as a government intervention in banks and financial institutions (Angkinand et al.2009)

4.2.5 Common Control Variables

Real GDP Growth

In the context of banking crises analysis, this control variable represents the degree of economic fundamentals which should have significant effects on the likelihood of banking crises. However, this proxy can be a factor in attracting the capital flows, in the empirical studies of credit and capital flows, because it is generally considered as the return on domestic investments or profitability. Therefore, foreign investors might take advantages of an economy with high returns and high-productivity projects by bringing foreign capital into the attractive economy for investment opportunities.

Inflation

This variable can represent macroeconomic instability. Domestically, high inflation might distort the real value of properties which potentially creates instabilities in the financial system as well the countries' economic performance. In the international context, inflation should have negative effects on foreign capital flow since it might be seen as an implicit tax that might reduce the return on capital (Alfaro et. al 2008 and Campion et. al 2004).

GDP Per Capita and Deposit Insurance Coverage

I use GDP per capita as in previous empirical studies as a proxy for quality of domestic institution. A proxy for the coverage of explicit deposit insurance captures the difference in deposit insurance systems. It measures the maximum deposit insurance coverage in a country relative to the value of the average (per capita) deposit. Deposit insurance was initially regulated to prevent depositors from losses of their deposit amount but it has its drawback in generating a moral hazard problem because depositors would not pay as much attention on banks' activities as if there was no deposit insurance.

Currency Crises

I adopt the currency crises dataset from Laeven and Valencia (2008). The currency crises variable is included in this study because there is existing literature which finds a strong relationship between currency and banking crises (e.g, Kaminsky and Reinhart, 1999). Currency crises may lead to banking crises later because of a possible deterioration of banks' balance sheets.

Chapter 5: Empirical Results

5.1 The Banking Crisis Likelihood

Tables 2 to 7 report the empirical results for effects of exchange rate regimes, financial liberalization and the interaction term between the two variables on the probability of banking crisis from the equation 1 above. The six tables (from table 2 to table 7) represent the six-way classification of exchange rate regimes when each regime is omitted once at a time. Results reported in these tables are the marginal effects. For the exchange rate regime dummy and interaction variables, the marginal effect is the effect of the change in a value of dummy variable from 0 (an omitted dummy) to 1 (a particular regime) on the banking crisis likelihood.

Each table has three columns for three different models. Column 1 refers to a model in which the financial liberalization index (FL) and interaction variables are not included. Column 2 includes FL but the interaction terms are still excluded. Column 3 is the main one which includes the interaction terms and all other variables. Only crawls and independent floats are significant in column 2. Moving away from hard pegs to the crawls and independent floats increases the banking crises likelihood by about 3% and 1.74% at conventional significance levels, respectively. Adjustable parities regimes turn significant when financial liberalization is included in the model in column 2 but the financial liberalization index is statistically insignificant. Similarly, the probability of banking crises increases by about 2.93% when a government decides to move from hard pegs to adjustable parities. In Column 3, Table2, the interaction terms between financial liberalization and adjustable parities, crawls and tightly managed floats regimes are positive and significant, which can be interpreted that under the three regimes above (adjustable parities, crawls, and tightly managed floats) increased financial liberalization is more likely to increase the frequencies of banking crises than under the omitted regime (hard pegs) or it can simply be said that financial liberalization

has a larger impact on the likelihood of banking crises under the intermediate regimes[16] than under hard pegs. A one-degree increase in financial liberalizations increases the probabilities of banking crises by about 0.13% at 10% level. The magnitude is very small, however.

Table 3 reports the estimate results when the adjustable parities regime is omitted. Results in column 1 and 2 are very similar in term of coefficient signs and statistical significance. A move to other managed regimes from the adjustable parities reduces the banking crises likelihood by 2.32% but it increases by 1.68% when moving to the crawls regime. In column 3, the interaction between FL and hard pegs is significant and negative, which suggests similar interpretations as above: under adjustable parities regime, FL is more likely to increase the banking crises likelihood than under hard pegs. The interaction terms of FL*Crawls and FL*Tightly Managed are not significant; but FL*Other Managed and FL*Floats interaction terms are statistically significant and negative at the 10% significance level. The negative sign implies that the impact of financial liberalization on the likelihood of banking crises is larger under adjustable parities than under flexible regimes (other managed and floats regimes). These results support the unstable middle and bipolar hypotheses.

Table 4 reports the empirical results when the crawls regime it omitted. In column 2 and 3, the negative and significant coefficients of other managed and independent floats imply that a move to the flexible corner from crawls reduces the banking crises likelihood by 3%. The results are very similar to Table 3 for the interaction variable. These findings reinforce the results in table 3 in supporting the unstable middle hypothesis.

Results in table 5 are different from table 4 only in that independent floats are not significant. This implies there are no significant differences for the banking crises likelihood between tightly managed and independent floats which is consistent with the findings of Angkinand and Willett (2010) that do not support the portion of the bipolar hypothesis that argues one must go all the way to floating rates to substantially reduce the risks of crises. The

[16] Note: Intermediate regimes include adjustable parities, crawls and tightly managed.

negative coefficients of both FL*other managed and FL* independent floats mean that under tightly managed regime, financial liberalization increases the likelihood of the banking crises 0.81% and 0.77% more than under other managed and independent floats, respectively.

In table 6 and 7, the two regimes (other managed and independent floats) of the flexible corner are omitted. There is no evidence of significance different on the risks of crises among the flexible corner. A negative coefficient of hard pegs implies the risks of crises increases when moving from the fixes corner to the flexible corner. These findings of regime effects on the banking crisis likelihood are in contrast to the studies of Angkinand and Willett (2010), Demac and Peria (2003), and Husain et al (2005) that flexible regimes are less susceptible to banking crises than fixed regimes and also do not support their conclusion that the flexible corner is associated with the least probabilities of banking crises. Moreover, among all significant interaction terms, the positive coefficients of the interaction terms between financial liberalization and intermediates regimes (adjustable parities, crawls and tightly managed floats) indicate that the relationship between financial liberalization and banking crisis likelihood varies with different types of exchange rate regimes. More specifically, the results suggest that under intermediate regimes increased financial liberalization is associated with a higher likelihood of banking crises than under the other managed float regimes.

It should be noted that for all three columns, most of the macroeconomic control variables are not significant, but they have the expected signs. Only real GDP growth rate and real GDP per capita are significant at 5% and 10%, respectively. However, domestic credit growth in column 3, where the interaction terms are included in the model, is significant and has the expected positive sign. Fast growth of domestic credit or credit booms tends to have a positive impact on the frequency of banking crises. Currency crisis and inflation are far from significance in all regressions.

All the results above from Table 2-7 are the results of the estimations when BOR's exchange rate regimes are classified into six groups. Therefore, next I want to see if the results remain the same when it is grouped into three classifications[17]. Since currency crisis and inflation as having shown above are far from significance in the study, I drop these two variables from the model. Tables 8 to 10 report the regression results of the effects of financial liberalization, exchange rate regimes, and the interaction terms on the banking crises likelihood when each of the new three-way classification is dropped. In table 8, column 1 and 2, FL index and the regime dummy are not significant at conventional levels. In column 3, when the interaction terms are included, all variables in the model are significant except the exchange rate regime dummy alone. FL index is positive and significant at the 10% level. The interaction between FL and intermediate regimes is significant and positive, which is consistent with the results of the 6-way regime classification. The significant negative coefficient of the interaction between FL and floats suggests that under hard fixes increased financial liberalization has larger impact on the banking crises likelihood than under floats.

The omitted exchange regime in Table 9 is the intermediate regime. The results of significant negative coefficients for both interaction terms in Column 3 suggest that under the two corners increased financial liberalization has less impact on the frequency of banking crises than under intermediate regimes. Results in Table 10 are not much different from results in Table 9. The same conclusion can be made as the above for the interaction terms. The coefficient of deposit insurance coverage has a significant negative sign which suggests that higher deposit insurance coverage is associated with less likelihood of banking crisis. This might happen as a result of less possibility of bank runs because deposit insurance coverage is created for the purpose in preventing bank run which eventually can lead to banking crises. The results of other controlled macroeconomic variables are mostly consistent with the existing literature.

[17] See Appendix A for more details

The final step in the analysis is to check the robustness of the results by introducing the three types of liberalization instead of total financial liberalization and grouping the countries into three different classifications: industrial, emerging and developing countries in order to examine whether if the results vary across country groups. Models without including interaction terms are not introduced in this robustness check analysis since they don't show any significant differences across exchange regimes and the interaction variables. The three columns in Table 11 represent each omitted regime of the 3-way regime grouping. Most results are not statistically significant at conventional significance levels in the case of substituting competitive liberalization and privatization for total FL except when FL is replaced by behavioral liberalization. However, in table 11, I still do not find significant differences on the banking crisis frequencies across exchange rate regimes (results of exchange rate dummies), but the significant coefficients of the interaction terms in Table 11 show significant results which broadly suggest that under intermediate regimes behavioral liberalization has larger impacts on the banking crises probabilities than the independent floats but doesn't have significance differences with the other corner (fixes). It should be noted that the coefficients of behavioral liberalization are significant and positive which is consistent with the common view of financial liberalization and banking crisis linkage.

In the case of robustness checks on the results across country groups, it's empirically impossible to run regression for an industrial country group due to a limited number of banking crises episodes happened in those countries. Only 11 banking crises episodes are detected for the study's sample period. Therefore, I investigate only two groups of countries: emerging countries and other developing countries. Tables 12 to 17 are results of banking crises likelihoods in developing and emerging countries when each of six-type exchange rate regimes is orderly omitted. First and second columns represent developing and emerging countries' results, respectively. It should be noticed that all total financial liberalization coefficients in developing countries have negative signs even though two of

them are insignificant. This implies that financial liberalization stimulates economic growth without causing financial fragilities. In contrast, financial liberalization statistically has positive impact on the banking crises likelihood in emerging countries. In tables 12 to 17, only the interaction terms of financial liberalization and independent floats in the case of emerging countries are significantly positive, which suggests that under independent floats financial liberalization has the largest impact on the likelihood of banking crises. This suggestion is contrast to the earlier results when considering all countries sample. Other interaction terms have mixed or inconsistent results which are unable to offer any conclusions. For macro economic variables, the real GDP growth rates, the credit growth, and GDP per capita are significant and have expected signs in both developing and emerging countries regressions which are very similar to the control variables results of whole sample. Inflation rates have the expected signs in all regressions but are not significant for all regressions. Similarly, deposit insurance coverage and currency crises have mixed signs and are not significant. Therefore, they are not reported.

Another robustness check is to group both emerging and developing countries together or non-industrial country group. In table 2A, when the hard peg is omitted, the interaction terms of FL*Adjustable Parities and FL*Independent Floats are not significant, which suggest that the relationship between FL and banking crises is not affected by the movements from hard pegs to adjustable parities and independent floats. However, under crawls and tightly managed regimes, financial liberalization increases the likelihood of banking crises about 2% and 2.7% more than under hard pegs. These results are slightly different from the results with the full sample that all intermediate regimes have larger impacts on the relationship than under hard pegs. The conventional view of the FL effect on the banking crises likelihood is still consistent although the magnitude is very small. Table 3A shows the regression results when adjustable parities are omitted. Only the interaction term of FL*Independent floats is negative and significant, which suggests that financial liberalization

increases the banking crises likelihood about 0.65% under the adjustable parities more than under the independent floats.

Table 7A (the independent floats omitted) shows that a move from the independent floats to the crawls regimes doesn't have any impact on the causal link between financial liberalization and banking crises likelihood. However, a move to the tightly managed regime strengthens the relationship by about 1.5%. Therefore, the results from the three tables above suggest that most intermediate regimes, not all, have the largest effect on the causal relationship between financial liberalization and banking crises likelihood relative to the other two corners. Moreover, there seems to be no significant differences of the effects among the two corners of the fixed and floating regimes, which is consistent with the results of the full sample. Notably, other results from other regimes omitted are shown in appendix D.

5.2 Continuous Credit Growth

Credit growth, again, is measured as an annual percentage change of private credit to GDP. Empirical results of equation (2) above are shown in tables 18 to 23. A continuous dependent variable is the annual percentage change of private credit to GDP ratio. According to the Hausman test, regressions are estimated using the country fixed effect models and also this estimator helps correct the omitted variable bias. Standard errors have been corrected for general forms of heteroskedasticity. Similar to the case of banking crisis, each table represents the results of regressions when each regime is omitted. In column one of table 18 (hard pegs omitted), when exchange rate regime dummies and the interaction terms are not included, financial liberalization index is significant and positive. Domestic credit tends to increase by about 1.52% when a country liberalizes its financial sector. Column 2 shows the effects of exchange rate choices on the domestic credit. A move away from a hard peg to adjustable parities and crawl regimes increases domestic credit growth by 2.06% and 2.36%, respectively. However, the growth of domestic credit decreases by about 2.50% and 6.59% when a government switches its exchange rate policy from hard peg to other managed and

independent floats, respectively. These results support an argument of implicit guarantees against exchange rate fluctuations by policy makers (Ottens et al 2005). It should be noted that there is no statistical variation in domestic credit across tightly managed and hard pegs regimes. Results of column 3 are pretty much the same as column 2, except other managed and independent floats regimes turn insignificant at the conventional level.

Column 4 shows the results of the regression model when the interaction terms between financial liberalization and exchange rate regimes are included. Again, the interaction terms are the main variables in answering the dissertation's questions. Interestingly, most interaction terms are significant, except the interaction term of financial liberalization and tightly managed regime. The positive coefficients of the two interaction terms (FL* Adjustable and FL* Crawls) implies that under these two regimes, financial liberalization has larger impacts on the domestic credit growth than under hard peg regime. In other words, the effects of financial liberalization under adjustable parities and crawls on domestic credit growth are 1.94% and 2.16% larger than under hard pegs regime. Macroeconomic control variables will be reported after the interpretations of each omitted regime's regression results because they are the same among each regime omitted.

Results of adjustable parities omitted are shown in table 19. The results of a model in which there are no exchange rate regimes included are not reported because they are exactly the same as in column 1 of the previous table. The results in column 1 table 19 suggest that moving from adjustable parities to independent floats reduces the growth of domestic credit by 8.66% a year. Tightly managed and other managed regimes have negative signs as well but they are not statistically significant at the conventional level. Crawls regime has a positive sign but is not significant either. Column 2 provides very similar results as column 1. Other managed regime becomes significant, which implies that domestic credit growth decreases about 5.26% from moving from adjustable parities to other managed regime. An expected positive impact of financial liberalization on domestic credit is again confirmed. On average,

there is an increase of about 1.5% of domestic credit growth when a financial sector is liberalized. Only an interaction term between financial liberalization and other managed regime is significant and negative at 90% confidence interval in column 3. This means that the positive relationship between financial liberalization and domestic credit is weakened if the government decides to move exchange rate regimes away from adjustable parities to other managed regime. More simply, under other managed regimes, financial liberalization has less effect on the domestic credit growth than under adjustable parities.

Columns 1 and 2 of table 20 show that other managed and independent floats regimes are significant and have negative signs when the crawl regime is omitted. On average, moving from crawls to other managed (independent floats) lowers domestic credit growths by 4.8% (9%) per year. There is no statistical change in domestic credit growth from moving from crawls to tightly managed regime. Column 3 reports regression results of interaction terms. Other managed and independent floats, and financial liberalization interaction terms are statistically significant at 5% and 10%, respectively. The significant coefficients explain the roles of exchange rate regimes on the financial liberalization and domestic credit relationship. Different exchange rate regimes have different roles. In this case, under one of intermediate regimes (crawls) financial liberalization tends to have larger impacts on domestic credit growth than under freely flexible regimes (other managed and independent floats). Table 21 is pretty much the same as table 20 in term of the coefficients' signs and statistical significance.

