SOFT PEG REGIMES: SENSITIVITY to CRISES and PERFORMANCE

A Master's Thesis

By

NİLGÜN ŞAYESTE GEDİK

Department of
Economics
İhsan Doğramacı Bilkent University
Ankara

December 2011

SOFT PEG REGIMES: SENSITIVITY to CRISES and PERFORMANCE

The Graduate School of Economics and Social Sciences
of
İhsan Doğramacı Bilkent University

by

NİLGÜN ŞAYESTE GEDİK

In Partial Fulfillment of the Requirements for the Degree of
MASTER OF ARTS

in

THE DEPARTMENT OF
ECONOMICS
İHSAN DOĞRAMACI BİLKENT UNIVERSITY
ANKARA

December 2011

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Economics.

Assoc. Prof. Selin Sayek Böke
Supervisor

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Economics.

Asst. Prof. Taner Yiğit
Examining Committee Member

I certify that I have read this thesis and have found that it is fully adequate, in scope and in quality, as a thesis for the degree of Master of Arts in Economics.

Assoc. Prof. Timur Han Gür
Examining Committee Member

Approval of the Graduate School of Economics and Social Sciences

----
Prof. Dr. Erdal Erel
Director

ABSTRACT

SOFT PEG REGIMES: SENSITIVITY to CRISES and PERFORMANCE

GEDİK, Nilgün Ş.

M.A., Department of Economics

Supervisor: Assoc. Prof. Selin Sayek Böke

December 2011

In this thesis, soft peg regimes' sensitivity to crises and performance are investigated after a brief review of exchange rate regimes and their historical evolutions. The currency crisis faced by emerging countries under adaptation of soft peg regimes in the 1990s and in the beginning of 2000s revealed the suspicions on soft peg regimes' vulnerability to crisis. With the increased tendency of countries adaptation of floating regimes after abandonment of soft pegs, some arguments emerged inquiring the appearance of soft peg regimes in the literature. The Corner Hypothesis, which defends the disappearance of soft peg regimes and its counter argument The Fear Of Floating, which does not accept the disappearance and another argument The Basket, Band and Crawl Arrangements, which provides alternative soft peg regimes are analyzed in this thesis. However, soft peg regimes' vulnerability to currency crisis should not be investigated without the emerging countries' common characteristics, which can be counted as lack of sound financial and fiscal structure and strong institutional framework. At the end of this study, importance of strong financial and fiscal structure

of countries to provide macroeconomic balances including exchange rate regime is mentioned.

ÖZET

ARA KUR REJİMLERİ: KRİZLERE DUYARLILIKLARI ve PERFORMANSLARI

GEDİK, Nilgün Ş.

Yüksek Lisans, İktisat Bölümü

Tez Yöneticisi: Doç. Dr. Selin Sayek Böke

Aralık, 2011

Bu tezde döviz kur rejimleri ve zaman içerisinde gelişimleri kısaca gözden geçirildikten sonra, ara rejimlerin krizlere duyarlılıkları ve performansları incelenmiştir. 1990 ve 2000li yıllarda gelişmekte olan ülkelerin ara rejim uygulamaları sırasında maruz kaldıkları krizler, ara rejimler hakkında süpheleri ortaya çıkarmıştır. Ülkelerin ara rejimleri terk edip, dalgalı rejimlere geçiş eğilimlerinin artması ile literatürde ara rejimlerin varlığı ile ilgili argümanlar ortaya çıkmıştır. Ara rejimlerin ortadan kalktığını savunun Köşe Hipotezi, ara rejimlerin ortadan kalktığına karşı hipotez Dalgalanma Korkusu ve ara rejimlere alternatif sunan Basket, Bant ve Emekleme Düzenlemeleri bu tezde incelenmiştir. Bunlara rağmen, ara rejimlerin krizlere duyarlılıkları, gelişmekte olan ülkelerin sağlam finansal ve mali yapı ve güçlü kurumsal çerçeveden yoksun olmaları gibi sayılabilecek ortak özelliklerden bağımsız olarak incelenmemelidir. Bu çalışmanın sonunda, ülkelerin güçlü mali ve finansal yapılarının döviz kuru rejimi de dahil, ülkelerin macroekonomik dengelerinin sağlanmasında ne kadar önemli oldukları

belirtilmiştir.

Anahtar Kelimeler: Döviz Kuru Rejimleri, Köşe Hipotezi, Dalgalanma Korkusu, Basket,-Bant ve Emekleme düzenlemeleri, Ara Rejimler

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

CHAPTER I

INTRODUCTION

The choice of exchange rate regime is one of the most important macroeconomic decisions of governments, which affect both internal and external balances of a country. For centuries, governments have struggled to find the appropriate exchange rate regimes for their economic conditions. All regimes can be arranged according to their degree of flexibility from the most flexible to the least flexible. Although all regimes have advantages and disadvantages, none of the regimes' superiority has been proved. As Frankel (1999) claims, no single currency regime is right for all countries or at all times because of different country characteristics and rapidly changing macroeconomic conditions. In the literature, emerging countries' exchange rate choices and developed countries' choices are investigated separately due to their different economic conditions. Calvo and Mishkin (2003) state that emerging countries' macroeconomic success does not depend on the adopted exchange rate regime, but depends on the health of fundamental macroeconomic institutions, including institutions associated with fiscal and monetary stability.

In addition to these, a related important research area in the literature is different exchange rate regimes' durability and performance. The collapse of the Bretton Woods System and the European Monetary System (EMS) caused some doubts over traditional pegs' performance in advanced economies. Afterwards, in the 1990s and 2000s under soft peg regimes many emerging countries (East Asia, Turkey, Mexico, Ecuador etc.) faced with currency crises, which amplified the doubts over soft peg regimes' durability. *The corner hypothesis* emerged in the literature at the end of 1990s, which argues that countries have a tendency to choose exchange rate regimes from the corner of the flexibility line. This hypothesis claims the reasons of trend towards the corner as unsustainable soft peg regimes with the increased capital mobility and bad experiences in last currency crises under soft peg regimes. However, the corner hypothesis, which defends hard pegs and floating regimes' superiority over any intermediate regime, attracted suspicion with Argentina's severe crisis under its hard peg regime. Subsequently, the *fear of floating* argument was developed by Calvo and Reinhart (2002), which rejects the disappearance of soft pegs but on the contrary defends that countries peg their currencies to a secret anchor by intervening in the foreign exchange market frequently, although they announce the application of a floating exchange rate regimes. On the other hand, Williamson (2000) suggested alternative intermediate regimes under "*Basket, Band and Crawl (BBC)"*standards, which may protect exchange rate from speculative attacks with wider bands and permissions for exchange rates to move outside the bands.

In the light of these arguments, the objective of this paper is to investigate soft peg regimes' sustainability, performance and their sensitivity to currency crisis. To reach

this objective, the arguments about soft peg regimes, the findings about their performance and their vulnerability to crises will be surveyed under the scope of countries' economic and financial characteristics. Emerging countries' successes and failures under soft peg regimes and the main reasons behind these will be discussed considering the severe crises emerging countries faced.

The rest of the paper is organized as follows: Chapter 2 gives a brief review of exchange rate regimes with the advantages and the disadvantages of these regimes. After that, historical trends of exchange rate regimes in the world are explained. In Chapter 3, soft pegs' durability and performance are discussed under various arguments and empirical researches. In Chapter 4, crisis histories of some selected countries under soft peg adaptation will be talked about. These countries are Mexico, Asian countries, Brazil and Turkey. These countries' crisis periods and reasons behind the crises will be investigated in that chapter.

CHAPTER 2

EXCHANGE RATE REGIMES

2.1 Brief Review of Exchange Rate Regimes

The exchange rate systems are defined in three main categories as hard peg, soft peg and floating arrangements in the International Monetary Fund's (IMF) Annual Report on Exchange Arrangements and Exchange Restrictions (AREAER) published in 2009. Other systems, which cannot be put under these categories, are defined as "Other Managed Arrangements". A detailed list for exchange rate regimes is given below.

a) Hard Pegs,

    i.   Exchange Arrangement with no separate legal tender

    ii.   Currency board arrangements

b) Soft Pegs

    i.   Conventional pegged arrangements

    ii.   Stabilized Arrangement

    iii.   Intermediate pegs

           1. Pegged exchange rate within horizontal band

2. Crawling Peg

3. Craw-like arrangement

c) Floating Arrangements

    i.   Floating

    ii.   Free Floating

d) Other Managed Arrangements.

Source: Habermeier, Karl. Annamaria Kokenyne. RomainVeyrune and Harold Anderson. (2009), *Revised System for Classification of Exchange Rate Arrangement.* IMF Working Paper.

2.1.1 Hard Peg Regimes

Frankel (1999) sequences exchange rate regimes in a "*flexibility continuum*", where hard pegs appear in the most rigid edges of this continuum. Frankel (2003) indicates "*institutional commitment such as a law mandating a currency board that requires a parliamentary supermajority to reverse it*" as necessary and sufficient condition for hard peg regimes. Additionally as Habermeier et al. (2009) mention country authorities' confirmation to the *de jure* exchange rate arrangements is required in all hard peg regimes. Under hard pegs, two regimes are observed:

Exchange Arrangement With No Separate Legal Tender: Under this concept, Dollarization and Currency Union Regimes exist. Tavlas et al. (2008) define Dollarization or Euroisation, as a country's acceptance a foreign currency as its legal tender by switching local currency with it. In this regime, independent monetary policy

must be given up. Habermeier et al. (2009) mention application of this regime introduces the complete surrender of the monetary authorities' control over the domestic monetary policy.

Habermeier et al. (2009) explain Currency (or Monetary) Union regime as member countries' adaptation of a single currency. Multinational central bank determines the currency rate and issue banknotes.[1]European Economic and Monetary Union (EMU) is the most popular example for currency union. Like Dollarization, in this regime there is no existence of independent monetary policy.

Currency Board Arrangements: In this regime, stated foreign currency at a specified rate is used explicitly as a legislative commitment. Central banks are restricted to issue banknotes against specified foreign currency, which forces them to forgo some of the main activities of central banking such as lender-of-last resort and governance on monetary policy.

There are some debates about the advantages and disadvantages of hard peg regimes in the literature. It is generally argued that countries are mainly motivated to choose hard pegs since it ensures a stable and credible monetary policy, encourages trade and investment by minimizing currency risk, provides a nominal anchor and protects from competitive depreciation.

---

[1] In IMF's 2009 de facto classification, Monetary or Currency Union Regime is classified under arrangement governing the joint currency. Behaviour of the common currency is considered in the new classification, which means there is no change in judgment but in description. (Habermeier et al, 2009)

Credibility: Yağcı (2001) claims "Institutionally binding monetary arrangements under hard pegs tie government's hands to provide irreversible fixed rates and maximum credibility." Countries can import the monetary policy from an economically strong country by fixing their currency to that country's hard currency aiming to gain credibility. Credibility is improved especially in the countries that do not have independent central banks. As Mishkin (1998) mentions central banks under the control of governments may be obliged to comply political pressure, which may cause a decline on the credibility of them and creation of inflationary environment. Under hard peg regimes, this risk is minimized with the help of restrictions over central banks in their monetary discretion.

Encouraging Trade and Investment: Frankel (2003) explains that fixing exchange rate decreases currency risk over importers and exporters, and therefore triggers international trade and investment. Especially, selecting a trade intensive neighbors' currency minimizes transaction cost and increases trade and investment more.

Provision of Nominal Anchor: Countries facing high inflation can control inflation by fixing their exchange rates to a hard currency of a country, which has a powerful economy with low inflation rates. Countries with high inflation rates import monetary discipline and credibility to reach stability by using the exchange rate as a nominal anchor. In addition to this, Mishkin (1998) addresses the *time inconsistency* problem, which emerges from policymakers' incentives to achieve short-term goals such as higher growth and employment rates with discretionary policies, which may be detrimental in the long term by increasing inflation rates. This probability is minimized by fixing exchange rates and depriving governments from discretionary policies.

On the other hand, Frankel (2003) argues that central banks' commitment to hard currency increases their credibility when fighting with inflation in the eyes of the players who set the prices and the wages. Consequently, firms set prices and workers desire wages considering their low inflation expectations, which aids to achieve lower inflation rates.

Protection from Competitive Depreciation: Frankel (2003) argues that countries can depreciate their currencies to gain a trade advantage over their competitors. This *beggar-thy-neighbor policy* can be defined as domestic welfare at the expense of neighbors, which is attained with foreign retaliation (Krugman and Obstfeld, 2004). Frankel shows severe experiences of East Asia and Latin America countries in 1990s when they tried to gain competitive advantage over neighbors by devaluation. Therefore, with fixed exchange rates, cooperative solution can be achieved by hindering countries' devaluation probability.

On the other hand, hard peg regimes contain some drawbacks seen in its application. For example, there is almost no discretionary independent monetary policy, and a shock transmission from anchor country is easier. In addition to these, shock absorption capacity of the hard peg regimes is limited, and in a currency crisis exiting from the regime is tough.

Loose of Independent Monetary Policy: Central banks adopting hard currencies forgo their Lender of Last Resort functions, which increases the likelihood of liquidity crisis. Bank runs and financial panics cause severe consequences in hard peg regimes because of central bank's inability to finance the commercial banks. Mishkin (1998) indicates that central banks under hard pegs cannot respond independently to domestic shocks

irrelevant to anchor country. For example, if there is a decline in the domestic demand, central bank cannot decrease interest rate, which is tied to interest rates of the anchor country. Secondly, especially in Dollarization, countries lose their seigniorage slightly less than under currency boards.

Shock Transmission from Anchor Country: Mishkin (1998) indicates shocks in the anchor country can easily be transferred to the pegged country. Frankel (1999) illustrates this situation with Argentina example. Federal Reserve's one basis point increase on interest rates affected Argentina's interest rates more than one basis point when Argentina was pegging its currency to dollar. According to the regression results, Argentina's interest rate increased significantly 2.73 basis points, against Federal Reserve's only one basis point increase.

Difficult Exit Strategies: Exiting from a hard peg regime requires an important preparation process. Yağcı (2001) refers pre-condition policies before moving to any other regime to avoid from an adverse shock. Exchange rate may be not suitable to adjust adverse shock stemmed from the need for more flexible wages, prices and fiscal policy.

Limited Shock Absorption capacity: Countries' dependences to the anchor country's monetary variables restrict them to cope with shocks by using monetary policies. So under hard peg regimes shocks are absorbed by rigorous arrangements in economic activities such as wages, prices, production and employment, which may be a painful process (Yağcı, 2001).

2.1.2 Soft Peg Regimes

Soft peg regimes appear between the two corners of the flexibility line. In the literature, the majority of authors define soft pegs as intermediate regimes. IMF's definition of intermediate regimes as a subcategory under soft pegs does not make substantial conceptual difference because all the types of soft peg regimes align between hard pegs and floating exchange rates according to their flexibility degree. Soft peg regimes can be classified as follows.

Conventional Peg Arrangements: According to IMF staff Habermeier and his colleague's (2009) definition, under this regime a country pegs its domestic currency to a specific currency or a basket of currencies at a fixed rate. The currencies in the basket can be chosen from the major trading and financial partners relevant to the trade, service or capital flow ratios. The anchor currency or basket ratios are informed to the public or IMF. Monetary authorities protect the fixed parity through direct and indirect interventions via sale or purchase of foreign exchange rates and via interest rates, foreign exchange rate regulations and restrictions, respectively. Empirical confirmation of the countries is, to let exchange rate fluctuate within a narrow margins of less than ±1 % around central rate. Alternatively countries can confirm to maintain the maximum and the minimum level of spot exchange rate within a narrow margin of 2% for six months at least.[2] This regime in the literature is known as adjustable peg, which Frankel (2003) defines as "fixed but adjustable peg". The Bretton Woods is the most important example for this regime.

---

[2] In all soft pegs definitions, Habermeier and his colleagues' paper (2009) is used intensively.

Stabilized Arrangement: This regime firstly appears in the IMF's 2009 classification. Country authorities' commitment is not required under this regime. Spot market exchange rate is expected to stay within a 2% margin for six months or larger. There is no scope for floating in the margin except step adjustments and specified number of outliers. Country can choose a single currency or basket as an anchor, which is determined by statistical methods. These statistical criteria must be reached.

Pegged Exchange Rate Within Horizontal Band: Under this regime, the currency is kept within certain margins of fluctuations of at least ±1 % around a fixed central rate, or the margin between the maximum and the minimum value of exchange rates exceeds 2%.[3] As the band range broadens, this regime approaches to floating exchange rate; oppositely as it narrows, it approaches to conventional peg arrangements. Margins are announced to the public before adopting the regime with the confirmation of intervenes when there is a deviation from the band borders. Exchange Rate Mechanism (ERM) adopted by European Monetary System (EMS) between 1979 and 1999, with a band ±2.25 % margins, can be shown as an example for this regime.

