Ι NTERNATIONELLA H ANDELSHÖGSKOLAN
HÖGSKOLAN I JÖNKÖPING

FDI and Currency Crises

Currency crises and the inflow of FDI.

Författare: Johan Rydqvist

Handledare: Professor Charlie Karlsson

                Doktorand Andreas Johnson

Jönköping, Sverige, April 2005

Paper inom nationalekonomi

Titel:	**Direktinvesteringar och Valutakriser**
Författare:	**Johan Rydqvist**
Handledare:	**Charlie Karlsson, Andreas Johnson**
Datum:	**2005-04-26**
Ämnesord:	**Direktinvesteringar, Valutakriser**

Sammanfattning

Syftet med den här uppsatsen är att analysera om det är några förändringar i inflödet av direktinvesteringar (FDI) före, under och efter en valutakris. Den här uppsatsen bygger på en empirisk analys som är konstruerad genom att tillämpa en regression modell.

Den teoretiska dispositionen presenterar en grund för motiven, effekterna och innebörden av direktinvesteringar från givarlandet till mottagarlandet. Tillsammans med den möjliga länken till nivån på den reala valutan i mottagarlandet, delvis grundad på tidigare studier i ämnet, föreslås en ekvation som bygger på en framarbetad hypotes om effekterna av en valuta kris på inflödet av direktinvesteringar.

Resultatet av den empiriska analysen visar på olikartade resultat gällande länken mellan direktinvesteringar och valutakriser. Hypotesen som används i uppsatsen gällande en valutakris och dess påverkan på inflödet av direktinvesteringar avvisas. Påverkan från en valutakris visar sig både ha en positiv och negativ effekt på inflödet av direktinvesteringar enligt regressions resultaten.

Dessutom hittas inga mönster i region data eller gällande år då valutakrisen pågick. Tyngden, längden och strukturen för varje valutakris tillsammans med valet av rätt definition av en valutakris är två viktiga faktorer som står i relation till resultaten i den här studien.

Paper in Economics

Title:	**FDI and Currency Crises**
Author:	**Johan Rydqvist**
Tutors:	**Charlie Karlsson, Andreas Johnson**
Date:	**2005-04-26**
Subject terms:	**Foreign Direct Investment, Currency crisis**

Abstract

The purpose of this thesis is to analyse if there are any changes in the inflow of Foreign Direct Investments before, during and after a currency crisis. The thesis is based on a theoretical framework and has an empirical part, which use a regression equation.

The theoretical framework presents a foundation of the incentives to make FDI investments and the implications for a host country. Together with the possible link to the level of the real exchange rate in the host country, this thesis, based partly on previous paper written on the subject, presents a regression equation for an empirical analysis. The regression equation is based on a hypothesis about the changes in FDI inflow before, during and after the occurrence of a currency crisis in the host country.

The empirical analysis presents different results concerning the link between FDI and a currency crisis. The hypothesis stated in the thesis is that a currency crisis influences FDI inflows. This hypothesis is rejected. Moreover, a currency crisis can have both positive and negative effects on the inflow of FDI for the selected countries.

Results find further no similarities in regions or year of occurrence of the currency crises. The depth, length and structure of each currency crisis together with using the right definition of a currency crisis are two important factors relating to the outcomes in this study.

Table of Contents

Tables

Appendix

1   Introduction

Floating exchanges rates were introduced as a consequence of the collapse of the Bretton Woods currency arrangement, since then several studies have shown that the level and the volatility of the exchange rates, as well as the expectation of their future development, can have significant effects on the timing, the amount and the location of FDI. (Pain & Welsum 2003).

Increasing volatility in exchange rate markets and currency crises have been two common features of the global economy over the last decades. Growing capital flows across borders reflect an increasing internationalisation.

"FDI is a flow of long-term capital based on long-term profit considerations involved in international production", (Caves, 1996). Modern theories of FDI claim that FDI takes place because certain domestic assets are worth more under foreign control. This view developed by industrial organization theorists is not focusing on the mode of financing a foreign acquisition or the relationship between the FDI and the level of the real exchange rate. However, empirical research has uncovered a significant relationship between FDI and exchange rates, (Shrikhande, 2002).

Considering the fact that FDI may be related to many different economic aspects of both the host country and the source country of FDI, these investment flows have been subject to intensive research. Despite the large amount of literature on FDI, the effect of currency crises on FDI inflow activity has largely remained unexamined.

Research during the last two decades concerning the relationship between FDI and the level of real exchange rates are for instance; a weak US dollar especially in the first half of 1990s is believed to have contributed to a wave of FDI into the U.S. by Japanese investors, (Blonigen, 1997). Ito (1999) argued that the strong yen induced more Japanese FDI to other parts of the world, like South East Asia during 1990s.

Lipsey (2001) investigated the behaviour of FDI during three currency crises: Latin America 1982, Mexico 1994 and Asia 1997. Lipsey's conclusion was that direct investment inflows into the affected country behaved differently from other investments in the same host countries. Inflows of direct investments into the crises countries were much more stable than portfolio inflows or other types of investment.

Froot and Stein (1991) propose in their study that domestic currency devaluation generates a positive "wealth effect" that allows potential direct investors to take over domestic firms for lower foreign currency value.

1.1   Problem

Modern theories claim that Foreign Direct Investments takes place because certain domestic assets are worth more under foreign managed control, (Frankel & Rose, 1996). Apart from that, empirical research has recently discovered a significant relationship between FDI and the level of the real exchange rates, Shrikhande (2002). Lipsey (2001) suggests also in his study that fast exchange rate fluctuations have large influence on FDI decisions. A study made by the IMF (IFS) and by the Bureau of Economic Analysis (BEA) show that the behaviour of FDI decisions to the affected country is far from systematic. It varies not only between countries but also from one crisis to another, (Soliman, 2003).

These previous studies together with the theoretical framework provide a platform for analysing the problem. This thesis attempts to find out if the occurrence of a currency crisis has a significant impact on the inflow of FDI into the country affected by the currency crisis and if there is a change of FDI inflows into the country before, during and after the currency crisis.

1.2   Purpose

The purpose of this thesis is to analyse if and to what extent the inflow of Foreign Direct Investments is affected before, during and after when a currency crisis hits the country.

1.3   Time Frame

The thesis will concentrate on the period from 1980 to the year 2000. The reason for choosing this period is due to available data. During this period, it is also possible to identify the essential currency crises.

Earlier studies of influences from real exchange rates on FDI have been limited to certain regions or type of financial environments. There are no studies made with the currency crises investigated in this thesis.

1.4   Outline

The outline of the thesis is as follow; Section two present a theoretical framework for FDI and currency crises and their interrelation. To gain an understanding for the elements and their relations a framework including both models and previous studies on the subject are presented. In the end of the section a hypothesis is stated which forms the starting point for the next section. In Section three an empirical analyses is carried out, based on this hypothesis. The regression model contains two dummy variables, related to the expected timing of the currency crisis. In Section, four presents conclusion and suggestion for research.

2   FDI and Currency Crises Framework

This chapter presents the most important theories and models of FDI and their relation with currency crisis and models supporting the empirical analysis which will be discussed in chapter three.

2.1   Introduction - FDI

Theories about FDI have been developed during the post-war period. The increasing globalisation process and the resulting rise in the number of MNEs (Multi National Enterprises) throughout the fifties and sixties has increased the demand for explaining the behaviour of FDI. Despite this demand there exists no general theory that explains the relationship between MNEs and FDI, as there is no single theory that explains all trade flows. Existing models of FDI try to explain the relationships between FDI and trade, by asking questions of the type; why does a firm decide to serve a foreign market through foreign production rather than exports? Moreover, what is the motive for FDI?

An FDI decision can be compared with alternative decisions of investment with regard to the expected returns. From a microeconomic perspective, investor's incentives for FDI can take the form of an expected profit equation. An equation with show that the expected profit is calculated through its expected sales profit compared to its producing cost and location costs.

To examine this view from a general perspective the discussion above can be summarised in the following equation:

(Eq. 2.1)   E (profit) = E (p) * (q) - E(c) * (q) - E (setup-cost) => E (profit.alt. invest)

E (profit) stands for the expected profit the company will gain from investing in the host country. E (p) is the expected price the MNEs can charge in the host country and for exports purposes, which is multiplied with quantity produced. This is then deducted by the expected production cost, E (c), times the quantity produced. Also subtracted from revenues are E (set up-cost), these represent costs associated with starting up production or distribution in the host country.