Columns 1 and 2 in table 22 (other managed omitted) provide the estimation results when interaction terms are not included. These show that there are no statistical different impacts of exchange rate regime movement between other managed and independent floats on the domestic credit growth. However, interestingly, the significant and positive coefficient of FL and independent floats interaction term should imply that the move from other managed regime to independent floats strengthens the positive relationship between financial

liberalization and domestic credit growth. In order words, under independent floats financial liberalization has larger impacts on domestic credit growth than other managed regime.

As expected, most control variables have expected signs and are significant. A country with higher real GDP growth and inflation tends to have high domestic credit growth, possibly due to the explanation of the financial accelerator model. According to the pull factor theory of capital flows, a higher return on domestic investment or profitability, as seen in an increase in domestic GDP growth, tends to attract capital inflows. In the absence of sterilization, capital inflows will enhance the availabilities of credit in the financial sector. On average, a one percent increase in GDP growth increases domestic credit growth by about 1.5%. Deposit insurance coverage is also significant and has a positive sign. This exists probably due to a moral hazard problem. The increase of savings by depositors let banks expand their lending to private sectors. Institutional variables (GDP/capita and capital regulation and supervision) are significant and negative, which implies that countries with better qualities of institutions as well as better capital regulatory and supervision can reduce the credit growth by in average about 3.5% and 1.7%, respectively.

Next, I want to examine whether the above results are different across country groups. For this sensitivity check I separate the countries into three groups and estimate each country group separately. Again, only results of the model with interaction terms are reported since this model is very essential and other models without interaction terms do not show much significance. Table 24 reports three regression results to compare the effects among the three groups of countries when hard fixes are omitted. The traditional view that financial liberalization leads to growth of domestic credit is confirmed only in the developing country group. Financial liberalization indexes of the other two groups are not statistically significant at the conventional levels. Results of interaction terms across country groups do not have consistent signs in the case of hard pegs omitted, implying that results vary across country groups. As in table 24, for example, a FL*adjustable parities term is significant only in

emerging and developing countries, and have different signs. It shows that in emerging markets the impacts of financial liberalization on domestic credit are larger under adjustable parities than hard pegs but in developing countries that the impacts of financial liberalization on domestic credit are larger under hard pegs than adjustable parities. Moreover, the FL*crawls interaction term is significant and negative only in the developing countries. Similarly, in the industrial country group, under the hard fixes regime financial liberalization has stronger effects on domestic credit growth than independent floats, but the effect is opposite for emerging markets. However, most control variables do not show differences among the three country groups. GDP growth variables, for instance, are significant and have the same signs across three countries groups. DI coverage, GDP per capita, and capital supervision have the same expected signs even though they are different in terms of significance level.

5.3 Credit Booms

Tables 25 to 30 report the estimated results of equation 3, which essentially looks at the effects of financial liberalization, exchange rate regimes, and the interaction between the two on probabilities of credit booms. Results reported in these tables are the marginal effects. Again each table reports results of each omitted exchange rate regime of the six-classification regimes. Column 1 show results based on a model which includes only the regime dummies, while column 2 adds the financial liberalization index, and column 3 includes the interaction terms.

Hard peg is omitted in table 25. The results show that financial liberalization index in column 2 and 3 is positive and significant but the magnitude is not strong, which tend to reinforce the previous finding of the financial liberalization's impact on the credit boom. The probabilities of having a credit boom increase by about 0.5% on average when the government liberalizes its financial sector. In column 2, positive significant coefficients of adjustable parities and crawls imply that a move from hard pegs to adjustable parities and

crawls heighten the risks of having credit booms by 7% and 1.29%, respectively. These results tend to support an unstable middle hypothesis of exchange regimes in the case that currency crises are preceded by credit booms. It should be noted that Gourinchas et al. (2001) find that while most crises were preceded by credit booms, only a few credit booms were followed by crises.

In addition, independent floats regime is less likely to increase the credit boom likelihood than hard pegs. The chance of a credit boom is reduced by about 7.04% by moving away from hard pegs to independent floats. However, there are no different effects for crawls and other managed regimes with hard pegs. Results of the regimes in column 2 are very similar to column 1, only the magnitudes are slightly different. In column 3, the coefficients of exchange regime dummies switch signs but most are insignificant when the interaction terms are included. However, most interaction terms are significant, except the FL*Crawls interaction term is not. FL*Adjustable parities and FL*Tightly managed are positive significant at 10% which can be interpreted that financial liberalization increases the credit boom likelihood about 0.4% and 1.8% more under adjustable parities and tightly managed than under hard pegs, respectively. However, under other managed and independent floats financial liberalization has fewer impacts on the credit boom likelihood than under hard pegs. These results imply that the relationship between financial liberalization and credit booms is affected across different types of exchange rate regimes. Statistically, financial liberalization increases the likelihood of credit booms about 1.75% and 0.7% more under hard pegs than under other managed and independent flats, respectively.

Table 26 reports the empirical results in the case that adjustable parities are omitted. The results of negative significant coefficients of crawls, tightly managed and other managed regimes in column 2 imply that moving to more flexible regimes reduces the likelihood of credit booms by 2.11%, 5.4%, and 4.93%, respectively. These findings support an argument of Ottens et al. (2005) that a moral hazard, generated by an implicit guarantee against

currency mismatch risks (less exchange rate variability), leads to more risk-taking behaviors by both borrowers and lenders. Moreover, the financial liberalization index is again found consistent with the conventional view. Column 3 represents the roles of exchange rate regimes on the link between financial liberalization and credit boom based on the statistical significances of the interaction terms at the conventional level. Under a soft peg (adjustable parities), financial liberalization increases the chance of having credit booms by about 0.39%, 1.70%, and 1.36% more than under crawls, tightly managed, and other managed, respectively.

Table 27 reports the empirical results when the crawls regime is omitted. Therefore, I compare impacts of the omitted regime (Crawls) with other more flexible regimes. Tightly managed and other managed regimes are not significant at the conventional level, but the independent floats regime is negative and significant at the 5% level in column 1. It means that a move to the extreme corner reduces the likelihood of a credit boom by about 2.57%. Column 2 gives the same results with column 1 but tightly managed statistically turns significant at 10% level. In terms of comparing the omitted regime (Crawls) with the other more flexible regimes in column 3, only the FL*Independent floats interaction term is statistically significant and negative, which implies that financial liberalization has the least impact on the credit boom under the extremely flexible regime. Notably, the results of omitting another regime of intermediates (tightly managed) in table 28 are not much different from table 27.

The empirical results of omitting other managed are shown in table 29. Within the flexible corner, significant differences of the impacts on the credit boom are not found among these two regimes in the flexible corner. The findings suggest that a common view that a move to more flexible regimes helps reduce the probabilities of credit boom based on the argument of an implicit guarantee against fluctuations of exchange rate regimes is not confirmed here. Moreover, the standard control variables in this study do have expected signs and significance except deposit insurance coverage. As expected, a one-percent increase in

the economy growth and inflation heightens the credit boom likelihood by 3.21% and 0.52%, respectively. Interestingly, an argument that deposit insurance tends to induce more risk-taking behaviors via less control and monitoring of depositors on banks' potential aggressive lending activities is not found in this study. Two institutional variables (GDP/capita and supervision) do prevent a possible incidence of credit boom less likely to happen. A one-unit increase of GDP/capita, and capital regulation and supervision prevents the likelihoods of credit boom by about 0.93% and 2.89%, respectively.

The next step of this analysis is to classify the country sample into three different groups as above. Notably, there are only 11 credit boom episodes in the industrial countries; therefore, the stata could not estimate the credit boom dummy. In the cases of developing and emerging countries, I do not find any roles of exchange rate regimes on the relationship between financial liberalization and credit booms. However, for the non-industrial group, the results seems to be consistent with the all country group that some intermediate regimes are associated with the largest impact on the financial liberalization and credit boom likelihood linkage; but the finding that financial liberalization increases the likelihood of credit boom under hard pegs more than under independent floats is not found for the non-industrial country group. The results are shown in appendix D.

Lastly, I think it's very crucial to use a few different measurements of credit booms that were used in the literature for sensitivity check of the results because there is no one best measurement. One alternative measurement is to follow the methodology of Mendoza and Torrones (2004). They use real private credit as a measure of credit and assume that the deviations from the trend, computed by a HP filter, have normal distributions. A credit boom is identified when its deviation is greater than 1.75 standard deviations. Following strictly their methodology, there are 54 booms detected in my data sample. The empirical results of each omitted regime are shown in tables 31 to 35. However, I don't find any significant differences of the effects on the credit booms as well as the effects on the financial

liberalization and credit boom link (insignificant interaction terms) between the fixed corner (hard pegs) and intermediates, especially adjustable parities. Unsurprisingly, the results of either one of the flexible corner (other managed and independent floats) with other regimes imply that moving to either other managed or independent floats reduces the probabilities of credit booms. These findings are generally consistent with the earlier findings that the flexible corner is associated with the least likelihood of credit boom and also with the least impacts on the relationship between financial liberalization and credit booms.

Chapter 6: Conclusion and Policy Recommendations

Using a data sample of 77 countries for the period from 1990-2005 the analyses in this study generally support the broad conclusion that exchange rate regimes have a role in explaining both the relationship between financial liberalization and banking crises probabilities and the relationships between financial liberalization and domestic credit growth and credit booms, although the evidence for credit booms is weaker. Interestingly, the results presented in Tables 2 to10 not only suggest a role of exchange rate regimes for the linkage between FL and banking crises frequencies, but they also indirectly support the unstable middle hypothesis of exchange rate regimes and crises. The results (coefficients of interaction terms) suggest that among the different types of exchange rate regimes, intermediate regimes (adjustable parities, crawls and tightly managed floats) explains FL and banking crises probabilities linkage the most. This simply means that financial liberalization has larger effects on the likelihood of banking crises under the intermediates regime than under hard fixes and freely floats regimes (the two corners).

However, there are no consistent significant differences of the effects on the FL and banking crises likelihood link between hard pegs and flexible regimes, which seems to contradict with the findings of Angkinand and Willett (2010) that flexible regimes are associated with the least risks of banking crises.

Interestingly, when distinguishing among three types of financial liberalization: behavioral liberalization, competitive liberalization, and privatization, none of these three types gives results consistent with earlier studies. Surprisingly, independent floats are associated with the least impact on the relationship between behavioral liberalization and banking crises. The other two types do not offer firm conclusions. Moreover, these results vary across the country groups. The conventional belief that financial liberalization increases the risks of banking crises seems to be confirmed in this study. However, the magnitude is

very small. Only GDP growth rate and GDP per capita are significant and have expected sign, the other control variables are not significant.

Using the country fixed effect models, the results show that the impact of financial liberalization on the domestic credit growth is strengthened under intermediate regimes relative to the other two corners when using the growth rate of private credit to GDP ratio as the dependent variable. Moreover, a move from hard pegs to independent floats weakens the causal link between financial liberalization and credit growth. Again, the results are not robust with different country groups. The logit model of credit booms, defined as a deviation from the trend by 1.5 standard deviations and the growth of credit is greater than 5%, generally provides consistent conclusions with the results of using domestic credit growth. The significant differences of the effects between hard pegs and independent floats are consistent with the credit growth's results as well as the findings that under most intermediate regimes, not all, financial liberalization has larger effects on the probabilities of credit boom than the other two corners. However, these findings do not remain the same when using other measurements of credit booms. For example, the results of using Mendoza and Torrones (2004) methodology of identifying credit booms show no different effects on the credit boom as well as its relationship with financial liberalization between hard pegs and intermediate regimes. However, the finding that independent floats are associated with the least effects on the relationship is still robust with the use of Mendoza and Torrones' credit boom measurement. Table 36 shows a summary of the empirical results in this dissertation.

Finally, the above results should provide useful information for policy makers, whose countries have substantially reformed their financial policies for the last two decades or plan to deregulate financial policies in the purpose to attract more capitals, to take exchange rate policies into consideration in order to protect the economies from crises risk as well its credit boom channel. An appropriate exchange rate regime might reduce the level of susceptibilities to banking crises as well as credit boom and allow policy makers to achieve

their financial reform goals. Since intermediate regime appears to be particularly susceptible to crisis generated by financial liberalization, liberalization in economies with such exchange rate regimes should be especially alert to doing liberalization carefully and accompanying it with strong prudential regulation and supervision.

Even though the results of this dissertation seem to reinforce the existing literature, this dissertation provides some future directions of research such as calculating net effects of FL and exchange regimes by comparing them with coefficients of interaction terms. In addition, existing study on possible effects of capital controls on the likelihood of crises can be further explored by incorporating different types of exchange rate regimes because if financial liberalization policies are prone to the crises via capital flows, possible impacts of capital control policies under different exchange rate regimes might be worthwhile to be investigated in more concrete manners.

Appendix A: Data Descriptions and Sources

Variable	Description	Source
The Onset Banking Crisis	The Onset of banking crisis dummy, which is equal to 1 in a first year of each banking crisis episode, and 0 otherwise	Laeven and Valencia (2008)
Real GDP Growth Rate	Real GDP growth (annual %)	WDI
GDP/Capita	The log of real GDP per capita (constant 2000 US$)	WDI
Credit Growth	The natural logarithm of the ratio of domestic credit to private sector to GDP	WDI
Inflation	The difference in the natural logarithm of GDP deflator	WDI
Deposit Insurance Coverage (DI)	The deposit insurance coverage per deposits per capita. This index ranges from 1 to 10.	Domirguc-Kunt (2005)
Currency Crisis	A dummy of one for the periods that currency crises occur.	Laeven and Valencia (2008)
Behavioral Liberalization	The aggregate index of the variables of elimination of and interest rate control following the calculation of Angkinand et al (2009). The scale is 0-6	Abiad, Detragiache and Tressel (2008)
Competitive Liberalization	The aggregate index of equity market liberalization, capital account liberalization, and entry & activity liberalization. The scale is 0-9	Abiad, Detragiache and Tressel (2008)
Privatization	Privatization of state ownership of the banking sector. The scale is 0-3	Abiad, Detragiache and Tressel (2008)
Total FL (Financial Liberalization)	The aggregate index of behavioral lib., competitive liberalization, and privatization. The scale is 0-18	Abiad, Detragiache and Tressel (2008)
Exchange Rate Regimes	The data for exchange rate regimes is the IMF de facto exchange rate regime classifications, complied by Bubula and Otker-Robe (2003). For a sample of time periods, which are not covered in their studies, I look up the six-month reports from IMF website. The exchange regimes are divided into thirteen categories : (1) dollarization, (2) currency unions, (3) currency boards, (4) conventional fixed peg to a single currency, (5) conventional fixed peg to a basket, (6) horizontal band, (7) forward looking crawling peg, (8) backward looking crawling peg, (9) forward looking crawling band, (10) backward looking crawling band, (11) tightly managed floating, (12) other managed floating with no predetermined exchange rate path, and (13) freely floating rates. Following the grouping of Angkinand and Willett (2010) , a six-way grouping is utilized in this paper : hard pegs(1-	Bubula and Otker-Robe (2003); and IMF website.

Three-Way Classification of Exchange Rate Regimes	3), adjustable parities (4-6), crawls (7-10), tightly managed floats (11), other managed floats (12), and floats (13). Group adjustable parities, crawls and tightly managed floats as intermediate regimes, with hard fixes as one corner and other managed and independent floats as the other corner.	Bubula and Otker-Robe (2003); Angkinand and Willett (2010)

Appendix B : 1. List of Countries in Different Country Groups

Industrial Countries (19) : Australia, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom, and United States.