Crawling Peg: Under this regime, there may be adjustments on currency in small amounts at a fixed rate, which are usually determined according to past inflation differentials vis-à-vis major trading partners or differentials between the inflation target and expected inflation .The arrangements on currency and its rules are informed to the public or the IMF. Two methods can be applied in this regime to fight with inflation: setting rate of crawl based on changes in the inflation rate which is backward looking, or

---

[3] Habermeier et al. (2009)

setting rate of crawl based on pre-determined fixed exchange rate and/or targeted inflation rates which is forward looking.

Crawl-like Arrangements: Exchange rate is maintained within a narrow margin of 2% relative to a statistically identified trend for six months or more. There is no scope for floating in the margin except specified number of outliers. Although this regime represents similarities to the stabilized arrangement regime, it may require an annualized rate of change at least 1%, provided that the exchange rate depreciates in a sufficient monotonic and continuous manner.

In the literature, soft pegs' advantages and disadvantages are not exactly defined because of their existence in the middle of the "flexibility continuum". The majority of authors indicate the fixed and floating exchange rates and their pros and cons. While the majority of authors prefer to explain advantages and disadvantages of soft pegs and hard pegs together under fixed exchange rates, some refer advantages and disadvantages of only "crawling pegs". In addition to this, there are views that countries can benefit from soft peg regimes if and only if the peg is credible. Shortly the main advantages can be ordered as, soft pegs maintain stability and reduce transaction costs and exchange risk while providing a nominal anchor for monetary policy (Yağcı, 2001).

In the last three decades so many countries faced with currency crises (Asian Countries, Mexico, Turkey etc.) when they were adopting soft peg regimes. Therefore, soft pegs' sustainability and their vulnerability to crisis began to be queried with the "*corner hypothesis*" in the literature. The authors against this argument exhibit counter arguments the "*BBC*" and the "*fear of floating*". All debates are generated from soft peg

regimes' disadvantages, which are overvaluation of exchange rates, excessive volatility, excessive tendency of borrowers in foreign currency without hedging and openness to speculative attacks (Frankel, 2003). In addition to these, countries need high level of international reserves to defend the currency by intervening in foreign exchange markets when the exchange rate goes out of the band boundaries.

2.1.3 Floating Arrangements

Floating arrangements are the most flexible exchange rates regimes providing full discretionary to monetary authorities. The exchange rates are determined by the market at the equilibrium point of supply and demand.

Floating Exchange Rates: Until recent classification of the IMF, this regime was called *"managed floating with no preannounced path for the exchange rate"*. Although exchange rate is principally determined in the market and there is no exchange rate target, monetary authorities may intervene directly or indirectly to foreign exchange market in order to avoid from extreme fluctuations in the exchange rate. Tavlas et al. (2008) adds that monetary authorities may aim to reverse long term "misalignment" besides preventing undue movements in the exchange rate with intervention, which is defined as a continued departure of the exchange rate from perception of its equilibrium value.

Free Floating Exchange Rate: Monetary authorities do not usually intervene in foreign exchange market except disorder market conditions. According to definition of Habermeier et al.(2009), this regime can be classified as free floating if the authorities

confirm that provided with data and information, intervention has existed at most tree times in the previous six months with the limit of three business day. Otherwise this regime is classified as floating exchange rate regime.

One of the main advantages of floating arrangements is that it allows a country to pursue independent monetary policy. In addition to this, with flexible exchange rate regime the economy is more resistant to speculative attacks, shocks are absorbed more rapidly and high level of international reserves are not required.

Independent Monetary Policy: In contrast to the rigid exchange rate regimes, monetary policy can be executed by contracting or extending according to the economic conjuncture. Monetary policy can be used independently to provide internal and external balance. Frankel (2003) indicates that under recessions governments by using expansionary monetary policy or depreciation of the currency induce reaching the desired level of employment and output level under floating arrangements rapidly. Under pegged regimes this process is longer and tougher due to the lack of independent monetary policy.

Secondly, as Frankel (2003) indicates that governments keep two important functions of central banking under floating regimes: seigniorage and lender of last resort. With lender of last resort function, central banks can bail out the banks, which are in liquidity crisis in order to avoid from bank runs and contagion effect.

Shock Absorption Capacity: Floating arrangements can show resistance to external and domestic real sector shocks because the exchange rate finds a new equilibrium rate related to the market conditions. Frankel (2003) states floating arrangements play

automatic adjustment to trade shocks. Even though the prices and the wages are sticky in an economy, the currency provides necessary real depreciation by responding adverse development in country's export markets.

No Requirement for High International Reserves: Under floating arrangements, central banks do not have any exchange rate target and do not intervene in the foreign exchange markets except for correction of undue positions of exchange rate. Consequently, central banks do not need to hold excessive international reserves.

There are four main disadvantages of floating arrangements that must be pointed out:

Discouraging Trade and Investment: Uncertainty of the future exchange rate may discourage the entrepreneurs from international trades and investment. This argument can be rebutted with the existence of global financial instruments providing hedging opportunities.

Inflationary Bias: Central banks' full monetary discretion may trigger inflation, if they do not adopt suitable monetary policies to the economic conditions' requirements. Especially central banks that are not independent tend to apply inflationary biased policies with the existence of political pressure. These inflationary biased policies stemmed from lack of discipline and political pressures may decrease central banks' credibility and trustworthiness.

Speculative Attacks: Krugman and Obstfeld (2004) state under floating exchange rate regimes speculation on exchange rates, which lead instability, may cause more harmful effects on internal and external balances comparing to pegged regimes. The authors

explain the mechanism as if exchange traders sell the currency according to their depreciation expectations unrelated to the currency's long-term prospects, others trades are triggered by this trend, more and more currency are sold and therefore expectations will be realized.

Uncoordinated Economic Policies: Krugman and Obstfeld (2004) indicate countries can harm the world's economy by applying policies like *"beggar-thy-neighbor"*, which harmed international economics in the interwar period.

2.2 De Jure - De Facto Classification

Researches in the literature related to exchange rates mostly depend on the AREAER published by the IMF. Until 1999, countries were reporting their regimes based on their own classification methods, which is called *de jure* regime. However since 1999, IMF began to publish observed *de facto* exchange rates in addition to *de jure* regimes, which are based on IMF staffs' assessment of the available information (Stone et al., 2008). The reason behind this new classification method is the difference between the countries' officially announced regime and the one they actually apply. For instance, although some countries announce floating arrangements, they actually adopt crawling pegs or intervene frequently in the foreign exchange markets in contrast to the floating arrangements' properties. These behaviors of countries can be explained by Calvo and Reinhart's (2000) the "fear of floating" hypothesis in which countries intervene intensively to control the volatility of exchange rates. Levy-Yeyati and Sturzenegger (2003) revise this concept with the "fear of pegging" by indicating some countries

follow pegged regimes, but announce floating arrangements in order to protect their exchange rate markets from speculative attacks.

In addition to the IMF's *de facto* classification, some authors construct alternative coding systems in their studies. In these coding systems, the authors usually subcategorize the exchange rate regimes according to their study area. The common purposes of these studies are to investigate the performance of alternative regimes and to test of the reality of the corner hypothesis (Tavlas et al., 2008). Table 1 represents the alternative coding systems used by the authors.

Table 1 : Alternative *de facto* coding systems	
Bènassy-Quèrè and Coueurè (BQC) (2006)	Ghosh,Gulde,Ostry and Wolf (GGOW) (1997)
Baillliu, Lafrance and Perrault (BLP) (2003)	Ghosh,Gulde and Wolf (GGW) (2002)
De Grauwe and Schnabl (DGS) (2005)	Levy-Yeyati and Sturzenegger (LYS) (2005)
Dubas, Lee and Mark (DLM)(2005)	Reinhart and Rogoff (RR)(2004)
Eichengreen and Leblang (EL) (2003)	Babula and Otker-Robe (2002)

Source: Tavlas, George. Harris Dellas and Alan C. Stockman (2008) "The Classification and performance of Alternative Exchange Rate Systems" European Economic Review 52

Some of these coding systems (GGOW, Babula and Otker, BLP, EL, DLM, GGW and RR) are formed from the mix of the *de jure-de facto* approaches whereas the others (BQC, DGS, and LYS) are formed from pure *de facto* approaches. Tavlas et al. (2008) summarized these coding systems. In GGOW, 136 countries are involved for the period 1960-1990. *De jure* pegged group is divided into two *de facto* subgroups as "infrequent" and "frequent" pegged adjusters according to the frequency of countries' change the announced peg in a year. Babula and Otker revised countries' description of their exchange rates for the period 1990-2001 based on the changes in reserves and

official exchange rates. In BLP and GGW coding systems, the *de jure* coding is converted into the *de facto* with statistical algorithms based on observed exchange-rate volatility. BLP covers 60 countries for the period 1973-1998 whereas the GGW covers 150 countries for the period 1970-1999. 153 countries over the period 1946-2001 are employed in RR coding, which is formed with some statistical methods. In addition to this, authors describe a different exchange rate "freely falling", if the countries' 12 months inflation rate exceeds 40% and after exchange rate crisis countries change their exchange rates from a fixed or quasi-fixed regime to a managed or independently floating regime in 6 months. In EL and DLM coding probit-type models are used in which the *de jure* regimes are the dependent variable. The fitted values are accepted as the *de facto* regime. 183 countries' regimes for the period 1974-2000 are included in the LYS coding, which is based on cluster analysis with the aim of capturing the effect of intervention in the exchange rate. DGS covers 18 South Eastern European and Central European economies for 1994-2004. "Z scores" is used to define the de facto regimes. In BQC, regression analysis is used to define implicit basket pegs.

2.3 HISTORICAL TRENDS IN EXCHANGE RATE REGIMES

The exchange rate regimes in the world have evolved extensively over the last two centuries. Table 2 shows the chronology of exchange rate regimes with an historical perspective.

Table 2: Chronology of Exchange Rate Regimes: 1880-∞
1880-1914: Specie: Gold Standard (bimetallism, silver); currency unions; currency boards; floats
1919-1945: Gold Exchange Standard; Floats; managed floats; currency unions (arrangements); pure floats; managed floats
1946-1971: Bretton Woods adjustable peg; floats (Canada); Dual/ Multiple Exchange Rates
1973-2000: Floating exchange rate regimes by advanced economies, EMS system by advanced European countries, hard pegs and soft pegs by developing and emerging countries
2000- ∞: Floating exchange rate regimes by advanced economies, adaptation of single currency (Euro) by European Union members, hard pegs and soft pegs by developing countries, soft pegs and floating regimes under the "fear of floating" concept by emerging countries.
*Source: Bordo, Michael D. (2003). Exchange Rate Regime Choice in Historical Perspective. IMF Working Paper WP/03/160
** Table is enlarged with the period from 2000 to nowadays.
*** The exchange rate choices are shown according to the countries development levels since 1973. Emerging markets' exchange rate choices became more attractive in the beginning of 1990s with the increase of the capital mobility.

The first system used in international monetary system was bimetallism. In a bimetallic system, a country's mint coin stated amounts of gold and silver into the nationally unit and the mint commits to change gold and silver with the coin, if it is necessary to protect parity (Krugman and Obstfeld, 2004). The main advantage of this system is its ability to reduce price level instability, which may be faced in the usage of one metal. For example, cheaper and comparatively abundant silver may become dominant form of money when gold becomes to be expensive and scarce in order to alleviate the pure gold standard (Krugman and Obstfeld, 2004). On the other hand, the main problem of the system is that the undervalued (silver) metal eliminates the overvalued metal (gold) from circulation, which is used as saving device. This system was abandoned from the century's economic leader Britain in the beginning of the 19th century with discovery of new gold mines and increase of gold production. Other countries followed Britain until there was no country adopting bimetallism in the

beginning of the 20th century. After the end of bimetallism, the gold standard was adapted all around the world, in which countries were defining their unit of account as a fixed weight of gold or alternatively were fixing the price of gold. Consequently, each country fixed its exchange rate to the countries adopting the gold standard and became a part of the international gold standard (Bordo and Schwartz, 1999).

In the classical gold standard, gold can be imported and exported freely between countries. The world gold stock was allocated according to the countries' need for money and use of substitute for gold (Bordo and Schwartz, 1999). Expansion and contraction of money supply were permitted by the monetary authorities according to the amount of the imported and exported gold, which provided to countries to hold their currency fixed in narrow band. Deviations from the determined currency were corrected by arbitrage so that the nations' currency levels were kept in a line (Bordo and Schwartz, 1999). The balance of payments' surplus and deficits were corrected automatically by Humean price-specie-flow mechanism, in which changes in domestic prices adjusted external trade balance of countries. In the countries with surplus, an increase in the price level would decrease the export level and in the countries with deficits, a decrease in the price level would increase the export. Bordo and Schwartz (1999) explain that balance of payment distortions were corrected with capital flows caused from changes in interest rates. In countries with external surplus, there would be a decrease on the interest rate related to expansions on money supply whereas in the countries with external deficit there would be increase in the interest rates related to the contraction on money supply. Therefore, there would be a capital flow from the country with surplus to the country with deficit, which was balancing the countries' balance of payments.

Under the gold standard central banks need sufficient gold stocks in order to protect the official parity between its currency and gold (Krugman and Obstfeld, 2004).In addition to this, central banks were supposed to flow "the rules of game" and hasten balance of payment arrangements by using their discount rates and other monetary policy tools (Bordo and Schwartz, 1999).

Gold standard was suspended during World War I and governments financed their enormous military expenditures by printing money. Governments' policies to finance their expenditures by printing money, increased money supply and price levels sharply in turn several countries faced with high inflation (Krugman and Obstfeld, 2004). Only USA (United State of America) kept adopting the gold standard in the war period and other countries let their currencies fluctuate against dollar. After World War I, countries began to adopt the gold standard again but the system was not successful because of the restrictions on international trade and payments, prohibitions on private financial account transactions, and trade barriers. After the collapse of the system, countries could not convert their currency to other countries' currencies, which forced them to settle bilateral or multilateral arrangements for international transactions. Consequently, world trade volume contracted. Restrictions over trade and capital controls were increased in the early 1930s, inducing disintegrated economy into increasingly autarkic national units (Krugman and Obstfeld, 2004). Countries' realization that they would have been better off with free international trade, which could help countries to protect their external and internal balance, provided by international cooperation, triggered foundation of the Bretton Woods Agreement (Krugman and Obstfeld 2004).

Representatives of 44 countries who met in Bretton Woods in July 1944, drafted and signed the Articles and Agreements of International Monetary System . The representatives were hopeful to design an international monetary system that would raise full employment and price stability while letting countries to reach an external balance without restrictions on international trade (Krugman and Obstfeld 2004). IMF was accepted as the guarantor of international economic system and the other institution International Bank for Reconstruction and Development (IBDR) was founded to help member countries financially in their reconstruction and development expenditures. "Adjustable peg" was also accepted as not to face the second gold standard period's bad experiences. According to this exchange rate regime, member countries committed to convert their currencies to other currencies and take away trade restrictions. Member countries were allowed to give up capital controls.

In this system, all IMF member countries pegged their domestic currencies against the dollar, which was defined as a fixed price of gold (1 ounce= 35 $). U.S was responsible for fixing the dollar price of gold and buy dollars against gold at the official fixed price from member countries that used to hold their international reserves mostly in the form of gold or dollar assets (Krugman and Obstfeld, 2004). Countries let their currencies to move ±1% directions in a band when pegging their currencies to dollar.

Countries' obligation to peg their exchange rates to dollar was providing discipline to the system because if a central bank except the Federal Reserve would increase money supply, it would lose international reserves therefore, it would not be able to stay in the system (Krugman and Obstfeld, 2004). Bad experiences in the

interwar period[4] showed that governments were not reluctant to maintain free trade and fixed exchange rates at the price of long term domestic unemployment. IMF Articles of Agreement was prepared to provide countries enough flexibility when reaching external balance without sacrificing internal objectives (Krugman and Obstfeld, 2004). External balance was provided in two ways; firstly members contributed with their currencies and gold to generate a pool of financial resources so that IMF would help them in need, secondly, parities could be adjusted by revaluation or devaluation although the exchange rates fixed against the dollar (Krugman and Obstfeld, 2004). These arrangements could be held rarely under in cases of balance of payment problems called "fundamental disequilibrium". IMF permission was required when countries devalue or revalue their currencies more than 10%.

Dollar's free convertibility property fostered international trade in terms of dollar. Therefore, dollar became an international currency, universal medium of exchange, unit of account and store of value (Krugman and Obstfeld, 2004).

Under the Bretton Woods System gold was a nominal anchor, which explains the low inflation rates in 1950s and 1960s (Bordo and Schwartz, 1999). However, main problem of the system was the credibility because if the growth of gold stock was not sufficient to finance the growth of world real output and maintain USA gold reserves, the system would become unstable and subject to speculative attacks, in which inconsistency between nations' policies and pegged exchange rates were predicted (Bordo and Schwartz, 1999).

---

[4]Great depression exploited in USA in 1929 with the collapse of Stock exchange Market and spread over all around the world until 1940s. In this severe period;international trade volume decreased excessively and countries faced internal challenges such as high unemployment levels, enormous decrease on production levels, personal income levels, tax incomes.

