

The Theoretical Link between Capital Account Liberalization and Currency Crisis Episodes

Malgorzata Sulimierska

Economic Department, University of Sussex, Brighton BN1-9RH, England

E-mail: malgorzata.sulimierska@sussex.ac.uk

Abstract

The paper investigates theoretical background if countries with unregulated capital flows are more vulnerable to currency crises. In order to solve this question properly the paper considers sequence, precondition of the Capital Account Liberalization process and different generation of currency crisis models. Furthermore, theoretical studies pointed that the speed and sequence of the CAL process needs to be adequate for the country financial development and financial liberalization.

Keywords: Currency crises, Capital account liberalization, Exchange rate

1. Introduction

The topic of capital account liberalization (henceforth CAL) and currency crisis episodes is an important issue for today's emerging market economies in the current era of multinational financial integration, the technology progress and development of international organizations such as the IMF, EU and OECD. Nevertheless, the CAL process is not a new issue; a similar situation occurred in the era of globalization from 1870-1914 when the capital flows were free of any restrictions.[1] However, at that time money could not be transferred with the press of a button from one part of world to another in one second. Today, the debate about the relationship between CAL and the currency crisis phenomena has become a heated one. This is due to the fact that in the last two decades, the increase of the intensity of the CAL process has been accompanied by an increase of currency and banking crises phenomenon, particularly in developing countries. [2] Many countries imposed or were tempted to impose controls on international capital movement in fear of the economic disruption that may accompany capital flows (e.g. Malaysia, Chile) [3] These capital controls have different forms, and their efficacy in promoting or deterring currency crisis episodes or economic growth is questionable and much debated. [4] Furthermore, at present, the macroeconomic empirical analysis and theoretical implications have not found conclusive evidence demonstrating that CAL increases the risk of a currency crisis.

All the points which are mentioned above suggest that there is room for another analysis which will try to find a theoretical link between capital account liberalization and the risk of currency crisis. In order to explain that free movement of capital reduces a country's vulnerability to currency crisis, three aspects need to be considered. Firstly, the aspects of capital account liberalization will be discussed. Starting with the way in which capital flows are allocated to different categories and how these categories can be imprecise. In particular, the analysis of categories' imperfection is important because many capital account regulations are based on capital flows classification. Next, I will investigate the reasons for capital control and the effects of capital control on the real economy with special consideration of capital control efficiency. And then, I concentrate on the sequence and precondition of the CAL process. Secondly, I will analyse the various theoretical models that attempt to describe the mechanism of a currency crisis or predict the moment of a successful currency attack on the exchange rate. Lastly, I will summary my theoretical observations about the relationship between CAL and the Currency Crisis will be presented in third section of this chapter.

2. Capital Account Liberalization

2.1 Capital flows

Capital flows can be distinguished in terms of their original maturity. The IMF developed a three-way division to separate international capital flows into Foreign Direct Investment (FDI) (long-term investments) [5], Foreign Portfolio Investment (FPI) (short-term investments) [6] and other investments (see Fig. 1.). There are short term and long term assets and liabilities based on whether a contractual maturity is less than or equal to one year or more than a year. However, in the case of the development of the financial instrument, in particular options and swaps, the original maturity is now of relatively little importance. [7]

It is an often heard statement that FDI flows tend to be more stable compared to FPI (Stiglitz (2000), Liccheta (2006)). [8] The theoretical model of Albuquerque (2003), Itay and Razin (2005) supported this view that FPI

flows create macroeconomic volatility as the reason of higher default risk of FPI than FDI. In empirical analysis, Lipsey (1999), and Itay and Razin (2005) shown that direct investment flows have been the least volatile source of international investment for majority of countries. However, Lipsey (1999) found an exception to this. The United States has flipped back and forth from being the dominant net supplier of FDI to being a dominant net recipient of FDI and back to being a dominant net supplier of FDI again. Itay and Razin (2005), and Wyplosz (2001) established that the differences in volatility between FPI and FDI flows are much smaller for developed economies than for developing economies. Moreover, portfolio investments are frequently maligned for causing a crisis (e.g. the Mexico Peso) due to their short-term investment horizon creating financial market volatility (Neely (1996), Rodrik and Velasco (1999)). However, an empirical study by Durhan (2003) found that FPI does not correlate positively with macroeconomic volatility, but the result indicates the negative indirect effect of “other foreign investment” through macroeconomic volatility. Other authors (Singh (2002), Zywiecka (2002), Kregel (1996)) suggest that FDI can also be responsible for macroeconomic instability and have a negative impact on a country’s balance of payments. In particular, FDI creates a time profits of foreign exchange outflows (e.g. dividend payment or profits repatriation) or FDI was made in production of export goods. [9] In summary, it is very complicated to provide an unambiguous answer to the question ‘What kind of capital is better for a country and causes less distributions in macroeconomic-currency stability?’. Moreover, there are problems in distinguishing between short or long run capital flows (FDI or FPI).

2.2 Capital controls

There are three main questions: firstly why capital control exists, and secondly, whether it is true that capital control has an impact on real economic variables such as interest rate, capital flows etc and, thirdly, how market participants avoid capital regulation.

Starting with the general reason for the existence of capital controls; the increase of capital flows across borders and the origin of the global capital market carry the risk of negative turbulences (e.g. investors animal spirits, boom-bust cycles, procyclical natura of capital and capital flight). To navigate this risky global environment, some countries impose certain kinds of control on capital [10], arguing that these controls help limit volatile short-term capital flows (sudden capital reversal), avoid balance of payments crises, exchange rate volatility and the spread of economic shocks. In addition, this domestic policy instrument provides greater independence of interest rate policy and has altered the maturity of capital flows (Saxena and Wong (1999), Dooley (1996), Summers (2000)). The pioneers of this line of thought were Tobin (1978) and Dornbusch (1986). Tobin proposes imposing uniform tax on all foreign exchange transaction to discourage very short-term capital flows. Dornbusch (1986) suggests the adoption of measures such as a dual exchange rate system. In contrast, capital controls themselves may have a destabilizing effect on exchange rates or the economic situation. Firstly, the implementation of capital control restriction may lead to herding behaviours or financial panic. These irrational investors’ behaviour can cause a net capital outflow and increased financial instability. Secondly, new capital restriction can be regarded as a signal of inconsistently designed government policies that render a country more vulnerable to currency crises (Glick, Reuven and Hutchison (2000)). Lastly, capital control regulation gave the power to the bureaucrats. It can lead to economic misallocation, corruption and rent seeking activities and then to economic instability (Eichengreen (2001)).

All the effects described above lead us to ask an open question about the effectiveness of capital control. The effectiveness depends on different factors concerning the countries themselves as well as the issue of time. These factors can change exogenously or as the results of domestic policy. The set of factors includes the “international in scope” factors, a domestic “structural” nature (i.e. slowly changing), macroeconomic factors, and factors related to the design of the restrictions themselves. The “international in scope” factors includes the state of technology and the international legal environment. The second set of factors, which operate at a domestic structural level, are efficiency of the bureaucracy, “structural” factors e.g. financial reform, trade integration and increase of FDI. A third set of factors is the size of the domestic incentives motivating inflows or outflows. Finally the effectiveness of restrictions is very likely to depend on the design of the restrictions themselves (Montiel (2003)). These factors determine whether laws controlling capital flows are on the book than whether the laws are enforcer, or they are enforced, whether they effectively stem the flows of capital. In this case the efficiency of capital control can be considered from two perspectives.