Emerging Economies (28):Argentina, Brazil, Bulgaria, Chile, China, Columbia, Ecuador, Egypt, Hong Kong, Hungary, India, Indonesia, Israel, Jordan, Korea, Malaysia, Mexico, Nigeria, Peru, Philippines, Poland, Russia, Singapore, South Africa, Sri Lanka, Thailand, Turkey, and Venezuela.

Developing Countries(30): Albania, Algeria, Azerbaijan, Bangladesh, Belarus, Bolivia, Cameroon, Costa Rica, Cote D'Ivoire, Dominican Republic, El Salvador, Estonia, Ethiopia, Georgia, Guatemala, Jamaica, Kenya, Kyrgyz Republic, Lithuania, Madagascar, Mozambique, Nepal, Nicaragua, Paraguay, Tanzania, Uganda, Ukraine, Uruguay, Vietnam, and Zimbabwe.

2. List of Countries Adopted Hard Pegs across Country Groups

Country	Year	Country	Year	Country	Year
Industrial Countries		**Emerging Markets**		**Developing Countries**	
Belgium	1999	Argentina	1991	Azebaijan	1990
Belgium	2000	Argentina	1992	Cameroon	1990
Belgium	2001	Argentina	1993	Cameroon	1991
Belgium	2002	Argentina	1994	Cameroon	1992
Belgium	2003	Argentina	1995	Cameroon	1993
Belgium	2004	Argentina	1996	Cameroon	1994
Belgium	2005	Argentina	1997	Cameroon	1995
Finland	1999	Argentina	1998	Cameroon	1996
Finland	2000	Argentina	1999	Cameroon	1997
Finland	2001	Argentina	2000	Cameroon	1998

Finland	2002	Argentina	2001	Cameroon	1999
Finland	2003	Bulgaria	1997	Cameroon	2000
Finland	2004	Bulgaria	1998	Cameroon	2001
Finland	2005	Bulgaria	1999	Cameroon	2002
France	1999	Bulgaria	2000	Cameroon	2003
France	2000	Bulgaria	2001	Cameroon	2004
France	2001	Bulgaria	2002	Cameroon	2005
France	2002	Bulgaria	2003	Cote D'Ivoire	1990
France	2003	Bulgaria	2004	Cote D'Ivoire	1991
France	2004	Bulgaria	2005	Cote D'Ivoire	1992
France	2005	Ecuador	2000	Cote D'Ivoire	1993
Germany	1999	Ecuador	2001	Cote D'Ivoire	1994
Germany	2000	Ecuador	2002	Cote D'Ivoire	1995
Germany	2001	Ecuador	2003	Cote D'Ivoire	1996
Germany	2002	Ecuador	2004	Cote D'Ivoire	1997
Germany	2003	Ecuador	2005	Cote D'Ivoire	1998
Germany	2004	Hong Kong	1990	Cote D'Ivoire	1999
Germany	2005	Hong Kong	1991	Cote D'Ivoire	2000
Ireland	1999	Hong Kong	1992	Cote D'Ivoire	2001
Ireland	2000	Hong Kong	1993	Cote D'Ivoire	2002
Ireland	2001	Hong Kong	1994	Cote D'Ivoire	2003
Ireland	2002	Hong Kong	1995	Cote D'Ivoire	2004
Ireland	2003	Hong Kong	1996	Cote D'Ivoire	2005
Ireland	2004	Hong Kong	1997	Elsavador	2001
Ireland	2005	Hong Kong	1998	Elsavador	2002
Italy	1999	Hong Kong	1999	Elsavador	2003
Italy	2000	Hong Kong	2000	Elsavador	2004
Italy	2001	Hong Kong	2001	Elsavador	2005
Italy	2002	Hong Kong	2002	Estonia	1990
Italy	2003	Hong Kong	2003	Estonia	1991
Italy	2004	Hong Kong	2004	Estonia	1992
Italy	2005	Hong Kong	2005	Estonia	1993
Netherlands	1999			Estonia	1994
Netherlands	2000			Estonia	1995
Netherlands	2001			Estonia	1996
Netherlands	2002			Estonia	1997
Netherlands	2003			Estonia	1998
Netherlands	2004			Estonia	1999
Netherlands	2005			Estonia	2000
Portugal	1999			Estonia	2001
Portugal	2000			Estonia	2002
Portugal	2001			Estonia	2003
Portugal	2002			Estonia	2004
Portugal	2003			Estonia	2005
Portugal	2004			Georgia	1990

Portugal	2005			Georgia	1991
Spain	1999			Georgia	1992
Spain	2000			Kyrgyz Republic	1990
Spain	2001			Kyrgyz Republic	1991
Spain	2002			Kyrgyz Republic	1992
Spain	2003			Lithuania	1994
Spain	2004			Lithuania	1995
Spain	2005			Lithuania	1996
				Lithuania	1997
				Lithuania	1998
				Lithuania	1999
				Lithuania	2000
				Lithuania	2001
				Lithuania	2002
				Lithuania	2003
				Lithuania	2004
				Lithuania	2005

3. List of Countries Adopted Independent Floats

Country	Year	Country	Year	Country	Year
Industrial Countries		**Emerging Markets**		**Developing Countries**	
Australia	1990	Argentina	1990	Albania	1992
Australia	1991	Brazil	1999	Albania	1993
Australia	1992	Brazil	2000	Albania	1994
Australia	1993	Brazil	2001	Albania	1995
Australia	1994	Brazil	2002	Albania	1996
Australia	1995	Brazil	2003	Albania	1997
Australia	1996	Brazil	2004	Albania	1998
Australia	1997	Brazil	2005	Albania	1999
Australia	1998	Bulgaria	1991	Albania	2000
Australia	1999	Bulgaria	1992	Albania	2001
Australia	2000	Bulgaria	1996	Albania	2002
Australia	2001	Chile	1999	Albania	2003
Australia	2002	Chile	2000	Albania	2004
Australia	2003	Chile	2001	Albania	2005
Australia	2004	Chile	2002	Belarus	1991
Australia	2005	Chile	2003	Dominican Republic	2004
Canada	1998	Chile	2004	Georgia	1993
Canada	1999	Chile	2005	Georgia	1998
Canada	2000	Columbia	1999	Georgia	1999
Canada	2001	Columbia	2000	Georgia	2000

Canada	2002	Columbia	2001	Georgia	2001
Canada	2003	Columbia	2002	Guatemala	2002
Canada	2004	Columbia	2003	Guatemala	2003
Canada	2005	Columbia	2004	Jamaica	1991
Finland	1992	Ecuador	1999	Jamaica	1995
Finland	1993	Indonesia	1997	Lithuania	1990
Finland	1994	Indonesia	1998	Lithuania	1991
Finland	1995	Indonesia	1999	Lithuania	1992
Italy	1992	Indonesia	2000	Madagascar	1994
Italy	1993	Israel	2002	Madagascar	1995
Italy	1994	Israel	2003	Madagascar	1996
Italy	1995	Israel	2004	Madagascar	1997
Japan	1990	Israel	2005	Madagascar	1998
Japan	1991	Korea	1997	Madagascar	1999
Japan	1992	Korea	1998	Madagascar	2000
Japan	1993	Korea	1999	Madagascar	2001
Japan	1994	Korea	2000	Madagascar	2002
Japan	1995	Korea	2001	Madagascar	2003
Japan	1996	Korea	2002	Madagascar	2004
Japan	1997	Korea	2003	Madagascar	2005
Japan	1998	Korea	2004	Mozambique	1992
Japan	1999	Korea	2005	Mozambique	1993
Japan	2000	Mexico	1994	Mozambique	1994
Japan	2001	Mexico	1995	Mozambique	1995
Japan	2002	Mexico	1996	Mozambique	1996
Japan	2003	Mexico	1997	Mozambique	1997
Japan	2004	Mexico	1998	Mozambique	1998
Japan	2005	Mexico	1999	Mozambique	1999
New Zealand	1990	Mexico	2000	Mozambique	2000
New Zealand	1991	Mexico	2001	Mozambique	2001
New Zealand	1992	Mexico	2002	Tanzania	1993
New Zealand	1993	Mexico	2003	Tanzania	1994
New Zealand	1994	Mexico	2004	Tanzania	1995
New Zealand	1995	Mexico	2005	Tanzania	1996
New Zealand	1996	Peru	1990	Tanzania	1997
New Zealand	1997	Peru	1991	Tanzania	1998
New Zealand	1998	Peru	1999	Tanzania	1999
New Zealand	1999	Peru	2000	Tanzania	2000
New Zealand	2000	Peru	2001	Tanzania	2001
New Zealand	2001	Peru	2002	Tanzania	2002
New Zealand	2002	Philippines	1998	Tanzania	2003
New Zealand	2003	Philippines	1999	Tanzania	2004
New Zealand	2004	Philippines	2000	Tanzania	2005
New Zealand	2005	Philippines	2001	Uganda	1990
Norway	1992	Philippines	2002	Uganda	1991

Norway	2001	Philippines	2003	Uganda	1992
Norway	2002	Philippines	2004	Uganda	1993
Norway	2003	Philippines	2005	Uganda	1994
Norway	2004	Poland	2000	Uganda	1995
Norway	2005	Poland	2001	Uganda	1996
Sweden	1992	Poland	2002	Uganda	1997
Sweden	1993	Poland	2003	Uganda	1998
Sweden	1994	Poland	2004	Uganda	1999
Sweden	1995	Poland	2005	Uganda	2000
Sweden	1996	South Africa	1997	Uganda	2001
Sweden	1997	South Africa	1998	Uganda	2002
Sweden	1998	South Africa	1999	Uganda	2003
Sweden	1999	South Africa	2000	Uganda	2004
Sweden	2000	South Africa	2001	Uganda	2005
Sweden	2001	South Africa	2002	Uruguay	2002
Sweden	2002	South Africa	2003	Uruguay	2003
Sweden	2003	South Africa	2004	Uruguay	2004
Sweden	2004	South Africa	2005	Uruguay	2005
Sweden	2005	Sri Lanka	2002		
Switzerland	1990	Sri Lanka	2003		
Switzerland	1991	Sri Lanka	2004		
Switzerland	1992	Sri Lanka	2005		
Switzerland	1993	Turkey	2001		
Switzerland	1994	Turkey	2002		
Switzerland	1995	Turkey	2003		
Switzerland	1996	Turkey	2004		
Switzerland	1997	Turkey	2005		
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United States	1999		
United States	2000		
United States	2001		
United States	2002		
United States	2003		
United States	2004		
United States	2005		

Appendix C : Descriptive Statistic

Variable	Obs	Mean	Std. Dev.	Min	Max
The Onset of Banking Crisis	1232	0.037	0.190	0	1
Total FL	1232	12.829	4.320	0.000	18.000
Real Growth Rate of GDP	1232	0.031	0.054	-0.569	0.264
Growth Rate of Domestic Credit	1232	0.015	0.218	-1.909	1.356
Inflation[1]	1232	0.199	0.518	-0.268	5.046
Currency Crisis	1232	0.041	0.199	0	1
Instiutional Variables					
Real GDP per Capita[2]	1232	7.9479	1.584	4.627	10.612
Deposit Insurance	1232	2.452	3.056	0	10
CRS	1232	1.333	0.998	0	3
Financial Liberalization Policies					
Credit Allocation Lib.	1232	2.183	0.866	0	3
Interest Rate Lib.	1232	2.577	0.871	0	3
Entry & Activity Barrier Lib.	1232	2.446	0.867	0	3
Capital Account Control	1232	2.193	1.002	0	3
Equity Market Lib.	1232	1.993	0.970	0	3
Privatization	1232	1.585	1.207	0	3
Behavioral Lib.	1232	4.706	1.526	0	6
Competitive Lib.	1232	6.557	2.327	0	9
Exchange Rate Regimes					
Hard pegs	1232	0.144	0.351	0	1
Adjustable parities	1232	0.217	0.412	0	1
Crawls	1232	0.142	0.349	0	1
Tighltly Managed	1232	0.093	0.290	0	1
Other Managed	1232	0.161	0.367	0	1
Floats	1232	0.243	0.429	0	1
Interaction Terms					
Total FL x Hard pegs	1232	2.071	5.300	0	18
Total FL x Adjustable parities	1232	2.584	5.445	0	18
Total FL x Crawls	1232	1.671	4.317	0	18
Total FL x Tightly Managed	1232	1.085	3.574	0	18
Total FL x Other Mananged	1232	1.851	4.549	0	18
Total FL x Floats	1232	3.561	6.515	0	18

Note: [1] Difference of natural logarithm of GDP deflator; [2]Natural logarithm of real GDP per capita;

Appendix D.

Table 4A : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Crawls regime omitted)

	B.C	**B.C**
Total FL_{t-1}	0.0037	0.0029*
	[0.1975]	[0.0625]
(FL X Hard Pegs)$_{t-1}$		-0.0195*
		[0.0685]
(FL X Adjustable Parities)$_{t-1}$		-0.0132
		[0.6324]
(FL X Tightly Managed) $_{t-1}$		0.2105
		[0.3536]
(FL X Other Managed) $_{t-1}$		-0.0493*
		[0.0508]
(FL X Independent Float) $_{t-1}$		-0.1425
		[0.2374]

Table 5A : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Tightly managed omitted)

	B.C	**B.C**
Total FL_{t-1}	0.0035	0.0046*
	[0.2531]	[0.0751]
(FL X Hard Pegs)$_{t-1}$		-0.0276*
		[0.0572]
(FL X Adjustable Parities)$_{t-1}$		-0.0076
		[0.4711]
(FL X Crawls) $_{t-1}$		-0.2105
		[0.3536]
(FL X Other Managed) $_{t-1}$		-0.0873
		[0.1643]
(FL X Independent Float) $_{t-1}$		-0.0139*
		[0.0783]

Table 6A : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Other managed omitted)

	B.C	**B.C**
Total FL_{t-1}	0.0032	0.0042**
	[0.1954]	[0.0176]
(FL X Hard Pegs)$_{t-1}$		-0.0159*
		[0.0971]
(FL X Adjustable Parities)$_{t-1}$		-0.0093
		[0.1367]
(FL X Crawls) $_{t-1}$		0.0493*
		[0.0508]
(FL X Tightly Managed) $_{t-1}$		0.0873
		[0.1643]
(FL X Independent Float) $_{t-1}$		0.0386
		[0.4182]

Table 25A : Credit Boom (Hard pegs Omitted) For Non-Industrial Country Group

	Boom	Boom
Total FL_{t-1}	0.0176*	0.0239**
	[0.0296]	[0.0342]
(FL X Adjustable Parities)$_{t-1}$		0.0245**
		[0.0497]
(FL X Crawls) $_{t-1}$		0.1734
		[0.4132]
(FL X Tightly Managed) $_{t-1}$		0.0149*
		[0.0846]
(FL X Other Managed) $_{t-1}$		-0.0942
		[0.3548]
(FL X Independent Float) $_{t-1}$		-0.0498
		[0.2846]

Table 30A: Credit Boom (Independent Floats Omitted) For The Non-Industrial Country Group

	Boom	Boom
Total FL_{t-1}	0.0312*	0.0247*
	[0.0872]	[0.0683]
$(FL \times \text{Hard Pegs})_{t-1}$		0.0498
		[0.2846]
$(FL \times \text{Adjustable Parities})_{t-1}$		0.0492*
		[0.0568]
$(FL \times \text{Crawls})_{t-1}$		0.0331
		[0.1164]
$(FL \times \text{Tightly Managed})_{t-1}$		0.0832*
		[0.0742]
$(FL \times \text{Other Managed})_{t-1}$		0.0475
		[0.3846]

Note: Only FL and the interaction terms are reported here.