The system collapsed in 1973 mostly because of the USA balance of payment problems. The system was giving the USA more responsibility to hold the value of dollar fixed to gold. After the World War II, massive amount of gold flowed in return to dollar from European Countries and Japan that needed convertible dollar in their reconstructions process, which distorted the USA balance of payment and created dollar abundance in the world. In addition to this, monetary expansion of the USA to meet military expenditures in the Vietnam War and increased import volumes induced becoming the USA dollar liabilities over the gold stock. Other member countries were in suspicion of the USA's ability to hold dollar at fixed rate to gold. Devaluations of dollar in 1971 and 1973 were not successful to liquidate the USA balance of payment, and the system collapsed.

After the collapse of the Bretton Woods, countries began to float their currencies. Although in the initial years exchange rate regimes were shaped as dirty float with central banks' intense intervention to affect the exchange rates and direction of fluctuations, by the 1990's they were converted to the regimes, in which central banks only intervene under necessary conditions to alleviate fluctuations (Bordo and Schwartz).In the 1980's countries challenged with high volatility in both nominal and real exchange rates, which in turn decreased macroeconomic stability and increased international transaction costs. However, flexible regimes' ability to mitigate trouble of the1970's oil price shocks and the other shocks in the following years and pegged regimes credibility problem stemmed from bad experiences of the Bretton Woods outweighed these problems (Bordo and Schwartz, 1999). With bad experiences of the Bretton Woods the world's leading countries were reluctant to be a part of an

international exchange rate arrangement, which would restrict them in their internal and external balances (Bordo and Schwartz, 1999). Exception to this situation was European countries' desires to generate a monetary union with a common currency. The reason behind this can be explained with *Optimal Currency Area* (OCA) theory, which is defined by the founder of theory Robert A. Mundell, as "*fixed exchange rates are more appropriate for areas closely integrated through international and factor movement*". Frankel (2003) defines OCA as "*a region that is neither so small and open that it would be better of pegging its currency to a neighbornor so large that it would be better-off splitting into subregions with different currencies*". The European Monetary System (EMS) was established in 1979 by eight European Countries and these countries began to adopt mutually pegged exchange rates by letting their exchange rates to fluctuate in a ±2.25% band relative to an assigned par value (Krugman and Obstfeld, 2004). The system was successful until facing with speculative attacks in 1992 and 1993, which forced Italy and Britain to leave the system (Krugman and Obstfeld, 2004). Bordo and Schwartz (1999) show pegged exchange rates, capital mobility and policy autonomies as the reason of the collapse of this system. The authors add that countries adopted inconsistent policies with their pegs to Deutsche Mark to challenge with speculative attacks, although they were seemed to be consistent with the rules. These inconsistent practices awakened the suspicions over the system's credibility, which in turn accelerated the collapse of the system. European countries' bad experiences with soft peg regime in the EMS speeded up to constitute a monetary union infrastructure. In the beginning of January 1999 European Union (EU) members began to adopt a single currency Euro. Shortly, one part of the advanced economies (USA, Japan) continued on

floating exchange rate regimes; the other part (EU) adapted hard pegs to achieve the OCA.

On the other hand, developing and emerging countries applied soft peg and hard peg regimes in 1980s and 1990s. Emerging countries with high inflation background chose rigid exchange rate regimes to benefit from nominal anchors, which might provide economic stability and decrease inflation. In the 1980s and 1990semerging markets liberalized their foreign exchange markets to gain from financial integration. Despite the gains coming from financial liberalization, countries were exposed to speculative attacks under soft pegs. Emerging markets' common features, financial fragility and lack of strong macroeconomic policies prevented countries to defend the currencies under soft peg regimes and many of these countries faced with severe currency crisis. Thus, currency crises in the last decade of 20th century, with the increase of financial integration and the capital mobility, revealed the doubts over pegged regimes. Debates were concentered on the sustainability of soft pegs under the "corner hypothesis", caused from majority of crises exploited in countries when they were adopting soft pegs. Argentina's crisis under currency board rebutted this argument partially but this hypothesis became a very interesting research area in the economic literature. After the crises they faced, many emerging countries began to let their currencies float in the beginning of the 21st century but the *de facto* classification puts them under soft peg regimes because their central banks frequently intervene in their foreign exchange markets to hold the currencies in line under the "fear of floating" concept. Numbers of the *de facto* exchange rates in 1998 and 2009 in Table 3 show no significant shift between the regimes.

Today the choice of exchange rate regime is much more complicated as compared to the beginning of the twentieth century when all the advanced countries joined to the gold standard. Now, there are many options ranging from pure floats through many intermediate arrangements to hard pegs. After providing a brief history of monetary regimes, in the next chapter the arguments about soft peg regimes will be discussed.

Table 3: Shares of Classifications Using the 1998 and 2009 Systems, as of April 30, 2008				
1998 de facto system			**2009 de facto system**	
Hard pegs	**23**			**23**
Arrangement with no seperate legal tender	10		Exchange arrangement with no seperate legal tender	10
Currency Board Arrangement	13		Currency Board Arrangement	13
Soft pegs	**81**			**78**
Conventional fixed peg	68		Conventional pegged arrangement	45
			Stabilized arrangement	22
of which: intermediate pegs	**13**			**11**
Pegged exchange rate within horizantal bands	3		Pegged exchange rate within horizantal bands	3
	8			5
Crawling Peg	2		Crawling Peg	3
Crawling Band			Crawl-like arrangements	
Floating arrangements	**84**			**75**
Managed floating	44		Floating	39
Independently floating	40		Free Floating	36
Other managed arrangements (residual)	**n.a.**			**12**
Total	**188**			**188**

Source: Habermeier, Karl. Annamaria Kokenyne. Romain Veyrune and Harold Anderson. (2009), Revised System for Classification of Exchange Rate Arrangement. IMF Working Paper.

CHAPTER 3

SOFT PEG REGIMES' SUSTAINABILITY and PERFORMANCE

3.1 Arguments About Soft Peg Regimes' Appearance

3.1.1 The Corner Hypothesis

The currency crises faced by emerging countries in 1990's with the increase of capital mobility triggered some economists to question soft peg regimes' sustainability. As a critic to the EMS crises in 1992-93, in 1994 Eichengreen came up with the theory known as "corner hypothesis", "vanishing the middle" or "hollowing out of the middle". This hypothesis was adapted to emerging countries after the East Asia crisis in 1997-98 (Frankel,2003).Fischer (2001) renames the hypothesis as "bipolar view" and claims that countries have a tendency to choose either hard peg regimes on the left corner or floating arrangement regimes on the right corner of a line in order to escape from the unsustainable segment of the line occupied by soft peg regimes. Fisher (2001) illustrates

these shifts to the corners with arrangement of the EMU after collapse of the EMS by European developed countries, noticeable number of emerging countries' (Indonesia, Korea, Thailand, Russia, Brazil, Mexico, Colombia) adaptation of floating exchange rate regimes after major currency crises in 1990s and relatively few number of emerging countries' adaptation of hard peg regimes. In addition to these, he indicates the countries (South Africa, Israel in 1998, Mexico in 1998 and Turkey in 1998) that did not face any currency crisis when they did not adopt any soft peg regimes.

Fischer (2001) argues that the main reasons of the trend towards the corners are soft peg regimes' crisis-prone property and unsustainability over long periods among the countries with open capital accounts. In the literature non-viability of soft peg regimes' is justified with the principle of the Impossible Trinity, the dangers of unhedged dollar liabilities and the politically difficult exit strategies (Frankel, 2003). Frankel et al. (2001) also investigate soft peg regimes' verifiability after claiming aforementioned explanations are lack of theoretical foundations for the corner hypothesis.

The first justification is inconsistency of soft peg regimes with the principle of the Impossible Trinity. Krugman and Obstfeld (2004) explain the principle of the Impossible Trinity as a policy dilemma for open countries. According to this dilemma, countries cannot choose all of the three goals- *independence in monetary policy, stable exchange rate regime and free movement of capital*- simultaneously. One of the goals should be abandoned. The authors indicate that in 1994 Mexico and in 1997 East Asia were hit by currency crises since they tried to reach three goals at the same time. Capital controls' effectiveness can be investigated under soft peg regimes as an avoidance from the policy dilemma under the principle of the Impossible Trinity. Emerging countries

adopting soft peg regimes can use capital controls to limit short-term speculative attacks, reduce the sensitivity of soft pegs to currency crisis and contagion and protect real economy from excessive movements in the exchange rate (Yağcı, 2001). Yağcı (2001) shows China, Chile and India as an example of countries that used capital controls successfully in order to avoid from 1990s currency crisis contagion, and criticizes East Asia to liberalize capital accounts overly rapid before providing financial stability and market discipline. Countries can apply control on capital inflows to mitigate the effect of short-term speculative attacks or hot money and can apply control on capital outflow to avoid from pressures on the exchange rates.

However, capital controls have some disadvantages. Countries with the controls on capital inflows forgo full integration with global markets in turn access of foreign savings and other benefits, which can come with integration such as discipline in the macroeconomic policies and the financial development. In addition to these, capital controls are not effective forever. Countries should not rely on this policy excessively and with prudential guidelines they should remove the controls gradually as the economy develops and the financial sector strengthens (Yağcı, 2001). Fischer (2001) explains that controls on capital outflows cannot protect a currency from devaluation, if domestic policies are not consistent with the maintenance of exchange rates so countries should give up gradually controls when there is no pressure over the exchange rates. These disadvantages and downward effectiveness of capital controls over time create uncertainty about their ability to overcome dilemmas faced by countries that adopt soft peg regimes stemmed from the principle of the Impossible Trinity.

The second justification for unstable soft peg regimes is the danger of unhedged liabilities. Companies and banks may underestimate the likelihood of currency devaluation in the future, if government determines a set of exchange rate target. This reckless manner leads them not take a hedge position for their foreign currency based liabilities (Frankel, 2003). In devaluation domestic currency revenues may not be enough to cover their foreign currency based liabilities. Consequently, bankruptcies, shut down in real sector and bank fails, difficulties that affect credit lines in financial sector may be observed.

The third justification is the timing problem of governments to abandon the soft peg regimes. Governments may have some political concerns about to change economic policies in election periods, which may induce some delays in abandoning soft peg regimes. Frankel (2003) criticizes Mexico, Thailand and Korea to wait too long until reserves ran very low. Consequently, in these countries there was no combination of exchange rate and interest rate that could be arranged to alleviate external financial constraint and to prevent an internal recession. Beside political reasons recently mentioned, countries may find difficult it to exit from soft pegs because an alternative anchor is required for monetary and inflation expectations (Yağcı, 2001).

Frankel (2003) accepts that these arguments- *the impossible trinity, the dangers of unhedged dollar liabilities and the political difficulty to exit*- have some importance but do not have enough theoretical background to prove the soft peg regimes' being unstable. Willet (2005:2) agrees with Frankel and adds "*mutual adjustment of exchange rate and monetary policies allow any degree of exchange rate flexibility to meet unholy*

trinity constraints as long as monetary policy is adjusted consistently with exchange rate policy."

Frankel et al. (2001) introduce verifiability notion to investigate the reasons of the trend to the corners. Verifiability is market participants' ability to figure out statistically from observed data that the exchange rate is announced or simply it represents the transparency and the credibility. The authors argue that regimes, which are simple and easily understandable by market participants, are more verifiable. In their study, they found Chile was more verifiable before 1992 when she had a narrow band and peg to only dollar than the period from 1992 to 1999,when the band was extended and currency was pegged to multiple currencies.

Fischer (2001) indicates the choice of exchange rate regime between hard peg regimes and floating regimes is related to the country's economic characteristics. Especially, the country's inflationary history is very effective in this choice. Countries with monetary disorder background, may reach credibility more rapidly and less costly under currency boards comparing to the alternative regimes (Fischer, 2001). Fischer (2001) gives Argentina as an example for the provision of credibility and success in disinflation in the 1990s. On the other hand, Argentina's recession in 1999-2002 was so terrible to outweigh the income gains during the "*heydays*" of the currency board between 1991- 1998 (Frankel, 2003:18). Argentina's lack of fiscal discipline, fragility in the banking system, excessive external debt ratio and especially problems came with the currency board adaptation can be counted as the reasons for Argentina's recession. Peso's movements parallel with dollar induced devastating effect on current account balance, which was balanced with capital flows. However, with the East Asia and the

Russian Crisis' contagion effect capital flows to Argentina decreased. Argentina could not respond this decrease in the capital flow because the currency board regime hindered the usage of independent monetary policy. Consequently, with the Argentina's crisis hard pegs viability attracted doubts.

Levy-Yeyatiand Sturzenegger (2007) mention the popularity of inflation targeting as a nominal anchor under an adaptation of floating exchange rate since the beginning of the 21st century. The authors also consider severe experiences of Argentina under adaptation of hard pegs and conclude that there is a shift from intermediate regimes to only floating regimes. The authors called this trend as the "unipolar view", where floating exchange rates are seen as only durable regimes in financially integrated economies.

Tavlas et al. (2008) gather studies that investigate whether countries have tendency to give up adaptation of soft peg regimes. The main challenge of this research is the existence of so many coding systems for the exchange rate classifications. Main findings for the corner hypothesis are demonstrated in the following table.

The study of Ghosh, Gulde and Wolf and the study of Babula and Otker show similar findings. They both find a decline in the proportion of intermediate regimes whereas there are increases in the proportions of hard pegs and floating arrangements. However, Bailliui, Lafrance and Perrault's, Rogoff et al. and Dubas, Lee and Mark find no supporting results about the disappearance of intermediate regimes in their studies. Shortly, some economists confirm the "corner hypothesis" with their findings, some

economists do not. As a result there is no consensus about the "corner hypothesis" in the economic literature.

Table 4: Major findings about the " corner hypothesis"			
Authors	Sample	Coding	Results
Ghosh, Gulde and Wolf (2002)	150 IMFcountries between 1975-1999	Six-way De jure coding	Decline in shares of intermediate regimes from %84 to% 50
			Incease in shares of pure float regimes from %5 to %27
			Incease in shares of hard pegs regimes from %12 to %23
Babula and Otker-Robe (2002)	190 IMFcountries between 1990-2001	Fifteen Way De facto coding	Decline in shares of intermediate regimes from %70 to% 40
			Incease in shares of floating regimes %20
			Incease in shares of hard pegs regimes %10
Bailliu, Lafrance and Perrault (2003)	1974-1998	BLP coding	Increase in shares of intermediate regimes from %20 to%45
			Increase in shares of floating regimes from %5 to %15
			Decrease in shares of pegs from 75% to %40
Rogoff et al (2004)	Mid of 1970s-2000s	RR five coding	Share of intermediate regimes remained at about one half between given period.
Dubas, Lee and Mark (2005)	1970s-1980s	three way coding	some movement away from pegs an toward intermediate regimes in the 1970s

Source: Tavlas, George.Harris Dellas and Allan C. Stockman (2008) The Classification and Performance of Alternative Exchange Rate Systems. Review Paper. European Economic Review.

3.1.2 The Fear of Floating and the Fear of Pegging

Calvo and Reinhart introduced the "fear of floating" concept in 2002, which mainly can be explained as emerging countries' reluctances for extreme fluctuations in their exchange rates. Lower exchange rate volatility was observed in emerging market countries that announce floating exchange rate regimes relative to the developed countries such as United States, Japan, Australia that show full commitment to floating exchange rate regimes. This asymmetry, although emerging countries are more likely to subject to large and frequent terms of trade shocks, motivated the authors to investigate the reasons of emerging country monetary authorities' intentions to stabilize their exchange rate by direct or indirect intervention in the foreign exchange markets.

Calvo and Reinhart (2002) indicate that emerging countries may be exposed to the"fear of floating" concept because of high dollarization ratio stemmed from lack of credibility, possible damages in terms of trade, cease of the international access, and currency mismatch problems. Calvo and Reinhart (2002) categorize the exchange rate regimes as fixed, fear of floating regimes and pure floating regimes, and compare determined countries' exchange rate volatility, interest rate volatility, fluctuations of international reserves and commodity prices. The authors base their research on four expectations. Firstly, exchange rate volatility of fear of floating countries' is expected to be less than pure floating countries and more than countries adopted fixed exchange rate. Secondly, changes in international reserves in fear of floating countries are expected to be more than in floating countries and less than in fixed countries. Thirdly, fears of floating countries are expected to use interest rates to mitigate the fluctuations of exchange rates. Lastly, commodity prices are not expected to vary in fear of floating countries as expected to move parallel with exchange rate variations in pure floating countries when there is a real shock. At the end of their study Calvo and Reinhart (2002) obtain consistent findings with their expectations and conclude emerging countries, even in normal periods, have tendency to intervene in the foreign exchange rate markets directly or indirectly to stabilize their exchange rates.

In the light of these evidences, Calvo and Reinhart (2002) do not accept the disappearance of intermediate exchange rate regimes, but conversely emphasize the prevalence of the fear of floating in emerging countries.