The expected profit must be equal or larger than the expected profit of alternative investments, E (profit.alt. invest). By focusing on how each of these variables is influenced by a sharp fluctuation in the real exchange rate we observe the following. A sharp decrease (depreciation) of the host countries currency would decrease the possible charge price in the host country and the investing country's profit as it experiences a loss expressed in its own currency resulting from the difference between sale prices obtained in host currency units. The second part with the expected cost for producing the effect is on the positive side with lower production cost per unit value through the 'cheaper' host country currency.

The third part of the equation with the set-up cost for investing into the host country is expected to have a positive effect on expected profit since its lowering this function through cheaper price of goods for supply and initial investment set-up costs. The overall effect of a sharp depreciation of the host country's currency associated with a currency crisis is depended on each variable size. The relationship between the price to be settled and production cost variable remains constant, assuming equal numbers of product produced. The main impact comes from the third part relating to set-up cost.

Further things, which could make the equation outcomes diverge from this assumption, are namely look-up costs, like long-term contract, in production facilities, which dampen the benefits from host country currency depreciation. Secondly, which also connect with the former statement, is that if the firms already are located in the host country and thereby the initially set-up cost is heavily depended on long term contract which can deceive the affect on the equation outcome.

2.2 Foreign Direct Investments

When we investigate the last 25 years we observe that the share of direct investment in the world's total capital outflows has increased and direct investment flows have generally been less volatile than other types of capital flows, (Lipsey, 1999). One reason for this difference is that the direct investment flow results in the transfer of ownership and operation of productive facilities, which renders the FDI flow not more problematic to reverse, (Lipsey, 2001). Empirically FDI is a more stable investment (from a country perspective) seeking manufacturing plants an machinery whilst capital market investors can quickly drop securities and banks can decline to roll over loans, but MNEs cannot so quickly pack up their factories and go home, (Chuhan, 1995), which is in line with Lipsey's (1999) statement.

There are two concepts of FDI and two similar ways of measuring it. One is that FDI is a particular form of capital flow across international boundaries from home countries to host countries. These flows give rise to a particular form of international assets for the home countries, specifically, the value of holdings in entities, typically corporations which are controlled by a home country resident or in which a home country resident holds a certain share of the voting rights. The other concept of direct investment relates to a set of economic activities or operations carried out in a host country by firms controlled or partly controlled by firms in some other (home) country. These activities are, for example, production, employment, sales, the purchase and use of intermediate goods and fixed capital, and the carrying out of research. The former of the two concepts is the one reflected in the balance of payments accounts.

During the 1960s and 1970s many developing countries, today often referred to as emerging markets, developed restrictive policies relating to the actions of foreign investors in their respective countries. During the last two decades, however, developing countries have liberalised their approach towards FDI in order to be able to attract as much multinational investment as possible (Singh, 2003). This view is also advocated by (Blomstrom & Kokko, 2003).

A comparative advantage of most emerging markets is their relatively low labour costs, which has the direct function of attracting FDI. Braconier and Ekholm (2001) conclude overwhelmingly that lower wages are an incentive for FDI. Another factor influencing the geographical direction of FDI lies in the fact that certain countries are gifted with an abundance of natural resources as FDI investors seek to exploit these natural endowments.

2.3 Currency Crisis

Currency crisis remains a topic of heated discussion. It is a highly disputed and investigated subject, which has sprouted numerous different definitions over the course of its known existence. These various definitions are developed for different types of crises

and different types of time frames. Currency crises are not only a developing country phenomenon; out of 202 crises, measured by Glick and Hutchison (1999), 42 took place in developed countries. The countries which where affected hold a variety of different exchange rate regimes, from floating to fixed system and a choice of capital control, (ibid.) From these results one can draw the conclusion that each separate crisis has its own exceptional causes despite its incomparable effects.

Below are different aspects of potential causes of currency crisis together with their possible influence on taking FDI decisions in the further.

2.3.1 Factors influencing Currency Crises

Many economists have tried to find country-specific economic fundamentals which cause currency crises by using a linear function and a wide range of fundamentals. This enables researches to increase the number of crises under consideration in order to increase the explanatory power of their models. However, according to Berg and Pattillo (1998) the explanatory power and in particular the predictive power of such models has remained small. In their study, they confirmed that empirical models often find statistically significant results without knowing if there really exists a causal relationship between the variables and the occurrence of currency crises. This is shown in how they have failed to predict the 1997 Asian crisis.

Another commonly encountered view among both experienced market observers and less experienced viewers of financial markets is an explanation of the causes for currency crises is that large traders in the foreign market can exercise a disproportionate influence on the probability and severity of a financial crisis by fermenting and orchestrating attacks against undermined currency pegs. This has been investigated by Corsetti, Dasgupta, Morris & Shin (2004) and they conclude in their model that a large trader in the market may exacerbate a crisis, and render small traders more aggressive. However, the relative accuracy of the information available to the traders affects this conclusion. If the large trader is more informed than, the small traders are, this effect might be quite small, (ibid.).

Frankel & Rose (1996) found that crashes tend to occur when: output growth is low; the growth of domestic credit is high; and the levels of foreign interest rates are high. A low ratio of FDI to debt, as mentioned before, is consistently associated with a high likelihood of a crash.

2.4 Currency Crises and FDI Flows

Currency crises often have a negative effect on GDP and per capita GDP. This is highly documented in several reports by the IMF and other international organizations reports. Calvo (1998) argues that the "sudden stop" of capital inflows during the financial disturbances causes large damages to the economy. Currency crises also often result in unusually large declines in private expenditure, production, asset prices, and prices of non-tradable goods (Mendoza, 2000).

Looking at the Asian crisis effect on the different stock markets during the period form July 1997 to February 1998 Thailand fell by 48,4 percent and Indonesia fell by 81,7 percent and in Mexico following the devaluation of the peso, the Mexico's stock market fell by more than 50%, (ibid.). This results, as previously mentioned, in a unique opening

for expansion and entry through both Greenfield investments and the acquisition of domestic firms for both existing firms and potential direct investors.

Currency crises are associated with large exchange rate depreciations; one observes diverse results in the literature on FDI and exchange rates. Froot and Stein (1991) propose that local currency devaluation generates a positive "wealth effect" that permits potential direct investors to take over domestic firms for a lower foreign currency value. This view is also confirmed in a study by Klein and Rosengren (1994).

Blonigen (1997) suggests that exchange rate movements might affect acquisition FDI when acquisitions involve firm specific assets and when merchandise markets imperfections prevent investors from having equal right of entry to all markets.

The level of the real exchange rates affects FDI in wide ranges of ways, inparticular in respect of the destination of the goods produced. If the investor plans to serve the local market, FDI and trade are substitutes. Different aspects can then be considered. For example, an appreciation of the local currency increases FDI inflows due to higher purchasing power of the local consumers, (Blonigen, 1997). Contrary, depreciation in the real exchange rate of the recipient country increases FDI through reduced cost of capital.

On the other hand if the aim of FDI is to produce for re-export, it complements trade, and a depreciation of the local currency reduces FDI inflows and increases competitiveness through higher labour costs, (Lipsey, 1999).

Looking at available data of real exchange rates changes, these do not separate the range of investors motivations; depreciation in real terms is normally shown to induce more FDI inflows (Goldberg and Klein, 1997). Knowing the variables, discussed above regarding capital transfer, the other impact of exchange rates on FDI decisions is linked with its variability. For example, Cushman (1988) suggests that producing on the destination market is a good substitute to exports if there is a large uncertainty on exchange rates. However, if the production is partly re-exported this benefit disappears.

By comparing with portfolio and other forms of investment flows, direct investment is likely to be a relatively more stable source of funds, as discussed in section 3.1. The investor's horizon is longer to begin with, and they are more deeply involved with the host economies after the investments have been made, (Lipsey, 2001).

From a fundamental point of, view large exchange rate movements and currency crises might differ in their effect on FDI. Currency crises are major shocks with more distinct effects on the crisis economy while a devaluation can be seen as a healthy policy measure when it come as a part of an economic reform program. Looking into the investors' reaction a real exchange rate shock may vary considerably from their response to a currency crisis, (ibid.).

On the other hand, when central banks defend currencies towards speculative attacks, the currency may not experience a large depreciation. During these circumstances, the country can still meet the definition requirements of a 'victim of currency crises' according to some well-known definitions such as that of Eichengreen et al (1995) and Glick & Hutchison (1999) discussed in section 2.5.