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Table 2 : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Hard Pegs omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		-0.0015 [0.1661]	0.0048* [0.0913]
Adjustable parities$_{t-1}$	0.0052 [0.1053]	0.0293* [0.0927]	-0.0295 [0.1828]
Crawls$_{t-1}$	0.031* [0.0972]	0.0304** [0.0244]	-0.0283 [0.1158]
Tightly Managed$_{t-1}$	0.0067 [0.7645]	0.0058 [0.7937]	-0.0353 [0.2115]
Other Managed$_{t-1}$	0.0201 [0.2515]	0.0206 [0.1934]	-0.0337 [0.2711]
Independent Float $_{t-1}$	0.0174** [0.0482]	0.0169* [0.0676]	-0.0036 [0.1987]
(FL X Adjustable Parities)$_{t-1}$			0.0035* [0.0819]
(FL X Crawls) $_{t-1}$			0.0055* [0.1004]
(FL X Tightly Managed) $_{t-1}$			0.0065* [0.0710]
(FL X Other Managed) $_{t-1}$			0.0024* [0.0572]
(FL X Independent Float) $_{t-1}$			0.0011 [0.7139]
GDP Growth Rate $_{t-1}$	-0.153** [0.0299]	-0.144** [0.0394]	-0.117** [0.00274]
Inflation $_{t-1}$	0.0512 [0.7310]	0.0419 [0.6294]	0.0061 [0.6989]
DI coverage $_{t-1}$	-0.062 [0.1538]	-0.0528 [0.2206]	-0.0385 [0.3477]
Credit Growth $_{t-1}$	0.0401 [0.1856]	0.0632 [0.1114]	0.0512* [0.0512]
GDP/Capita $_{t-1}$	-0.038** [0.0124]	-0.057* [0.0770]	-0.045* [0.0768]
Currency Crises $_{t-1}$	0.0008 [0.9767]	-0.0017 [0.9469]	-0.0011 [0.9620]
No. of Obs.	1124	1124	1124
Prob > Chi-Square	0.035	0.035	0.032
Wald Chi-Square	35.607	50.434	57.566

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 3 : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Adjustable parities omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		-0.0015	0.0013*
		[0.1661]	[0.0617]
Hard $Pegs_{t-1}$	-0.0052	-0.0293*	0.0295
	[0.1053]	[0.0927]	[0.1828]
$Crawls_{t-1}$	0.0168*	0.0186**	-0.0026
	[0.0656]	[0.0355]	[0.3910]
Tightly $Managed_{t-1}$	-0.0012	-0.0033	0.0227
	[0.9434]	[0.8596]	[0.2685]
Other $Managed_{t-1}$	-0.0232**	-0.0220*	0.0268
	[0.0498]	[0.0669]	[0.2808]
Independent Float $_{t-1}$	-0.0211	-0.0187	0.0543
	[0.1179]	[0.1951]	[0.1215]
(FL X Hard $Pegs)_{t-1}$			-0.0035*
			[0.0819]
(FL X Crawls) $_{t-1}$			0.0019
			[0.4320]
(FL X Tightly Managed) $_{t-1}$			0.003
			[0.3716]
(FL X Other Managed) $_{t-1}$			-0.0011*
			[0.0897]
(FL X Independent Float) $_{t-1}$			-0.0047*
			[0.0950]
GDP Growth Rate $_{t-1}$	-0.153**	-0.144**	-0.117**
	[0.0299]	[0.0394]	[0.00274]
Inflation $_{t-1}$	0.0512	0.0419	0.0061
	[0.7310]	[0.6294]	[0.6989]
DI coverage $_{t-1}$	-0.062	-0.0528	-0.0385
	[0.1538]	[0.2206]	[0.3477]
Credit Growth $_{t-1}$	0.0401	0.0632	0.0512*
	[0.1856]	[0.1114]	[0.0512]
GDP/Capita $_{t-1}$	-0.038**	-0.057*	-0.045*
	[0.0124]	[0.0770]	[0.0768]
Currency Crises $_{t-1}$	0.0008	-0.0017	-0.0011
	[0.9767]	[0.9469]	[0.9620]
No. of Obs.	1124	1124	1124
Prob > Chi-Square	0.035	0.035	0.032
Wald Chi-Square	35.607	50.434	57.571

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 4 : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Crawls regime omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		-0.0015	0.0017**
		[0.1661]	[0.0250]
Hard $Pegs_{t-1}$	-0.031*	-0.0304**	0.0283
	[0.0972]	[0.0244]	[0.1158]
Adjustable $parities_{t-1}$	-0.0168*	-0.0186**	0.0026
	[0.0656]	[0.0355]	[0.3910]
Tightly $Managed_{t-1}$	-0.0148	-0.0151	-0.0215
	[0.1064]	[0.1001]	[0.3246]
Other $Managed_{t-1}$	-0.0330***	-0.0332***	-0.0108
	[0.0000]	[0.0000]	[0.7211]
Independent Float $_{t-1}$	-0.0336***	-0.0330***	0.0537
	[0.0008]	[0.0011]	[0.4720]
(FL X Hard $Pegs)_{t-1}$			-0.0055*
			[0.1004]
(FL X Adjustable $Parities)_{t-1}$			-0.0019
			[0.4320]
(FL X Tightly Managed) $_{t-1}$			0.0011
			[0.7526]
(FL X Other Managed) $_{t-1}$			-0.003*
			[0.0736]
(FL X Independent Float) $_{t-1}$			-0.0066**
			[0.0234]
GDP Growth Rate $_{t-1}$	-0.153**	-0.144**	-0.117**
	[0.0299]	[0.0394]	[0.00274]
Inflation $_{t-1}$	0.0512	0.0419	0.0061
	[0.7310]	[0.6294]	[0.6989]
DI coverage $_{t-1}$	-0.062	-0.0528	-0.0385
	[0.1538]	[0.2206]	[0.3477]
Credit Growth $_{t-1}$	0.0401	0.0632	0.0512*
	[0.1856]	[0.1114]	[0.0512]
GDP/Capita $_{t-1}$	-0.038**	-0.057*	-0.045*
	[0.0124]	[0.0770]	[0.0768]
Currency Crises $_{t-1}$	0.0008	-0.0017	-0.0011
	[0.9767]	[0.9469]	[0.9620]
No. of Obs.	1124	1124	1124
Prob > Chi-Square	0.035	0.035	0.032
Wald Chi-Square	35.607	50.434	57.571

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 5 : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Tightly managed omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		-0.0015	0.0016*
		[0.1661]	[0.0511]
Hard $Pegs_{t-1}$	-0.0067	-0.0058	0.0353
	[0.7645]	[0.7937]	[0.2115]
Adjustable $parities_{t-1}$	0.0012	0.0033	-0.0227
	[0.9434]	[0.8596]	[0.2685]
$Crawls_{t-1}$	0.0148	0.0151	0.0215
	[0.1064]	[0.1001]	[0.3246]
Other $Managed_{t-1}$	-0.0239**	-0.0239**	0.0216
	[0.0496]	[0.0480]	[0.7531]
Independent Float $_{t-1}$	-0.022	-0.021	0.1316
	[0.1361]	[0.1668]	[0.2112]
$(FL \times Hard\ Pegs)_{t-1}$			-0.0065*
			[0.0710]
$(FL \times Adjustable\ Parities)_{t-1}$			-0.003
			[0.3716]
$(FL \times Crawls)_{t-1}$			-0.0011
			[0.7526]
$(FL \times Other\ Managed)_{t-1}$			-0.0081***
			[0.0168]
$(FL \times Independent\ Float)_{t-1}$			-0.0077**
			[0.0368]
GDP Growth Rate $_{t-1}$	-0.153**	-0.144**	-0.117**
	[0.0299]	[0.0394]	[0.00274]
Inflation $_{t-1}$	0.0512	0.0419	0.0061
	[0.7310]	[0.6294]	[0.6989]
DI coverage $_{t-1}$	-0.062	-0.0528	-0.0385
	[0.1538]	[0.2206]	[0.3477]
Credit Growth $_{t-1}$	0.0401	0.0632	0.0512*
	[0.1856]	[0.1114]	[0.0512]
GDP/Capita $_{t-1}$	-0.038**	-0.057*	-0.045*
	[0.0124]	[0.0770]	[0.0768]
Currency Crises $_{t-1}$	0.0008	-0.0017	-0.0011
	[0.9767]	[0.9469]	[0.9620]
No. of Obs.	1124	1124	1124
Prob > Chi-Square	0.035	0.035	0.032
Wald Chi-Square	35.607	50.434	57.571

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 6 : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Other managed omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		-0.0015	0.0024**
		[0.1661]	[0.0318]
Hard $Pegs_{t-1}$	-0.0201	-0.0206	0.0337
	[0.2515]	[0.1934]	[0.2711]
Adjustable $parities_{t-1}$	0.0232**	0.0220*	-0.0268
	[0.0498]	[0.0669]	[0.2808]
$Crawls_{t-1}$	0.0330***	0.0332***	0.0108
	[0.0000]	[0.0000]	[0.7211]
Tightly $Managed_{t-1}$	0.0239**	0.0239**	-0.0216
	[0.0496]	[0.0480]	[0.7531]
Independent Float $_{t-1}$	0.0034	0.008	-0.0074
	[0.8370]	[0.7955]	[0.6441]
$(FL \times Hard\ Pegs)_{t-1}$			-0.0024*
			[0.0572]
$(FL \times Adjustable\ Parities)_{t-1}$			0.0011*
			[0.0897]
$(FL \times Crawls)_{t-1}$			0.003*
			[0.0736]
$(FL \times Tightly\ Managed)_{t-1}$			0.0081***
			[0.0168]
$(FL \times Independent\ Float)_{t-1}$			0.0036
			[0.3455]
GDP Growth Rate $_{t-1}$	-0.153**	-0.144**	-0.117**
	[0.0299]	[0.0394]	[0.00274]
Inflation $_{t-1}$	0.0512	0.0419	0.0061
	[0.7310]	[0.6294]	[0.6989]
DI coverage $_{t-1}$	-0.062	-0.0528	-0.0385
	[0.1538]	[0.2206]	[0.3477]
Credit Growth $_{t-1}$	0.0401	0.0632	0.0512*
	[0.1856]	[0.1114]	[0.0512]
GDP/Capita $_{t-1}$	-0.038**	-0.057*	-0.045*
	[0.0124]	[0.0770]	[0.0768]
Currency Crises $_{t-1}$	0.0008	-0.0017	-0.0011
	[0.9767]	[0.9469]	[0.9620]
No. of Obs.	1124	1124	1124
Prob > Chi-Square	0.035	0.035	0.032
Wald Chi-Square	35.607	50.434	57.571

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 7 : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Independent Floats omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		-0.0015	0.0068**
		[0.1661]	[0.0144]
Hard $Pegs_{t-1}$	-0.0174**	-0.0169*	0.0036
	[0.0482]	[0.0676]	[0.1987]
Adjustable $parities_{t-1}$	0.0211	0.0187	-0.0543
	[0.1179]	[0.1951]	[0.1215]
$Crawls_{t-1}$	0.0336***	0.0330***	-0.0537
	[0.0008]	[0.0011]	[0.4720]
Tightly $Managed_{t-1}$	0.022	0.021	-0.1316
	[0.1361]	[0.1668]	[0.2112]
Other $Managed_{t-1}$	-0.0034	-0.008	0.0074
	[0.8370]	[0.7955]	[0.6441]
$(FL \times Hard\ Pegs)_{t-1}$			-0.0011
			[0.7139]
$(FL \times Adjustable\ Parities)_{t-1}$			0.0047*
			[0.0950]
$(FL \times Crawls)_{t-1}$			0.0066**
			[0.0234]
$(FL \times Tightly\ Managed)_{t-1}$			0.0077**
			[0.0368]
$(FL \times Other\ Managed)_{t-1}$			-0.0036
			[0.3455]
GDP Growth $Rate_{t-1}$	-0.153**	-0.144**	-0.117**
	[0.0299]	[0.0394]	[0.00274]
$Inflation_{t-1}$	0.0512	0.0419	0.0061
	[0.7310]	[0.6294]	[0.6989]
DI $coverage_{t-1}$	-0.062	-0.0528	-0.0385
	[0.1538]	[0.2206]	[0.3477]
Credit $Growth_{t-1}$	0.0401	0.0632	0.0512*
	[0.1856]	[0.1114]	[0.0512]
GDP/$Capita_{t-1}$	-0.038**	-0.057*	-0.045*
	[0.0124]	[0.0770]	[0.0768]
Currency $Crises_{t-1}$	0.0008	-0.0017	-0.0011
	[0.9767]	[0.9469]	[0.9620]
No. of Obs.	1124	1124	1124
Prob > Chi-Square	0.035	0.035	0.032
Wald Chi-Square	35.607	50.434	57.566

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 8 : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Hard fixes regime is omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		0.0012	0.0045*
		[0.2979]	[0.0850]
$Intermediate_{t-1}$	0.0122	0.0108	-0.0437
	[0.4086]	[0.4653]	[0.1825]
$Floats_{t-1}$	-0.0225*	-0.0223**	0.0319
	[0.0524]	[0.0461]	[0.3054]
$(FL \times Intermediate)_{t-1}$			0.0046*
			[0.0941]
$(FL \times Float)_{t-1}$			-0.0095*
			[0.0980]
GDP Growth Rate $_{t-1}$	-0.1375**	-0.1249*	-0.1084*
	[0.0431]	[0.0622]	[0.0973]
DI coverage $_{t-1}$	-0.0058	-0.0051	-0.0048*
	[0.1602]	[0.2166]	[0.0829]
Credit Growth $_{t-1}$	0.0187	0.0593*	0.0615**
	[0.2760]	[0.0614]	[0.0318]
GDP/Capita $_{t-1}$	-0.0319**	-0.0273*	-0.0249*
	[0.0087]	[0.0634]	[0.0852]
No. of Obs.	1124	1124	1124
Prob > Chi-Square	0.035	0.035	0.033
Wald Chi-Square	25.33	33.696	38.929

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 9 : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Intermediate regime is omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		0.0012	0.0039**
		[0.2979]	[0.0252]
Hard $Fixes_{t-1}$	-0.0122	-0.0108	0.0437
	[0.4086]	[0.4653]	[0.1825]
$Floats_{t-1}$	-0.0328***	-0.0319***	0.0092
	[0.0019]	[0.0029]	[0.7264]
$(FL \times Hardfixes)_{t-1}$			-0.0046*
			[0.0941]
$(FL \times Float)_{t-1}$			-0.0037*
			[0.0599]
GDP Growth $Rate_{t-1}$	-0.1375**	-0.1249*	-0.1084*
	[0.0431]	[0.0622]	[0.0973]
DI $coverage_{t-1}$	-0.0058	-0.0051	-0.0048*
	[0.1602]	[0.2166]	[0.0829]
Credit $Growth_{t-1}$	0.0187	0.0593*	0.0615**
	[0.2760]	[0.0614]	[0.0318]
GDP/$Capita_{t-1}$	-0.0319**	-0.0273*	-0.0249*
	[0.0087]	[0.0634]	[0.0852]
No. of Obs.	1124	1124	1124
Prob > Chi-Square	0.035	0.035	0.033
Wald Chi-Square	25.33	33.696	38.929

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 10 : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Freely floats regime is omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		0.0012	0.0036**
		[0.2979]	[0.0240]
Hard $Fixes_{t-1}$	0.0225*	0.0223**	-0.0319
	[0.0524]	[0.0461]	[0.3054]
$Intermediate_{t-1}$	0.0328***	0.0319***	-0.0092
	[0.0019]	[0.0029]	[0.7264]
$(FL \times Hardfixes)_{t-1}$			0.0095*
			[0.0980]
$(FL \times Intermediate)_{t-1}$			0.0037*
			[0.0599]
GDP Growth $Rate_{t-1}$	-0.1375**	-0.1249*	-0.1084*
	[0.0431]	[0.0622]	[0.0973]
DI $coverage_{t-1}$	-0.0058	-0.0051	-0.0048*
	[0.1602]	[0.2166]	[0.0829]
Credit $Growth_{t-1}$	0.0187	0.0593*	0.0615**
	[0.2760]	[0.0614]	[0.0318]
GDP/$Capita_{t-1}$	-0.0319**	-0.0273*	-0.0249*
	[0.0087]	[0.0634]	[0.0852]
No. of Obs.	1124	1124	1124
Prob > Chi-Square	0.035	0.035	0.033
Wald Chi-Square	25.33	33.696	38.929