Levy-Yeyati and Sturzenegger (2003) reexamine the "fear of floating" concept and find that countries avoid announcing an adaptation of pegged exchange rate regime,

although they follow exchange rate policies to stabilize their exchange rate. The authors refer to the countries' stabilization of their exchange rates under announcement of floating exchange rate regimes as the "fear of pegging". Genberg and Swoboda (2004) find consistent results with the "fear of pegging" in their study and mention a country may have more devastating consequences under economic disturbances if it announces a commitment to a pegged exchange rate regime comparing to any other country, which stabilizes exchange rate with an announcement of floating exchange rate regime. In addition to these, the authors list possible three reasons of the "fear of pegging". Firstly, exchange rate stability can be reached incidentally by monetary policy strategy in which a central bank operates and monitors many variables including exchange rate. Secondly, a central bank may desire to have discretion in order to react with significant exchange rate adjustments when the country faces an idiosyncratic shock. Lastly, a country may avoid from an announcement of a parity to eliminate the likelihood of being a target of the speculators.

Alesina and Wagner (2005) investigate the relationship between the countries' departure from announced exchange rate regime and the institutional development. Alesina and Wagner (2005) mention the important role of institutions' to provide a commitment and to keep macroeconomic policies consistent with nominal stability. The authors find that countries with poor institutions exhibit the fear of pegging whereas larger countries with better institutions exhibit the fear of floating. The reason behind the countries' fear of pegging is reconciled by the authors as poor institutions' association with poor economic management and instability. However, countries displaying the fear

of floating with good institutions avoid to be seen having a poor economic management with wide fluctuations in their exchange rate so they peg their exchange rate.

Fear of floating concept is usually used for countries' intention to protect their domestic currency from devaluation by interventions. Levy-Yeyati and Sturzenegger (2007) investigate the characteristics of the exchange rate policies in the 2000s and find that countries have tendency to intervene to depreciate or to delay the appreciation of local currency. Levy-Yeyati and Sturzenegger (2007) call this neo-mercantilist approach, which allege that undervalued currency would trigger growth as the "fear of floating in reverse" or the "fear of appreciation". In their study, the authors find supporting results for the allegation that undervalued exchange rate stimulates growth with an increase in aggregate savings and investment, and a decline in unemployment and labor relative to capital compensation. The authors cannot find any relationship between growth and boomed export ratios with undervalued currency, as expected. Levy-Yeyati and Sturzenegger (2007) differentiate intentions behind the "fear of floating" and the "fear of floating in reverse". They claim that the "fear of floating" would be adopted to avoid from financial crisis whereas the "fear of floating in reverse" would be adopted to reap from economic welfare.

3.1.3 Basket, Band and Crawl (BBC) Regime

Williamson (2001) suggests an alternative intermediate regime taking into consideration of some countries' dissatisfaction under floating exchange rate regimes.

This regime, which is called Basket, Band and Crawl (BBC) arrangement provides more flexible monetary policy comparing to the traditional intermediate regimes.

Williamson (2001) recommends the basket arrangements for countries with diversified trade. He argues that if countries with diversified trade peg their currency to a single industrial country's currency, exchange rate fluctuations of pegged currency may induce changes in the countries' effective exchange rate, and consequently damage their macroeconomic balance. Therefore, countries should choose a trade-weighted basket of currencies of their major trading partners that may stabilize their effective exchange rates.

Williamson (2001) proposes wider band (up to ±10 % or even ±15 %) motivated by four incentives. Firstly, wider bands may provide countries more independent monetary discretion, which may be used to correct country's macroeconomic imbalances. Secondly, wider bands may comfort countries when there is an existence of strong but temporary capital flows. Thirdly, this regime may prevent countries to be in a no-win situation of struggling to defend a disequilibrium exchange rate. Lastly, allowed adjustments in the parity consistent with the economic fundamentals may prevent provocations in the expectations of discrete exchange rates. Permissions to exchange rate to move outside the band temporarily are also recommended in order to protect currency from speculative attacks.

Williamson (2001) criticizes the likelihood of regular crawling pegs, which are usually adapted to stabilize the inflation rates, to damage countries' competitiveness. He

suggests that changes in the rate of crawl or occasional small adjustments in parity to eliminate this risk by providing necessary real adjustments.

Williamson (2001) indicates that BBC regime is not an alternative for the inflation targeting, but it should be considered as a complement to the inflation targeting. Countries should adopt policies to protect both "internal balances" and "external balances". Countries are interested in securing internal balances with inflation targeting because of the social reasons especially unemployment levels. On the other hand, reserves are used to finance short-run imbalances to protect external balances. Internal balance can be provided continually when an external balance is achieved. Williamson (2001) points out that BBC regime's objective is to secure external balance in the medium term under "fundamental equilibrium exchange rate" (FEER).

Williamson argues in his study that the East Asian crisis could have been avoided, if these countries had managed BBC regime. Singapore is shown as a successful example of BBC regime follower since the 1980s. Singapore chooses a basket, which contains weighted ratio of the currencies of the fundamental trading partners and allows exchange rate to move within bands. Government does not disclose the currency basket, central rate and bands. The crawl of the nominal exchange rate regime is used to mitigate the differences between the domestic and the foreign inflation rates (Wang, 2008).

3.2 Performance of Soft Peg Regimes

3.2.1 Inflation

Rigid exchange rate regimes (soft pegs and hard pegs) are expected to provide lower inflation rates. Countries with high inflation backgrounds may adopt a pegged exchange rate regime as a nominal anchor to achieve monetary discipline and credibility, thereby decrease the inflation rates. On the other hand with full discretionary of monetary authorities, higher inflation levels may be expected under floating exchange rate regimes, especially in emerging countries. The distinction of performance under different exchange rate regimes in advanced and emerging countries should be done since emerging countries have specific characteristics. Calvo and Mishkin (2003) order these common features as weak fiscal, financial and monetary institutions; currency substitutions and liability dollarization; and sensitivity to sudden stops. The first three features may cause inflation or induce to difficulties when fighting with the inflation. Fiscal policies far from responsibilities may compel the monetary authorities for the debt monetization, which may produce rapid money growth, high inflation and depreciation pressure over the exchange rates. Weak financial systems without strong regulations and supervisions may induce damages on the bank' balance sheets so the monetary authorities are restricted to raise the interest rates in order to fight with the inflation. In addition to this, banking system fragility may lead high inflation rates and devaluations through fiscal instability since governments need to bail-out the banks. Monetary authorities may not be able to control the inflation rates and protect the currency from large depreciations, when there are weak monetary institutions and dependent central banks with little commitment to the price stability (Calvo and Mishkin,2003). Ghosh,

Gulde and Ostry (1996) argue that policymakers may maintain pegged regimes as an anti-inflationary tool with two main reasons. These are pegged regimes' provision of the political discipline with visible commitment and the confidence on exchange rates.

Soft peg regimes' appearance between hard pegs and floating arrangements do not serve a clear perception about the performance with inflation. There are some views that soft pegs are beneficial for the countries if only if the peg is credible.

Tavlas et al. (2008) indicate that pegged exchange rate systems are reconciled with lower inflation rates in much of the literature. Still these empirical studies are not exactly consistent with each other because of the usage of number of different coding systems. In these empirical studies, some economists prefer to investigate soft pegs and hard pegs under one category whereas some prefer to investigate soft pegs' under separate category from hard pegs. Ghosh, Gulde and Wolf (2002) search the relationship between the inflation and the exchange rate regimes between 1970 and 1999 by dividing regimes into three categories: pegged regimes (hard pegs and traditional pegs), intermediate regimes (floating within a predetermined range) and floating regimes. Either they use their own coding or the *de jure* coding, they find that pegged regimes have lower inflation level and are followed by intermediate and floating regimes respectively. When they elaborate their search based on the countries' income levels (upper-income, upper-middle income and low and lower middle income), they observe that upper- middle income and lower-middle income countries can achieve lower inflation rates under pegged exchange rate regimes. On the other hand, floating regimes perform the best in upper income countries to reach lower inflation rates and followed by intermediate regimes and pegged regimes respectively. Rogoff et al.(2003)

investigate the relationship between the exchange rate regimes and the macroeconomic variables in the period of 1970 to 1999 with the usage of the *de facto* classification. They categorize countries based on the macroeconomic and the financial development as developing countries, emerging markets and advanced countries. Their findings show that developing countries with relatively low exposure to international capital flows can reach lower inflation levels with rigid regimes (pegged and intermediate regimes), which provide them enhanced policy credibility, and advanced countries meet faster growth rates without facing higher inflation rates under floating regimes. On the other hand, neither rigid regimes nor floating regimes provide remarkable gain for emerging markets in terms of inflation rates. In addition to this, both regimes have some adverse effects on the emerging markets, which are highly open to the international capital flows. When rigid exchange rate regimes are associated to *"twin crisis",* which includes financial sector crisis and balance-of payment turbulence, floating regimes are associated with large fluctuations in exchange rates.

In conclusion, although it is accepted that hard peg regimes may provide best solution for developing countries in terms of inflation, and floating regimes provide the best for advanced economies, there is no consensus about soft pegs regimes' performance in terms of inflation. The reasons behind this may be existence of soft peg regimes' in the middle of the flexibility continuum. Generally, soft peg regimes' performance in terms of inflation is lower than hard pegs in developing countries, lower than floating regimes in advanced countries. On the other hand, none of the exchange rate regimes show superiority in terms of inflation for emerging markets. However,

another nominal anchor inflation targeting under floating exchange rate regimes provides lower inflation rates for emerging markets.

3.2.2 Growth Rates

Ghosh, Gulde and Wolf (1996) indicate exchange rates may affect growth rates through investment and increased productivity. The authors argue that pegged exchange rates are expected to increase the investment by diminishing the uncertainties of policies and decreasing the interest rates. On the other hand, pegged exchange rates impair efficient allocation of resources among sectors, misguide price signals, and stimulate protectionist pressure through removing important adjustment mechanism. Ghosh and Ostry (2009) specify that the intermediate regimes have best growth performance by achieving best balance between the pegged and the floating exchange rate regimes. Appearance of both the conventional pegs, which are close to the rigid corner and the intermediate pegs, which are more flexible under soft peg regimes, restrict to achieve a certain comment of soft pegs' performance in the growth rates. Tavlas et al. (2008) collect empirical findings about this relationship. Although half of these studies show that the intermediate regimes grow faster than the other regimes, the other half of the studies do not support these findings.

Table 5: Major findings about the relationship between growth and exchange rates		
Authors	**Coding**	**Results**
Ghosh, Gulde and Wolf (2002)	Their own codes	Intermediate regimes grow faster than other regimes
Dubas, Lee and Mark (2005)	Their own codes	Intermediate regimes grow faster than other regimes
Rogoff et al (2004)	RR five coding	Intermediate regimes grow faster than other regimes
Reinhart and Rogoff (2004)	RR five coding	Intermediate regimes grow faster than other regimes
Bailliu, Lafrance and Perrault (2003)	BLP coding	Floating regimes are associated with the highest growth rates
Levy-Yeyati and Sturzenegger (2003)	Their own codes	Floating regimes are associated with the highest growth rates
De Grauwe and Schnabl (2005)	Their own codes	Pegs grew faster than flexible regimes

Source: Tavlas, George. Harris Dellas and Allan C. Stockman. (2008) The Classification and Performance of Alternative Exchange Rate Systems. Review Paper. European Economic Review.

3.2.3 Output Volatility

Output volatility is expected to be lower under floating exchange rate regimes, which have shock absorber capacity, and provides the authorities a monetary discretion. Tavlas et al. (2008) indicate that in the literature there are consistent empirical results with this expectation and the growth volatility increases as the flexibility of exchange rate decreases. As empirical results support, intermediate regimes' performance are expected to be lower than floating exchange rate regimes' but higher than pegged exchange rate regimes' in terms of output volatility.

Table 6: Major findings about the relationship between output volatility and exchange rate regimes	
Authors	**Results**
Levy-Yeyati and Sturzenegger (2003)	4.3% under pegs
	4.0% under intermediate regimes
	3.4% under floating regimes
Rogoff et al (2004)	Free falling regimes* have highest volatility
	pegged regimes have second highest volatility
	free floatings have lowest volatility
Bleaney and Fielding (2002)	Similar results with Rogoff et al. (2004)
Edwards and Magendzo (2006)	Dollarised economies are associated with higher growth volatility than other regimes.
Source: Tavlas, George. Harris Dellas and Allan C. Stockman. (2008) The Classification and Performance of Alternative Exchange Rate Systems. Review Paper. European Economic Review.	
* Reinhart and Rogoff (2004) discriminate the countries with annual inflation rates above 40% and classify them under "freely failing". The authors accept that this macroeconomic imbalance may harm the possible effects of the exchange rate	

3.3 SOFT PEGS' SENSITIVITY TO CRISES

In the 1990s and 2000s, many emerging country experienced severe currency crises under adaptation of soft peg regimes with the climb of the international capital flows. In the literature, soft peg regimes vulnerability for currency crisis is usually associated with the currency misalignment concept and the speculative attacks. Soft peg regimes are also criticized to be more prone for liability dollarization and sudden stops. However, none of the currency crisis faced in these years should be talked independently from the macroeconomic and financial development of countries. Yağcı (2001) indicates the importance of strong financial and economic policies to defend the soft pegs and,

adds the need of consistency of the macroeconomic policies with the maintenance of the exchange rate. Husain, Mody and Rogoff (2003) state that "twin crises", where banking sector crisis and currency crisis appear together, has been faced under rigid regimes by mostly emerging countries. Frequent existences of "twin crisis" in emerging countries under rigid regimes comparing to developing and advanced economies are associated with the fragile financial sectors of emerging countries. Calvo and Mishkin (2003) mention that emerging countries should have strong institutions, which provide fiscal, financial and macroeconomic stability to gain macroeconomic success and to avoid from currency crisis.

In the following sub-sections, the concepts associated with soft pegs' vulnerability to crisis will be investigated in the light of financial fragility.

3.3.1 Currency Misalignments

Calvo and Mishkin (2003) define the misalignment concept as *"a sizable difference between currency's actual level and the one to which "fundamentals" would dictate"*. Misalignment in emerging countries may damage the current account balance with unsustainable trade deficit or undesirable surplus, and may lessen economic growth in the medium and long run (Yağcı, 2001). Many economists accept continuous overvaluation as a powerful warning for currency crisis.

Coudert and Couharde (2008) mention the difference of inflation rates between the country and nominal anchor cause real appreciation in rigid exchange rates. If inflation falls only gently after adaptation of a peg, there will be real appreciation in the

currency. Real appreciation of currency increases the import and decreases the exports by damaging external competitiveness of a country under a pegged regime.

Calvo and Mishkin (2003) state that countries can arrange the effective real exchange rates by applying taxes and subsidies on imports and exports. The same amount of tax on imports and subsidies on exports can be chosen parallel to real depreciation. This *tax-and-subsidy fiscal devaluation* has an advantage over nominal devaluation up to some level, which triggers inflation. High levels of taxes may lead importers for tax evasion. However, the authors add that to implement a fiscal devaluation effectively and in right time is difficult without well-run fiscal institutions.

Yağcı (2001) emphasizes that the soft peg regimes provide stable and competitive exchange rates only if a sustainable level is set consistent with the economic fundamentals. In addition to this, the authorities should persuade the market to keep currency at that level with disciplined macroeconomic policies and credible institutions. Nevertheless, elimination of misalignment cannot be assured in the countries open to international capital flows. Yağcı (2001) indicates that countries' poor fiscal and monetary policies, real external and domestic shocks may lead to misalignments and currency crisis under soft pegs. Impact of policy mistakes enlarges with the open capital flows. In order to reduce current account deficit stemmed from overvalued currency, higher interest rates or financial contraction are required. Political concerns in a country may lead the authorities to respond with required arrangements lately or inadequately. With increased uncertainty, large capital outflows and rapid decline in international reserves are observed. Finally this country cannot defend the peg anymore and has a currency crisis with devastating effect, if the financial sector is also subjected to foreign

exchange rate risks. Yağcı (2001) refers the likelihood of contagion of currency crisis to other countries in an increasingly integrated global economy. On the other hand, intermediate regimes (BBC arrangements) may be less sensitive to misalignments than soft pegs, if the authorities allow the exchange rate to move outside of the band. The reason behind this is the intermediate regimes' provision of scope for determining a suitable balance between exchange rate stability and flexibility (Yağcı, 2001).

3.3.2 Speculative Attacks

Soft peg regimes may be target for one-way speculative bets. In a downward pressure for currency, central bank defends the currency by intervening in the foreign exchange market. Purchasing the domestic currency against its international reserves may relieve foreign exchange markets in the short run. However, in the long run reserves would be eroded and a serious depreciation would flow this erosion. Speculators know this process, and they may lead the direction of any significant change in exchange rates (Angkinand, Chiu and Willett, 2006). Yağcı (2001) indicates that under self-fulfilling expectations speculative attacks may generate currency crisis, although the country has strong economic fundamentals. If a large player takes a short position of domestic currency with depreciation expectations, the other player will follow him/her. Consequently, central bank is forced to abandon the currency if the government is reluctant to increase interest rates or hold other cautions, which are costly. Disastrous result, collapse of currency would accelerate the inflation.