A study on FDI and exchange rates regime, by Benassy-Quere, Fontagne & Lahreche-Revil, (1999), confirms the relatively significant role of exchange rate strategies for at-

tracting inflows of FDI. In their study, with panel data from 1984-1996 they show that nominal exchange rate instability is detrimental to FDI. In addition to this, from the host country's perspective, the correlation between its bilateral exchange rate against the origin country and the one of alternative locations has a sizable impact on inward FDI, (Benassy-Quere, Fontagne & Lahreche-Revil, 1999).

Further can a fixed exchange rate regime take form of crawling pegs, target zones or/and gliding bands. All these construction are seen as fixed regimes but continue to allow for possible currency movements but within small limited bands. The fundamental factors influencing the occurrence of a currency crisis are mainly the same for the pegged and the pure fixed regimes, (Lipsey, 2001).

The differences are shown in the reaction of the real exchange rate. With a fixed regime, the currency is fixed towards a strong currency, usually the US-Dollar, and during a currency crisis, the monetary authorities are forced to devaluate the home currency to meet new economic conditions. Compared to a floating exchange rate regime the fixed exchange rate regime can stop heavy short-term speculations attacks on the currency, but on the other hand a floating exchange rate regime can easily adjust initially to fast economic changes and thereby ease new speculations attacks. According to the Glick and Hutchison (1999) definition of currency crises, a currency crisis can take form both during a fixed and floating exchange rate regime. The definition does not only count devaluation in the currency as mark for a currency crisis but also a sharp depreciation of the currency, like for instance in Philippines during the Asian crisis.

Looking to further aspects on the implication of a currency crisis directly after its occurrence, it is notable to say that for new FDI entries expansion and to attract foreign investors, MNEs other investors have to secure the required funds for their new operations. If their intention is to raise funds on the local market, then all the above mentioned positive effects may be undone when a currency crises comes along with a banking crisis. Within a twin crisis situation the effect on the macro economy may be more devastating, (Glick & Hutchison, 1999).

In addition to this, when local credit channels collapse due to the banking crises, it becomes extremely hard to raise funds locally and firms become less able to take advantage of on any potential gains following a currency crises. Glick and Hutchison (1999) put forward in their study that banking crises and currency crises often go hand in hand and that this causality takes place in either direction.

According to this, it should be said that FDI activity is a strategic decision on the part of the firm, during a currency crisis. Therefore, potential effects of currency crises are subject to individual firm's estimation. Firms' decisions consequently depend on their attitude towards risk and on their awareness of domestic and international circumstances surrounding the crisis and its consequences for the predictions of profitable operation and profit repatriation, (Aizenman, 1999). Further discussion in section 2.1 highlights the expected profit estimated by each individual firm facing decision on FDI activities. Further lies the benefit for the MNEs the global relocations advantages, studies by (Lipsey, (1999, 2001) and Aizenman, (1999) have shown that many MNEs during the initial stage of currency crisis switch from host country sales to export sales and thereby can take advantage of the weaker host country real exchange rate.

FDI decisions can also be referred to as strategies concerning locations. Markusen (1995) emphasize that the location of multinational activities depends on comparative

advantages, but also on transaction costs and increasing returns. Looking into exchange rate instability, the impact is theoretically ambiguous concerning previous mentioned theories. A foreign firm facing large exchange rate volatility will produce its good in the local country if its intentions are to sell on this market, but will desist from doing so if it intends to re-export the goods.

Risk aversion, in theory, should result in firms diversifying across numerous possible locations. Aizenmann (1992) on the other hand claims that FDI allows firms to allocate production to the subsidiary, which has the cheapest production cost and thereby be able to adjust to various shocks in the real exchange rates taken place.

Looking deeper into the aftermath of a currency crisis, a currency crisis often induces some regulatory changes that tend to open the possibility for FDI inflows and improve the incentives to pursue FDI activities. This has been the case in Asia, (Lipsey, 2001). Aizenman (1999) has developed a model which shows that following a currency crisis local capitalists may support an opening up of the economy to joint venture FDI. This change in attitude, according to Aizenmann, is more likely to happen where the greater the debt overhang, the lower the borrowing constraint, and the weaker the market power of foreign entrepreneurs.

FDI liabilities appear, as discussed in section 2.2, to be a safer form than debt or other forms of non-FDI obligations, irrespective of country risk elements such as income level and amount of openness, (Fernândez-Arias & Hausmann, 2001).

Should thus countries affected by currency crises adopt policies that discourage debt and favour FDI? A solution to solve these problems could thereby be for the countries facing a currency crisis to find their way out of debt mismatches. According to Lipsey, (2002) it should be said that FDI plays a main role in the transformation of host economies from being exporters of raw materials and foods to being exporters of manufactures, and also in some cases relatively high-tech manufactures, (ibid.).

To sum up previous discussion; a financial crisis causes both positive and negative impacts on the profitability of MNE operation in the crisis-affected economy. On the optimistic side, currency collapse can have a positive impact on FDI in at least three different ways. First, large exchange rate depreciations decrease domestic production costs and asset values, making foreign investment more profitable. Since depreciation of the exchange rate of host country currencies make the firms richer in terms of their purchasing power within the country, investment can boost. Second, the cost of investment may also be considerably reduced by falling asset prices because of the contraction in domestic demand propelled by the crisis, (Athukorala, 2003). Third, revisions to FDI laws as part of the crisis management package in crisis-affected countries can open up new chances for cross-border mergers and acquisitions, (Krugman, 2000). On the negative side, domestic demand contraction caused by output collapse and lowered immediate growth prospects can have a negative effect on domestic market-oriented foreign investment, (Athukorala, 2003).

This leads into the discussion concerning the affected country's ability to quickly create stability and reconstruction plans during the crisis. The general view is that developed countries have a reputation for quicker recovery in comparison to developing countries. The outlook for the impact on FDI decisions is therefore such that, in a currency crisis in a developed country MNEs can more rapidly take advantage of price benefits and easily finance those investments into developed countries opposite to investment into

affected developing countries. Studies have also shown, (Corsetti, Pesenti & Roubini, 1998) that currency crises in developing countries are faster being transmit to neighbouring countries and also in the future easily affect the source country's development through its closely trade relations with those countries.

According to this argument countries which are unable to borrow abroad in their domestic currency, can be expected to suffer form excessive debt mismatch, (Fernândez-Arias & Hausmann, 2001). This hypothesis is often formalized as an 'original sin' that debt liabilities are crisis prone. Findings suggest that a critical difference between developed and developing countries relates to the fact that many of the former do not suffer from the 'original sin'. They can borrow internationally in their own currency, thus avoiding the mismatches that cause crises in other economies, (ibid.).

The Eclectic paradigm is a theory, which tries to explain international production and the actions of multinational enterprises through combining different trade theories in a general conceptual structure. The theory is a development of Hymer (1972) theory of firm specific advantages. The theory does not deal with or tries to explain the relationship between FDI and currency crisis and thereby it's not used in this thesis.

2.4.1   Facts and Trends FDI after Currency Crises

As discussed in section 1.1, statistics from the IMF International Financial Statistics (IFS) and the Bureau of Economic Analysis (BEA) are used to explore the performance of FDI through more than a hundred crises in different countries, (Soliman, 2003). The results show that the behaviour of FDI inflows to the affected country is far from consistent. It varies not only between countries but also from one crisis to another.

The findings show that gross FDI inflows to the host country increased during the year(s) of crisis or the year(s) directly after in 57 out 122 cases, (ibid.). The average inflows across countries and among crises tend to increase in the year of the crises and in the following three years. Focusing on country groups, average annual inflows to industrial countries shows paths of decreasing flows in the year of the crisis and recovers in the year after. In Asian countries, inflows of FDI declined to some extent in the year of the crisis and continued the descending trend in the years after. Looking into the Latin American experience, the inflows of FDI tend to increase in the year of the crisis and then stay at a stable level in the following years, in overall perspective.

In each of the three financial and exchange rate crises, Latin America in 1982, Mexico in 1994 and East Asia in 1997, direct investment inflows into the affected countries have behaved differently from other types of investment, (Lipsey, 2001).

Focusing on Latin America in 1982 one can observe that country investment declined after the currency crisis that year. Direct Investments sustained showing positive numbers, though at an inferior level than before, (ibid.).