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 11 : Interaction between Behavioral Liberalization Index and Exchange Rate Regimes

	(1)B.C	(2)B.C	(3)B.C
Behavioral Lib_{t-1}	0.0079**	0.0027*	0.0076**
	[0.0452]	[0.0536]	[0.0278]
Hard $Fixes_{t-1}$		0.0257	-0.0071*
		[0.2445]	[0.0858]
$Intermediate_{t-1}$	-0.0257		-0.0198
	[0.2445]		[0.4608]
$Floats_{t-1}$	0.0071*	0.0198	
	[0.0858]	[0.4608]	
(Behavioral Lib X Hardfixes)$_{t-1}$		-0.0089	0.0206*
		[0.1186]	[0.0868]
(Behavioral Lib X Intermediate)$_{t-1}$	0.0089		0.0086**
	[0.1186]		[0.0280]
(Behavioral Lib X Float) $_{t-1}$	-0.0206*	-0.0086**	
	[0.0868]	[0.0280]	
GDP Growth Rate $_{t-1}$	-0.0721**	-0.0721**	-0.0721**
	[0.0388]	[0.0388]	[0.0388]
DI coverage $_{t-1}$	0.0023	0.0023	0.0023
	[0.3065]	[0.3065]	[0.3065]
Credit Growth $_{t-1}$	0.0050*	0.0050*	0.0050*
	[0.0890]	[0.0890]	[0.0890]
GDP/Capita $_{t-1}$	0.0012	0.0012	0.0012
	[0.4410]	[0.4410]	[0.4410]
CRS $_{t-1}$	-0.0160***	-0.0160***	-0.0160***
	[0.0000]	[0.0000]	[0.0000]
No. of Obs.	1130	1130	1130
Prob > Chi-Square	0.016	0.016	0.016
Wald Chi-Square	78.568	78.568	78.568

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 12 : Banking Crisis Likelihood Across Country Groups (Hard Pegs omitted)

	Total B.C (Developing)	Total B.C (Emerging)
Total FL_{t-1}	-0.0097***	0.0063**
	[0.0042]	[0.0367]
Adjustable $parities_{t-1}$	-0.0493**	0.7432
	[0.0172]	[0.2413]
$Crawls_{t-1}$	-0.0531**	0.4025
	[0.0110]	[0.6195]
Tightly $Managed_{t-1}$	-0.1470***	0.394
	[0.0014]	[0.6706]
Other $Managed_{t-1}$	-0.0402**	0.1462
	[0.0400]	[0.8159]
Independent Float $_{t-1}$	0.0847	-0.0459***
	[0.5533]	[0.0000]
(FL x Adjustable $Parities)_{t-1}$	0.0100*	-0.0081
	[0.0642]	[0.2968]
(FL X Crawls) $_{t-1}$	0.0125**	-0.0047
	[0.0197]	[0.4192]
(FL X Tightly Managed) $_{t-1}$	0.0336***	-0.0032
	[0.0000]	[0.5374]
(FL X Other Managed) $_{t-1}$	0.0086**	-0.0033
	[0.0322]	[0.6130]
(FL X Independent Float) $_{t-1}$	-0.0012	0.0378***
	[0.8328]	[0.0006]
GDP Growth Rate $_{t-1}$	-0.0973**	-0.1699*
	[0.0394]	[0.0853]
Credit Growth $_{t-1}$	0.0089**	0.0104**
	[0.0313]	[0.0288]
GDP/Capita $_{t-1}$	-0.0014***	-0.0034*
	[0.0011]	[0.0868]
No. of Obs.	439	385
Prob > Chi-Square	0.037	0.017
Wald Chi-Square	102.802	150.323

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 13: Banking Crisis Likelihood (Adjustable Parities omitted)

	Total BC (Developing)	Total B.C (Emerging)
Total FL_{t-1}	-0.0004	0.0018*
	[0.9416]	[0.0724]
Hard $Pegs_{t-1}$	0.0493**	-0.7432
	[0.0172]	[0.2413]
$Crawls_{t-1}$	0.0192	-0.0206
	[0.7183]	[0.4005]
Tightly $Managed_{t-1}$	-0.1148***	-0.0213
	[0.0059]	[0.2878]
Other $Managed_{t-1}$	0.0323	-0.0281
	[0.7065]	[0.2333]
Independent Float $_{t-1}$	0.4431	-0.0986***
	[0.2324]	[0.0000]
$(FL \times Hard\ Pegs)_{t-1}$	-0.0100*	0.0081
	[0.0642]	[0.2968]
$(FL \times Crawls)_{t-1}$	0.0024	0.0034
	[0.7231]	[0.3708]
$(FL \times Tightly\ Managed)_{t-1}$	0.0235***	0.0049
	[0.0059]	[0.3169]
$(FL \times Other\ Managed)_{t-1}$	-0.0015	0.0048
	[0.8030]	[0.2998]
$(FL \times Independent\ Float)_{t-1}$	-0.0113*	0.0459***
	[0.0813]	[0.0007]
GDP Growth Rate $_{t-1}$	-0.0973**	-0.1699*
	[0.0394]	[0.0853]
Credit Growth $_{t-1}$	0.0089**	0.0104**
	[0.0313]	[0.0288]
GDP/Capita $_{t-1}$	-0.0014***	-0.0034*
	[0.0011]	[0.0868]
No. of Obs.	439	385
Prob > Chi-Square	0.037	0.017
Wald Chi-Square	102.802	150.323

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 14 : Banking Crisis Likelihood (Crawls omitted)

	Total B.C (Developing)	Total B.C (Emerging)
Total FL_{t-1}	-0.0028	0.0016*
	[0.5811]	[0.0911]
Hard $Pegs_{t-1}$	0.0531**	-0.4025
	[0.0110]	[0.6195]
Adjustable $parities_{t-1}$	-0.0192	0.0206
	[0.7183]	[0.4005]
Tightly $Managed_{t-1}$	-0.1066**	-0.0093
	[0.0158]	[0.6759]
Other $Managed_{t-1}$	0.0739	-0.0206
	[0.5926]	[0.2940]
Independent Float $_{t-1}$	0.5824	-0.0782***
	[0.1779]	[0.0000]
$(FL \times Hard\ Pegs)_{t-1}$	-0.0125**	0.0047
	[0.0197]	[0.4192]
$(FL \times Adjustable\ Parities)_{t-1}$	-0.0024	-0.0034
	[0.7231]	[0.3708]
(FL X Tightly Managed) $_{t-1}$	0.0211**	0.0015
	[0.0182]	[0.6233]
(FL X Other Managed) $_{t-1}$	-0.0039	0.0014
	[0.4616]	[0.6813]
(FL X Independent Float) $_{t-1}$	-0.0137**	0.0424***
	[0.0446]	[0.0004]
GDP Growth Rate $_{t-1}$	-0.0973**	-0.1699*
	[0.0394]	[0.0853]
Credit Growth $_{t-1}$	0.0089**	0.0104**
	[0.0313]	[0.0288]
GDP/Capita $_{t-1}$	-0.0014***	-0.0034*
	[0.0011]	[0.0868]
No. of Obs.	439	385
Prob > Chi-Square	0.037	0.017
Wald Chi-Square	102.802	150.323

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 15 : Banking Crisis Likelihood (Tightly Managed omitted)

	Total B.C(Developing)	Total B.C (Emerging)
Total FL_{t-1}	-0.0239***	0.0031***
	[0.0002]	[0.0043]
Hard $Pegs_{t-1}$	0.1470***	-0.394
	[0.0014]	[0.6706]
Adjustable $parities_{t-1}$	0.1148***	0.0213
	[0.0059]	[0.2878]
$Crawls_{t-1}$	0.1066**	0.0093
	[0.0158]	[0.6759]
Other $Managed_{t-1}$	0.0883***	-0.0165
	[0.0000]	[0.4288]
Independent Float $_{t-1}$	0.0754***	-0.0991***
	[0.0000]	[0.0000]
$(FL \times Hard\ Pegs)_{t-1}$	-0.0336***	0.0032
	[0.0000]	[0.5374]
$(FL \times Adjustable\ Parities)_{t-1}$	-0.0235***	-0.0049
	[0.0059]	[0.3169]
$(FL \times Crawls)_{t-1}$	-0.0211**	-0.0015
	[0.0182]	[0.6233]
$(FL \times Other\ Managed)_{t-1}$	-0.0250***	-0.0001
	[0.0001]	[0.9765]
$(FL \times Independent\ Float)_{t-1}$	-0.0348***	0.0409***
	[0.0000]	[0.0004]
GDP Growth Rate $_{t-1}$	-0.0973**	-0.1699*
	[0.0394]	[0.0853]
Credit Growth $_{t-1}$	0.0089**	0.0104**
	[0.0313]	[0.0288]
GDP/Capita $_{t-1}$	-0.0014***	-0.0034*
	[0.0011]	[0.0868]
No. of Obs.	439	385
Prob > Chi-Square	0.037	0.017
Wald Chi-Square	102.802	150.323

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 16 : Banking Crisis Likelihood (Other Managed omitted)

	Total B.C (Developing)	Total B.C (Emerging)
Total FL_{t-1}	-0.0011	0.0036*
	[0.6054]	[0.0694]
Hard $Pegs_{t-1}$	0.0402**	-0.1462
	[0.0400]	[0.8159]
Adjustable $parities_{t-1}$	-0.0323	0.0281
	[0.7065]	[0.2333]
$Crawls_{t-1}$	-0.0739	0.0206
	[0.5926]	[0.2940]
Tightly $Managed_{t-1}$	-0.0883***	0.0165
	[0.0000]	[0.4288]
Independent Float $_{t-1}$	0.2924	-0.6671***
	[0.3211]	[0.0000]
$(FL \times Hard\ Pegs)_{t-1}$	-0.0086**	0.0033
	[0.0322]	[0.6130]
$(FL \times Adjustable\ Parities)_{t-1}$	0.0015	-0.0048
	[0.8030]	[0.2998]
$(FL \times Crawls)_{t-1}$	0.0039	-0.0014
	[0.4616]	[0.6813]
$(FL \times Tightly\ Managed)_{t-1}$	0.0250***	0.0001
	[0.0001]	[0.9765]
$(FL \times Independent\ Float)_{t-1}$	-0.0098	0.0410***
	[0.1009]	[0.0012]
GDP Growth Rate $_{t-1}$	-0.0973**	-0.1699*
	[0.0394]	[0.0853]
Credit Growth $_{t-1}$	0.0089**	0.0104**
	[0.0313]	[0.0288]
GDP/Capita $_{t-1}$	-0.0014***	-0.0034*
	[0.0011]	[0.0868]
No. of Obs.	439	385
Prob > Chi-Square	0.037	0.017
Wald Chi-Square	102.802	150.323

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 17 : Banking Crisis Likelihood (Freely Floats omitted)

	Total B.C (Developing)	Total B.C (Emerging)
Total FL_{t-1}	-0.0109**	0.0440***
	[0.0391]	[0.0005]
Hard $Pegs_{t-1}$	-0.0847	0.0459***
	[0.5533]	[0.0000]
Adjustable $parities_{t-1}$	-0.4431	0.0986***
	[0.2324]	[0.0000]
$Crawls_{t-1}$	-0.5824	0.0782***
	[0.1779]	[0.0000]
Tightly $Managed_{t-1}$	-0.0754***	0.0991***
	[0.0000]	[0.0000]
Other $Managed_{t-1}$	-0.2924	0.6671***
	[0.3211]	[0.0000]
$(FL \times Hard\ Pegs)_{t-1}$	0.0012	-0.0378***
	[0.8328]	[0.0006]
$(FL \times Adjustable\ Parities)_{t-1}$	0.0113*	-0.0459***
	[0.0813]	[0.0007]
$(FL \times Crawls)_{t-1}$	0.0137**	-0.0424***
	[0.0446]	[0.0004]
$(FL \times Tightly\ Managed)_{t-1}$	0.0348***	-0.0409***
	[0.0000]	[0.0004]
$(FL \times Other\ Managed)_{t-1}$	0.0098	-0.0410***
	[0.1009]	[0.0012]
GDP Growth $Rate_{t-1}$	-0.0973**	-0.1699*
	[0.0394]	[0.0853]
Credit $Growth_{t-1}$	0.0089**	0.0104**
	[0.0313]	[0.0288]
GDP/$Capita_{t-1}$	-0.0014***	-0.0034*
	[0.0011]	[0.0868]
No. of Obs.	439	385
Prob > Chi-Square	0.037	0.017
Wald Chi-Square	102.802	150.323

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 18 : Credit Growth (Hard pegs Omitted)

	Growth	Growth	Growth	Growth
Total FL_{t-1}	1.5293***		1.6299***	3.2295***
	[0.0007]		[0.0003]	[0.0002]
Adjustable $parities_{t-1}$			2.9737*	-4.1082
		[0.0518]	[0.0780]	[0.1992]
$Crawls_{t-1}$		2.3654**	2.608**	-6.6514**
		[0.0467]	[0.0397]	[0.0272]
Tightly $Managed_{t-1}$		-0.0019	0.6527	3.5675
		[0.9997]	[0.8828]	[0.0581]
Other $Managed_{t-1}$		-2.5041*	-2.2932	5.8673**
		[0.0547]	[0.5673]	[0.0446]
Independent Float $_{t-1}$		-6.5975*	-6.5186	7.5218
		[0.0976]	[0.1096]	[0.6437]
(FL X Adjustable $Parities)_{t-1}$				1.9478**
				[0.0313]
(FL X Crawls) $_{t-1}$				2.1640**
				[0.0472]
(FL X Tightly Managed) $_{t-1}$				1.8803
				[0.1010]
(FL X Other Managed) $_{t-1}$				-2.1216**
				[0.0351]
(FL X Independent Float) $_{t-1}$				-0.7431*
				[0.0814]
GDP Growth Rate $_{t-1}$	1.5483***	1.5479***	1.4782***	1.4643***
	[0.0000]	[0.0000]	[0.0000]	[0.0000]
Inflation $_{t-1}$	2.6305**	3.9223*	2.9284*	4.0936*
	[0.0362]	[0.0513]	[0.0836]	[0.0711]
DI coverage $_{t-1}$	2.0603*	2.1987**	2.0548*	2.2617**
	[0.0594]	[0.0495]	[0.0649]	[0.0439]
GDP/Capita $_{t-1}$	-3.892	-1.4969	-3.7551**	-4.4552**
	[0.3201]	[0.1307]	[0.0391]	[0.0242]
Supervision	-2.6233*	0.6842	-1.7142*	-1.6662***
	[0.0656]	[0.5991]	[0.0937]	[0.0052]
Constant	8.7611	7.0185	6.3175	-14.7356
	[0.7689]	[0.8192]	[0.8360]	[0.6506]
No. of Obs.	1206	1206	1206	1206
Prob > Chi-Square	0.033	0.034	0.037	0.036
Wald Chi-Square	10.746	12.583	18.393	32.097

Note: The dependent variable is the growth rate of the ratio of private domestic credit to GDP (calculated by the log difference of the ratio times 100). All independent variables are lagged by one year. Regressions are estimated using the country fixed effect models. The figures in the table are the effects of the change in a value of an omitted regime dummy to particular regimes. The number in the bracket is the p-value indicating whether the effects of particular regimes are statistically significantly different from the omitted regime. The statistical significance levels of 1%, 5%, and 10% are also shown by ***, **, and *, respectively.