On the other hand, the risk of speculative attacks is lower under both hard peg regimes and floating regimes. In hard peg regimes, loss in reserve induce a monetary contradiction and higher interest rates, which stabilize the runs on currency, and in floating regimes, flexibility and lack of commitment to defend any determined rate or band present two-way bets for speculators, which lessens the risk of speculative attack and its contagion effect (Yağcı, 2001). Yağcı (2001) adds that both floating regimes and hard peg regimes may be subjected to the speculative attacks under some conditions. If a country has many debts based on foreign currency, expectations for depreciation of currency increases in which debt holders will not be able to complete their obligation. Eventually under this self-fulfilling crisis considerable capital flight is occurred, and expectations of depreciation are realized. In a liquidity crisis, countries under both floating and hard peg regimes face with currency crisis. In a hard peg, limited lender of last resort role of a central bank prevent the banks bail-out, in turn liquidity crisis will affect output and employment adversely and central bank give up hard peg regime. In a floating regime, market players' anticipation about bailouts the banking system with pressure on prices and exchange rates would cause capital flights (Yağcı, 2001).

There are also debates about, which kinds of soft peg regime are more vulnerable to speculative attacks. Angkin and, Chiu and Willett (2006) argue that although adjustable pegs (conventional pegs) are very prone to the speculative attacks, more flexible intermediate regimes are less prone to the speculative attacks. The authors reconcile the success of protecting currency from speculative attacks with well-managed crawling pegs. Yağcı (2001) explains that in conventional pegs the authorities are obligated to keep the currency by interventions within the band, which may induce

speculative attacks if the band is not perceived credible and defensible. On the other hand, relatively wider bands and temporary permission for currency to move outside the band avoid one-way bet of speculative attacks. Nevertheless, this description accommodates better to Williamson's BBC arrangements than IMF's intermediate regimes definition.

3.3.3 Sudden Stops and Liability Dollarization

Sudden stops can de defined as reversal of the capital inflows. Sudden stops have been usually observed in emerging markets in the period of the financial crisis. Current account deficit, which is offsetby capital inflows must be compensated by reserves, if capital inflows dry. This decreases the international reserves. In rigid regimes, reserve losses lead to central banks to abandon pegging and depreciate the domestic currency. Calvo and Mishkin (2003) state the depreciation and sudden stops may induce large shifts in relative prices, imbalances in income distribution and harmful effect on wealth. There are so many reasons for sudden stops. If countries' pegs are not perceived as credible, creditors began to withdraw their capitals. Not only suspicions on the currency but also suspicions of the countries' fiscal and financial instability may trigger a sudden stop.Yağcı (2001) orders the possible motivators for sudden stop as real and perceived policy mistakes, terms of trade and productivity shocks, weaknesses in the financial sector, liability dollarization and political instabilities.

Developing and emerging countries' inability to borrow in their own currencies is called "original sin". Countries' ill-advised economic policy backgrounds and their

lack of complete compatibility to the global capital markets are shown as the main reasons of "original sin" (Krugman and Obstfeld, 2004). Original sin leads countries to borrow usually based on Dollar or Euro. As the countries' liability dollarization increases, their sensitivity for shocks increases. In depreciations, debt holders whose incomes are usually based on domestic currency would not be able to pay their debts. Overall result for the economy would be very severe with many bankruptcies, loan defaults, sharp decline in lending and an economic contradiction (Calvo and Mishkin, 2003). Liability Dollarization is more dangerous for the relatively closed economies in which earnings are in domestic currency.

Liability dollarization is a problem for all exchange rate regimes. It may induce lack of credibility for countries in the international markets, capital reversals and sudden stops. After the depreciation of the currency, liability dollarization would also lead liquidity crisis, especially if the banking system is not strong. The defender of the "corner hypothesis" claim that soft pegs regimes are more prone to the crisis stemmed from liability dollarization, because these regimes prevent banking sector and real sector players to take precautions. With previously determined bands, financial sector and real sector players may feel themselves more confident and do not need to take hedge positions for their liabilities. At this point, financial sector regulations should be considered.Calvo and Mishkin (2003) explain that governments' financial regulatory policies affect the ratio of liability dollarization. Banking regulations can be arranged to decrease the currency mismatch in the balance sheets of banks. Matching up foreign-denominated liabilities with foreign-denominated assets may decrease the currency risk. However, this regulation for banking system may be ineffective to reduce the risk, if the

banks' assets are the loans to companies who are unhedged. If the companies arenot able to pay their loans to the banks, banking system would inevitably face with liquidity crisis. Consequently, governments not only should apply regulations for banking system but also should discourage the real sector for liability dollarization or borrowing unhedged foreign currency denominated debt (Calvo and Mishkin, 2003). Calvo and Mishkin (2003) compare Argentina and Chile when they both experienced sudden stop after the 1998 Russian crisis, and they indicate that Chile was less affected because liability dollarization was lower resulted from stronger fiscal, financial and monetary institutions.

3.3.4 Empirical Studies

The earliest study for comparing different exchange regimes' crisis sensitivity was held by Babula and Otker-Robe in 2003. Babula and Otker (2003) investigate the frequency of crisis under different exchange rate regimes adopted by IMF member countries between 1990 and 2000. The authors define the crisis period as if determined thresholds for exchange market pressure index, interest rate increases and weighted average of exchange rate depreciation are exceeded. In their study, not only purpose they to find the different exchange rate regimes' crisis vulnerability, but they also purpose to test the corner hypothesis. As aforementioned in the previous section about the corner hypothesis, they find supporting results for the corner hypothesis. They observed more frequent crisis episodes under soft pegs regimes in that period. However, they add that none of the poles of the regime spectrum are free from crisis. In addition to these, they

find that conventional pegs are more prone to the crisis comparing the other intermediate regimes, although there is no statistically significant difference between different intermediate regimes for crisis sensitivity. Angkinard, Chiu and Willet (2006) criticize Babula and Otker-Robe's study about three issues. These are usage of unusual crisis dates, lack of consideration of changes in reserves and the problems of classifying exchange rates. In their study, the authors aim to see if Babula and Otker-Robe's results are consistent with other crisis measures and different classification methods such as regime classification of Reinhart and Rogoff (2002) and Levy-Yeyati and Sturzenegger (2003). They find no supporting result for the corner hypothesis, but they find that exchange rate regimes in the center of spectrum are the most crisis prone regimes. In addition to these, when they enlarge their study based on the countries development level, they find intermediate regimes being prone to crisis are more prevalent in emerging countries. In contrast to the Babula and Otker-Robe's findings, they find substantial differences in being prone to crisis between different intermediate regimes (Angkinard, Chiu and Willet, 2006).

Cudert and Couharde (2008) investigate if pegged regimes are more prone to the overvaluations. They examine 128 countries' misalignments by estimating real equilibrium exchange rates from 1974 to 2004. They find that pegged exchange rate regimes are more prone to the overvaluation both in the de facto classification of Reinhart and Rogoff (2004) and Levy-Yeyati and Sturzenegger (2003).

3.4 Conclusion

Due to globalization and large capital mobility throughout the world, the importance of choosing the appropriate exchange rate regime has increased in the last thirty years. Major currency crises in the 1990s have also intensified the debate about the costs and benefits of various exchange rate regimes. Although there is no consensus among economists, a growing number of researchers agree on the view that there is no single ideal exchange rate regime that is appropriate for all countries.

This study provides a review of the recent debates about soft peg regimes sustainability and their performance. The main difficulty that economists face is the existence of so many coding systems for exchange rate regimes. Although IMF's de facto classification is generally accepted by the majority of economists, some prefer to use their own classification method. In some coding systems conventional pegs and hard pegs are categorized under fixed exchange rate regime whereas the other soft peg regimes are categorized as intermediate regimes, which complicate the assessment of soft peg regimes' performance and sustainability clearly. This study is based on the IMF's recent classification system. Although the concept of soft peg regime covers both more rigid conventional pegs and relatively flexible intermediate regimes, soft peg regimes and intermediate regimes are used as synonymous.

In the beginning of the 21st century, the hypothesis of gradual disappearance of soft peg regimes became popular. The currency crises countries faced under soft peg regimes and the trend of countries' choice towards the corners of flexibility continuum - mostly to the flexible corner- formed the main arguments of the corner hypothesis. Although none of the exchange rate regime is proved to be innocent for the currency

crises, the majority of empirical studies show that soft peg regimes are more prone to the currency crises.

On the contrary to the corner hypothesis, intermediate regimes are adopted by many country secretly under the announcement of floating exchange rate regimes. The countries with an unannounced, hidden exchange rate target avoid from speculative attacks, which is more prevalent under soft peg regimes and hold the exchange rate in that hidden target by frequently intervening in the foreign exchange rate market like in the intermediate regimes. Under the arguments support each other the "Fear of Floating" and the "Fear of Pegging" countries both keep their full monetary discretionary and control exchange rate movements.

On the other hand, countries' sensitivity to currency crisis should not only be evaluated with their exchange rate regimes choices. Countries financial, fiscal and economic institutions' strength affects the stability of all macroeconomic variables, including exchange rates. The reality that greatest majority of currency crises under soft peg regimes were faced by emerging countries without strong, developed financial institutions should not be ignored. Real country examples show the importance of institutional framework and sound fiscal and financial structure to provide strong macroeconomic balances including the exchange rate regime. Banking system plays very important role to provide strong economic balances because banking system directly affects the real sector by credit mechanism and has an intermediary role for savings and investments. Consequently, strong banking system is one of the main pillar for a strong economy. To provide a sound banking system, there should be effective regulatory framework on the banking system. Emerging countries, which faced with

currency crisis under soft peg regimes did not have sound banking system and regulatory frameworks. Indeed nearly all these countries faced with banking system crisis after a currency crisis.

In conclusion; although the appearance of soft peg regimes seems to be vanished from the perspective of countries' exchange rate choices, their hidden applications by countries seem to be continuing and their vulnerability to crises should be analyzed with considering emerging countries' lack of strong financial and fiscal structure.

CHAPTER 4

CRISES EXPERIENCES OF EMERGING COUNTRIES UNDER SOFT PEG REGIMES

4.1 Introduction

In the 1990s so many emerging country adopted soft peg regimes, usually to fight with the high inflation ratios. Although most of them managed to decrease inflation ratios, they could not have escaped from the crises. General problems faced by countries were aforementioned dangers stemmed from the soft peg adaptation such as overvaluation, liability dollarization, and speculative attacks. Most of these countries had to float their currencies after they faced with speculative attacks because there was no way to defend the currency. In addition to the disadvantages came with adaptation of soft peg regime, these emerging countries generally did not have good macroeconomic, financial and fiscal appearance. Emerging countries have similar characteristics like lack of regulatory framework in financial area, high public deficit, high current account deficit, unsound banking system, lack of corporate governance and political

uncertainties. Their unsound appearance decreased the credibility of them in the eyes of the creditors in the international financial markets, which caused sudden stops and speculative attacks. Generally, these emerging countries faced with banking crisis with the currency crisis because of their highly liability dollarized banking systems and bank runs stemmed from confidence depletion of residents. On the other hand, before facing with the crises so many emerging countries were successful on fighting with inflation. In short, although emerging countries benefited from the advantages of soft peg regimes, they lived crises and abandoned their peg.

In this chapter four countries are chosen as example. They both adapted rigid exchange rate regimes and at the end they both faced with currency crises stemmed from various reasons and let their exchange regime float. The crises will be investigated in chorological order in the following part. The first country is Mexico. Mexico faced a severe balance of payment crisis in 1994 stemmed from speculative attacks with the confidence depletion of investors, who kept suspicions over Mexico's high current account deficit, high debt ratio, weak financial structure and political uncertainty. Second example, 1997 East Asian Crises has different characteristics. In this example, a region is held as an example, because nearly all the countries in this region faced with the crisis in a very short period, because of similar reasons and contagion effect. In this region, some countries adapted soft peg regime, some adapted hard peg regimes. However, general appearance of this region was adaptation of rigid regimes. The East Asian countries faced financial crises stemmed from speculative attacks with the confidence depletion of international investors, who kept suspicions over the East Asian countries fragile banking systems, weak financial structure, continuously increased debt structure and political uncertainties. 1999 Brazil Balance of Payment crisis follows this

severe crisis. In this crisis, the contagion effect of the East Asian Crises and the 1998 Russian crisis played very important role. Brazil like other countries faced with the speculative attack. In a short period continuously increased public debt, current account deficit and political uncertainties attracted the attention of investors, who had little confidence to emerging countries after the Mexico, the East Asian and the Russian crises. Last country example is from Turkey. Turkey faced a severe financial crisis in 2001. Like previously aforementioned countries Turkey faced the speculative attacks and had to abandon the peg. The main reasons attracted the international investor in this case was weak financial structure, fragile banking system, unsustainable debt structure appearance and political uncertainties. To categorize, where Mexico and Brazil faced balance of payment crises, Turkey and The East Asian countries faced financial crises after speculative attacks. Except Brazil, all the countries had weak financial structure. However Mexico crisis is not usually categorized as a financial crisis because main reasons attracted the speculative attack were debt structure, unsustainable current account deficit and political turbulence.

Mexico's and Brazil's current account deficits were perceived as unsustainable and they faced balance of payment crises with sharp currency devaluation. Mexico faced nearly its' all foreign reserves, where Brazil lost half of its reserves in very short time as usually observed in the balance of payment crises. These countries were attracting high amount of capital inflow and they were financing their current account deficit with these inflows. So sustainability of the current account was very important for them. Some indicators can be counted as showing sustainability of current account. Corsetti, Pesenti and Roubini (1998) counts these indicators as, investment and saving ratios, productive efficiency, inflation, political stability, composition and size of capital inflow, foreign

exchange reserves etc. They indicate that because current account balance is the difference between national saving and investment, the reason behind the deficit may be either a fall in saving or an increase in investment. Borrowing from abroad if it is channeled to productive, efficient investments projects is less dangerous than decrease on saving, which means increase on consumption. The other indicator inflation plays an important role in rigid exchange rate regimes adaptation. Domestic higher inflation rates lead to real appreciation of the fixed currency, which cause deterioration on trade balance. Political instability may cause balance of payment if the general macroeconomic appearance of the country is not strong, because the threat of a change in regime which is not committed to a sound macroeconomic policy may distort the confidence of the investors and their willingness to finance current account deficits (Corsetti, Pesenti and Roubini1998). The other indicator is foreign reserve. Adequately higher financial reserves more than short-term debt may provide confidence to investors, who invest in the countries for short periods. In addition to these, the structure of the capital inflow plays very important role in sustainability of the current account. If the ratio of the foreign direct investment is high, this means the probability of facing sudden stop decreases and the foreign debt goes to the investments as mentioned in investment and saving indicator (Corsetti, Pesenti and Roubini 1998).

The East Asian countries' and Turkey's weak financial system supported with some imbalances in macroeconomic area and political uncertainties attracted the investors' attention. In addition to these, both countries faced so many defaults in the banking system. Mishkin (1998) counts two ways that weaknesses in the banking sector cause financial crises and three main relations between financial crises and currency crises.

First way, deterioration of the balance sheets of the banks especially maturity mismatch may restrict the banks' lending ratio. These restrictions of lending may limit the real sector's activity. Second way, the deterioration of the balance sheets of the banks would also restrict the central bank to use its instruments, especially interest rates. An increase on the interest rates to avoid from depreciation of the currency may harm the bank's balance sheets if maturity mismatch ratio is high. In these situations, central banks avoid to increase the interest rates. Investors, who observed the weak banking sector, assume that the central bank has limited ability to defend the currency so that they began to withdraw their hot money (Mishkin, 1998).

In addition to these; Mishkin (1998) constitutes three main relations between a currency crises and financial crises. Currency crises generate a sharp devaluation of the currency. First of all, this devaluation firstly deteriorates the firms' balance sheets, especially if their liability structures   depend on foreign currency, when their incomes are domestic currency based. This would decrease the net worth and if the banks do not monitor the firms adequately, the ratio of unqualified credit would increase with asymmetric information. Secondly, after a sharp depreciation the increase on interest rates again brings interest debt burden on the firms. Lastly, devaluation would harm the balance sheet of the banks. If the banks' liability structures depend on short-term based foreign debt, the banks would go to the liquidity crises. Their inability to gather credits from the insolvent firms would harm the banks more. These dangers can be prevented by strong regulatory and supervisory framework, which would restrict the banks with required rules and sanctions and good monitoring capacity (Mishkin, 1998).

In the following sections aforementioned countries, their crisis periods and the main reasons behind the crises they faced will be investigated in detail.