Firstly, if capital control has any effective effects on domestic policy and its impact are according to policy makers intensions (e.g. limit volatile short-term capital flows or interest rate, changing the composition of capital flows). The second case analysed how foreign or domestic residence can circumvent capital control regulations. Unfortunately, in the first case, the unambiguous answer was found neither for the empirical cross-country analysis (see Table 1) nor single country studies (e.g. the Chile case, Malaysian case (1998-2001)). [11]

In the second case, the channels through which foreign or domestic resident can circumvent capital control regulations are similar to the circumvention of corporation taxations and profit transfer, especially for multinational corporations. According to Eiteman, Stonehill, and Moffett (2006), Montiel (2003) the main way of avoiding capital controls are identified: transfer pricing [12], overinvoicing of import, underinvoicing of export, creating unrelated exports, use of payment leads and lags to effectively lend and borrow abroad [13], changing of trade credits condition, unbundling of Capital Service Payments [14], Fronting Loans [15] and Special Dispensation (creation of centre profit of multinational corporations).

Some empirical literature has tried to present the problem of avoiding capital control regulations. Mathieson and Rojas-Suarez (1993) suggest that capital controls had lost effectiveness in the 1980s with the liberalization of exchange and trade controls. They identified channels of evasion such as under- and over-invoicing, transfer pricing policies, and leads and lags. Desai, Foley and Hines (2004) analysed the impact of capital control of FDI investment by using American affiliate-level data makes for the period 1982-1997. According to their results, American multinational firms circumvent capital controls by adjusting their reported intra-firm trade, affiliate profitability and dividend repatriations. The evidence indicates that the same affiliates have a 4.7 percent lower reported profit rates than do comparable affiliates in countries without capital controls.

2.3 The preconditions and sequencing of Capital Account Liberalization

As shown above, capital controls have a tendency to become more ineffective over time, creating their own costs and distortions (Summers, (2000)). These effects encourage individual countries to continue the process of CAL. Since the late 1960s, several developed countries have pursued gradual CAL and in the 1990s many developing countries took this path but more rapidly and often adopting a deeper approach, the so-called “big bang” (Schneider (2000), Griffith, Gottschalk and Cirera (2000)). The gradual approach is mainly connected with the orthodox, laissez-faire concept which required reforms in the real economy and financial system before opening the capital account (Singh (2002)). Since the Latin American and Western European financial crashes in the 1990s, a gradualist approach has won over. More economics heads move into this approach. However, some researchers have advocated rapid CAL, given its positive impact on capital inflow and domestic financial development (Johnston and Ryan (1994)). Specifically, after the Asian crisis in 1997 there was big break in economic thinking about rapid methods of CAL (Singh (2002), Stiglitz (2004)). Two important questions were raised about what sequencing of capital regulation should have been taken (order and speed of capital account restriction removal) and what pre-liberalization conditions should be met before opening the capital account.

Sequencing of capital regulation removal

The sequence of CAL can have different order or pattern. Some researchers believe that the capital account should be liberated following the liberalization of the current account and the domestic financial system. Others have suggested that there should be simultaneous liberalization of the current and capital account (McKinnon (1993), Saxena and Wong (1999)). In practical view, the IMF and OECD liberalized the capital flows by using a type of two-step procedures (the IMF's Articles of Agreement and OECD Code Liberalization). The first step included liberalization of direct investment, long-term capital movements and trade transactions. The second considered the liberalization of short-term financial transactions and inter-bank market (Griffith, Gottschalk and Cirera (2000), IMF (2005)).

Pre-liberalization reforms

Several studies have a sceptical view of the importance of the sequencing of capital regulation removal and underline the role of adequate institutional safeguards. They point out that institutional safeguards must be in place before an economy can benefit fully from free access to international capital markets (Mathieson and Rojas-Suarez (1993), Kaminsky and Schumukler (2003), Kawai and Takagi (2003)). The adequate institutional safeguards were based on capital account pre-conditions. It is necessary for countries to meet these preconditions before capital account liberalization is possible:

1. Sound macroeconomic policy framework: macroeconomic policy and fiscal consolidation are consistent with the choice of the exchange rate regime (Saxena and Wong (1999), Schneider (2000)),
2. Independent monetary policy based on indirect policy tools and flexibility in exchange rate management. This involves multiple exchange rate regimes into floating unified rate systems (Schneider (2000), Singh (2002)). However, governments must ensure that inflation, the current account balance and foreign exchange reserves are maintained at acceptable levels before the movement towards capital account convertibility (Schneider (2000)),
3. Strong domestic financial and banking system: strong supervision and prudential regulations covering capital adequacy, good lending standards and asset valuation, effective loan recovery mechanism, transparency,

disclosure and accountability standards, and provisions ensuring that insolvent institutions which are dealt with promptly financial collapse. (Fisher (1997), Prasad, Kenneth, Wei and Kose (2003)). In addition it is important to offer some incentives for sound corporate finance practices in order to avoid high leverage and excessive reliance on foreign borrowing (Kawai and Takagi (2003)),

4. Accurate and comprehensive data disclosure, including information on central bank reserves and forward operations (Saxena and Wong (1999)).

In summary, both conceptions of CAL: preconditions or sequencing of liberalization) could be adopted simultaneously, as Johnston and Ötör-Robe's (1999) modernized approach to managing the risks of cross-border capita flows suggests.

3. Currency Crisis-Theory

There are main five different kinds of theoretical models are examined that endeavour to describe the mechanism of currency. The first generation of Krugman's (1979) and Salant and Henderson's (1978) models centred on inconsistency between domestic economic conditions (wrong macroeconomic fundamentals and exchange rate commitment causes a currency crash. Then the second generation models analyse the psychological game between investors and government which might root to multiple equilibriums. In this line of models, there are self-fulfilling currency crisis models (Obstfeld (1986)) and pure speculative models such as contagion effects models (Gerlach and Smets 2000, Eichengreen, Rose and Wyplosz (1997) and Masson (1998)) or herding behaviour models (Binkchamadani and Shami (2000), Calvo (1998), Mendoza (2000)). In contrast, the third generation model is based on the microeconomics fundamentals and explores three main areas: financial market inefficiency (James and Stoker (1994), Mishkin (1996)), the fragility of the banking system (Chang and Velasco (1998 a,b), McKinnon and Huw (1996), Kaminsky and Reinhart (1999) a company's balance sheet and the effects of monetary policy in the currency crisis (Krugman (1999 a), Aghion, Bacchetta and Banerjee (2001)). The last group of models, the so-called Sudden Stop models (Mendoza (2001), Hutchison and Noy (2004)) were developed by basing on the herding behaviour models (Calvo (1998)) and concentrate on the fact that sudden capital reveals are in unpredicted moments. The analysis of the reason for the occurrence of a currency crisis will point the indicators responsible for currency crisis and simultaneously influenced by the CAL process.

3.1 The first generation models

The first generation models are based on the balance-of-payments, stresses that crises are caused by, and weak economic fundamentals such as excessive fiscal and monetary expansion. The money is created only through government deficit; conversely, government deficit will be financed by printing money. [16] If, in any period, expansion of domestic credit is too large to be absorbed by the demand for real balances, equilibrium in the money market is achieved through adjustment of the exchange rate by offsetting movement in central bank foreign exchange reserve stock so as to hold the exchange rate regime. It causes the depletion of foreign exchange reserve, when the process is continued, so that the outcome is fundamental disequilibrium rather than purely transitory events. Since foreign exchange reserves systematically decline, market agents may doubt the ability of the central bank to control the fixed exchange rates system. [17] Eventually, reserves fall to a critical threshold at which the rational agents may initiate speculative attacks on the foreign exchange reserve of the central bank, eliminating the authorities' remaining foreign assets and causing the collapse of the exchange rate [18] (see Fig. 2).