Table 19 : Credit Growth (Adjustable Parity Omitted)

	Growth	Growth	Growth
Total FL_{t-1}		1.6299***	1.2817**
		[0.0003]	[0.0331]
Hard $Pegs_{t-1}$	-2.0651*	-2.9737*	4.1082
	[0.0518]	[0.0780]	[0.1992]
$Crawls_{t-1}$	0.3003	-0.3657	1.5432
	[0.9339]	[0.9191]	[0.8928]
Tightly $Managed_{t-1}$	-2.0669	-2.321	-3.5406
	[0.5574]	[0.5075]	[0.7358]
Other $Managed_{t-1}$	-4.5692	-5.2670*	3.2408
	[0.1160]	[0.0689]	[0.6900]
Independent Float $_{t-1}$	-8.6626***	-9.4923***	6.5864**
	[0.0091]	[0.0041]	[0.0261]
$(FL \times Hard\ Pegs)_{t-1}$			-1.9478**
			[0.0313]
$(FL \times Crawls)_{t-1}$			-0.2162
			[0.8097]
$(FL \times Tightly\ Managed)_{t-1}$			0.0676
			[0.9420]
$(FL \times Other\ Managed)_{t-1}$			-0.1738*
			[0.0791]
$(FL \times Independent\ Float)_{t-1}$			1.2047
			[0.1629]
GDP Growth Rate $_{t-1}$	1.5479***	1.4782***	1.4643***
	[0.0000]	[0.0000]	[0.0000]
Inflation $_{t-1}$	3.9223*	2.9284*	4.0936*
	[0.0513]	[0.0836]	[0.0711]
DI coverage $_{t-1}$	2.1987**	2.0548*	2.2617**
	[0.0495]	[0.0649]	[0.0439]
GDP/Capita $_{t-1}$	-1.4969	-3.7551**	-4.4552**
	[0.1307]	[0.0391]	[0.0242]
Supervision	0.6842	-1.7142*	-1.6662***
	[0.5991]	[0.0937]	[0.0052]
Constant	7.0185	6.3175	-14.7356
	[0.8192]	[0.8360]	[0.6506]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.034	0.037	0.036
Wald Chi-Square	12.583	18.393	32.097

Note: The dependent variable is the growth rate of the ratio of private domestic credit to GDP (calculated by the log difference of the ratio times 100). All independent variables are lagged by one year. Regressions are estimated using the country fixed effect models. The figures in the table are the effects of the change in a value of an omitted regime dummy to particular regimes. The number in the bracket is the p-value indicating whether the effects of particular regimes are statistically significantly different from the omitted regime. The statistical significance levels of 1%, 5%, and 10% are also shown by ***, **, and *, respectively.

Table 20 : Credit Growth (Crawls Omitted)

	Growth	Growth	Growth
Total FL_{t-1}		1.6299***	1.0655
		[0.0003]	[0.1754]
Hard $Pegs_{t-1}$	-2.3654**	-2.608**	6.6514**
	[0.0467]	[0.0397]	[0.0272]
Adjustable $parities_{t-1}$	-0.3003	0.3657	-1.5432
	[0.9339]	[0.9191]	[0.8928]
Tightly $Managed_{t-1}$	-2.3672	-1.9553	5.0839*
	[0.5805]	[0.6461]	[0.0702]
Other $Managed_{t-1}$	-4.8695*	-4.9013*	4.784
	[0.1862]	[0.0806]	[0.6933]
Independent Float $_{t-1}$	-8.9629***	-9.1266***	8.1296
	[0.0069]	[0.0057]	[0.3268]
$(FL \times Hard\ Pegs)_{t-1}$			-2.1640**
			[0.0472]
$(FL \times Adjustable\ Parities)_{t-1}$			0.2162
			[0.8097]
$(FL \times Tightly\ Managed)_{t-1}$			-0.2838
			[0.7949]
$(FL \times Other\ Managed)_{t-1}$			-0.0424*
			[0.0649]
$(FL \times Independent\ Float)_{t-1}$			-1.4209**
			[0.0318]
GDP Growth Rate $_{t-1}$	1.5479***	1.4782***	1.4643***
	[0.0000]	[0.0000]	[0.0000]
Inflation $_{t-1}$	3.9223*	2.9284*	4.0936*
	[0.0513]	[0.0836]	[0.0711]
DI coverage $_{t-1}$	2.1987**	2.0548*	2.2617**
	[0.0495]	[0.0649]	[0.0439]
GDP/Capita $_{t-1}$	-1.4969	-3.7551**	-4.4552**
	[0.1307]	[0.0391]	[0.0242]
Supervision	0.6842	-1.7142*	-1.6662***
	[0.5991]	[0.0937]	[0.0052]
Constant	7.0185	6.3175	-14.7356
	[0.8192]	[0.8360]	[0.6506]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.034	0.037	0.036
Wald Chi-Square	12.583	18.393	32.097

Note: The dependent variable is the growth rate of the ratio of private domestic credit to GDP (calculated by the log difference of the ratio times 100). All independent variables are lagged by one year. Regressions are estimated using the country fixed effect models. The figures in the table are the effects of the change in a value of an omitted regime dummy to particular regimes. The number in the bracket is the p-value indicating whether the effects of particular regimes are statistically significantly different from the omitted regime. The statistical significance levels of 1%, 5%, and 10% are also shown by ***, **, and *, respectively.

Table21 : Credit Growth (Tightly Managed Omitted)

	Growth	Growth	Growth
Total FLt-1		1.6299***	1.3493
		[0.0003]	[0.1214]
Hard Pegst-1	0.0019	-0.6527	-3.5675
	[0.9997]	[0.8828]	[0.0581]
Adjustable paritiest-1	2.0669	2.321	3.5406
	[0.5574]	[0.5075]	[0.7358]
Crawlst-1	2.3672	1.9553	-5.0839*
	[0.5805]	[0.6461]	[0.0702]
Other Managedt-1	-2.5022	-2.946	0.2998
	[0.4663]	[0.3884]	[0.9787]
Independent Float t-1	-6.5957*	-7.1713*	7.0457*
	[0.0830]	[0.0581]	[0.0861]
(FL X Hard Pegs)t-1			-1.8803
			[0.1010]
(FL X Adjustable Parities)t-1			-0.0676
			[0.9420]
(FL X Crawls) t-1			0.2838
			[0.7949]
(FL X Other Managed) t-1			-0.2414
			[0.7947]
(FL X Independent Float) t-1			-1.1371**
			[0.0252]
GDP Growth Rate $_{t-1}$	1.5479***	1.4782***	1.4643***
	[0.0000]	[0.0000]	[0.0000]
Inflation $_{t-1}$	3.9223*	2.9284*	4.0936*
	[0.0513]	[0.0836]	[0.0711]
DI coverage $_{t-1}$	2.1987**	2.0548*	2.2617**
	[0.0495]	[0.0649]	[0.0439]
GDP/Capita $_{t-1}$	-1.4969	-3.7551**	-4.4552**
	[0.1307]	[0.0391]	[0.0242]
Supervision	0.6842	-1.7142*	-1.6662***
	[0.5991]	[0.0937]	[0.0052]
Constant	7.0185	6.3175	-14.7356
	[0.8192]	[0.8360]	[0.6506]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.034	0.037	0.036
Wald Chi-Square	12.583	18.393	32.097

Note: The dependent variable is the growth rate of the ratio of private domestic credit to GDP (calculated by the log difference of the ratio times 100). All independent variables are lagged by one year. Regressions are estimated using the country fixed effect models. The figures in the table are the effects of the change in a value of an omitted regime dummy to particular regimes. The number in the bracket is the p-value indicating whether the effects of particular regimes are statistically significantly different from the omitted regime. The statistical significance levels of 1%, 5%, and 10% are also shown by ***, **, and *, respectively.

Table 22 : Credit Growth (Other Managed Omitted)

	Growth	Growth	Growth
Total FL_{t-1}		1.6299***	1.1079
		[0.0003]	[0.1167]
Hard $Pegs_{t-1}$	2.5041*	2.2932	-5.8673**
	[0.0547]	[0.5673]	[0.0446]
Adjustable $parities_{t-1}$	4.5692	5.2670*	-3.2408
	[0.1160]	[0.0689]	[0.6900]
$Crawls_{t-1}$	4.8695*	4.9013*	-4.784
	[0.1862]	[0.0806]	[0.6933]
Tightly $Managed_{t-1}$	2.5022	2.946	-0.2998
	[0.4663]	[0.3884]	[0.9787]
Independent Float $_{t-1}$	4.0934	4.2253	-5.3455*
	[0.1942]	[0.1776]	[0.0582]
$(FL \times Hard\ Pegs)_{t-1}$			2.1216**
			[0.0351]
$(FL \times Adjustable\ Parities)_{t-1}$			0.1738*
			[0.0791]
$(FL \times Crawls)_{t-1}$			0.0424*
			[0.0649]
$(FL \times Tightly\ Managed)_{t-1}$			0.2414
			[0.7947]
$(FL \times Independent\ Float)_{t-1}$			1.3785*
			[0.0832]
GDP Growth Rate $_{t-1}$	1.5479***	1.4782***	1.4643***
	[0.0000]	[0.0000]	[0.0000]
Inflation $_{t-1}$	3.9223*	2.9284*	4.0936*
	[0.0513]	[0.0836]	[0.0711]
DI coverage $_{t-1}$	2.1987**	2.0548*	2.2617**
	[0.0495]	[0.0649]	[0.0439]
GDP/Capita $_{t-1}$	-1.4969	-3.7551**	-4.4552**
	[0.1307]	[0.0391]	[0.0242]
Supervision	0.6842	-1.7142*	-1.6662***
	[0.5991]	[0.0937]	[0.0052]
Constant	7.0185	6.3175	-14.7356
	[0.8192]	[0.8360]	[0.6506]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.034	0.037	0.036
Wald Chi-Square	12.583	18.393	32.097

Note: The dependent variable is the growth rate of the ratio of private domestic credit to GDP (calculated by the log difference of the ratio times 100). All independent variables are lagged by one year. Regressions are estimated using the country fixed effect models. The figures in the table are the effects of the change in a value of an omitted regime dummy to particular regimes. The number in the bracket is the p-value indicating whether the effects of particular regimes are statistically significantly different from the omitted regime. The statistical significance levels of 1%, 5%, and 10% are also shown by ***, **, and *, respectively.

Table 23: Credit Growth (Floats Omitted)

	Growth	Growth	Growth
Total FL_{t-1}		1.6299***	2.4864***
		[0.0003]	[0.0016]
Hard $Pegs_{t-1}$	6.5975*	6.5186	-7.5218
	[0.0976]	[0.1096]	[0.6437]
Adjustable $parities_{t-1}$	8.6626***	9.4923***	-6.5864**
	[0.0091]	[0.0041]	[0.0261]
$Crawls_{t-1}$	8.9629***	9.1266***	-8.1296
	[0.0069]	[0.0057]	[0.3268]
Tightly $Managed_{t-1}$	6.5957*	7.1713*	-7.0457*
	[0.0830]	[0.0581]	[0.0861]
Other $Managed_{t-1}$	-4.0934	-4.2253	5.3455*
	[0.1942]	[0.1776]	[0.0582]
$(FL \times Hard\ Pegs)_{t-1}$			0.7431*
			[0.0814]
$(FL \times Adjustable\ Parities)_{t-1}$			-1.2047
			[0.1629]
$(FL \times Crawls)_{t-1}$			1.4209**
			[0.0318]
$(FL \times Tightly\ Managed)_{t-1}$			1.1371**
			[0.0252]
$(FL \times Other\ Managed)_{t-1}$			-1.3785*
			[0.0832]
GDP Growth $Rate_{t-1}$	1.5479***	1.4782***	1.4643***
	[0.0000]	[0.0000]	[0.0000]
$Inflation_{t-1}$	3.9223*	2.9284*	4.0936*
	[0.0513]	[0.0836]	[0.0711]
DI $coverage_{t-1}$	2.1987**	2.0548*	2.2617**
	[0.0495]	[0.0649]	[0.0439]
GDP/$Capita_{t-1}$	-1.4969	-3.7551**	-4.4552**
	[0.1307]	[0.0391]	[0.0242]
Supervision	0.6842	-1.7142*	-1.6662***
	[0.5991]	[0.0937]	[0.0052]
Constant	7.0185	6.3175	-14.7356
	[0.8192]	[0.8360]	[0.6506]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.034	0.037	0.036
Wald Chi-Square	12.583	18.393	32.097

Note: The dependent variable is the growth rate of the ratio of private domestic credit to GDP (calculated by the log difference of the ratio times 100). All independent variables are lagged by one year. Regressions are estimated using the country fixed effect models. The figures in the table are the effects of the change in a value of an omitted regime dummy to particular regimes. The number in the bracket is the p-value indicating whether the effects of particular regimes are statistically significantly different from the omitted regime. The statistical significance levels of 1%, 5%, and 10% are also shown by ***, **, and *, respectively.

Table 24 : Credit Growth Across Countries (Hardpeg Omitted)

	Growth (Industrial)	Growth(Emerging)	Growth(Developing)
Total FL_{t-1}	2.1257	-0.0657	5.2300***
	[0.3681]	[0.9685]	[0.0004]
Adjustable $parities_{t-1}$	6.9821	-1.0349*	7.2244**
	[0.3595]	[0.0559]	[0.0122]
$Crawls_{t-1}$	2.6492	-7.0979	3.8233**
	[0.1603]	[0.6624]	[0.0213]
Tightly $Managed_{t-1}$	3.2429	-1.3152	5.8334**
	[0.4271]	[0.4125]	[0.0440]
Other $Managed_{t-1}$	7.1057*	-17.4956	6.2804**
	[0.0791]	[0.4877]	[0.0221]
Independent Float $_{t-1}$	5.6794	-6.1268*	4.1643
	[0.2046]	[0.0812]	[0.2120]
(FL x Adjustable $Parities)_{t-1}$	-1.7319	1.0745**	-3.5187*
	[0.4674]	[0.0428]	[0.0564]
(FL X Crawls) $_{t-1}$	2.9542	0.4852	-2.8367**
	[0.2093]	[0.7892]	[0.0163]
(FL X Tightly Managed) $_{t-1}$	0.4493	0.9297	-1.9566
	[0.6207]	[0.6242]	[0.3509]
(FL X Other Managed) $_{t-1}$	-4.3364*	0.9004	-3.2980*
	[0.0954]	[0.6108]	[0.0639]
(FL X Independent Float) $_{t-1}$	-3.6146*	2.3386*	-1.6112
	[0.0879]	[0.0744]	[0.4245]
GDP Growth Rate $_{t-1}$	0.7055*	1.1848***	1.6417***
	[0.0904]	[0.0000]	[0.0000]
Inflation $_{t-1}$	0.1003	-0.0434	-0.0017
	[0.8757]	[0.2460]	[0.9576]
DI coverage $_{t-1}$	6.1982	1.8812	3.1541*
	[0.3465]	[0.3160]	[0.0948]
GDP/Capita $_{t-1}$	-6.3400**	-13.312	-15.2043
	[0.0114]	[0.2212]	[0.2524]
Supervision $_{t-1}$	-2.3568*	-1.159*	-4.6468
	[0.0855]	[0.0612]	[0.1233]

Note: The dependent variable is the growth rate of the ratio of private domestic credit to GDP (calculated by the log difference of the ratio times 100). All independent variables are lagged by one year. Regressions are estimated using the country fixed effect models. The figures in the table are the effects of the change in a value of an omitted regime dummy to particular regimes. The number in the bracket is the p-value indicating whether the effects of particular regimes are statistically significantly different from the omitted regime. The statistical significance levels of 1%, 5%, and 10% are also shown by ***, **, and *, respectively.