61

4.2 1994 Mexico Crisis And Its Reasons

4.2.1 The Crisis Period

In 1985 Mexican government began series of reforms after living with high inflation levels and stagnant economy for long years. First of all, government liberalized the trade sector. An economic stabilization plan followed this process in 1987 with new market-oriented institutions (Gil-Diaz, 1998). The main pillars of the stabilization program were a fundamental opening of the economy to international competition, a strong privatization and deregulation process, a stabilization program based on a predetermined nominal exchange rate anchor with restricted fiscal and monetary policy support, a radical debt restructuring and, a broad social and economic agreement between government, the private sector and labor unions (Edwards, 1997).

One of the main features of these reforms was choice of exchange rate regime, which was used as a nominal anchor to fight with inflation. Mexico changed its' regime several times between 1988 and 1994. Firstly a completely fixed exchange regime was adapted; it was followed by a soft peg regime with pre-announced devaluation rates based on ongoing inflation rates and lastly exchange rate band with a sliding ceiling. Mexico government aimed to discourage short-term capital inflow and to deal with exchange rate corrections if needed with the choice of exchange rate regime (Edwards, 1997). Until NAFTA agreement in the beginning of 1994, peso/dollar rate was stable and exchange rate regime was supported by fiscal and monetary policies (Edwards, 1997).

With these reforms, Mexico reached averaged 3.1 % economic growth for 1989-1994 period and single-digit level of inflation in 1993 (Gil-Diaz, 1998). Inflation was

8% in 1993 comparing to 160 % in 1988. In addition to these, overall public sector fiscal balance had a surplus of 1 % of GDP in 1993 comparing to the deficit of 11 % in 1988 (Griffith-Jones, 1997). These positive processes attracted attention of international investors. Large capital inflow began with the expectation of Mexico to be one of the advanced economies with solid growth, stability and prosperity after being member of NAFTA (Edwards, 1997). Short-term characteristics stock market securities and Mexico government short- term bonds heavily attracted the international investors. Especially, they invested on "Tesobonos" dollar denominated short term papers, which were firstly issued in 1991. With these securities, Mexican government took exchange rate risk and attracted more capital. The stock of Tesobonos were higher than the international reserves in the mid of 1994, which increased Mexico's fragility (Griffith-Jones, 1997).

However these hey-days did not last long. In 1994 Mexico felt in a political turbulence. Mexico faced so many political problems in the beginning of the 1994 and before the elections, public expenditures increased heavily. These continuing political problems induced depletion of confidence in international area. In addition to these, US Federal Reserve's repeated interest raise policy affected attractiveness of Mexico for capital investors negatively. Therefore, capital outflow began (Griffith-Jones, 1997). In addition to these Mexico had high levels of current account deficit (in 1994, 7 % of GDP), which began to seem as unsustainable. To live with high level of current account deficit, capital inflows were vital for Mexico. To attract the capital investors, Mexico government could increase the interest rates but this option was not chosen not to increase unemployment level and decrease growth level. Mexican government also was reluctant to choose this way because banks gave too many credits with low levels of interest by taking the risk of interest rate. In addition to this, Mexico did not choose the

other way, devaluation and it defended the currency from rapid capital outflow with sterilization. Although the first attack was managed, high levels of international reserves were lost.

At the end of 1994, political problems, current account deficit and public debt, which were heavily short term and dollar denominated based peaked. Level of international reserve was very low, nearly 6 billion dollar. In addition to these, Federal Reserve announced that they would not let Mexico use the swap opportunity. All these triggered capital outflow. On December 20, 1994 new Mexican authorities enlarged the bands by % 15. This increased expectation of the devaluation and capital outflow accelerated. With very low levels of international reserves, Mexico could not defend the currency from speculative attack. Mexico let the peso float after two days facing with a severe balance of payment crisis. (Whitehead, 1997)

4.2.2 Reasons Behind The 1994 Mexico Crisis

In 1994, Mexico's the brilliant appearance for future turned into economically collapsed country. It lost nearly all of its international reserves and faced a balance of payment crisis (Gil-Diaz, 1998).

What were the reasons behind this crisis? Soft peg regime caused appreciation of the currency, which enlarged the current account deficit. In addition to this, exchange rate regime increased the possibility of speculative attack. On the other hand, despite numerous reforms were adapted in Mexico, Mexico had so many fragilities in macroeconomic area and banking sector. In addition to these, political uncertainties augmented the doubts.

To summarize, main reasons behind the 1994 crisis can be counted as, unsustainable current account deficit, which was funded by relatively short-term capital inflow, political turbulence and increased public debt especially before the election period, low level of international reserves to defend the currency, fragile banking system with mismatched balance sheets, credit boom which was expanded imprudently and devaluation decision after waiting long time. In the following sub-sections, these situations are investigated in detail.

a) External Appearance and Debt Management

Mexico's current account deficit increased rapidly and consistently and reached 7.7 % of GDP in 1994 (Griffith-Jones, 1997). Although current account deficit gave the signals in the middle of stabilization program, the politicians did not give enough importance to it and did not take any caution. The liberalization process was too rapid in the end of 1980s that economic system could not adjust so many changes at the same time appropriately, which left a high current account deficit as a heritage (Griffith-Jones, 1997). When table 7 shows, summary of balance of payment of Mexico is given for 1990-1994 period; chart 1 exhibits the progress of current account deficit since 1985. As it can be observed from the chart and the table, Mexico's current account deficit had a continuously increasing trend.

Chart 1: Current Account Balance of Mexico between 1985 and 1994
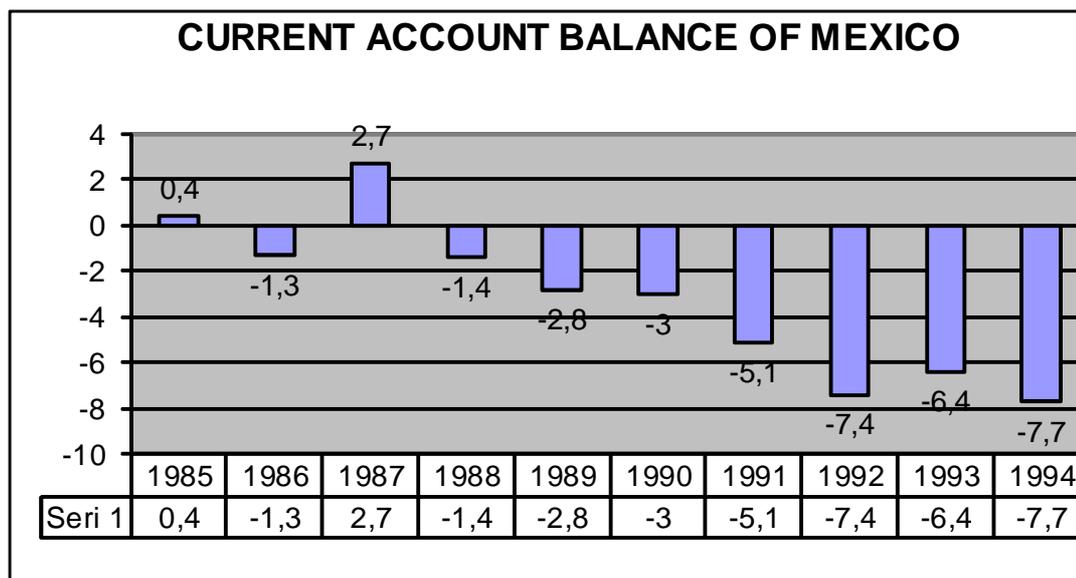
CURRENT ACCOUNT BALANCE OF MEXICO

	1985	1986	1987	1988	1989	1990	1991	1992	1993	1994
Seri 1	0,4	-1,3	2,7	-1,4	-2,8	-3	-5,1	-7,4	-6,4	-7,7

Source: Griffith-Jones Stephany. (1997) "Causes and Lessons of Mexican
Peso Crisis"The United Nations University Working Paper No:32
Data : Banco de Mexico and IMF, International Financial Statistic

| TABLE 7 : SUMMARY CAPITAL ACCOUNTS, 1988-94							
	1988	1989	1990	1991	1992	1993	1994
	In millions of US dollars						
Current account	-989	-5,823	-7,45	-14,649	-24,439	-23,4	-28,786
Capital account	-5,774	4,745	10,889	22,232	26,361	30,491	10,866
Official capital	265	-1,124	-1,82	3,424	7,94	7,882	-400
Medium- and long-term borrowing	1,459	-29	6,371	1,226	-3,821	1,601	1,447
Short term	219	-199	483	529	1,843	1,063	2,172
Non-resident purchases of Mexican Gov	-	-	-	3,406	8,147	7,013	-1,942
Tesobonos	-	-	-	253	-62	1,063	14,338
Other government financial assets	-1,412	-896	-8,674	-1,736	1,772	-1,794	-2,076
Private capital	-6,039	5,869	12,709	18,807	18,421	22,609	11,266
Direct investment	2,595	3,037	2,633	4,762	4,393	4,389	7,98
Equity investments	-	493	1,995	6,332	4,783	10,717	4,088
Net international reserves (increase -)	6,763	1,078	-3,439	-7,583	-1,923	-7,092	17,919
Source: Griffith-Jones Stephany. (1997) "Causes and Lessons of Mexican Peso Crisis"The United Nations University Working Paper No:32							
Data from Banco de Mexico and IMF,International Financial Statistics							

Chart 2 shows Mexico's deteriorated current account balance before 1994 crisis. 1994,

crisis period is chosen as t.

CHART 2: Mexico's Current Account (BIL. US$)
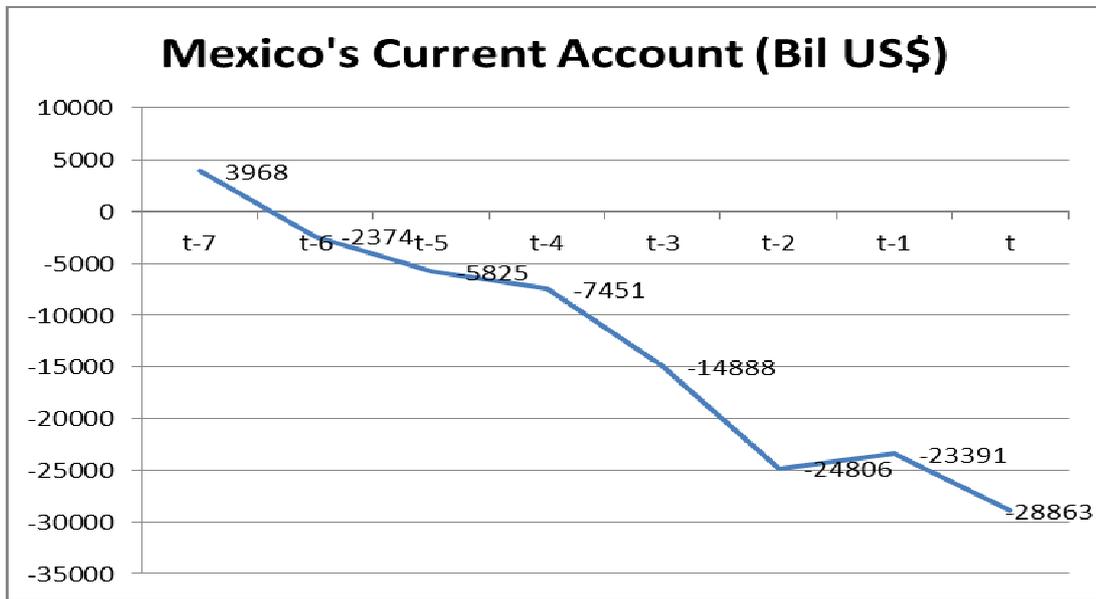
Data: Banco de Mexico

Current account was funded by the capital inflows. Until the end of 1993, net capital flows were higher than current account deficit so that foreign exchange reserves increased. However, this situation did not last long. With the political uncertainties and interest rate increases of Federal Reserve capital inflows began to decrease.

On the other hand, the structure of the capital inflow was so unbalanced with high proportion of short-term capital inflow. As it can be observed in table 8, high proportion of the capital inflow was portfolio investment; even it reached 67 % of total inflows in 1990-1993. These kind of portfolios are known to be more prone to the reversal and more volatile (Griffith-Jones, 1997). First of all, with the liberalization of the Mexico Stock Markets in 1989, the ratio of foreigners heavily increased. Foreigners purchased 28 billion dollar Mexican equities during 1990-1993 comparing to the less than 1 billion dollar annually numbers before 1990 (Griffith-Jones, 1997). Table 9

shows the ratio of non-residents holdings of public holdings. Ratio of foreign investors increased to nearly 70 %, although it was only 8 % in the beginning of 1991.

TABLE 8:			
COMPOSITION OF(%) MEXICAN CAPITAL INFLOWS,1990-1993			
PORTFOLIO INVESTMENT	FOREIGN DIRECT INVESTMENT	OTHER (inc. Bank lending)	TOTAL
67	21	12	100

Source: Griffith-Jones Stephany. (1997) "Causes and Lessons of Mexican Peso Crisis"The United Nations University Working Paper No:32
Data from Banco de Mexico and IMF,International Financial Statistics

TABLE 9 : NON-RESIDENT INVESTMENTS IN MEXICAN GOVERNMENT SECURITIES,1991,1994							
Percentage of total public holdings							
		CETES	Ajustabonos	Tesobonos	Bondes	Total	
January 1991		7,30	7,4	58,9	8,4	8	
December 1992		21,9	15,9	78,7	4	13,1	
December 1993		75,8	41,4	58,6	12,4	45,6	
December 1994		63,1	53,4	80,3	18,7	56,6	
December 1994		60,2	19,1	79	5	69,3	

Source: Griffith-Jones Stephany. (1997) "Causes and Lessons of Mexican Peso Crisis"The United Nations University Working Paper No:32
Data from Banco de Mexico and IMF,International Financial Statistics

Secondly, the ratio of short-term government bonds hold by foreigners was high enough to constitute a risk over capital flow. In 1991 foreigners had 3.4 billion dollar government debt, and they purchased 18 billion dollar between 1991 and 1993. Between these years, foreigners were holding 57 % of the government securities (Griffith-Jones, 1997). In addition to this, Mexico issued short-term, dollar indexed, peso–denominated government securities Tesobonos in 1991. These high ratios of the short-term dollar-indexed government securities with their high volatile characteristics increased the possibility of capital outflows and also foreign exchange risk for the issuers stemmed

from exchange rate regime. When Griffith-Jones (1997) shows one of the reasons of the Mexico Crises as management of the public debt, Whitehead (1997) mentions that Mexico government heated up its problems by rolling over its debt with short-term securities and taking the foreign exchange risk.

Another important reason of the current account deficit was the dissaving of the private sector (Griffith-Jones, 1997). Whitehead (1997) specifies that current account deficit reached 8 % of GDP because of the gap between domestic saving, investment and raising reliance on foreign savings. Whitehead (1997) explains the decrease on the domestic private saving with rapid increase in commercial bank credit and higher private domestic spending, high unemployment levels and relatively low growth levels. Domestic saving decreased to 11 % of GDP in 1994 from the 21 % of GDP numbers in 1989. Credit expansion, which will be talked about in the following sub-sections and increased import ratios because of overvalued Peso contributed the current account deficit.

When capital inflows began to decrease, Mexico Government perceived that situation as temporary and did not take any caution (Griffith-Jones, 1997). In addition to this, Mexico government did not have high level of international reserves to defend the currency in a speculative attack. This low level also triggered the investor to withdraw their investment with the depletion of the confidence. Mexico used high amount of international levels in the beginning of 1994, when the first suspicions emerged with the reversal of capital outflow. At the end of 1994, when the suspicions peaked, Mexico had less than 6 billion dollar international reserves.

b) Exchange rate mechanism and its consequences

Mexico adapted an exchange rate based stabilization program in 1987. Until the crisis, exchange rate regime was changed from fixed to firstly crawling peg then adjustable peg and lastly enlargement of the bands just before the speculative attack. In this period, exchange rate regime was used as main nominal anchor to fight with the inflation. However, peso appreciated nearly 30 % between 1989 and 1994. Although Mexico government preferred fixed and soft peg regimes to decrease inflation to low levels quickly, government did not take any action to prevent overvaluation of the currency (Griffith-Jones, 1997). This overvaluation caused inflation to fall slowly than expected. As Whitehead (1997) mentions, Mexico had to choose one of the options, firstly let the peso fall or to increase the interest rates. Mexico never chose interest raise with the fear of weak banking system and possible devastating effect on unemployment and growth levels. On the other hand as Steward (1997) mentioned, exchange rate stabilization program was expected to eliminate the "inertia inflation". Program diminished the "inertia inflation" but could not eliminate it.

c) Financial Appearance

Before the 1994 Mexico Peso crisis, the appearance of the Mexican financial system was not sound. In the 1990s with the fast liberalization process, banking sector was heavily privatized without taking regulatory or supervisory actions and new owners of the banks were not experienced of the banking system (Griffith-Jones, 1997).

In the beginning of the 1990s, uncontrolled credit expansion was observed, which contributed the current account deficit in an important manner. Gil-Diaz (1997) shows the reason of this dangerous credit expansion as; improved economic

70

expectations, important reduction in the public debt, extraordinary international attention for securitized debt, a strong private-investment response and an increase on the real estate and in the stock market.