Seminal studies in the field carried out by Krugman (1979) and Salant and Henderson (1978), have led to numerous other researchers addressing this issue. Several authors have extended and simplified Krugman's paper, namely Dornbusch (1987), Flood and Garber (1986), Flood, Garber and Kramer (1996). [19]

3.2 The second generation model

After the European currency crisis experience in 1992-1993, it was impossible to fully understand the reason for the crisis in the terms of the first generation model. Most countries did not have any problems with the divergence between fiscal policy and exchange rate policy. In this context, some authorities state that changes in the exchange rate regime can be caused by reasons other than a depletion of official international reserves. In that case a crisis can happen without a significant change in macroeconomics fundamentals. Instead, economists have pointed out that the adverse consequences of policies such as higher interest rates or other key economic parameters (for example, unemployment levels or GDP etc.) have forced governments to maintain exchange rate parity. Simultaneously, it gave room to the development of the market agents' formation of expectation about exchange rate policy and then might lead to bad equilibrium such as self-fulfilling currency crisis. The first pioneer of the model of the self-fulfilling currency crisis even before the European crisis in 1992-1993, was Obstfeld (1986). [20] The expansion of this model can be found in other studies including Obstfeld (1994, 1996), Ozkan and Sutherland (1995), Reisen (1998) and Krugman (1996). Most of these authors pay less attention to the role of fundamentals in creating

balance-of payments crises; they also point to the importance of other economic variables that may help predicting those crises. Since most of the solutions the models provide do not apply to the steady state, they became the basis for a body of literature on speculative bubbles, sun-spot equilibrium and consider nonlinear behaviour rules by one or more agents. This led to multiple solutions and then to self-fulfilling solution. The models of self-fulfilling currency have two main assumptions: firstly, the government is the active agent of the market and wants to maximize an objective function. Secondly, economic policies are not predetermined but respond instead to changes in the economy. Economic agents take this relationship into account in forming their expectations about the policy. The policy represents a kind of trade-off between the benefits of and the costs of maintaining a credible exchange rate peg. For instance, the degree of commitment of the central bank to defend the peg is dependent on the level of reserve. The weaker the commitment of the central bank the higher the probability that the speculative attack will be successful. Additionally, there is the psychological game which takes place between the market agents and authorities. The market agents create expectations about the future policy and then start the actions that affect some of the variables (e.g. interest rate, unemployment, loss of trade competition). [21] This variety of factors may affect the authority's objective function that could be used as the indicator of a currency crisis. In these circumstances, the possibility of a multiple equilibrium can be created and the economy may move from one equilibrium to another without a change in the fundamentals. [22]

The other line of second generation models suggests that crises may occur as a consequence of pure speculation against the currency, as agents follow herding behaviour (Calvo and Mendoza (2000) and Binkhnadami and Sharma (2000)) and/or foreign exchange markets are subject to contagion effects (Gerlach and Smets (1995), Eichengreen, Rose and Wyplosz (1997), Masson (1998) and Ahluwalia (2000)). [23] In Obstfeld's and Reisen's models, neither of them predicted crises by changes in the economic fundamentals through the market agent's expectations. The crisis is the consequence of a pure speculative attack on a currency.

With regard to herding, this can be presented into two different ways. Firstly, when all agents have different pieces of information, it can be rational for individuals to base behaviours on the behaviours of others because of the cost of information. This is especially the case when there are many small investors in the economy. They cannot rely on their own individual information due to the high costs involved so they will base their behaviour on the behaviours of other market players, mostly those who have good reputations. In this situation, market investors will take decisions based on limited information and will therefore be more sensitive to rumours. This causes an ineffective distribution of the financial market decisions and moves the market to a crisis outcome (Calvo and Mendoza (2000)). Secondly, the incentive structures within which portfolio managers operate may make it not very costly to be wrong along with everyone else, with incentives to stand out against the crowd being insufficient. This is mostly the case when the advantages of investment (the case of the manager's salary in investment firms) depend on their competitors behaving similarly (Binkhnadami and Sharma (2000)). In other words the salary of the manager will not decrease so much if the other investors on the market make the same mistake.

There is a possibility of contagion effects where two variants are present. The first variant is the spill-over effect (trade linkages). [24] The crisis in one market may affect macroeconomic fundamentals in another country, market via the loss of competitiveness of the countries associated with devaluation of currency. This situation can result if the said countries are main trading partners. Generally, a successful attack on the exchange rate in one country leads to its real depreciation, which improves the competitiveness of the country's merchandise exports. This produces a trade deficit in the second country and a gradual decline in the international reserves of its central bank. This causes the other country to become more vulnerable to an attack and a currency crisis (Gerlach and Smets (2000), Eichengreen, Rose and Wyplosz (1997)).

The second variant is monsoonal effects (Eichengreen, Rose and Wyplosz (1997) and Masson (1998)). This effect is linked with multiple-equilibrium and suggests that a crisis in one country may raise the probability of a crisis in another country because the currency crisis in one country is like a signal which encourages a self-fulfilling speculative attack. Certainly a crisis in one country may conceivably trigger a crisis elsewhere for reasons unexplained by the macroeconomic fundamentals, perhaps because it leads to shifts in market sentiment or changes in the interpretation given to existing information. However, there can be another variance connected with the political nature of the devaluation decision when a policy is interested in enlarging political integration with its neighbours (e.g. the European crisis 1992-1993). In this context, devaluation in one of the neighbouring countries may increase speculation against the domestic currency.

3.3 Third generation model

At the end of the 1990s, in particular, after the structural financial crisis in Asia, a third generation model of currency crisis started developing very quickly. For the reason that the Asian countries brought incontrovertible

experience that if something does not work in the micro fundamentals of an economy that could cause a currency crisis. [25]

The third generation models concentrated on three main microeconomic aspects related to currency crisis such as the fragility of the banking system (McKinnon and Huw Pill (1996), Chang and Velasco (1998 a,b,c) and Kaminsky-Reinhart (1999), financial market inefficiency (moral hazard or the problem of asymmetrical information) (Stoker (1994), Mishkin (1996) and Krugman (1998)), companies' balance sheets and the effects of monetary policy during/before the currency crisis episodes (Krugman (1999 a, b), Aghion, Bacchetta and Banerjee (2000, 2001)).

The first issue addressed in the development of third generation models was the fragility of the banking system and financial market inefficiency. The classical views of the first generation model suggest that currency crises arise as a result of inconsistencies between inflationary fiscal policy and the exchange rate peg. This causes the depletion of international reserves and finally the collapse of the exchange rate regime. [26] As the models show, the authorities cannot directly finance the fiscal deficit by printing money but it is clear that the problem of financing expansive fiscal policy by printing does not disappear especially in most developing countries. However, modern variants of the first generation model, the so-called twin banking-currency crisis model, explain how this problem can change in a currency crisis, again, via the banking system. This framework stresses the fact that currency crises are often part of broader financial crises, where the two elements interact with one another, giving life to what have been called the "twin crises" (McKinnon and Huw Pill (1996), Chang and Velasco (1998 a, b, c), Stoker (1994), Mishkin (1996) Kaminsky-Reinhart (1999). [27]

Stoker (1994) and Mishkin's (1996) models concentrated more on the financial aspects of asymmetric information and moral hazard than twin model effect. However, more recently, a thoroughly worked-out attempt to model the financial fragility aspect of a currency crisis was carried out by Chang and Velasco (1998 a, b, c). This study addresses the issue of the financial intermediaries and commercial banks collecting funds from depositors and then allocating investment in order to maximize their profits and that of the depositors also. The banking system, in so doing, will improve social welfare. Additionally, the exchange rate regime and authorities' credit policy increase this effect so that the whole economic mechanism is intended to maximize social welfare. In an open economy, the banks play another active role in generating large capital inflows to the economy through, for instance, the banking system where domestic and foreign investors borrow money from abroad at a low interest rate and then invest in the domestic market where yields are higher. At the same time, though, there is one caveat, which is the risk of a sudden reversal of capital flows and of a bank run. In other words, international illiquidity [28] of the domestic financial system plus financial liberalization is at the centre of the problem. To the same extent, we do not have to implicitly assume that holders of the bank's liabilities, domestic depositors and foreign creditors, all remain confident in the bank. This means that depositors will attempt to withdraw their deposits in the short run, and that foreign creditors will not roll over their initial credit in the short run so that the bank will not be able to honour all of its commitments. There certainly seems to be a lack of confidence that leads to a banking crisis raises that can be caused by a shift in expectations. For example, if agents expect devaluation, early withdrawals will be beneficial. This can generate financial panic in domestic and foreign investors and at the same time foreign creditors will demand repayment from the domestic banks. If the domestic banks do not have enough domestic deposits in liquid form that is in the world asset it raises the possibility of self-fulfilling bank run. Long-term investments of the domestic bank will yield little if they have to be liquidated prematurely. In a closed economy, the central bank can protect against market panic by acting as a lender of the resort. With a fixed exchange rate and open economy the central bank can play the same role because a run against the intermediaries generates pressure on the peg and then increases demand for foreign exchange reserves. As long as the central bank holds the exchange rate, the regime will stabilise the banking system. Everything depends on the size of the central bank's reserves. On the other hand, to help domestic banks, the central bank can pursue a different expansionary policy and keep interest rates from rising. But, in this case, private agents will use the additional domestic currency to deplete the central bank's reserves. Therefore with limited international reserves, eventually, the central bank will abandon the peg. This shows how a financial crisis can transfer to a balance of payments crisis.