Table 25 : Credit Boom (Hardpeg Omitted)

	Boom	Boom	Boom
Total FL_{t-1}		0.0019*	0.0089**
		[0.0524]	[0.0231]
Adjustable $parities_{t-1}$	0.0701*	0.0654**	-0.2437
	[0.0951]	[0.0354]	[0.6560]
$Crawls_{t-1}$	0.0772	0.0415	-0.7271
	[0.2416]	[0.2424]	[0.3021]
Tightly $Managed_{t-1}$	0.0129**	0.0131*	-0.5485
	[0.0241]	[0.0827]	[0.1797]
Other $Managed_{t-1}$	0.0264	0.026	0.0526*
	[0.6260]	[0.6298]	[0.0916]
Independent Float $_{t-1}$	-0.0704**	-0.0708**	0.2592
	[0.0247]	[0.0239]	[0.3400]
(FL x Adjustable $Parities)_{t-1}$			0.0039*
			[0.0847]
(FL X Crawls) $_{t-1}$			0.0209
			[0.0183]
(FL X Tightly Managed) $_{t-1}$			0.018*
			[0.0970]
(FL X Other Managed) $_{t-1}$			-0.0175**
			[0.0348]
(FL X Independent Float) $_{t-1}$			-0.0072*
			[0.0836]
GDP Growth Rate $_{t-1}$	0.0321**	0.0323**	0.0277*
	[0.0367]	[0.0374]	[0.0615]
Inflation $_{t-1}$	0.0052***	0.0051***	0.0054***
	[0.0022]	[0.0033]	[0.0021]
DI coverage $_{t-1}$	0.0014	0.0017	0.0018
	[0.7593]	[0.7155]	[0.6918]
GDP/Capita $_{t-1}$	-0.0093*	-0.0114*	-0.0087**
	[0.0951]	[0.0691]	[0.0347]
Supervision	-0.0289**	-0.0262**	-0.0308**
	[0.0114]	[0.0419]	[0.0167]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.046	0.045	0.042
Wald Chi-Square	11.905	16.671	35.384

Note: The dependent variable is the credit boom. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 26 : Credit Boom (Adjustable Parity Omitted)

	Boom	Boom	Boom
Total FL_{t-1}		0.0047**	0.0151***
		[0.0485]	[0.0084]
Hard $Pegs_{t-1}$	-0.0701*	-0.0654**	0.2437
	[0.0951]	[0.0354]	[0.6560]
$Crawls_{t-1}$	-0.0211*	-0.0219*	0.0361*
	[0.0621]	[0.0909]	[0.0938]
Tightly $Managed_{t-1}$	-0.0540***	-0.0387*	0.1416
	[0.0056]	[0.0557]	[0.4973]
Other $Managed_{t-1}$	-0.0493**	-0.0440*	0.1303
	[0.0155]	[0.0881]	[0.1802]
Independent Float $_{t-1}$	-0.0227	-0.0462**	0.0161
	[0.1935]	[0.0286]	[0.8592]
(FL X Hard $Pegs)_{t-1}$			-0.0039*
			[0.0847]
(FL x Crawls) $_{t-1}$			-0.0170***
			[0.0043]
(FL x Tightly Managed) $_{t-1}$			-0.0142*
			[0.0523]
(FL x Other Managed) $_{t-1}$			-0.0136***
			[0.0074]
(FL x Independent Float) $_{t-1}$			-0.0034
			[0.5473]
GDP Growth Rate $_{t-1}$	0.0321**	0.0323**	0.0277*
	[0.0367]	[0.0374]	[0.0615]
Inflation $_{t-1}$	0.0052***	0.0051***	0.0054***
	[0.0022]	[0.0033]	[0.0021]
DI coverage $_{t-1}$	0.0014	0.0017	0.0018
	[0.7593]	[0.7155]	[0.6918]
GDP/Capita $_{t-1}$	-0.0093*	-0.0114*	-0.0087**
	[0.0951]	[0.0691]	[0.0347]
Supervision	-0.0289**	-0.0262**	-0.0308**
	[0.0114]	[0.0419]	[0.0167]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.046	0.045	0.042
Wald Chi-Square	11.905	16.671	35.384

Note: The dependent variable is the credit boom. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 27 : Credit Boom (Crawls Omitted)

	Boom	Boom	Boom
Total FL_{t-1}		0.0018*	0.0114**
		[0.0595]	[0.0333]
Hard $Pegs_{t-1}$	-0.0772	-0.0415	0.7271
	[0.2416]	[0.2424]	[0.3021]
Adjustable $parities_{t-1}$	0.0211*	0.0219*	-0.0361*
	[0.0621]	[0.0909]	[0.0938]
Tightly $Managed_{t-1}$	-0.0213	-0.0399*	-0.0554
	[0.5348]	[0.0953]	[0.3425]
Other $Managed_{t-1}$	-0.0261	-0.0327	0.0597
	[0.3547]	[0.1352]	[0.1142]
Independent Float $_{t-1}$	-0.0257**	-0.0357*	0.1128*
	[0.0268]	[0.0831]	[0.0670]
(FL X Hard $Pegs)_{t-1}$			-0.0209
			[0.0183]
(FL X Adjustable $Parities)_{t-1}$			0.0170***
			[0.0043]
(FL X Tightly Managed) $_{t-1}$			0.0023
			[0.8214]
(FL X Other Managed) $_{t-1}$			-0.0028
			[0.6518]
(FL X Independent Float) $_{t-1}$			-0.0131*
			[0.0814]
GDP Growth Rate $_{t-1}$	0.0321**	0.0323**	0.0277*
	[0.0367]	[0.0374]	[0.0615]
Inflation $_{t-1}$	0.0052***	0.0051***	0.0054***
	[0.0022]	[0.0033]	[0.0021]
DI coverage $_{t-1}$	0.0014	0.0017	0.0018
	[0.7593]	[0.7155]	[0.6918]
GDP/Capita $_{t-1}$	-0.0093*	-0.0114*	-0.0087**
	[0.0951]	[0.0691]	[0.0347]
Supervision	-0.0289**	-0.0262**	-0.0308**
	[0.0114]	[0.0419]	[0.0167]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.046	0.045	0.042
Wald Chi-Square	11.905	16.671	35.384

Note: The dependent variable is the credit boom. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table28 : Credit Boom (Tightly Managed Omitted)

	Boom	Boom	Boom
Total FLt-1		0.0047**	0.0086**
		[0.0483]	[0.0315]
Hard Pegst-1	-0.0129**	-0.0131*	0.5485
	[0.0241]	[0.0827]	[0.1797]
Adjustable paritiest-1	0.0540***	0.0387*	-0.1416
	[0.0056]	[0.0557]	[0.4973]
Crawlst-1	0.0213	0.0399*	0.0554
	[0.5348]	[0.0953]	[0.3425]
Other Managedt-1	-0.0146*	-0.0151*	0.0057
	[0.0658]	[0.0973]	[0.5158]
Independent Float t-1	-0.0037	-0.0059	0.0605
	[0.2954]	[0.2822]	[0.1749]
(FL X Hard Pegs)t-1			-0.018*
			[0.0970]
(FL X Adjustable Parities)t-1			0.0142*
			[0.0523]
(FL X Crawls) t-1			-0.0023
			[0.8214]
(FL X Other Managed) t-1			-0.0024
			[0.1983]
(FL X Independent Float) t-1			-0.0103**
			[0.0293]
GDP Growth Rate $_{t-1}$	0.0321**	0.0323**	0.0277*
	[0.0367]	[0.0374]	[0.0615]
Inflation $_{t-1}$	0.0052***	0.0051***	0.0054***
	[0.0022]	[0.0033]	[0.0021]
DI coverage $_{t-1}$	0.0014	0.0017	0.0018
	[0.7593]	[0.7155]	[0.6918]
GDP/Capita $_{t-1}$	-0.0093*	-0.0114*	-0.0087**
	[0.0951]	[0.0691]	[0.0347]
Supervision	-0.0289**	-0.0262**	-0.0308**
	[0.0114]	[0.0419]	[0.0167]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.046	0.045	0.042
Wald Chi-Square	11.905	16.671	35.384

Note: The dependent variable is the credit boom. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 29 : Credit Boom (Other Managed Omitted)

	Boom	Boom	Boom
Total FL_{t-1}		0.0019*	0.0084**
		[0.0538]	[0.0121]
Hard $Pegs_{t-1}$	-0.0264	-0.026	-0.0526*
	[0.6260]	[0.6298]	[0.0916]
Adjustable $parities_{t-1}$	0.0493**	0.0440*	-0.1303
	[0.0155]	[0.0881]	[0.1802]
$Crawls_{t-1}$	0.0261	0.0327	-0.0597
	[0.3547]	[0.1352]	[0.1142]
Tightly $Managed_{t-1}$	0.0146*	0.0151*	-0.0057
	[0.0658]	[0.0973]	[0.5158]
Independent Float $_{t-1}$	-0.0412	-0.0408	0.063
	[0.2425]	[0.2295]	[0.2862]
(FL X Hard $Pegs)_{t-1}$			0.0175**
			[0.0348]
(FL X Adjustable $Parities)_{t-1}$			0.0136***
			[0.0074]
(FL X Crawls) $_{t-1}$			0.0028
			[0.6518]
(FL X Tightly Managed) $_{t-1}$			0.0024
			[0.1983]
(FL X Independent Float) $_{t-1}$			-0.0101
			[0.1446]
GDP Growth Rate $_{t-1}$	0.0321**	0.0323**	0.0277*
	[0.0367]	[0.0374]	[0.0615]
Inflation $_{t-1}$	0.0052***	0.0051***	0.0054***
	[0.0022]	[0.0033]	[0.0021]
DI coverage $_{t-1}$	0.0014	0.0017	0.0018
	[0.7593]	[0.7155]	[0.6918]
GDP/Capita $_{t-1}$	-0.0093*	-0.0114*	-0.0087**
	[0.0951]	[0.0691]	[0.0347]
Supervision	-0.0289**	-0.0262**	-0.0308**
	[0.0114]	[0.0419]	[0.0167]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.046	0.045	0.042
Wald Chi-Square	11.905	16.671	35.384

Note: The dependent variable is the credit boom. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 30: Credit Boom (Independent Floats Omitted)

	Boom	Boom	Boom
Total FL_{t-1}		0.0047**	0.0094*
		[0.0482]	[0.0773]
Hard $Pegs_{t-1}$	0.0704**	0.0708**	-0.2592
	[0.0247]	[0.0239]	[0.3400]
Adjustable $parities_{t-1}$	0.0227	0.0462**	-0.0161
	[0.1935]	[0.0286]	[0.8592]
$Crawls_{t-1}$	0.0257**	0.0357*	-0.1128*
	[0.0268]	[0.0831]	[0.0670]
Tightly $Managed_{t-1}$	0.0391*	0.0067	-0.119
	[0.0960]	[0.8734]	[0.6035]
Other $Managed_{t-1}$	0.0412	0.0408	-0.063
	[0.2425]	[0.2295]	[0.2862]
(FL X Hard $Pegs)_{t-1}$			0.0072*
			[0.0836]
(FL X Adjustable $Parities)_{t-1}$			0.0034
			[0.5473]
(FL X Crawls) $_{t-1}$			0.0131*
			[0.0814]
(FL X Tightly Managed) $_{t-1}$			0.0103**
			[0.0293]
(FL X Other Managed) $_{t-1}$			0.0101
			[0.1446]
GDP Growth Rate $_{t-1}$	0.0321**	0.0323**	0.0277*
	[0.0367]	[0.0374]	[0.0615]
Inflation $_{t-1}$	0.0052***	0.0051***	0.0054***
	[0.0022]	[0.0033]	[0.0021]
DI coverage $_{t-1}$	0.0014	0.0017	0.0018
	[0.7593]	[0.7155]	[0.6918]
GDP/Capita $_{t-1}$	-0.0093*	-0.0114*	-0.0087**
	[0.0951]	[0.0691]	[0.0347]
Supervision	-0.0289**	-0.0262**	-0.0308**
	[0.0114]	[0.0419]	[0.0167]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.046	0.045	0.042
Wald Chi-Square	11.905	16.671	35.384

Note: The dependent variable is the credit boom. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 31 : Credit Boom Uses Real Private Credit (Hardpeg Omitted)

	Boom	Boom	Boom	Boom
Total FL_{t-1}	0.0035*		0.0047	0.0218**
	[0.0749]		[0.1892]	[0.0463]
Adjustable $parities_{t-1}$		0.0508	0.0573	0.5642
		[0.2651]	[0.2220]	[0.2206]
$Crawls_{t-1}$		0.0301	0.0298	0.6387
		[0.4699]	[0.4714]	[0.1546]
Tightly $Managed_{t-1}$		0.0049	0.007	0.4198
		[0.9172]	[0.8840]	[0.4648]
Other $Managed_{t-1}$		-0.0372**	-0.0139*	0.5451
		[0.0385]	[0.0738]	[0.2694]
Independent Float $_{t-1}$		-0.0405	-0.0276	0.1182
		[0.3872]	[0.2904]	[0.7302]
(FL X Adjustable $Parities)_{t-1}$				0.018
				[0.2299]
(FL X Crawls) $_{t-1}$				-0.022
				[0.1623]
(FL X Tightly Managed) $_{t-1}$				-0.0144
				[0.3542]
(FL X Other Managed) $_{t-1}$				-0.0208*
				[0.0797]
(FL X Independent Float) $_{t-1}$				-0.0168*
				[0.0922]
GDP Growth Rate $_{t-1}$	0.0172***	0.0171***	0.0171***	0.0169***
	[0.0010]	[0.0018]	[0.0015]	[0.0038]
Inflation $_{t-1}$	0.0002	0.0002	0.0002	0.0003
	[0.2981]	[0.4327]	[0.3053]	[0.2057]
DI coverage $_{t-1}$	0.0062	0.0073	0.0067	0.0072
	[0.1431]	[0.1189]	[0.1504]	[0.1155]
GDP/Capita $_{t-1}$	0.0027	0.0067	0.0018	-0.0014
	[0.6770]	[0.2582]	[0.7886]	[0.8198]
Supervision	-0.0117*	-0.0068*	-0.0121*	-0.0153*
	[0.0717]	[0.0671]	[0.0667]	[0.0629]
No. of Obs.	1206	1206	1206	1206
Prob > Chi-Square	0.039	0.038	0.038	0.036
Wald Chi-Square	8.256	11.835	13.598	24.15

Note: The dependent variable is the credit boom. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 32 : Credit Boom Uses Private Credit (Adjustable Parity Omitted)