In 1993, nonperforming loans increased heavily as a return of rapid consumer credit. Gil-Diaz (1997) shows the main reasons of these nonperforming loans as;

- After a rapid liberalization and privatization process, banking sector owners and workers were not experienced to screen borrowers and so many credits were given to consumers or firms who were not able to pay the credits back.

- There was no strong banking supervision and regulative institutions on the banking system. In addition to this important deficiency, lending and borrowing rates were made free, reserve requirement ratios for the banks were eliminated and forced channeling of the credit was cancelled. All these triggered the moral hazard in the banking system and ratio of the unqualified credits increased. Although consumer credit increased rapidly and contributed the current account deficit in an important ratio, government did not take any action in financial sector to control it (Griffith-Jones, 1997).

On the other hand, banks took so many foreign exchange rate risks by borrowing in foreign exchange rate based and giving lend in foreign exchange rate based. In devaluation, borrowers may become insolvent and cannot pay credit back to the money. These would affect all the banking system like a domino stones. These possibilities were not taken into account; there was no caution for the banks' mismatched balance sheets in Mexico (Griffith-Jones, 1997). A similar possibility; if there may be bank runs in any devaluation, with mismatched balance sheets the banks would go bankruptcy. Financial

sector and government authorities did not show any attention to this situation, although Mexican banks hold high amount of short term liabilities. Nearly 70 % of Mexican banks' liabilities were payable overnight and approximately all of the rest was very short term based. (Gil-Diaz,1998).

4.3 1997 – 1998 The East Asian Crisis

4.3.1 The Crisis Period

Asian Countries showed incredible economic performance for decades until the end of the 1990s. ASEAN-5 (Indonesia, Malaysia, the Philippines, Singapore, and Thailand) countries' annual GDP growth averages were approximately over % 8 for end of the 1980s and beginning of the 1990s. In addition to this growth rate, Asian countries increased their per capita income levels excessively since from 1960s. This level increased by ten times in Korea, five times in Thailand and four times in Malaysia. Even, Singapore and Hong Kong reached higher per capita income levels more than some developed countries (Kaminsky and Reinhart, 1998).

Moreover, Asian countries attracted nearly half of the total capital inflows to the emerging countries before 1997. Total capital inflow to emerging countries shifted from $ 46 billion in 1990 to $ 236 billion in 1996. South Korea, Indonesia, Malaysia, Thailand and the Philippines attracted $93 billion in 1996, when they only attracted $47 billion in 1994 (Wade, 1998). For the last decade before 1997 Asian countries' share was one fifth of the total world export, which was doubled comparing the numbers of 10 years before (Kaminsky and Reinhart, 1998). In addition to this, Asian countries were

important importer from the rest of the world, which stimulated the general world growth (Kaminsky and Reinhart, 1998).

However, Asian countries outstanding performance halted with the 1997 East Asian Crisis. The crisis began in Thailand and spread over all Asian countries and nearly all the countries were affected by different ratios. Pressures on Thai Baht began in July, 1996. The liquidity injections to financial sector by the Bank of Thailand after the collapse of the Bangkok Bank of Commerce were not enough to stop the doubt seeds of the international investors, when Thailand was also in a political instability. In 1997, 16 finance companies' operations were suspended, which escalated the suspicions over Thailand (Kaminskya and Schmuklerb, 2005). On July 2, 1997 Thailand faced with speculative attacks and had to float Thai baht after a sharp devaluation, which was pegged to a basket of currencies with USA dollar domination. This sharp devaluation in Thai baht attracted attention of the international players and other currencies were exposed to attacks (Wong et al., 2000). Philippines followed Thailand and it abandoned the peg and began to float its currency after a sharp decline in the currency, increases in interest rates and depletion of the reserves (Kaminskya and Schmuklerb, 2005). Shortly after, Malaysia changed its exchange rate regime from tightly managed float to other managed float after facing with attacks. When Malaysia was trying to defend the Ringgit, interest rates increased, reserves decreased. In the end, a sharp depreciation occurred. Similarly Indonesia abandoned backward looking crawling band regime in August, 1997 with a sharp depreciation and rises in interest rates.

In October 1997, Taiwan was infected from the currency crisis with the devaluation of the Taiwanese dollar (Kaminskya and Schmuklerb, 2005). On the other hand, other countries Hong Kong, South Korea and Singapore were affected less from

the Asian crises compared to the aforementioned countries. When Hong Kong and South Korea did not change their exchange rate regimes, Singapore extended the bands after depreciation. However these countries had long recession period in the real sector with bankruptcies and defaults. Briefly, Asian countries faced with the crises under different exchange rate regimes- generally under hard peg and soft peg regimes- some of them changed their exchange rate regimes and many of them faced with banking crisis and the recession in the real sector stemmed from the financial distress.

4.3.2 Reasons Behind The Crisis

In 1997 so many East Asian countries faced contagion effect of the Thailand currency crisis. Many of them had to abandon their soft or hard peg regimes. Although some suffered from speculative attack, all of them lived the recession and sudden capital outflow. What went wrong? How did the investors lose their confidence?

In the literature, there is a consensus about this twin crisis. The countries faced with currency crisis and financial crisis after they were exposed to speculative attacks. According to Corsetti, Pesenti and Roubini's (1998) view, Asian countries were excessively vulnerable to financial crises sourced from both cumulative effects of the real and financial imbalances. These imbalances were supported by political instabilities with structural and policy distortions. All the imbalances and distortions caused elimination of the investors' confidence and speculative attack began. When Kaminsky and Reinhart (1998) show the main reasons of the East Asian Crisis as, over-lending which was exacerbated by implicit and explicit deposit guarantees, poor supervision and moral-hazard problem in banking sector, they also do not ignore the role of overvaluation of the currency, weakened export ratios and the bursting of asset price

bubbles. When Krugman and Obstfeld (1994) accept the same reasons like previously mentioned authors as lack of strong regulative and supervision framework in the banking sector, unsound credit mechanism, excessively lending with moral hazard, poor quality investment with the support of the governments, they also add inadequate productivity levels, lack of corporate governance and lack of strong legal framework of the companies. Stanley Fischer (1998) from IMF mentions similar reasons; large external deficit and property and stock market bubbles, excessively un-hedged external borrowing and financial and corporate sector's being so vulnerable to foreign exchange risk sourced from maintaining exchange rate regimes too long, lack of prudential rules and regulations on banking system, political uncertainties and suspicions over the authorities to commit and have ability to implement the required adjustments for pressures on stock market and currencies. He also adds that governments' reluctance to adapt tight monetary policies and close the insolvent financial institutions triggered the crisis. Wade (1998) like his colleagues counts the reasons with same frames: deep domestic debt, fixed peg regimes that provide the perception of little risk for borrowing, early liberalization of capital markets in the 1990s before constructing a strong regulatory structure and vast flow of excess liquidity of Japan and Europe which created deep foreign debt.

As a summary, it can be observed that the effect of the exchange rate regime on the crisis is not ignorable. Hard and soft peg regimes caused the increase on liability dollarization by providing riskless appearance and overvaluations in currencies caused loss of competitiveness and deterioration in export levels (IMF Staff, 1998).

On the other hand, the weaknesses in financial structures and debt structures supported with political turbulences had higher responsibility of the crisis. In the following sub-sections, these aforementioned reasons will be discussed in detail.

a) External Balances

High proportion of the East Asian countries adapted soft peg regimes and hard peg regimes. The reason behind adaptation of these kinds of exchange rate regimes was not to fight with inflation like Latin America countries or Turkey. However these countries generally adapted pegged regimes against USA dollar, to facilitate external financing of the domestic projects (Corsetti, Pesenti and Roubini, 1998). A credible peg would provide decrease on currency risk premium charged by international investors, consequently there would be reductions of the cost of borrowing.

Where Malaysia, Thailand and Philippines adapted rigid exchange rate regimes pegged to USA dollar, Korea followed more flexible exchange rate policy (Corsetti, Pesenti and Roubini,1998). On the other hand, policy of Indonesia and Taiwan can be described as policy of exchange rate targeting.

Generally, exchange rate appreciation deteriorates the countries' competitiveness, trade balance consequently current account balance. The important part of loss of competitiveness because of the currency appreciation in the East Asian countries sourced from the changes in USA dollar, especially after the mid of 1995 (Corsetti, Pesenti and Roubini,1998). The table 10 shows the real exchange rate for the East Asian Countries. As it can be observed from the table, between 1990 and 1997 except Korea nearly all the countries experienced real appreciation (Corsetti, Pesenti and Roubini, 1998).

Table 10 Real Exchange Rate. End of year data.								
	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**
Korea	96,00	91,50	87,70	85,20	84,70	87,70	87,20	58,60
Indonesia	97,40	99,60	100,80	103,80	101,00	100,50	105,40	62,40
Malaysia	97,00	96,90	109,70	111,00	107,10	106,90	112,10	84,90
Philippines	92,40	103,10	107,10	97,40	111,70	109,60	116,40	90,90
Singapore	101,20	105,70	106,00	108,60	111,90	112,70	118,20	114,40
Thailand	102,20	99,00	99,70	101,90	98,30	101,70	107,60	72,40
Hong Kong	99,70	103,90	108,50	116,00	114,50	116,00	125,80	138,40
Taiwan	96,50	95,70	95,70	91,40	92,60	90,40	89,60	89,20
Data Source: J.P. Morgan. The base figure (100) is the average for the year 1990.								
Source: Corsetti, Giancarlo , Paolo Pesenti and Nouriel Roubini (1998) "What Caused the Asian Currency and Financial Crisis? Part1 : A Macroeconomic Overview" National Bureau of Economic Research, Cambridge								

In addition to real appreciation, Corsetti, Pesenti and Roubini (1998) explain the reason of misalignment as long lasted stagnation in Japan affected worse its East Asian Trading partners with slowdown in the export levels and increasing weight of China in export levels.

These countries trade balance were deteriorated or slowed down before the crisis. Table 11 shows trade balance of the East Asian countries between 1990 and 1997. Except Singapore and Taiwan, all countries faced trade balance deterioration in different ratios.

Table 11 Trade Balance, BOP Definition (% of GDP)								
	1990	1991	1992	1993	1994	1995	1996	1997
Korea	-0,81	-3,04	-1,42	0,06	-1,22	-1,63	-4,36	-1,44
Indonesia	1,68	0,91	1,81	1,48	0,72	-0,76	-1,14	0,22
Malaysia	2,10	-3,74	1,39	-0,11	-1,59	-3,75	0,58	
Philippines	-5,73	-3,00	-4,27	-8,53	-8,95	-8,80	-9,44	-12,30
Singapore	6,76	10,62	9,29	8,12	14,87	15,38	13,62	12,55
Thailand	-7,75	-6,88	-4,70	-4,56	-5,18	-7,09	-6,65	0,14
Taiwan	4,74	4,39	1,69	1,60	1,66	1,61	3,45	2,35

Source: Corsetti, Giancarlo , Paolo Pesenti and Nouriel Roubini (1998) "What Caused the Asian Currency and Financial Crisis? Part1 : A Macroeconomic Overview" National Bureau of Economic Research, Cambridge

b) Political Uncertainties

The political uncertainties in political area peaked in 1997 in numerous East Asian countries, which was one of the main reasons of the international investors' confidence depletion. Political turbulence in Thailand, Malaysia, election period's uncertainty in Indonesia and Korea effected the market reactions (Corsetti, Pesenti and Roubini, 1998). Political uncertainty played an important role in the crisis period by decreasing the international investor's confidence.

c) Debt Management

Countries debt structures play important role for triggering currency crises. If the debt structure does not give confidence to the investors and seems unsustainable, investors do not want keep their hot money in that country. There is a high probability to live a short-run liquidity problem with the panic of investors, if the international reserves are not adequate to finance short-term debt. With capital outflows, country may become unable to roll-over its short-term and become insolvent (Corsetti, Pesenti and Roubini, 1998).

Table 12 shows short term debt numbers as a ratio of foreign reserves for the East Asian countries. Especially Korea and Indonesia show unpleasant appearance with short-term debts over its reserves. Philippines and Thailand has high ratio of short-term debts, whereas Malaysia has an increasing ratio. Only Singapore shows good appearance of debt structure.

Table 12 Short-Term Debt, World Bank Data (% of foreign reserves).							
	1990	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**
Korea	72,13	81,75	69,62	60,31	54,06	171,45	203,23
Indonesia	149,28	154,62	172,81	159,70	160,36	189,42	176,59
Malaysia	19,54	19,05	21,12	25,51	24,34	30,60	40,98
Philippines	479,11	152,31	119,37	107,68	95,00	82,85	79,45
Singapore	2,65	2,67	2,35	2,04	1,75	1,78	2,60
Thailand	62,55	71,31	72,34	92,49	99,48	114,21	99,69
Hong Kong	23,52	21,78	18,38	17,09	16,49	14,16	22,35
Taiwan	21,56	20,21	21,00	23,64	21,76	21,64	21,31
Source: Corsetti, Giancarlo , Paolo Pesenti and Nouriel Roubini (1998) "What Caused the Asian Currency and Financial Crisis? Part1 : A Macroeconomic Overview" National Bureau of Economic Research, Cambridge							

Table 13 shows the total short term debt of the East Asian Countries. Except Taiwan, all the countries have an increasing trend in short-term debts. Although ratios of short term debts do not have miserable appearance, their ratios to foreign reserves are in dangerous boundaries.

Table 13: Short-Term Debt, World Bank Data (% of Total).							
	1990	1991	1992	1993	1994	1995	1996
Korea	30,87	28,19	26,99	25,85	25,47	51,60	50,20
Indonesia	15,92	18,00	20,52	20,17	18,05	20,87	24,98
Malaysia	12,43	12,14	18,18	26,58	21,13	21,19	27,83
Philippines	14,48	15,24	15,93	14,01	14,29	13,38	19,34
Singapore	17,51	18,92	19,91	17,87	13,28	14,56	19,81
Thailand	29,63	33,13	35,22	53,01	60,67	72,36	41,41
Hong Kong	45,97	46,63	45,89	41,19	30,04	28,36	43,57
Taiwan	88,31	86,49	86,93	84,99	76,75	72,18	68,44

Source: Corsetti, Giancarlo , Paolo Pesenti and Nouriel Roubini (1998) "What Caused the Asian Currency and Financial Crisis? Part1 : A Macroeconomic Overview" National Bureau of Economic Research, Cambridge

d) Financial Weaknesses

In the literature, there is a long list about the weaknesses in financial sector which is shown as tne main responsible of the 1997 East Asian crises (Corsetti, Pesenti and Roubini, 1998). These are lack of strong supervision and regulation capacity, low capital adequacy ratios, low quality in project selection and monitoring, mismatched balance sheet structures of banking sector, excessively foreign debt structure of the companies, lack of corporate governance apprehension, lack of financial experience of the managers in the banks and companies.

Banking sector were heavily exposed to high degrees of moral hazard. Although the banks were not regulated, their liabilities were perceived to have implicit government guarantee, which triggered risky lending excessively with moral hazard (Krugman, 1998). This caused to inflation in asset prices. As the assets were overpriced, the demand for the assets increased and risky lending. The prices of assets increased more, and this situation began to show the banks more strong. However, one day this

bubble burst and with the fall of the asset prices, the banks appearance turned in to insolvent (Krugman, 1998).

Like these asymmetric information problems in which one party of a financial contract is not as informed as the other party, financial intermediaries cannot channel funds efficiently to the most productive investment opportunities and there would be deterioration on their balance sheet especially with the increase of non-performing loans (Mishkin, 1998). In the East Asian banking sector, this kind of inefficiency was enormous stemmed from mainly two reasons. Firstly, excessively lending ratio was too high because the administrations of the banks were not experienced and effective to value the risk appropriately when lending. In addition to these, the banks were not effective to monitor these projects because they did not accumulate necessary managerial capital like well-trained managers or risk-evaluating systems (Mishkin, 1998). Secondly, there was not strong regulatory framework to monitor the bank's activities or restrict them in order to prevent the moral hazard. Despite the lack of regulatory framework, depositors and foreign lenders did not need the monitor the banks because they believed to be bailed-out by the governments (Mishkin, 1998).

On the other hand, capital inflow increased the level of excessive lending. Foreign capital flows into the banks were not managed well and banks took so many risky actions.

With the burst of asset bubble and increase on non-performing loans, the balance sheet of the banks deteriorated. The mismatching problems appeared obviously. Table 14 shows the non-performing loan ratio, which is considerably high enough in Malaysia, Philippines and Thailand.

Table 14 : Non-Performing Loans (as proportion of total lending in 1996)				
Korea	8			
Indonesia	13			
Malaysia	10			
Philippines	14			
Singapore	4			
Thailand	13			
Hong Kong	3			
Taiwan	4			
Data Source: 1997 BIS Annual Report; Jardine Fleming.				
Source: Corsetti, Giancarlo , Paolo Pesenti and Nouriel Roubini (1998) "What Caused the Asian Currency and Financial Crisis? Part1 : A Macroeconomic Overview" National Bureau of Economic Research, Cambridge				

In addition to weaknesses in the financial sector, the companies did not have corporate governance apprehension and they took so many foreign- exchange risk, which escalated the possibility of non-performing loans.