By looking into FDI inflows for Mexico, one observes a different effect. In the crisis of 1976, the inflows of FDI grew by 3%. 6 years later, 1982, FDI declined by 38%. In the year of 1994, FDI inflows to Mexico rushed by 134%. These findings show that the structure of each currency crises greatly influences the impact on FDI inflows. As mentioned above, in the crisis of 1982, which essentially was a debt crises, (Lipsey, 2001), the inflows of FDI to Mexico declined by almost 40%.

If one then look at the recent crisis in 1994-1995 the inflows of FDI to Mexico surged. This diversified pattern is apparent in several other countries both in industrial and developing countries and it mainly replicates conditions surrounding the crisis. According to this, in Sweden the currency crisis in the 1980s resulted in increased inflows of FDI, but during twin crises in 1992 the inflows of FDI to Sweden declined by over 70 percent. A similar example shows Korea, where FDI inflows declined in the 1980 crisis. Nevertheless, 1997, during the Asian crisis, FDI inflows grew steadily.

2.5   The Gravity Model Approach

The gravity model which was introduced in the year 1966 is a model that tries to explain bilateral trade flows and FDI. The Gravity model has been extensively used to determine substantial trade flow effects of institutions such as customs unions, exchange rate mechanisms, ethnic ties, linguistic identity and international borders. (Anderson & Wincoop, 2001). In explaining bilateral flows, it has proved to be popular and empirically successful. Empirical studies focusing on bilateral distribution of FDI using the gravity model have been made by for example Brainard & Riker (1997) and Eaton & Tamura (1996).

The gravity model describes the flow from an origin i to a destination j in terms of supply factors in the origin country (income and population), demand factors in the destination (income and population) and a range of stimulating or restraining factors relating to the specific flow. This could be such as distance (as a proxy for trade costs) and trade preferences, (Linnemann, 1966). Hence, in gravity model the volume of trade between two countries increases with the product of their GDPs and decreases with their geographical distance, (Carr, Markusen & Maskus, 1998).

When a currency crisis occurs in a country, the gravity model projects that MNEs will redirect their FDI to countries with more stability and which portray structure similarities between the source and host country. Even though the trade volume might only face a short-term downtrend and opportunities for cheaper production arises the increasing diverging structure makes the gravity model strive for changing FDI patterns.

2.6   The Markusen and Maskus Model

Different from the gravity model, the Markusen and Maskus model (1999) has a more theoretical foundation. The model tests a number of alternative theories for FDI. The model functions as "knowledge-capital-model" for multinational firms and includes three principal assumptions. First, services of knowledge-based and knowledge-generating activities, such as R&D, can be geographically divided from production and supplied to production facilities at low cost. Second, the knowledge-intensive activities are skilled labour intensive relative to production. These characteristics give rise to vertical multinationals, which divide production and locate activities according to factor prices and market size. Third, knowledge-based services have a joint-input characteristic, so that they can be supplied to additional production services at low cost, (Carr, Markusen & Maskus, 1998).

According to the model outward investment from a source country to affiliates in a host country is increasing in the sum of their economic sizes in terms of GDP, their similarity in size, the relative labour abundance of the parent nation, and the interaction between size and relative endowment differences. The model also allows for simultaneous

horizontal and vertical motives for direct investment and emphasizes certain interactions, such as that between size and endowment differences, (ibid.).

The model has a connection with the gravity model through it's emphasize of an interaction between the source country and the host country concerning Foreign Direct Investments decisions. The difference is though when the model is linking the currency crises influence on the decision to make FDI. The Markusen and Maskus model focusing on the MNEs as a vertical-oriented origin and as an institution which move its production where it's most efficient within the companies existing production affiliates independent of gravity connection, which is showing similarities in structure and distance, (Carr, Markusen & Maskus, 1998).

The Markusen and Maskus model also highlight the difference between the skilled and unskilled labour force, which in currency crises affect on FDI decision can be shown in that the skilled labour force faster ability to movements. In the face of currency crisis countries with a high level of skilled labour, more rapidly are able to relocate its workforce and hence adjust to shift in demands etc. (ibid.).

2.7   Framework Conclusions

The theoretical framework section tries to present basic theory related to FDI, defining FDI, describe the occurrence of currency crisis and how a currency crisis influences the inflow of FDI into countries following the impact of a currency crisis.

The gravity model emphasises that MNEs relocate their investment during time of uncertainty, in this case a currency crisis. The occurrence of a currency crisis puts pressure on MNEs to move their investments to safer areas. The gravity model further suggests a decreased inflow of FDI to the affected country at the time of the occurrence of the currency crisis. The Markusen & Maskus model on the other hand stress that MNEs move production to places where they can gain the largest gains in production. Linked with a currency crisis, FDI inflow thereby is expected to increase after the occurrence of a currency crisis into the country. Lipsey (2001) presents results in his study showing different direction of FDI flow, during and after the occurrence of a currency crisis.

With these models and previous papers, the hypothesis for this thesis is constructed. The hypothesis states that during the currency crisis the inflow of FDI into the affected country is expected to decrease and after the currency crisis the inflow of FDI is expected to increase.

3   Empirical Analysis

3.1   Introduction

The methodology in the empirical analysis uses a regression model with the dependent variable FDI inflow into a country. This is put into respect to an in-dependent time-variable and two dummy-variables. The dummy variables are selected to search for significant similarities in FDI inflow during the occurrence of a currency crisis and the time before compare to the time after the crisis.

As discussed in section 2.1, decisions made by MNEs to make foreign direct investments into the host country is based on results from their each different profitability function outcomes.

3.2   An Operational definition of Currency Crises

In a study written by Krugman (2000), it is stated "there is no generally accepted formal definition of currency crises, but we know them when we see them" (p.1). Another set definition of a currency crisis is that when the level of nominal devaluation of the exchange rate exceeds an arbitrary entrance. This definition is set by Frankel and Rose (1996), which define currency crises as a nominal depreciation of a currency of at least 25 percent and at least a 10 percent increase in the rate of depreciation on a yearly basis. Another definition is set by Kaminsky and Reinhart (1996) who identify currency crises as when the affected country itself, international financial institution or highly regarded financial organizations report that there indeed is a currency crisis.

A third definition by Glick and Hutchison (1999) is based on a comprehensive study. In their study, they introduce a crisis indicator that is constructed from large changes in an index of currency pressure, defined as a weighted mean value of monthly real exchange rates changes and monthly percent reserve losses. The weights are then inversely related to the variance of changes of each component over the sample for each country. The formula is then given so that large changes in exchange rate pressure are defined as changes in the pressure index that exceed the average plus 2 times the country specific standard deviation (ibid.).

This paper relies on the definition of a currency crisis set by Glick and Hutchison (1999). All the countries in this group together with year(s) hit by a currency crisis are shown in table 1 in the Appendix. The reason for choosing this definition lies within the broad study made which cover both floating and fixed exchange rate regimes.

3.3   Data

As often with research concerning FDI, available data is of great concern. The FDI data used in this thesis are from the UNCTAD database for the selected countries between the years 1980 to 2000. The countries chosen are selected on the basis discussed in section 3.2. A limited factor is also obtainable, FDI numbers within the chosen year range and appearance of currency crises. The information on currency crises and banking crises are obtained from the definition made by Glick and Hutchison (1999). The definition is representative, shows similar count of currency crises as other definitions, and corresponds with the chosen countries and with international financial organizations

recognition of the incidence of currency crises. All FDI data is showed in United States Dollar.

It should be noted that the dummy variable CCRIS is a measure of currency crises on an annual basis, which takes form of a binary variable that takes the value of one when there is a crises and in the instance of no currency crisis the value of zero. This raises concerns, partly discussed in Section 2.1. Different crisis can take diverse forms of depth and magnitude, a distinction, which is not made by this measurement. It can appear as a deafening measure of currency crisis and consequently generates some bias towards receiving insignificant effects of a currency crisis on the FDI activity. An alternative to straighten out this problem could be the use of real exchange rate. However, the FDI data on an annual level restricts the ability of the real exchange rate to detain the depth of the crisis since the year-end or the year-average real exchange rate in this case has to be used. According to this, it's also possible that the exchange rate recovers almost immediately after the crisis in a way that leaves year-end measurement of the real exchange rate ineffective in capturing the full degree and effect of the crisis.