A further implication of the Chang and Velasco (1998) model suggests that financial liberalisation allows the domestic bank to obtain cheaper borrowed capital, and promotes a lending and investing boom in the domestic economy that causes a consumption boom, increase in current account deficit and increased financed the borrowing abroad. As the current account deficit continues to widen, financial markets will need more foreign capital to feed the trade deficit (boom-bust cycles) (McKinnon and Huw (1996), Kaminsky and Reinhart (1999) [29]. The lending boom converges levels gradually in inflation. There is marked cumulative real exchange rate appreciation. [30] Cumulative real exchange rate appreciation will generate the expectation of exchange rate depreciation on the

market. According to Chang and Velasco's model (1998), the capital inflows become outflows and cause the collapse of the banking system which then leads to a currency crisis.

The problems of balance sheet firms have been dealt with in practical discussions, while the issue has been neglected in the currency crisis literature. However, more recent models (Krugman (1999 a, b) and Aghion, Bacchetta and Banerjee (1999, 2001)) increasingly address this topic and have found a link between all three micro economic aspects: the fragility of the banking system, asymmetrical information (moral hazard) and company balance sheets. Krugman's (1999 a) model presents an elegant simplification of the model of Aghion, Bacchetta and Banerjee (1999, 2001). Aghion, Bacchetta and Banerjee's (1999) model addresses the issue in a similar manner to Krugman's (1999a) model. These models state that a currency crisis can happen both under fixed and flexible exchange rate pegs, as the primary source of a crisis is the deteriorating balance sheet of private firms. This is because these balance sheets play a key role in the crisis itself. These models suggest that entrepreneurs can borrow in domestic currency from domestic consumers or in foreign currency from foreign lenders. Indeed, in these models it is mix short-term debt, denominated in domestic currency and long-term debt denominated in foreign currency. The amount that domestic entrepreneurs can borrow from foreigners or domestic banks to finance investment depends on their wealth; the entrepreneurs' wealth is therefore the fundamental variable that determines investment and output (Bernanke and Gertler (1989)). However, the wealth of each individual entrepreneur depends on the level of such borrowing in the economy as a whole; because the volume of capital inflow affects the terms of trade and hence the valuation of foreign currency- denominated debt (for example, inflows cause real appreciation of the exchange rate and decrease the value of foreign debt).

Any real shock in the economy such as productivity, or, such as fiscal or expectation shocks, can cause a decrease in capital inflows that will have adverse effects on the balance sheets of domestic entrepreneurs (Aghion, Bacchetta and Banerjee (2001)). Though the arbitrage in the foreign exchange market which implies that the currency must depreciate in the current period. If people start to believe that the currency will depreciate, it may indeed depreciate (Blanchard (1979)), but an explosion in the domestic currency value of dollar debt has a disastrous effect on firms. The increase in foreign currency repayments and fall in their profits then reduce their ability to borrow and then investment and output in a credit-constrained economy. A further reduction of capital inflow reduces the demand for the domestic currency and leads to depreciation. Generally speaking, the financial crisis cycles started to close circle, nevertheless, it is one of the possibilities multiple equilibrium in these models. [31]

Moreover, fragility in the banking and financial sector will make the whole system more susceptible to collapse by reducing the amount of credit available to firms (Stiglitz and Furman (1998), Radelet and Sachs (1998), Velasco (2001)) [32]

3.4 Sudden –Stop Model

Calvo (1998) was a pioneer in defining the empirical regularities of the so-called sudden stop phenomenon. These sudden stop episodes hit emerging markets in the 1990s (Asian crisis 1997-1998, Russian Crisis 1998, Mexican crisis 1994). The sudden stop phenomenon is essentially defined as an abrupt reduction of the capital inflows to a country and up to time of abrupt reduction that have been receiving large volumes of foreign capital Calvo (1998). This definition of Sudden Stop event was widened by Mendoza (2001), Mendoza and Smith (2002) and Hutchison and Noy (2004). These authors consider the effect of large downward adjustments in domestic production after a sharp reversal in capital inflows and collapses in asset prices and in the relative prices of non-tradable goods relative to tradable ones.

There are no perfect measures of the sudden stop effect. The traditional sudden stop indexes are based on changes of international reserve and net capital flows (current account balance changes) Calvo, Izquierdo and Mejia (2004). [33] The sudden stop event is defined as episodes when gross inflows drop off considerably and remain modest for a full year. In contrast, Rothenberg and Warnock (2006) and Mendoza (2006) regarded the sudden stop index as net capital flows in preference to gross capital flows. In addition, Rothenberg and Warnock (2006) indicated the episodes of sudden as very strong inflows of capital for the following two years. This definition allows us to distinguish the sudden stop episodes from the episode of sudden flight. [34]

The sudden stop phenomenon involves a reversal in capital inflows associated with a currency and balance of payments crisis (Calvo (1998), Rodrik and Velasco (1999), Calvo, Izquierdo and Talvi (2002), Kaminsky (2003), Hutchison and Noy (2004)). There are three mechanisms through which a sudden stop in international capital flows may bring about a currency and balance of payments crisis. The first two channels were built on the financial friction of the "great depressions" model. The first channel is based on the Keynesian hypothesis of price or wage stickiness and its connection with an external financing premium (Bernanke, Gertler and Gilchrist (1999)). The second channel is the so-called Fisherian analysis of debt-deflations driven by collateral constraints. [35] This

analysis was introduced by Kiyotaki and Moore (1997) and then developed by integrating forms of imperfect credit markets, by Mendoza (2001). Essentially, these two approaches investigated the effect of a fall in credits, attributable to the sudden stop in capital inflows, combined with an external financing premium, a “financial accelerator”, reducing aggregate demand and causing a fall in output. [36] Conversely, Mendoza’s approach to Bernanke, Gertler and Gilchrist’s and Moore’s (1997) Sudden Stop models is quite different. This analysis focuses on an excess volatility phenomenon and explains the abrupt economic collapses of Sudden Stops as a typical phenomenon nested within the co-movements of regular business cycles. The model also emphasizes the interaction of uncertainty, risk aversion and incomplete contingent-claims markets in forming the transmission mechanism linking financial frictions to the real economy. This analysis is in line with the models developed by Aiyagari (1993) and Aiyagari and Gertler (1999), where precautionary saving and state-contingent risk premium play a key role in driving business cycle dynamics. [37] In addition, Mendoza (2001) introduced policy uncertainty” and “involuntary contagion” as explanatory variables in Sudden Stops model. Finally, the third mechanism is the analysis of existence the multiple equilibria most of which were developed as part of the second and third generation model (Calvo (1998), Rodrik and Velasco (1999) and Aghion, Bacchetta and Banerjee (2001)). However, in this case, as Rodrik and Velasco (1999) suggest, excessive short debt can leave borrowing countries vulnerable to sudden shifts in lenders’ or investors’ expectations, which can in turn become self-fulfilling of a currency crisis. However, the reason for the shift in the economy to a bad equilibrium might be the sudden capital reversal.