	Boom	Boom	Boom
Total FL_{t-1}		0.0047	0.0039*
		[0.1485]	[0.0559]
Hard $Pegs_{t-1}$	-0.0508	-0.0573	-0.5642
	[0.2651]	[0.2220]	[0.2206]
$Crawls_{t-1}$	-0.0169	-0.0219	0.0232
	[0.5111]	[0.3909]	[0.1928]
Tightly $Managed_{t-1}$	-0.0362*	-0.0387	-0.0688
	[0.0945]	[0.1157]	[0.3062]
Other $Managed_{t-1}$	-0.0411	-0.0440*	-0.0183
	[0.1095]	[0.0881]	[0.7934]
Independent Float $_{t-1}$	-0.0417**	-0.0462**	0.1622
	[0.0454]	[0.0286]	[0.1206]
$(FL \times Hard\ Pegs)_{t-1}$			-0.018
			[0.2299]
$(FL \times Crawls)_{t-1}$			-0.0041
			[0.5350]
$(FL \times Tightly\ Managed)_{t-1}$			0.0036
			[0.6445]
$(FL \times Other\ Managed)_{t-1}$			-0.0028
			[0.6629]
$(FL \times Independent\ Float)_{t-1}$			-0.0120**
			[0.0364]
GDP Growth Rate $_{t-1}$	0.0171***	0.0171***	0.0169***
	[0.0018]	[0.0015]	[0.0038]
Inflation $_{t-1}$	0.0002	0.0002	0.0003
	[0.4327]	[0.3053]	[0.2057]
DI coverage $_{t-1}$	0.0073	0.0067	0.0072
	[0.1189]	[0.1504]	[0.1155]
GDP/Capita $_{t-1}$	0.0067	0.0018	-0.0014
	[0.2582]	[0.7886]	[0.8198]
Supervision	-0.0068*	-0.0121*	-0.0153*
	[0.0671]	[0.0667]	[0.0629]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.038	0.038	0.036
Wald Chi-Square	11.835	13.598	24.15

Note: The dependent variable is the credit boom. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 33 : Credit Boom Uses Real Private Credit (Crawls Omitted)

	Boom	Boom	Boom
Total FL_{t-1}		0.0047	0.0072*
		[0.1478]	[0.0957]
Hard $Pegs_{t-1}$	-0.0301	-0.0298	-0.6387
	[0.4699]	[0.4714]	[0.1546]
Adjustable $parities_{t-1}$	0.0169	0.0219	-0.0232
	[0.5111]	[0.3909]	[0.1928]
Tightly $Managed_{t-1}$	-0.0213	-0.0193	-0.0786
	[0.5348]	[0.5809]	[0.2251]
Other $Managed_{t-1}$	-0.0261*	-0.0245*	-0.0343
	[0.0547]	[0.0813]	[0.6522]
Independent Float $_{t-1}$	-0.0257*	-0.0256*	-0.1724
	[0.0668]	[0.0654]	[0.0049]
$(FL \times Hard\ Pegs)_{t-1}$			0.022
			[0.1623]
$(FL \times Adjustable\ Parities)_{t-1}$			0.0041
			[0.5350]
$(FL \times Tightly\ Managed)_{t-1}$			0.0074
			[0.4178]
$(FL \times Other\ Managed)_{t-1}$			0.001
			[0.8989]
$(FL \times Independent\ Float)_{t-1}$			0.0158
			[0.1608]
GDP Growth Rate $_{t-1}$	0.0171***	0.0171***	0.0169***
	[0.0018]	[0.0015]	[0.0038]
Inflation $_{t-1}$	0.0002	0.0002	0.0003
	[0.4327]	[0.3053]	[0.2057]
DI coverage $_{t-1}$	0.0073	0.0067	0.0072
	[0.1189]	[0.1504]	[0.1155]
GDP/Capita $_{t-1}$	0.0067	0.0018	-0.0014
	[0.2582]	[0.7886]	[0.8198]
Supervision	-0.0068*	-0.0121*	-0.0153*
	[0.0671]	[0.0667]	[0.0629]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.038	0.038	0.036
Wald Chi-Square	11.835	13.598	24.15

Note: The dependent variable is the credit boom. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table34 : Credit Boom Uses Real Private Credit (Tightly Managed Omitted)

	Boom	Boom	Boom
Total FLt-1		0.0047	0.0077**
		[0.1483]	[0.0284]
Hard Pegst-1	-0.0049	-0.007	-0.4198
	[0.9172]	[0.8840]	[0.4648]
Adjustable paritiest-1	0.0362*	0.0387	0.0688
	[0.0945]	[0.1157]	[0.3062]
Crawlst-1	0.0213	0.0193	0.0786
	[0.5348]	[0.5809]	[0.2251]
Other Managedt-1	-0.0046	-0.0051	0.0898
	[0.1165]	[0.1073]	[0.6099]
Independent Float t-1	-0.0037*	-0.0059*	-0.1071
	[0.0954]	[0.0822]	[0.2130]
(FL X Hard Pegs)t-1			0.0144
			[0.3542]
(FL X Adjustable Parities)t-1			-0.0036
			[0.6445]
(FL X Crawls) t-1			-0.0074
			[0.4178]
(FL X Other Managed) t-1			-0.0066*
			[0.0982]
(FL X Independent Float) t-1			-0.0082**
			[0.0347]
GDP Growth Rate $_{t-1}$	0.0171***	0.0171***	0.0169***
	[0.0018]	[0.0015]	[0.0038]
Inflation $_{t-1}$	0.0002	0.0002	0.0003
	[0.4327]	[0.3053]	[0.2057]
DI coverage $_{t-1}$	0.0073	0.0067	0.0072
	[0.1189]	[0.1504]	[0.1155]
GDP/Capita $_{t-1}$	0.0067	0.0018	-0.0014
	[0.2582]	[0.7886]	[0.8198]
Supervision	-0.0068*	-0.0121*	-0.0153*
	[0.0671]	[0.0667]	[0.0629]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.038	0.038	0.036
Wald Chi-Square	11.835	13.598	24.15

Note: The dependent variable is the credit boom. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 35 : Credit Boom Uses Real Private Credit (Other Managed Omitted)

	Boom	Boom	Boom
Total FL_{t-1}		0.0047	0.0011**
		[0.1483]	[0.0272]
Hard $Pegs_{t-1}$	0.0372**	0.0139*	-0.5451
	[0.0385]	[0.0738]	[0.2694]
Adjustable $parities_{t-1}$	0.0411	0.0440*	0.0183
	[0.1095]	[0.0881]	[0.7934]
$Crawls_{t-1}$	0.0261*	0.0245*	0.0343
	[0.0547]	[0.0813]	[0.6522]
Tightly $Managed_{t-1}$	0.0046	0.0051	-0.0898
	[0.1165]	[0.1073]	[0.6099]
Independent Float $_{t-1}$	0.0012	-0.0006	-0.1507
	[0.9680]	[0.9850]	[0.2084]
$(FL \times Hard\ Pegs)_{t-1}$			0.0208*
			[0.0797]
$(FL \times Adjustable\ Parities)_{t-1}$			0.0028
			[0.6629]
$(FL \times Crawls)_{t-1}$			-0.001
			[0.8989]
$(FL \times Tightly\ Managed)_{t-1}$			0.0066*
			[0.0982]
$(FL \times Independent\ Float)_{t-1}$			0.0147
			[0.1566]
GDP Growth Rate $_{t-1}$	0.0171***	0.0171***	0.0169***
	[0.0018]	[0.0015]	[0.0038]
Inflation $_{t-1}$	0.0002	0.0002	0.0003
	[0.4327]	[0.3053]	[0.2057]
DI coverage $_{t-1}$	0.0073	0.0067	0.0072
	[0.1189]	[0.1504]	[0.1155]
GDP/Capita $_{t-1}$	0.0067	0.0018	-0.0014
	[0.2582]	[0.7886]	[0.8198]
Supervision	-0.0068*	-0.0121*	-0.0153*
	[0.0671]	[0.0667]	[0.0629]
No. of Obs.	1206	1206	1206
Prob > Chi-Square	0.038	0.038	0.036
Wald Chi-Square	11.835	13.598	24.15

Note: The dependent variable is the credit boom. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 36: A summary table of the empirical findings

1. Banking Crises	1. Intermediate Regimes have the largest impacts on the relationship between financial liberalization and banking crises relationship. These findings are consistent with the results of a three-way classification of exchange rate regimes. 2. The results vary across country groups. 3. There are no significant differences of the effects on the link between financial liberalization and banking crises under hard pegs and independent floats. This result is robust with the case of non-industrial country group. 4. The finding that all intermediate regimes are associated with the largest effect is not found in the case of non-industrial group. Only some of them are. 5. Over all, financial Liberalization seems to increase the banking crises likelihood but the magnitude is very small.
2. Credit Growth	1. Not all intermediate regimes, but most of them seem to have larger effects on the positive relationship between financial liberalization and credit growth relative to the two corners. 2. Under hard pegs financial liberalization has larger effects on the credit growth than under independent floats. 3. The results vary across country groups.
3. Credit Boom	A. Using the methodology of this study (looking at both deviation and growth), the findings are very similar to the case of credit growth 1. Most intermediate regimes, not all, tend to have the most influences on the positive relationship between financial liberalization and credit boom likelihoods. 2. Financial liberalization increases the likelihood of credit boom more under hard pegs than under independent floats; but this finding doesn't remain the same with a case of the non-industrial country group B. Following the methodology of Mendoza and Torrones (2004, 2008), the results are as follows : 1. The relationship between financial liberalization and credit boom likelihood is not affected by a movement between hard pegs and intermediate regimes. This finding is not consistent with the above results. 2. The flexible regimes tend to be associated with the least effect on the financial liberalization and credit boom likelihood link. This finding is also found above. 3. Over all, financial liberalization appears to stimulate the probability of credit boom even with very small extent.

Table2A : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Hard Pegs omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		0.0035	0.0023*
		[0.2761]	[0.0743]
Adjustable $parities_{t-1}$	0.0165	0.0482	-0.0361
	[0.1558]	[0.2257]	[0.1938]
$Crawls_{t-1}$	0.2957	0.2683	-0.1721
	[0.1861]	[0.2132]	[0.2148]
Tightly $Managed_{t-1}$	0.0145*	0.0158*	-0.0278
	[0.0675]	[0.0548]	[0.4236]
Other $Managed_{t-1}$	0.0312	0.0236*	-0.0248
	[0.1617]	[0.0934]	[0.1822]
Independent Float $_{t-1}$	-0.0398	-0.0284	0.0144
	[0.2482]	[0.2779]	[0.1987]
(FL X Adjustable $Parities)_{t-1}$			0.0792
			[0.2819]
(FL X Crawls) $_{t-1}$			0.0195*
			[0.0685]
(FL X Tightly Managed) $_{t-1}$			0.0276*
			[0.0572]
(FL X Other Managed) $_{t-1}$			0.0159*
			[0.0971]
(FL X Independent Float) $_{t-1}$			-0.0054
			[0.6241]
GDP Growth Rate $_{t-1}$	-0.0943**	-0.1042**	-0.1193**
	[0.0392]	[0.0481]	[0.0294]
Inflation $_{t-1}$	0.003	0.0012	0.0061
	[0.7149]	[0.3307]	[0.6989]
DI coverage $_{t-1}$	-0.0106	-0.0043	-0.0038
	[0.1538]	[0.2206]	[0.3477]
Credit Growth $_{t-1}$	0.0697	0.0345	0.0531
	[0.1967]	[0.1635]	[0.1549]
GDP/Capita $_{t-1}$	-0.0294*	-0.0382*	-0.0457*
	[0.0736]	[0.0846]	[0.0694]
Currency Crises $_{t-1}$	0.0025	-0.0213	-0.0162
	[0.8267]	[0.7469]	[0.8643]
No. of Obs.	864	864	864
Prob > Chi-Square	0.057	0.061	0.059
Wald Chi-Square	14.473	17.557	17.253

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 3A: Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Adjustable parities omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		0.0039	0.0042*
		[0.1549]	[0.0865]
Hard $Pegs_{t-1}$	-0.0165	-0.0482	0.0361
	[0.1558]	[0.2257]	[0.1938]
$Crawls_{t-1}$	0.0194*	0.0231*	-0.1296
	[0.0963]	[0.0769]	[0.4213]
Tightly $Managed_{t-1}$	-0.0325	-0.0142	0.0732
	[0.7262]	[0.8247]	[0.3589]
Other $Managed_{t-1}$	-0.0483	0.0312	0.0845
	[0.2587]	[0.1669]	[0.3851]
Independent Float $_{t-1}$	-0.0361*	-0.0274*	0.0543
	[0.0739]	[0.0914]	[0.1215]
$(FL \times Hard\ Pegs)_{t-1}$			-0.0792
			[0.2819]
$(FL \times Crawls)_{t-1}$			0.0132
			[0.6324]
$(FL \times Tightly\ Managed)_{t-1}$			0.0076
			[0.4711]
$(FL \times Other\ Managed)_{t-1}$			0.0093
			[0.1367]
$(FL \times Independent\ Float)_{t-1}$			-0.0064*
			[0.0507]
GDP Growth Rate $_{t-1}$	-0.0943**	-0.1042**	-0.1193**
	[0.0392]	[0.0481]	[0.0294]
Inflation $_{t-1}$	0.003	0.0012	0.0061
	[0.7149]	[0.3307]	[0.6989]
DI coverage $_{t-1}$	-0.0106	-0.0043	-0.0038
	[0.1538]	[0.2206]	[0.3477]
Credit Growth $_{t-1}$	0.0697	0.0345	0.0531
	[0.1967]	[0.1635]	[0.1549]
GDP/Capita $_{t-1}$	-0.0294*	-0.0382*	-0.0457*
	[0.0736]	[0.0846]	[0.0694]
Currency Crises $_{t-1}$	0.0025	-0.0213	-0.0162
	[0.8267]	[0.7469]	[0.8643]
No. of Obs.	864	864	864
Prob > Chi-Square	0.057	0.061	0.059
Wald Chi-Square	14.473	17.557	17.253

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.

Table 7A : Interaction between the Aggregate Financial Liberalization Index and Exchange Rate Regimes (Independent Floats omitted)

	B.C	**B.C**	**B.C**
Total FL_{t-1}		0.0036	0.0045**
		[0.21543]	[0.0245]
Hard $Pegs_{t-1}$	0.0398	0.0284	-0.0144
	[0.2482]	[0.2779]	[0.1987]
Adjustable $parities_{t-1}$	0.0361*	0.0274*	-0.0543
	[0.0739]	[0.0914]	[0.1215]
$Crawls_{t-1}$	0.2483	0.2815	-0.5217
	[0.1409]	[0.1804]	[0.5469]
Tightly $Managed_{t-1}$	0.0387*	0.0395*	-0.3246
	[0.0649]	[0.0835]	[0.1974]
Other $Managed_{t-1}$	-0.0097	-0.0072	0.0028
	[0.6352]	[0.6535]	[0.7326]
(FL X Hard $Pegs)_{t-1}$			0.0054
			[0.6241]
(FL X Adjustable $Parities)_{t-1}$			0.0064*
			[0.0507]
(FL X Crawls) $_{t-1}$			0.1425
			[0.2374]
(FL X Tightly Managed) $_{t-1}$			0.0139*
			[0.0783]
(FL X Other Managed) $_{t-1}$			-0.0386
			[0.4182]
GDP Growth Rate $_{t-1}$	-0.0943**	-0.1042**	-0.1193**
	[0.0392]	[0.0481]	[0.0294]
Inflation $_{t-1}$	0.003	0.0012	0.0061
	[0.7149]	[0.3307]	[0.6989]
DI coverage $_{t-1}$	-0.0106	-0.0043	-0.0038
	[0.1538]	[0.2206]	[0.3477]
Credit Growth $_{t-1}$	0.0697	0.0345	0.0531
	[0.1967]	[0.1635]	[0.1549]
GDP/Capita $_{t-1}$	-0.0294*	-0.0382*	-0.0457*
	[0.0736]	[0.0846]	[0.0694]
Currency Crises $_{t-1}$	0.0025	-0.0213	-0.0162
	[0.8267]	[0.7469]	[0.8643]
No. of Obs.	864	864	864
Prob > Chi-Square	0.057	0.061	0.059
Wald Chi-Square	14.473	17.557	17.253

Note: The dependent variable is the onset of banking crisis dummy. Estimation method is the logit model. The standard error of estimates is robust standard error and adjusted within cluster. The number in parentheses is the p-value indicating whether the effects of particular regimes are statistically different from the omitted regime. The statistical significance levels of 1%, 5% and 10% are also shown by ***, ** and *, respectively.