The Asian crisis in 1997-98 was a modern-style capital account crisis characterized by a boom of international capital inflows followed by a sudden withdrawal of such funds because of loss of confidence by investors in the country's currency, (Athukorala, 2003). Due to limited numbers of FDI data after the Asian crisis, this thesis has chosen not include the Asian crisis.

3.4   Methodology

3.4.1   Graph Study

First, a study is shown on the yearly growth rates for the FDI inflow in the selected countries. The selection is taken from Glick & Hutchison (1999) definition of currency crises occurring during the last three decades. A selection is made so that all countries are selected which were hit by a currency crisis during the years 1980-2000 and didn't show negative FDI inflow values during any of those years.

In the first study, the graphs (shown in Appendix 2) one can observe interesting paths before and after the occurrence of a currency crisis. A currency crisis apparently is changing the inflows of FDI, focusing on before and after the occurrence of such a crisis.

3.4.2   Further Methodology

The methodology for the regression analyse is based on the Equation 3.1. This equation relays on the hypothesis in Equation 2.1. The equation 2.1 shows each firm expected profit function regarding FDI. This is, as discussed, tested by first graph studies over the development for FDI inflows during the selected years 1980-2000. Secondly, the yearly growth rates of FDI inflow are calculated to obtain growth difference before and after a currency crisis. Thirdly, as stated above, a regression analyse is done on Equation 3.1.

The hypothesis is, as discussed in section 2.7, that during the currency crisis the inflow of FDI should decrease and after the occurrence of a currency crisis the inflow of FDI should increase.

To examine the impact of currency crises on FDI inflows to the affected country this thesis will use econometric specifications. The model using to test this is a plain regression model, constructed as followed:

(Equation 3.1) $(FDI)_t = \alpha + \beta (1)*Time + \beta (2)* CCRIS + \beta (3)* CCROCC + \varepsilon_t$

Interpreting the equation together with hypothesis stated above, the CCRIS dummy variable should show a positive beta-sign and the CCROCC dummy variable should show a negative beta-sign. According to this, the time variable is expected to show a positive beta sign, along with growing yearly growth rates, showing in the graphs.

The Equation 3.1 is constructed so that the $(FDI)_t$ variable and the Time variable is logged and added with both dummy variables. Hence, the formula $(FDI)_t = ae^{bt}$ is logged and then the both dummy variables CCRIS and CCROCC are added and Equation 3.1 is constructed.

3.4.3   Yearly Growth Rates

Calculations are made on the yearly growth rates of FDI inflow before and after a currency crisis. The numbers show the average yearly growth rates of FDI inflow before and after a currency crisis. A currency crisis can take place under, as in this case, 1 to 3 years. The growth rates are calculated before and after this time. The results are presented in Table 3.1 below:

Table 3.1 Yearly growth rates before and after a currency crisis

COUNTRY	BEFORE CRISIS	AFTER CRISIS	YEAR OF CRISIS
URUGUAY	-91%	67% +	1983
THAILAND	36%	53% +	1984
VENEZUELA	46%	55% +	1984-86
CHILE	-1%	128% +	1985
COLOMBIA	43%	28% -	1985
ECUADOR	-5%	36% +	1985
GREECE	-6%	14% +	1985
MEXICO	-1%	25% +	1985
FIJI	-9%	198% +	1986
GUATEMALA	-3%	43% +	1986
INDONESIA	18%	38% +	1986
MALAYSIA	-2%	54% +	1986
NORWAY	24%	3% -	1986
PHILIPPINES	12%	90% +	1986

U.K.	-52%	42% +	1986
ARGENTINA	30%	41% +	1987
BRAZIL	-11%	128% +	1987
COSTA RICA	14%	32% +	1987
DENMARK	-20%	67% +	1987
DOM. REPUBLIC	3%	12% +	1987
JORDAN	43%	111% +	1987
BOLIVIA	-3%	26% +	1988
PARAGUAY	28%	59% +	1988-89
HONDURAS	18%	21% +	1990
FINLAND	46%	31% -	1991-93
INDIA	41%	68% +	1991
CANADA	23%	40% +	1992
ITALY	-15%	35% +	1992
SWEDEN	51%	59% +	1992-93
TURKEY	17%	6% -	1994
FRANCE	2%	24% +	1994-95
AVERAGE	17.2%	47.7% +	-

The average growth rate before a currency crisis is +17.2 percent and after a currency crisis +47.7 percent, calculated on positive values with a limit of a 100% growth rate per year. As shown above, most of the countries show an increase in yearly average growth terms of FDI inflow after that the countries are hit by currency crisis.

With above results showing the changes in the yearly growth rates of FDI inflow to host countries, it's reasonable to assume that the occurrence of currency crisis can have a significant impact on changes in the flow of FDI, in this case inflow, to the host country as a result of a currency crisis.

$(FDI)_t$ is a measurement of the FDI inflows to the host country set in FDI inflow per year, Time is the time period variable in this case from 1980 to 2000, CCRIS is a dummy variable, that takes the value one the years after a currency crises hit the country and zero otherwise. The other dummy variable, CCRIS, takes the value one during the crisis, before, and after the value of zero. CCROCC is also a dummy variable, taking the value one during the year(s) of crisis and zero otherwise.

By testing the formula, the attempt is to try to find patterns of currency crises influence on FDI inflows to countries hit by currency crisis. The hypothesis is that Equation 3.1

should present a positive beta-sign for the CCRISIS variable, as stated previous. Things, which could make the regression Equation 3.1 diverge from the above stated assumption concerns facts stated in Section 2.1 with lock-up prices/costs. Secondly, occurrence may result in significant currency fluctuations since its measured on a yearly basis, the real time horizon between different crisis and countries. Thirdly, since different currency crises are taken into account, they diverge in structure and the effect over time, which naturally may influence the affected countries differently.

The formula involves dummy-variables for occurrence and time of a currency crisis; the affected countries are shown in table 1 in Appendix 1. The selected crises and countries affected are according to definition set by Glick and Hutchison (1999).

3.5   Results

The initial results presented below are calculated using the EViews regression program and so used with the above presented model; Equation (3.1). The results are divided into sections due to significance levels.

3.5.1   Regression Analyse on Country Level

The above-described data is used to run a regression analysis. Firstly, a per-land regression is completed. Thirty-one observations are made. FDI inflow, which is shown in US Dollars, is used as a dependent variable. The model seems to fit the data reasonably well with R^2-values around 0.6-0.9 in most cases.

3.5.2   Regression Data

Below are regression results presented from running the regression on Equation 3.1 for selected countries. Countries shown in Table 3.4 and 3.5 are countries that show significant values for the dummy variable CCRIS. Countries shown in Table 3.6 are countries, which show significant values for both of the dummy variables or just for the CCROCC variable. In Table 3.7, 3.8, 3.9 and 3.10 are countries showing no significant values for either of the dummy variables. Listed at the bottom is each equations R-square value.

Table 3.2 Regression results for the group, numbers of countries showing positive or negative significant beta-sign or non-significant values for each variable.

	TIME	CCRIS	CCROCC
+	27	3	No
-	1	8	5
No-signi.	3	20	26

Table 3.3 Regression results showing countries grouped after beta and significant signs.

CCRIS

		+	-	No-signi
CCROCC	+	Non	Non	
	-	Non	Finland, Venezuela	Arg,Chi, Swe
	No-signi	Den, Par, Phi	Col, Hon, Ita, Jor,Mex,Tur	See table 4.7-10

Table 3.4 Regression results for countries, t-values are shown within parenthesis.

COUNTRY	COLOMBIA	DENMARK	HONDURAS	ITALY	JORDAN
CONSTANT	-341.85(-5.96)	-493.2 (-8.46)	-337.17 (-7.24)	-370.6 (-7.75)	-416.95 (-2.33)
TIME	0.17 (6.07)	0.25 (8.53)	0.17 (7.31)	0.19 (7.9)	0.21 (2.35)
CCRIS	-0.9 (-2.2)	0.68 (2.05)	-0.5 (-2.03)	-1.11 (-3.64)	-3.21 (-2.75)
CCROCC	0.54 (0.55)	-0.38 (-0.81)	-0.1 (-0.4)	-0.23 (-0.62)	-1.61 (-1.11)
R^2-VALUE	0.76	0.95	0.90	0.87	0.51

Table 3.5 Regression results for countries, t-values are shown within parenthesis.