4. The Link between the regulation of capital control and currency crisis events

Neoclassical theory is based on the concept of allocative efficiency. In that case CAL should improve the efficiency of capital investment by removing the distortions (e.g. monopolization of market). CAL works in the same way as the liberalization of the domestic market (Fischer (1997), Summer (2000)). In addition, the supporters of neoclassical theory and the CAL concept argue that capital flows are similar to the trade between time periods (temporal borrowing and lending) and to the trade between countries. They term these capital flows as “intertemporal trade” and argue that trade liberalization is beneficial for the economy across jurisdictions under argument for competitive markets (Fischer (1997), Summer (2000)). In the case of allocative efficiency, the CAL process will improve the diversification of the investor’s portfolio (by reducing the portfolio risks or increasing the purchase of lower risk equity), increase the efficiency of saving allocation and then smooth the consumptions in response to shocks and increase economic growth [38] (Fischer, (1997), Liccheta (2006), Gourinchas, Jeanne (2002), Prada, et al. (2003)). All these improvements will have a positive influence on macroeconomic stabilization and financial markets strength (Fig 3).

Certainly, CAL optimists recognize that the CAL process can be linked to the risks of market overreaction. Nevertheless, they argued that if capital movements are mostly appropriate then the currency crises do not blow up with any reason rather started as the rational reaction to policy mistakes or external shocks (Fisher, (2003: 4)). Therefore, market overreactions are caused by the lack of precondition reforms or wrong sequences of CAL reforms. The economists mainly consider the currency crisis described by the first generation models (Krugman (1979), Salant and Henderson (1978)) or the simple version of “twin models” (McKinnon and Huw (1996), Chang and Velasco (1998 a,b,c)) where bad macroeconomic fundamentals or weak banking supervision allowed the economy to crash in an almost predictable way. However, the currency crisis described as second generation models (Obsfeld (1986, 1994, 1997)) recognized to special factors (e.g. unemployment levels, interest rate levels, GDP) can be considered here as well. The self-fulfilling expectations of investors were caused mainly by some economic problems (e.g. high unemployment levels). On the other hand, this assumption about precondition reforms CAL becomes an incentive for good policies or reforms (e.g. independence of monetary policy or property rights). This effect also reduced the probability of a currency crisis. (Gourinchas and Jeanne (2002), Eichengreen (2001), Klein and Olivei (2001)) (see Fig. 3).

However, the other side of the debate about CAL and currency crises was of the opinion that it is not a direct causal link between CAL and the incidence of a crisis, but there is evidence to believe that liberalization increases the probability of a crisis (Stiglitz (2000), Charlton and Stiglitz (2004), Williamson and Mahar (1998), Singh (2002), Dollar and Kraay (2001)). They arrived at this conclusion from the wrong neoclassical paradigms: those financial and capital markets are essentially the same as the goods-services markets. The theory ignores important aspects that undermine the main neoclassical assumptions (such as full information, rational agents’ behaviour, distortions etc.). [39] They found reasons why CAL can lead to economic instability macroeconomic instability and banking booms and then to a currency crisis (the lack of neoclassical theory) (see Fig. 3).

These reasons might be divided into main two categories. The first group of reasons consist of animal spirits [40], the procyclical nature and volatility in capital flows, self-fulfilling expectations, the systemic risk though contagion from one economy to other, momentum trading [41] and the sensitivity of international markets to

changes in information (financial panic). (Stiglitz (2000), Singh (2002)). This group is mainly linked to the indicators of sudden stop models (Mendoza (2001), Hutchison and Noy (2004)) and second generations models which are based on the assumption of pure speculation against the currency such as herding behaviour models (Calvo and Mendoza (2000) and Binkchamadani and Shami (2000)) and contagion effects models (Gerlach and Smets (2000), Eichengreen, Rose and Wyplosz (1997) and Masson (1998)). After that, the second category of reasons for instability can be regarded in the perspective of third generations models and banking/financial fragility- the main authors in this field being James and Stoker (1994), Mishkin (1996), Chang and Velasco (1998 a,b,c), Kaminsky and Reinhart (1999) or Companies' balance sheet models (Krugman (1999 a,b), Aghion, Bacchetta and Banerjee (2000, 2001). In this categories of reason are financial panic, boom-bust cycles [42], increased the competition among banks following liberalization and the short-terms of leading players and momentum trading. However, financial panic and momentum trading are important in analysing both second and third generation models of a currency crisis (Stiglitz (2000), Charlton and Stiglitz (2004), Chari and Henry (2002) (see Fig. 3).

All these phenomena connected relation between CAL and currency crisis episodes are intensive during the process of liberalization the capital flows. Nowadays a few practical sides of these phenomena are presented. First example is that the liberalization of capital flows increases the number of investors and availability of new foreign assets which might raise the problem animal spirit effects (e.g. adverse selection, risk of asymmetric information, moral hazard, financial panic) (Mishkin (1996)). Foreign investors might have less knowledge about domestic markets than domestic ones. At the same time, domestic investors can have problems with information about new foreign assets. However, access to information about a new situation will entail additional costs for both kinds of investor, which can drive them into patterns of irrational behaviors (Banerjee (1992), Calvo and Mendoza (2000), Binkchamadani and Sharma (2000). Additionally, the CAL process exposes the country to short-term debt/ short-term capital (e.g. East Asian countries before 1998) which make a country more vulnerable to sudden changes in market sentiment and financial panic (Rodrik and Velasco (1999), Gruszczynski (2002), Uri Dadush, Dasgusta and Rata (2003)). In terms of CAL and the banking system, for example, CAL might increase the fragility of the banking system. The managers of foreign-owned banks may suffer from the poorer knowledge of the behaviour of borrowers. Consequently, foreign-owned banks may face more problems resulting from information asymmetries than domestic-owned banks (Mc Kinnon and Huw (1999)) In addition, the increase of capital flows can exacerbate the efficiency of financial supervision by monetary authorities and can lead to a banking crisis by increasing the amount of bad credit in a foreign currency for firms or individual-domestic financial dolarization (Chang Velasco (1998a,b), Kaminsky and Reinhart (1999), Demirguc-Kunt and Detragiache (1998)).

Moreover, these opponents to the CAL process also suggest that the link between the liberalization of the financial system and economic and financial crises is closer in developing countries than in developed countries (Arteta, Eichengreen and Wyplosz (2001), Singh (2002)). There are several reasons which help explain this situation. Firstly, developing countries are more suspected to economic distortions such as economic shocks or weak legal framework. Secondly, most developing countries have a small economy so that CAL process influenced negatively on efficiency of the monetary policy. [43] This means that developing countries have fewer tools to protect against the speculation attacks. Lastly, it is sometimes very difficult to implement any preconditions reforms in developing countries (see Fig. 3.).

On the whole, it is difficult to obtain an unambiguous answer about the sign in the relation between CAL and Currency Crisis Episodes. As has been discussed, there are two main ways in which this link can be considered. Moreover, as discussed in first part of this chapter, capital control might be efficient (e.g. the Malaysian case) but in the long-term market, players always find a way to avoid this restrictions. Furthermore, there are always problems what kind of capital control regulation should be imposed on different categories of capital flows. As we have seen, both categories of capital (FDI and FPI) bring volatility of balance of payments (Singh (2002)). On the other hand, it is sometimes relatively easy to transfer FDI to FPI by foreign investors (e.g. foreign companies can take the credit in domestic bank and in the case of domestic problems, they transfer it to head office.

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Notes

- Note 1. See among others Bordo (2007), Henry (2006), Summer (2000) and Stiglitz and Charlton (2004).
- Note 2. Griffith-Jones, Gottschalk and Cirara (2000) found that three countries (Korea, Mexico and the Czech Rep.) from the six emerging countries that joined the OECD and liberalized their capital flows in the 1990s, had a large and costly crisis shortly after they joined.
- Note 3. See Kawai and Takagi (2003), Kapla and Rodrik (2001), Charlton and Stiglitz (2004), Cowan et al (2005).
- Note 4. See Le Fort and Lehman (2003), Glick, Reuven and Hutchison (2000), Eiteman, Stonehill and Moffett (2006).
- Note 5. The IMF proposed the following definitions of FDI. A foreign investor owns at least 10 % of the ordinary shares or has a right to 10% percent of the votes in the General Assembly of shareholders in an incorporated enterprise or the equivalent an unincorporated enterprise. The FDI reflects the aim of obtaining a lasting interest by a resident entity of one economy (direct investor) in enterprises that are resident in another economy (direct investment enterprises). The lasting interest implies the existence of a long-term relationship between the direct investor and the enterprise and a significant degree of influence on the management of the enterprise (Duce (2003: 5). The emphasis is on whether the purchase is made with a view to controlling the firm or not controlling investors' interests (effective voice in the management). But there is opened question how the 10% voice in the General Assembly can be effective. In this context the 10% criterion is somewhat arbitrary (Lipseý (1999: 5), Gökent (1997:10)).
- Note 6. The FPI is strictly connected with a portfolio diversification process and obtaining high-fast capital gains. FPI is considered as transactions when a non-resident holds less then 10 percent of the shares of an enterprise plus

all investment in debt securities (e.g. bonds, debentures, notes, money market or debt instruments, financial derivatives or secondary instruments)

Note 7. A good example can be a bond maturity in twenty years is long term, but during its life, it may change hands numerous times or the herding practice of corporations Gökent (1997: 10), Cowan and De Gregorio (2005:12), Pawlik (2003: 4).

Note 8. As a result of the smaller cost of pulling out for lenders, the short-term debt whereas liquidating foreign direct investment may involve selling plant and machinery, and selling stocks or bonds during a crisis usually involves a loss for the sellers. (Dadush, Dasgupta and Ratha 2000).

Note 9. Zywiecka (2002: 20), Devereux (2006: 28).

Note 10. Capital controls is a government policy of restricting local residents from acquiring foreign assets (capital outflow) and/or restricting foreigners from acquiring local assets (capital inflow). This domestic policy instrument can be divided into two categories: administrative restriction (direct control) and market restriction (indirect controls). Administrative regulations are mainly legal regulations. Examples of these include: legal permission of a risky financial transaction, limits imposed on the amount of a firm's stock a foreigner can own, limits imposed on a citizen's ability to invest outside the country, the amount of foreign capital residents may hold, banking obligations for the controlling and monitoring of capital flows. The purpose of market restrictions is to discourage an investor from making a risky financial transaction. The market restriction increases the cost of this transaction e.g. uniform tax, require reserve level, capital gain tax Gruszczynski (2002).

Note 11. De Gregorio et al. (2000), Gallego et al. (1999), (2003), Galbis (1996), Cowan et al. (2005), Gallego et al. (1999), Kawai and Takagi (2003), Lopez-Mejia (1999), Edison, Klein, Ricci and Slok (2002), Charton and Stiglitz (2004).

Note 12. This is the financial transactions between the subsidiary and the parent company for purchasing raw materials, services and intellectual property from the parent.

Note 13. The parent may serve to transfer profits temporarily between the subsidiary and the parent. For example, if the subsidiary buys supplies from the parent and pays for them in advance, this serves as a loan from the subsidiary to the parent. If the subsidiary sells supplies to the parent and the payments are delayed (lagged) then this also serves as a loan from the subsidiary to the parent.

Note 14. The return on a foreign investment is composed of compensation for a variety of services from the parent company; i.e.: management fees, payment for technical expertise, royalties and license fees, payment for proprietary knowledge and intellectual property.

Note 15. The loans from the parent company may also carry an interest charge above the cost of debt capital that serves to transfer profits to the parent. The subsidiary could also make loans to the parent, perhaps at below-cost interest rates; this would be an effective way of transferring funds from the subsidiary to the parent. If a country's regulations on the transfer of capital prohibit loans from a subsidiary to a parent company, but allow the transfer of funds to financial intermediaries, then a fronting loan may be used to achieve a transfer of capital from the subsidiary to the parent. The subsidiary deposits funds in a bank which serves as collateral for a loan to the parent company. The interest on the parent company's loan is offset, at least in part, by the interest received on the subsidiary's deposit.

Note 16. Goldberg (1994) "Predicting exchange rate crises Mexico revisited", *Journal of International Economics*, 36, pp. 414.

Note 17. Krugman (1979) "A model of balance of payment crises", *Journal of money, credit and banking*, Vol. 11, No. 3, pp. 315.

Note 18. It is clear that speculative attack on the government's reserves can be viewed as the process by which investors change the composition of their portfolios, reducing their domestic currency holding and increasing that of foreign currency. A currency crisis is a natural outcome of maximizing behaviour by investors.

Note 19. On the whole, these economists describe the same process - that an exchange rate crisis can take the form of either a discrete devaluation of a controlled exchange rate or a switch to a floating rate accompanied by a sharp speculative attack on central bank holding of foreign exchange reserves.

Note 20. Obstfeld model suggested that speculative attack is the opposite of the canonical model and represents an entirely rational market response to persistently conflicting internal and external macroeconomic targets. There exist circumstances in which balance-of-payments crises may indeed be purely self-fulfilling. Clearly, such crises are apparently unnecessary and lead to the collapse of an exchange rate that would otherwise have been viable.

The crisis does not reflect irrational private behaviour, but an indeterminacy of equilibrium that may arise when agents expect a speculative attack to cause a sharp change in government macroeconomic policies. Even though a crisis is not inevitable, agents believe that the central bank will respond to crises by embarking on a program of heightened inflation. The belief that the authorities will ratify crises makes it unprofitable for any individual speculator to hold domestic currency while a run is taking place.

Note 21. There are three main reasons which indicate a speculative attack: the perceived benefit of maintaining the exchange rate regime; the benefits of abandoning the peg and feedback from expectations of abandonment of the peg to the costs of defending it. The last two reasons for speculative attacks were especially analysed in the works of Obsfeld (1994, 1996) and Reisen (1998). According to these articles, markets expect devaluation, makes the endogenous variables as domestic interest increase, thus creating an incentive to devalue.

Note 22. There exist two equilibrium: the first one features no attack, no change in fundamentals and indefinite maintenance of the peg; the second one features a speculative attack followed by a change in fundamentals which validates, ex post, the exchange-rate change which speculators expect will take place. (Eichengreen, Rose and Wyplosz (1997: 13)) Two main lines can be seen in this kind of model. The first emphasises the reinforcing effects of the action of economic agents in determining the movement from one equilibrium position to another. The second line underlines the role of expectation by considering the strategic complementarities of the action of economic agents in determining the final outcome (Esquivel and Larrain (1998: 4-5)).

Note 23. Sometimes the contagion and hedging effect should not be added to the second-generation models and by many economics authorities put them to the special category such as financial market in efficiencies. However, despite this, I decided to use in my theoretical presentation the same way as Kaminsky, Lizondo and Reinhard (1997) and Esquivel and Larrain (1998). After developed the third generation models that mostly depends on the microeconomics fundamentals it can suggest that contagion and hedging effects should be considered as the second generation models due to the fact that they present the some kind game between the investors and government as well.

Note 24. Masson (1998) "Contagion: Monsoonal effects, spillovers and Jumps between Multiple Equilibria", *IMF Working Paper*, pp. 5.