COUNTRY	MEXICO	PARAGUAY	PHILIPPINES	TURKEY
CONSTANT	-329.8 (-8.73)	157.45 (0.91)	-360.71 (-3.27)	-509.5 (-8.63)
TIME	0.17 (8.93)	-0.1 (-2.9)	0.18 (3.3)	0.26 (8.71)
CCRIS	-0.92 (-3.42)	3.79 (3.38)	1.7 (2.29)	-1.31 (-3.31)
CCROCC	-0.57 (-1.58)	0.81 (0.85)	0.22 (0.23)	-0.74 (-1.4)
R^2-VALUE	0.87	0.78	0.84	0.88

Table 3.6 Regression results for countries, t-values are shown within parenthesis.

COUNTRY	ARGENTINA	CHILE	FINLAND	SWEDEN	VENEZUELA
CONSTANT	-377.28 (-5.1)	-394.23 (-7.3)	-5.77 (-16.2)	-535.2 (-18.5)	-520.45 (-10.8)
TIME	0.19 (5.19)	0.2 (7.44)	0.29 (16.34)	0.27 (18.7)	0.27 (10.86)
CCRIS	0.15 (0.3)	-0.51 (-1.34)	-0.89 (-3.75)	-0.06 (-0.37)	-0.88 (-2.45)
CCROCC	-6.86 (-11.52)	-1.196 (-2.33)	-1.08 (-5.8)	-0.4 (-2.51)	-3.37 (-11.31)
R^2-VALUE	0.95	0.88	0.98	0.98	0.94

Table 3.7 Regression results for countries, t-values are shown within parenthesis.

COUNTRY	BOLIVIA	BRAZIL	CANADA	COSTA RICA	DOM.REP.
CONSTANT	-399.51 (-3.1)	-466.84 (-3.75)	-401.39 (-3.09)	-248.79	-331.74
TIME	**0.2 (3.12)**	**0.239 (3.81)**	**0.2 (3.15)**	**0.13 (7.08)**	**0.17 (2.52)**
CCRIS	0.26 (0.32)	-1.46 (-1.8)	-0.6 (-0.72)	0.21 (0.9)	0.15 (0.87)
CCROCC	-0.46 (-0.47)	-1.17 (-1.17)	-0.75 (-0.74)	-0.13 (-0.45)	0.26 (1.07)
R^2-VALUE	0.74	0.58	0.62	0.93	0.60

Table 3.8 Regression results for countries, t-values are shown within parenthesis.

COUNTRY	ECUADOR	FIJI	FRANCE	GREECE	GUATEMALA
CONSTANT	-313.33 (-8.32)	-185.63	-381.49 (-8.72)	53.6 (0.77)	-35.93 (-0.43)
TIME	**0.16 (8.42)**	**0.09 (3.43)**	**0.2 (8.92)**	-0.02 (-0.68)	0.02 (0.48)
CCRIS	-0.02 (-0.06)	-0.51 (-1.38)	-0.43 (-1.41)	0.67 (1.36)	-0.35 (0.63)
CCROCC	-0.32 (-0.9)	-0.81 (-1.7)	-0.24 (-0.79)	-0.04 (-0.07)	-0.08 (-0.11)
R^2-VALUE	0.92	0.56	0.87	0.14	0.18

Table 3.9 Regression results for countries, t-values are shown within parenthesis.

COUNTRY	INDIA	INDONESIA	MALAYSIA	NORWAY	THAILAND
CONSTANT	-403 (-3.17)	-38.22 (-0.25)	-226.89 (-2.98)	-402.62 (-2.13)	-315.19 (-6.63)
TIME	**0.2 (3.2)**	0.02 (0.29)	**0.12 (3.07)**	**0.21 (2.17)**	**0.16 (6.75)**
CCRIS	0.66 (0.83)	1.27 (1.23)	-0.18 (-0.36)	-0.93 (-0.73)	0.2 (0.55)
CCROCC	-1.29 (-1.35)	0.11 (0.08)	-1.15 (-1.84)	-1.17 (-0.72)	0.09 (0.19)
R^2-VALUE	0.81	0.3	0.64	0.34	0.87

Table 3.10 Regression results for countries, t-values are shown within parenthesis

COUNTRY	U.K.	URUGUAY
CONSTANT	-164.93 (-2.69)	-577.26 (-3.32)
TIME	**0.09 (2.83)**	**0.29 (3.34)**
CCRIS	0.52 (1.25)	-2.38 (-1.91)
CCROCC	-0.46 (-0.87)	-0.59 (-0.38)
R^2-VALUE	0.76	0.42

As presented above fourteen of thirty-one regressions show significant values for at least one of the two dummy variables. Presented with beginning in Section 3.5.3 are the countries showing similar regression result.

3.5.3 Analysis of Table 3.2 and 3.3

Observation of Table 3.2 and 3.3, one can see firstly that a main part, twenty-seven countries, show a significant positive beta sign for the time variable, along with expectations. By focusing on the dummy variables, one observes diversified results. The CCRIS variable, which is expected to, according to the stated hypothesis, show a positive beta-sign value, only do so for three of thirty-one countries, on the other hand show eight countries a negative significant beta-sign value for this variable. The results for the CCROCC variable shows that non country presents a significant positive beta-sign for this variable, just according to expectations but just five countries of thirty-one presents a negative beta-sign. Analyses of this data are presented in Section 3.6.

3.5.4 Countries with Significant CCRIS variable

As shown above nine countries show significant values for the CCRIS variable. Looking into the beta-signs for each variable one can first observe that Denmark, Paraguay and Philippines show a positive beta-sign while Colombia, Honduras, Italy, Jordan, Mexico and Turkey show a negative beta-sign for this variable.

Focusing on the countries with a positive beta-sign one can observe, apart from that they all suffered from a crisis during the late 1980s, and they all experienced inflow of FDI during the crisis year at approxiametely the same level. Denmark suffered from a banking crisis in the years after the currency crisis, which naturally could have influenced the numbers. Further, Paraguay and Philippines show several other interesting similarities. Both Paraguay and Philippines had the same FDI/cap level during the crisis year. They additionally had the FDI-stock per real GDP at the same level, during the years before and after the currency crisis.

Looking into the countries with a negative significant value for the CCRIS variable, similarities are harder to detect. Using above-mentioned parameters, only in the level of FDI/cap during the year before and in the year after the currency crisis the countries presented similar levels. Italy is an exception.

Searching for description of the difference of the beta-sign for two country groups in this section, possible solutions are hard to find. None of the three show any similarities in year of occurrence of currency crisis or banking crisis. Looking into the length of the currency crisis or possible occurrence of previous crisis in the country this does not, either brings any interesting similar outcomes between the countries.

3.5.5 Countries with Significant CCROCC variable

Presented in Table 3.6 Argentina, Chile and Sweden are showing a significant value for the CCROCC variable. Finland and Venezuela are the only two who's demonstrating significant values for both of the dummy variables. Argentina, Chile and Sweden are all showing a negative beta-sign for their significant CCROCC-variable.

The currency crisis occurrence variable, CCROCC, tries to detect whether the year of currency crisis shows a significant difference in inflow of FDI compare the period be-

fore and after. A significant value for this second dummy variable is presented by Argentina and Chile, both with a negative beta-sign. Peek and Rosengren (2000), point out in their study the complexity of those currency crises and how it took all the way until 1990 and several banking crises until many Latin America countries changed their FDI policies. These factors can explain the negative beta-signs of the significant CCROCC variable.

Both Argentina and Chile suffered from a currencies crisis during the 1980s, which where as mentioned by Frankel & Rose (1996), short lived and intense. This can explain the outcome of a negative beta-sign for CCROCC variable, but also as stated in Section 2.1 with the negative impact of the occurrence of a currency crisis explain those signs. Further tests on likenesses in FDI inflow level, RGDP/cap, FDI/cap, FDI-stock/RGDP or FDI-stock level present not any similarities for Argentina, Chile and Sweden during the time before, during and after the currency crises took place in each country.

In the case with Finland and Venezuela who show significant values for both dummy variables it is interesting to observe that both also show negative beta-signs for these variables. Trying to interpreting those numbers one can first say that a negative beta-sign for the first dummy variable, CCRIS, should in most cases lead to a negative sign for the occurrence of a currency crisis variable, CCROCC. In addition, if the FDI inflow doesn't pick up after the crisis it might also have a negative effect on the FDI inflow during the year of currency crisis.