Note 25. In most crisis economies, governments have enjoyed surpluses and increasing foreign exchange reserves as well as low unemployment and booming exports. On the other hand there have been government failures, such as the fact that the financial sectors in these countries were not well-regulated. It also appeared that while growth had slowed, some signs of excess capacity had appeared in 1996 (Krugman (1998, 1999 a, b), Furman and Stiglitz (1998), Chang and Velasco (1998 c), Velasco (2001)).

Note 26. Krugman (1979), Dornbush (1987), Flood, Garber and Kramer (1996), Flood and Garber (1986).

Note 27. The twin banking-currency crisis model relies on Diamond and Dybvig's dilemma (1983), where we find two possible outcomes of the market agents: one in which agents have confidence in the solvency of financial intermediaries, and one in which lack of confidence leads to a run. Both equilibria involve self-fulfilling expectations because banks fail if, and only if, there is a run. Furthermore they concentrate on the asymmetrical information problems (adverse selection and moral hazard) in the financial market when with later are poorly supervised and monetary authorities act as lenders of the last resort. The asymmetrical information problem results in financial markets being unable to efficiently channel funds to those who have the most productive investment opportunities and therefore causing the banking system (Mishkin (1996: 17)).

Note 28. The key issue is a mismatch of assets and liabilities: a country's financial system is internationally illiquid if its potential short term obligations in foreign currency exceed the amount of foreign currency it can have access to on short notice (Change Velasco (1998 c)).

Note 29. Kaminsky and Reinhart (1999) "The twin crises: the cause of banking and balance-of-payments problems", *The American Economics Review*, 89, (3), pp.475.

Note 30. This conclusion is taken from Dornbush's overshooting model (Dornbush (1987)).

Note 31. This story of currency crises pointed out two well-known and significant facts. Firstly, a country goes into a crisis where firms hold a lot of foreign currency as denominated debt (the measure of aggregate foreign currency exposure is the ratio of claims to liabilities with respect to BIS banks). It is striking that all the countries which had a ratio higher than 1.5 experienced a serious crisis in the 1990s. The second fact is that there are substantial and persistent deviations from the purchasing power parity that require large changes in the relative price of tradeable and non-tradeable commodities. (Krugman (1999a), Aghion, Bacchetta and Banerjee (1999)).

Note 32. The expansionary monetary policy is assumed not to be inflationary since prices are stickling in short run. Velasco (2001 :12)

Note 33. Calvo at el. (2004) first built the sudden capital reversal measure ΔC_t where $\Delta C_t = C_t - C_{t-12}$ and then C_t is defined to be a 12-month moving sum of lagged values of capital flows proxy P_t . The capital flows proxy is computed by subtracting monthly changes in international reserves from the quarterly current account balance. The sudden stop episode is indicated when in the first month t that ΔC_t falls one standard deviation below its mean. The episode ends if ΔC_t again exceeds one standard deviation below its mean. The additional assumption is that within the episode, there must be at least one time t when ΔC_t falls at least two standard deviations below its mean.

Note 34. In accordance with Rothenberg and Warnock (2006), nearly the half of the currency crisis episodes that were recognized as sudden stops by previous definition of Sudden Stop episodes. In the traditional model sudden flight is defined when local investors are given information to enable them to foresee a negative shock to the local market. These investors then shift money to global markets. In this case the net inflows will decline, but the decline is prompted not by global investors. True sudden stops might occur if global investors sell emerging market assets when they receive a negative signal that could well originate from the actions of other global investors. Both types of episodes are associated with a sharp decrease in net capital inflows, however, so Rothenberg, Warnock decided to use the gross flows.

Note 35. Hutchison and Noy (2004) "Sudden Stops and the Mexican Wave: Currency Crises, Capital Flow Reversals and Output Loss in Emerging Markets" Working Paper 0413, University of California, Santa Cruz, pp. 11.

Note 36. Mendoza (2001) Credit, prices, and crashes: Business cycles with a sudden stop. *NBER Working paper* No. 8338, 2001, pp.12.

Note 37. Mendoza (2001) Credit, prices, and crashes: Business cycles with a sudden stop. *NBER Working paper* No. 8338, 2001 pp. 13.

Note 38. In more detail, the link between economic growth and CAL might be regarded from two important perspectives: investments increase and savings increase. The effect of CAL might cause the direct implications or indirect implications of investment/saving conditions improvements. However, both effects work in the same direction to decrease the cost of capital and increase the efficiency of diversification of the investment portfolio. The direct effect is generally linked with price of capital such as interest rates, price of market stocks and cost of inter-company loans. (Henry (2003), Stulz (1999)). When a country liberalizes their regulation of capital control their interest rate should have flattened to the international interest rate; at the same time the additional inflows of foreign capital to the stock market should cause an increase in market stock prices. In the context of multinational corporations, the transfer of investment capital between different subsidiaries will be less expensive after CAL resulting in more capital stock being available for future investments (Desai, Foley and Hines (2003)).

Note 39. Beginning with the assumptions that large numbers of them are of questionable validity in, specifically, developing countries, Rashit (2001) has pointed that the benefits of open capital markets predicted in the neoclassical theory rests on three key assumptions: capital and labour resources are fully employed everywhere, capital flows themselves do not adversely affect macroeconomic stability and international capital movements are determined by long-term returns on investment in different countries. Few of these assumptions, however, are likely to hold in developing countries. And the other aspects are the distortions. For instance the restrictions on capital flows are certainly distortional but this may be optimal in the presence of the other distortions (Stiglitz and Charlton (2004)). Such distortions are pervasive in developing countries. Industrial policies are often implemented to protect and promote domestic industries; where the economic institutions are often weak and are limited in their ability to enforce competition law, property rights, and international macroeconomics instability often connected with informational asymmetries or in the context of economics shocks. In addition, the model of perfect functioning markets is even less relevant when one considers that liberalization often takes place in perspective of contemporaneous economic shocks (Stiglitz and Charlton (2004)).

Note 40. The animal spirits argued that capital flows have little to real economic activity; in this context CAL has no effect on investments, output or any other real variable and mainly consider the impact of information on the behaviours of investor.

Note 41. This strategy prescribed the buying of assets whose prices have been increased and selling assets whose prices have been falling, (Prasad, Rogoff, Wei and Kose (2003)).

Note 42. Boom-bust cycles following capital inflows imply an initial surge in investment and asset bubbles, followed by capital outflows and recession.

Note 43. This conclusion is based mainly on the Mundell-Fleming model. This model argued that there is inconsistency between the policy of simultaneous currency pegging and CAL for a small open economy. Any attempt by the central bank to raise the domestic interest rate above the world rate (plus a risk premium) will invite foreign capital inflows, while any attempt to lower the domestic rate below the world rate will lead to capital outflows. On the other hand, if there is a change in the world interest rate, the domestic rate has to change accordingly (Saxena and Wong (1999)).

Table 1. Empirical cross-country analysis about the efficiency of capital control

Empirical studies	Volume of capital flows	Composition of capital flows
Mathieson and Rojas-Suarez (1993) (developing countries)	●	~
Johnston and Ryan (1994) (OECD countries)	↑	↑
Montiel and Reinhart (1999) (15 developed and developing countries)	↑	↑
Lopez-Mejia (1999) (Chile, Colombia, Malaysia)	●	↑
Edison and Warnoc (2003) (developing countries)	~	
Campion and Neumann (2004) (Latin American countries)	●	↑↑

Note:↑↑↑- strong up-way impact (rise of interest rate, less volatility of exchange rate, decreases of capital flows, less “hot capital”)↑↑- medium positive impact↑- small positive impact ↓- negative impact (decrease of interest rate) ~ no impact , ●-the study did not analyse the effect of capital control on this variable

Source: Mathieson and Rojas-Suarez (1993), Johnston and Ryan (1994), Montiel and Reinhart (1999), Lopez-Mejia (1999), Edison and Warnoc (2003), Campion and Neumann (2004).