According to FDI level and FDI-Stock/RGDP or the FDI-stock levels Finland and Venezuela does not show numbers at the same level before, during or after the occurrence of the currency crisis. It is further though interesting to observe that both Finland and Venezuela had during the currency crisis year a level of real GDP at the same level. Further, the FDI/cap level in the first year of the currency crises for both Finland and Venezuela where almost at the exact same level, but maybe the most interesting is that Finland and Venezuela are the only two in the group which suffered from a period of three years of a currency crises.

Venezuela where clearly hit by a twin crisis, a currency crisis together with a banking crisis, during the mid 1980s, where one can find an explanation of the negative sign of the CCRIS variable, Garcia-Herrero (1997). In the case with Finland, one can find similar results. Pazarbasioglu (1996) writes about the twin crisis phenomena in Finland the early 1990s, which took Finland over 4 years to recover fully from, which could thereby explain the negative beta-sign.

3.5.6   Countries showing no Significance Values

In table 3.7, 3.8, 3.9 and 3.10 countries are presented which show no significant values for either of the dummy variables. The countries thereby also present low R-square values. The countries are Bolivia, Brazil, Canada, Costa Rica, Dominican Republic, Ecuador, Fiji, France, Greece, Guatemala, India, Indonesia, Malaysia, Norway, Thailand, U.K. and Uruguay. Comments on similarities between these countries are hard to make.

3.5.7   Additional possible Tests

A further test could be a sensitivity test using the real exchange rate. By using a log of the real exchange rate as a continuous variable, that captures part of the effect of the

currency crises. A problem with this, mentioned in section 3.3, is that FDI data is presented on annual levels, which limit the possible analysis of this. The possibility to obtain monthly or quarterly FDI data could have eased this problem.

3.6   Data Analyse

By observing the presented data in Section 3.5.2, one can firstly observe the difference in significance values between countries. Of thirty-one countries, fourteen show significant values for at least one of the two dummy crisis variables.

The outcomes from the regressions show diversified results not only in a significance value aspect but also in the different beta-sign observable for the dummy variables. By comparing with the hypothesis stated in beginning of this section, the results do not cohere at a high level. Only three of thirty-one countries correspond with expected view from the hypothesis regarding the beta-sign on the CCRIS-variable. Only five countries show a negative beta-sign for CCROCC variable which where expected.

In trying to analyse these results one a can clearly observe that a pattern of weak coherence with stated hypothesis emerges. First, CCRIS, the dummy variable that is trying to detect an increasing inflow of FDI after the currency crises is not finding much ground. Observable here is that more countries, eight, show a negative significant beta-sign for this variable. Explanation for this can be found in that the crisis did not fully ended at end of set definition of the currency crisis period. The other variable, CCROCC, which tries to detect if the occurrence of a currency crisis has a negative impact on FDI inflow, does not either find much ground for its hypothesis.

In the first group, in section 3.3.3, Denmark, Paraguay and Philippines show significant value with a positive beta-sign for the CCRIS variable. Findings above show that in these cases, levels of FDI/cap inflow and the FDI-stock emerge to have been at the same level.

The countries that show a significant CCRIS variable with a negative beta-sign value show an interesting likeness. All the countries except from Honduras suffered from a banking crisis at the same time as the currency crisis or directly after. This should be considered as an important factor which natural had negative influence on the inflow of capital until problems where solved. However, studies by Peek and Rosengren, (2000) Mathiyazhagan and Sahoo, (2003) about banking crisis in Latin America, objects that a crisis can also have a positive turn-around effect in openness in for examples FDI inflow in the medium- to long-run.

The outcomes suggest thereby not that occurrence of the currency crisis might have being the released factor for structural changes in those countries which enabled larger inflow of FDI. However, it point out that such an effect can and have taken place in the end of banking crisis not in the beginning, as with countries above, where it can and have had the opposite effect. Similarities are also written by Kaminsky and Reinhart, (1999) who point out in their study that the result by solving a financial crisis can have a positive effect on the financial liberalization and future increase access to international capital markets first after the end of the banking crisis and not at the end of the currency crisis.

Garcia-Herrero (1997) writing on just that it was at the absolute end of the financial crisis and mainly the currency and banking crises during the 1990s until the World Banks

program took a positive effect on trading flows in foreign exchange markets in this case for Venezuela, factors, which could explain the negative beta-sign of these variables. Besides that, it is further interesting to observe that both Finland and Venezuela suffered from a currency crisis during three years. The length of the crisis would naturally have an impact on the significance of the second dummy variable, the occurrence of a currency crisis, which is shown in the case with Finland and Venezuela.

The beta-sign of the CCRIS dummy variables is negative, in several cases, despite studies from Lipsey (2001), and Krugman, (2001) showing that the FDI/GDP ratio was higher during and after the crisis years compare to pre-crises levels. On the other hand, in the study by Athukorala (2003) results presents that a modest decline in FDI immediate in the aftermath of the crisis. Generally, it is further hard to find similarities in regions or specific year(s) of currency crisis between the outcomes in the regression. Other things, which can have had influence this, are also in fact the time variable, which expect a higher degree of FDI inflow with time. In addition, the timing of the occurrence of a currency crisis could have had a main impact on these numbers.

4   Conclusions and Suggestion for Further Studies

This thesis examines currency crises effects on the inflow of FDI. By applying a regression analysis, significant numbers emerge which, together with the theoretical framework forms the following conclusions and suggestions for further studies.

The hypothesis stated concerns the development of FDI before, during and after the occurrence of a currency crisis and does not find much ground in the regression results presented. The beta-sign of the variables used, does not further present any similarities in signs or coherence. The timing of the currency crisis and also relying on correct definitions for the currency crises represents two important things which could have influence upon these outcomes.

The results from the empirical analysis further state that each currency crisis is in itself unique and comparison and overall conclusion based on several different occurrences are in fact difficult to make. Apart from this, the greatest similarities between countries with similar significant values are same levels of FDI/cap during the crisis year, which further suggest that this might be better parameter included in the regression formula. With the knowledge that each currency crisis are differently in length, depth and structure it might be better to focus on one or very few similar crisis to gain improved significant results.

An interesting approach and recommendation for further studies relating to the topic would be to include a banking crisis variable. This could be done by examining the possible effect a currency crisis could have on FDI inflow when its goes along with a banking crises. This also raise the question to further study the twin crises structure, to see how they have affected each other and if it is possible to find indicators for both of them in their affection on the FDI inflow into the country hit by a currency crisis. Furthermore it also raises questions and initiate further studies about government policies changes during currency crisis contra banking crisis, is there occurrence of twin crises necessary to commence financial structure changes for larger FDI inflow into the host country.

Looking beyond this thesis for additional studies, one can observe that this thesis' analysis does not distinguish between different types of FDI. One-way researchers could undertake further study would be to diversify entry FDI from expansion FDI activities on the one-side and distinguish between different forms of entry, i.e. Greenfield investments and takeovers on the other-side. In addition to this, by using country data it can hide industry specifics and not enable for exploration of firm behaviour during crises and how they internalise it.

References

Aizenmann, J. (1992), *"Exchange Rate Flexibility, Volatility and the Patterns of Domestic and Foreign Direct Investment"*, NBER Working Paper, No. 3853.

_____ (1999), *"Capital Control and Financial Crises"*, NBER Working Papers, No.7398.

Anderson, J. & Wincoop, E., (2001), *"Borders, Trade and Welfare"*, NBER Working Papers, No. 8515.

Athukorala, P., (2003), *"FDI in Crisis and Recovery: Lessons from the 1997-98 Asian Crisis"*, Australian National University.

Benessy-Quere, A., Fontagne, L. & Lahreche-Revil, A. (1999), *"Exchange rate Strategies in the Competition for Attracting FDI"*. CEPII, document de travail, No. 99-16.

Berg, A. & Pattillo, C. (1998), *"Are currency crises predictable"*, International Monetary Fund Working Paper No. 155.

Blomstrom, M. & Kokko, A. *"The Economics of Foreign Direct Investment Incentives"*, NBER Working Paper, No. 9489.

Blonigen, B. (1997), *"Firm Specific Assets and the Link Between Exchange Rates and Foreign Direct Investment"*, The American Economic Review, Vol.87, No. 3. 447-465.

Braconier, H. & Ekholm, K., (2001), *"Foreign Direct Investments in Central and Eastern Europe: Employment Effects in the EU"*. The Research Institute of Industrial Economics. Stockholm.