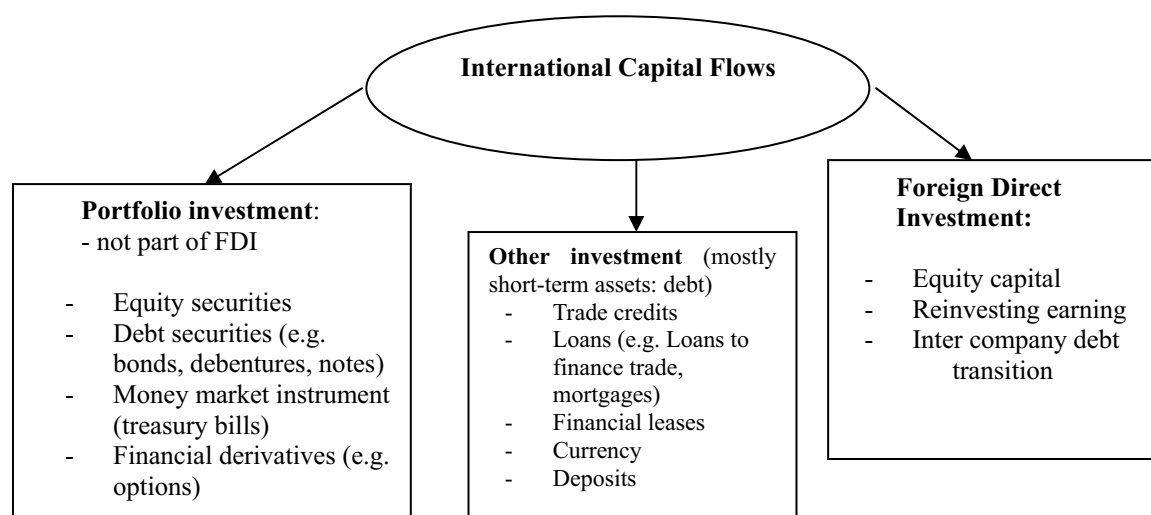


Figure 1. International capital flows classification according to the investment instrument used (OECD, IMF)

Sources: IMF. *Balance of Payments Manual*, Washington, DC, 1993.

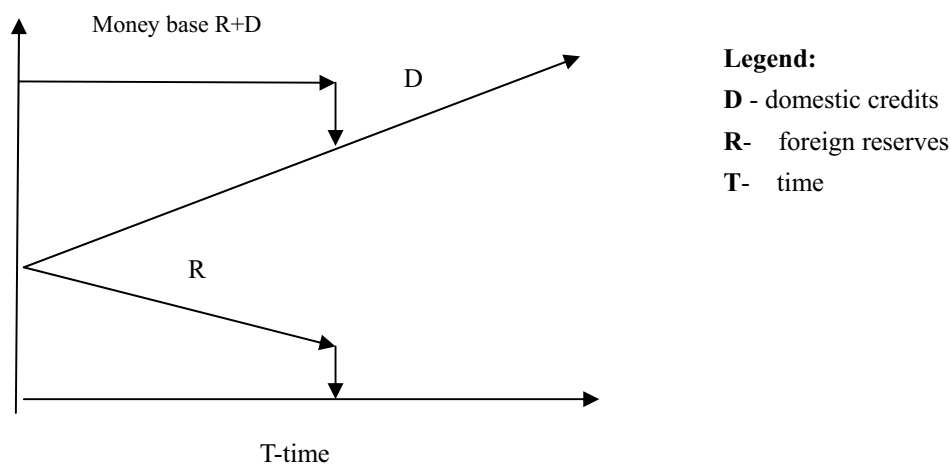


Figure 2. Domestic credit (D) and foreign reserves in first generation models

Source: Flood Robert, Garber Peter and Cramer (1996), *Collapsing Exchange-Rate Regimes: Another liner examples*, *Journal of International Economics*, 41, 227.

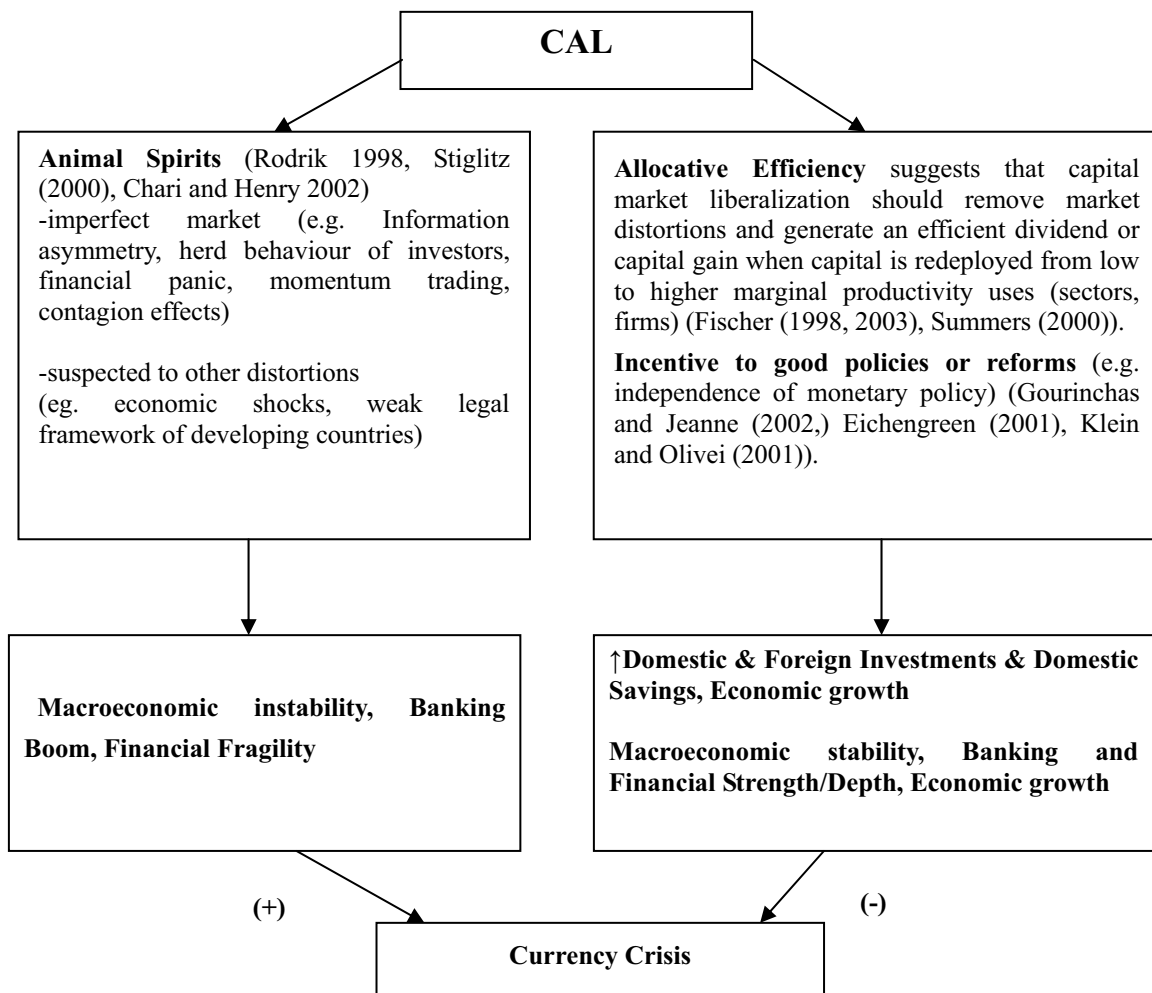


Figure 3. CAL and Currency Crisis from a theoretical perspective

Source: My own analysis based on Chari and Henry (2002), Stiglitz (2000), Rodrik (1998), Eichengreen (2001), Gourinchas and Jeanne (2002), Klein and Olivei (2001), Charlton and Stiglitz (2004), Singh (2002)).