Brainard, S. & Riker, D. (1997), *"Are U.S. Multinationals Exporting U.S. Jobs?"*, NBER Working Paper, No. 5958.

Calvo, G. (1998), *"Growth, Debt and Economic Transformation: The Capital Flight Problem"*, London: Macmillan Press.

Carr, D., Markusen, J. & Maskus, K. (1998), *"Estimating the Knowledge-Capital Model of the Multinational Enterprise"*, NBER Working Paper, No. 6773.

Caves, R., (1996), *"Multinational Enterprise and Economic Analysis"*, Cambridge: Cambridge University Press.

Chuhan, P. (1995), *"International Capital Flows: Do Short-Term Investment and Direct Investment Differ?"* World Bank mimeo.

Corsetti, G., Dasgupta, A., Morris, S. & Shin, H., (2004), *"Does One Soros Make a Difference"*? A Theory of Currency Crises with Large and Small Traders. Review fo Economic Studies, Jan 2004, 71, 246; ABI/INFORM Global pg.87.

Corsetti, G., Pesenti, P. & Roubini, N., (1998), *"What Caused the Asian Currency and Financial Crisis?"*, NBER Working Paper, No. 6834.

Cushman, D. (1988), *"Exchange-Rate Uncertainty and Foreign Direct Investment in the U.S."*, Weltwirtschaftliches Archiv, 124 (2), 322-326.

Eaton, J. & Tamura, A., (1996), *"Japanese and U.S. Exports and Investment as Conduits of Growth"*, NBER Working Papers, No. 5457.

Eichengreen, B., Rose A. & Wyplosz, C., (1995), *"Exchange Market Mayhem: The Antecedents and Aftermath of Speculative Attacks"*, Economic Policy, 21, October, 249-312.

Fernandez-Arias, E. & Hausmann, R., (2001), *"Capital Inflows and Crisis: Does the Mix Matter"*, OECD: 93-111

Frankel, J. & Rose, A., (1996), *"Currency Crashes in Emerging Markets: An Empirical Treatment,"* Journal of International Economics, 41, November, 351-366.

Froot, K. & Stein, J, (1991), *"Exchange Rates and FDI: An Imperfect Capital Markets Approach"*, Quarterly-Journal-of-Economics, November: 106(4): 1991-217

Garcia-Herrero, A., (1997), *"Banking Crises in Latin America in the 1990s: Lessons from Argentina, Paraguay and Venezuela"* IMF Working Paper, October 1997.

Glick, R. & Hutchison, M., (1999), *"Banking and Currency Crises: How Common Are Twins?"*, Pacific Basin Working Paper No. PB99-07, Economics Research Department, Federal Reserve Bank of San Francisco.

Goldberg, L. & Klein, M., (1997), *"Foreign Direct Investment, Trade and Real Exchange Rate Linkages in Southeast and Latin America"*, NBER Working Paper, No. 6344.

Hymer, S., (1972), *"The Internalization of Capital"*, Journal-of-Economic-Issues, 1972; 91-111.

Ito, T., (1999), *"Capital Flows in Asia"*, NBER Working Papers, No. 7134.

Johnson, A., (2004), *"FDI Inflows to the transition economies in Eastern Europe: magnitude and potential determinants, in S. Hacker , B. Johansson and C. Karlsson (eds):"* Emerging Market Economies and European Economic Integration, Edward Elgar.

Kaminsky, G. & Reinhart, C., (1999), *"The Twin Crises: The Causes of Banking and Balance-of-Payments Problems"*, TheAmerican Economic Review, June.

Klein, M. & Rosengren, E., (1994), *"The Real Exchange Rate and FDI in the U.S.: Relative Wealth vs. Relative Wage Effects"*, NBER Working Paper, No. 4192.

Krugman, P., (2000), *"The Aftermath of the 1992 ERM Breakup: Was There a Macroeconomic Free Lunch?"* NBER Conference Report series, University of Chicago Press, 2000, s.282-84.

_____ (2001), *"What Happened to Asia"*, Globalization of the World Economy, vol. 11.

Lipsey, R. (1999), *"The Role of FDI in International Capital Flows,"* In Martin Feldstein, Editor*, International Capital Flows, Chicago, University of Chicago Press, pp.307-331.

‗‗‗‗‗‗‗ (2001), *"Foreign Direct Investors in Three Financial Crises"*, NBER Working Paper, No. 8084.

‗‗‗‗‗‗‗ (2002), *"Home and Host Country Effects of FDI"*, NBER Working Paper, No. 9293.

Markusen, J. (1995), *"The Boundaries of Multinational Enterprises and the Theory of International Trade"*, Journal of Economic Perspectives, 9, (2), 169-189.

Mathiayazhagan, M. & Sahoo, D. (2003), *"Economic Growth in India: Does Foreign Direct Investment Inflow Matter?"*, The Singapore Economic Review, Vol48, No.2, 151-171.

Mendoza, E. (2000), *"On the Benefits of Dollarization when Stabilization Policy is Not Credible and Financial Markets are Imperfect"*, Duke University, Working Papers: 00-01.

Pain, N. & Welsum, D. (2003), *"Untying the Gordian Knot: The Multiple Links between Exchange Rates and Foreign Direct Investment"*, Journal of Common Market Studies, Special Issue Dec.2003; 41(5): 823-46.

Pazarbasioglu, C., (1996), *"A Study of Finland in the Aftermath of the Banking Crisis"*, IMF Working Papers: 96/135.

Peek, J. & Rosengren, E. (2000), *"Implications of the Globalization of the Banking Sector: The Latin American Experience"*, New England Economic Review, September 2000.

Shrikhande, M. (2002), *"A General Equilibrium Analysis of Foreign Direct Investment and The Real Exchange Rate"*, International Journal of Finance and Economics 7: 309-325.

Singh, A. (2003), *"Globalisation, Labour Standards and Economic Development"*, ESRC – Working Papers.

Soliman, E. (2003), *"Effects of a currency crisis on FDI"*, American University press.

Appendix 1

Country	Currency Crisis	Banking Crisis
Denmark	1987	1987-1992
Finland	1982, 1991-1993	1991-1994
France		1994-1995
Germany	1982	
Greece	1980,1982-1983,1985	1991-1995
Ireland		
Italy	1992,1995	1990-1995
Netherlands		
Portugal	1982-1983,1993,1995	1986-1989
Spain	1982,1992-1993	1980-1985
Sweden	1981-1982,1992-1993	1990-1993
UK	1981-1982,1986,1992	1984
Cyprus		
Norway	1986,1992	1987-1993
Switzerland		
Canada	1992	1983-1985
Argentina	1982-1983,1987,1990-1991,1995	1980-1982,1989-1990,1995-1997
Bolivia	1981-1985,1988,1990-1991	1986-1987,1994-1997
Brazil	1982-1983,1987,1990-1991,1995	1990,1994-1997
Chile	1985	1981-1983
Colombia	1985	1982-1987
Ecuador	1982-1983,1985,1990	1980-1982,1996-1997
Paraguay	1984-1986,1988-1989,1992	1995-1997
Peru	1980-1988	1983-1990
Uruguay	1982-1983	1981-1984
Venezuela	1984-1986	1980-1986,1994-1997
Costa Rica	1981	1987,1994-1997
Dominican Republic	1985,1987,1990	
El Salvador	1986,1990	1989
Guatemala	1986,1989-1990	1991-1992
Honduras	1990	
Jamaica	1983-1984,1990-1992	1994-1997
Mexico	1982,1985,1994-1995	1981-1991,1995-1997
Panama		1988-1989
Trinidad & Tobago	1985,1988,1993	1982-1993
Jordan	1983,1987-1989,1992	1989-1990
Turkey	1980,1994	1982-1985,1991,1994-1995
China		
Hong Kong		1982-1986

India	1991,1993,1995	1993-1997
Indonesia	1983,1986,1997	1994,1997
Korea	1980,1997	1980,1997
Malaysia	1986,1997	1985-1988,1997
Philippines	1983-1984,1986,1997	1981-1987,1997
Singapore		1982
Sri Lanka		
Thailand	1981,1984,1997	1983-1987
Fiji	1986-1987	

Appendix 2

Argentina

Venezuela

Brazil

Denmark

Canada

Bolivia

Chile

Ecuador

Uruguay

Mexico

Guatemala

India

Colombia

Thailand

Turkey

Indonesia

Costa Rica

Jordan

Fiji

Philippines

Venezuela

Brazil