Following charts show net foreign liabilities (Foreign liabilities-foreign assets) structure of the banking sector for Korea, Hong Kong, Indonesia and Singapore in US $ billion. T (time) shows the crisis period. In all the countries, banking sectors' net liabilities increased, which makes banking sector very sensitive any changes in the currency.

CHART 3 : Net Liabilities of Banking Sector in Korea (US $ billion)
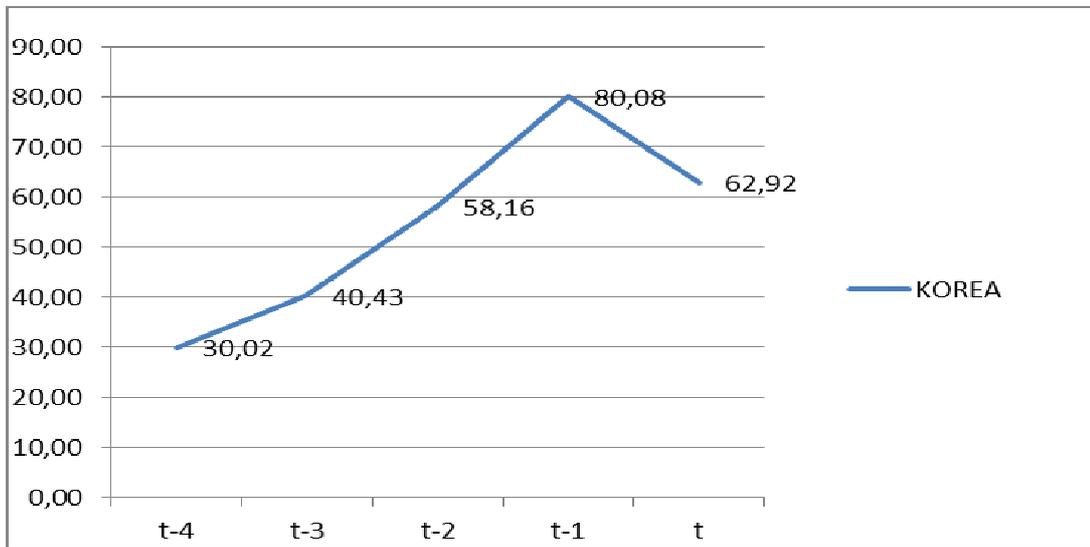
Source: Source: Bank of International Settlements (BIS): International Banking and Financial Market Developments

CHART 4 : Net Liabilities of Banking Sector in Indonesia (US $ billion)
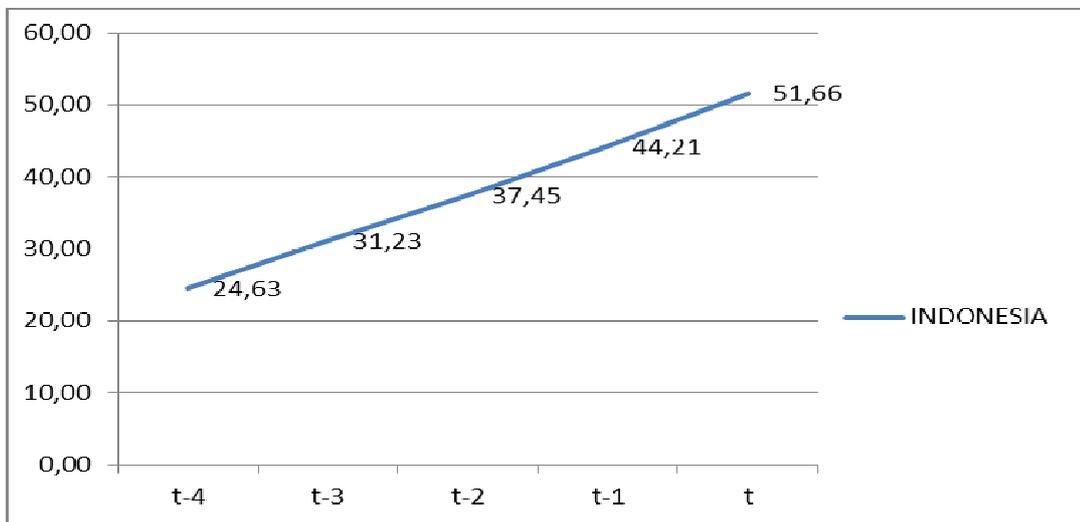
Source: Source: Bank of International Settlements (BIS): International Banking and Financial Market Developments

CHART 5 : Net Liabilities of Banking Sector in Hong Kong (US $ billion)
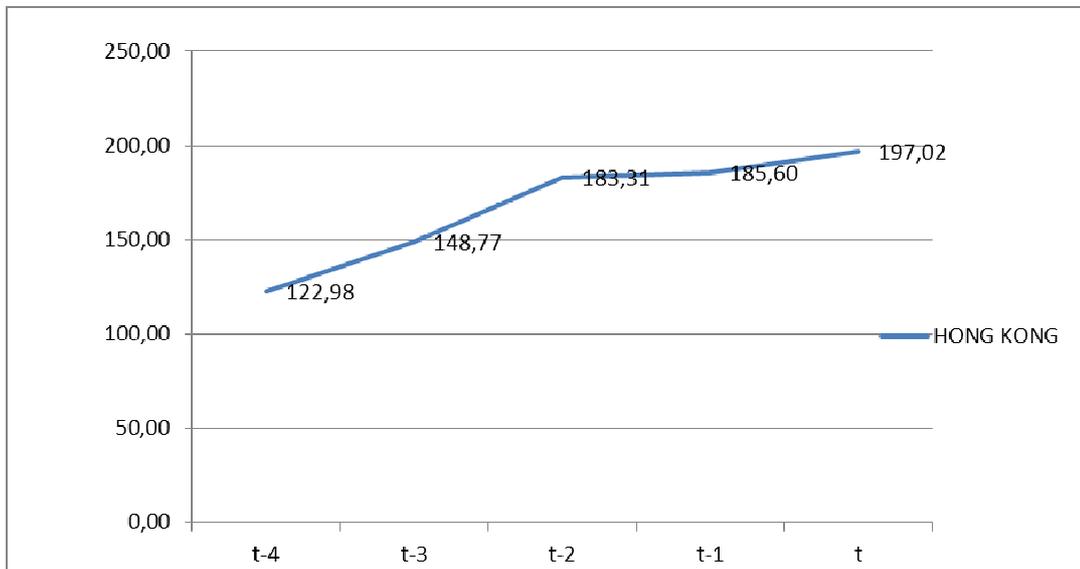

Source: Source: Bank of International Settlements (BIS): International Banking and Financial Market Developments

CHART 6 : Net Liabilities of Banking Sector in Singapore (US $ billion)
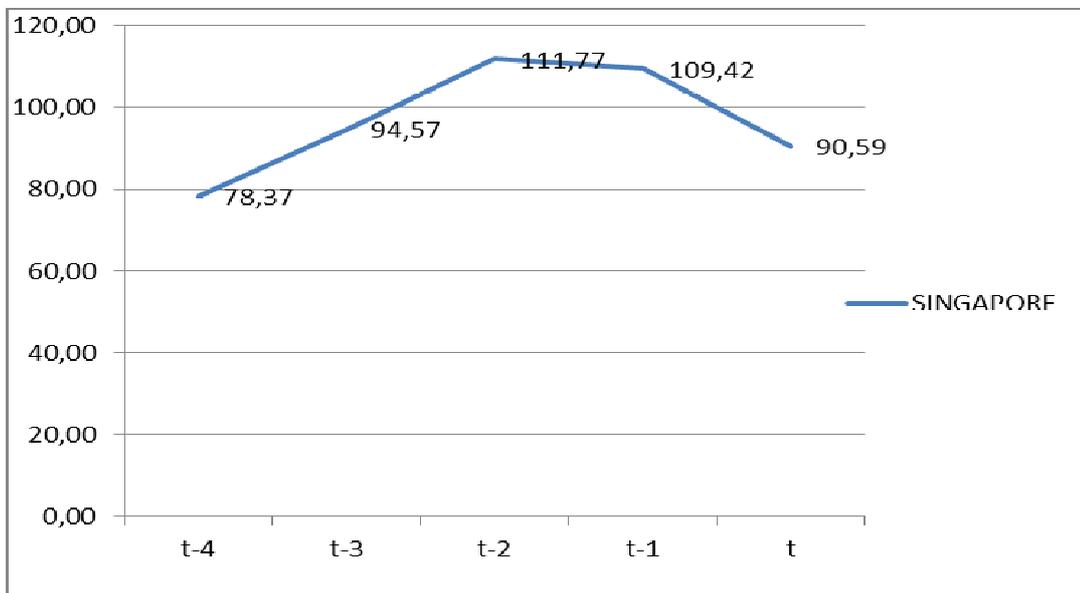
Source: Source: Bank of International Settlements (BIS): International Banking and Financial Market Developments

The financial system had so many structural weaknesses so that it is showed as the main reason of the East Asian, and this crisis is categorized as a financial crisis.

4.4 1999 The Brazil Crisis

4.4.1 The Crisis Period

Like its neighbor Mexico, Brazil faced a balance of payment crisis under adaptation of crawling peg regime in1999. The history was similar, inherent high inflation rates for decades, adaptation of exchange rate based stabilization program and a severe crisis with the depletion of the international reserves after speculative attacks.

Brazil shared the same faith with other Latin America Countries. Approximately, during a decade Brazil had inflation rates ranging from 100 % to 3000 % per year (Evangelist and Sathe, 2004). In the 1990s Brazil government took so many actions to reduce inflation and control public spending (Evangelist and Sathe, 2004). In 1994 Brazil reissued the Real and adapted the new plan called The Real. The Real plan was compromising three stages. First one was a brief fiscal adjustment, which was constituted of cutting spending and creation of the Emergency Social Fund. Second one was temporary monetary reform measure associated with linked contracts, prices and wages. And the last one was choice of exchange rate (crawling peg) as a nominal anchor (Evangelist and Sathe, 2004). With the choice of crawling peg regime, which was based on the dollar, interest rates were held higher in order to prevent inflationary pressures and attract international capitals (Evangelist and Sathe, 2004).

The plan was successful to reduce and control the inflation. Inflation ratio decreased until two digit numbers in 1995 from four digit numbers and even it fell to

less than 2 % in 1998 (Cardoso and Helwege, 1999). In the same period, interest rates were high enough to attract high amount of capital flow. Average of the real interest rates between 1995 and 1998 was 22 % per year. Not only unprecedented hot money flew into country, but also increase on the foreign direct investment was charming. FDI increased by 140 % in 1997 comparing with the previous year (Evangelist and Sathe, 2004). In addition to these, Brazil economy grew approximately more than % 3 per year.

Despite the improvements in the inflation rates, capital flows and growth rates, Brazil government could not prevent fiscal deficit and current account deficit. Net public debt to GDP ratio increased to 44 % in 1998, although it was only 28 % in 1995. Even this ratio exceeded 50 % after 1999 devaluation (Cardoso and Helwege, 1999). When the fiscal deficit was 8 % in 1998, the current account deficit was 4.5 % of GDP at the same time. Political worries, elections periods and regulation on the wages augmented the fiscal deficit. Increase on the wages and public spending accelerated the consumption ratio, the import levels and consequently current account deficit. The highest appreciation on the Real occurred in 1994 with the Mexico crisis, and despite some minor devaluations in 1995 and 1998, the level of the overvalued currency did no change too much (Cardoso and Helwege, 1999). Import ratio increased to $ 61 billion in 1997 from $33 billion in 1994. With this climb, trade balance turned to a deficit of $ 8.4 billion although it was $10 billion surplus (Cardoso and Helwege, 1999). These deficits and the structure of the public debt induced government finance to be very sensitive to changes in the short-term interest rate and currency. (IMF Publications, 1999). In addition to these, with this highly sensitive appearance, the political turbulences and recent crises in the emerging market countries attracted the international investor

attention on Brazil (IMF Publications, 1999). The first crisis exploded in Mexico, which triggered the doubts of the international investors over all emerging markets. In the end of 1994 and in the beginning of 1995 with the reactions of these doubts, capital inflow to Brazil was not high enough to finance current account deficit. Brazil central bank lost $ 9.8 billion in that period. Although Mexico crisis depleted investors' confidence, the IMF and USA support reforms for Mexico calmed the investors down. However after only two years, The Asian Crisis exacerbated the panics.

In 1997, Brazil government took several measures to provide confidence in the international markets. It announced tight monetary policy, cutting on spending, tax increases, and a strong fiscal policy. However so many deficiencies on the adaptation of these measures again depleted the investors' confidence. With the contagion effect of the 1998 Russian crisis, doubts reached the peak. Interest rate increases were ineffective to prevent capital outflow. However the following rescue pocket of the IMF restrained the capital outflow for a short period. In December 1998, with the political problems in the Brazil Congress, capital outflow increased and on the 13 January of 1995, Brazil had to enlarge exchange rate band. This enlargement was also ineffective and Brazilian Central Bank lost $ 30 billion to defend the real and with the depletion of international reserves, the real was let to float on 15th of January (Cardoso and Helwege, 1999).

4.4.2 Reasons Behind The Crisis

Brazil adapted crawling peg regime in order to decrease hyper inflation rates. In the beginning of the program, incredible success was attained. On the other hand, Brazil did not apply properly other components of the Real Plan and could not control the speed of the fiscal deficit.

Some authors criticize Brazil to wait too long to exit from the exchange rate based stabilization program after reaching low levels of inflation, which was targeted. Exit strategies have always been any other important question of the academics and countries usually are criticized to wait too long or to wait until irrevocable speculative attacks usually because of political reasons.

Brazil faced overvaluation in the Real like so many country faced under adaptation of soft peg regimes. This situation triggered the current account deficit. However, this overvaluation and current account deficit was not the only reason of the speculative attack. Public spending increased fast, which deteriorated fiscal deficit. Fast increase on the spending contributed the current account deficit. This contribution was one of the main responsible of the current account deficit. On the other hand, Brazil can be called unlucky for timing and situation as it affected highly from the global confidence depletion of the international investors. The Mexico crisis' still continuing effect, The Asian Crisis and The Russian Crisis triggered the speculative attacks to Brazil.

Although Brazil had more strong financial appearance with stronger banking system without any weak credit boom comparing to Mexico, Brazil did not show strong appearance of monetary and fiscal positions. Like Mexico, financing current account with capital inflow, which were usually short-term based made Brazil very sensitive to capital outflows. In the following sub-sections Brazil current account deficit and its reasons, fiscal deficit and exchange rate mechanism will be investigated in detail. In a summary, in Brazil crawling peg regime was used as a very effective tool to fight with the inflation. However, the bad progress on the public debt, current account deficit, political uncertainties and contagion effect of the other emerging countries' currency

crisis induced a speculative attack on Brazil. Behind these reasons, overvaluation of the currency seems as a small naughty brother.

a) Monetary Policy Appearance

In March 1995, Brazil Central Bank adapted a crawling peg regime as a nominal anchor. There was no preannounced depreciations. Brazil Central Bank choose to not to announce the depreciation in order to provide more flexibility in fighting with inflation (De Paula and Hose Alves, 1999). With this nominal anchor, Brazil said goodbye to hyper inflation rates and had low inflation levels. According to Cardoso and Helwege, currency appreciation in this period associated with the low levels of inflation. The effect of overvaluation was deterioration on the current account balance which will be examined in detail in the following sub-sections. To defend the overvalued currency and attract foreign capital Brazil increased interest rates, which caused increase on unemployment levels, interest burden on public debts (Ferreia and Tulio, 2002)

b) External Appearance

In the beginning of 1990s, like the other Latin America Countries, Brazil opened its trade. In this process, tariffs were eliminated, subsidies were cancelled so many incentives were given to the exporters (Cardoso and Helwege, 1999)

On the other hand, interest rates were held higher to attract capital investors in the Real plan with the adaptation of the crawling peg regime. Interest rates were high enough to provide satisfactory arbitrage profit with short term capital inflow. However the high level of the capital inflow induced appreciation of the currency. Under the adaptation of the soft peg regime, overvalued currency caused harmful effects on the current account (Cardoso and Helwege, 1999). Overvalued currency triggered importation and as the currency appreciated, Brazil began to lose its competiveness.

From 1994 to 1999, the increase on the price index for traded goods was 27 % where the increase on non-traded goods was 120 %. These numbers prove the loss in competiveness (De Paula and Hose Alves, 1999). Consequently, trade deficit occurred and began to increase. Between 1994 and 1997, import ratio climbed from $33 billion to nearly its double amount $61 billion. Chart 7 shows The Brazil trade balance between 1990 and 1998 in US $ billions and Chart 8 shows current account balance for the same period. In chart 8, t is chosen as crisis period. As two chart shows, trade balance and current account balance were deteriorated continually.

CHART 7: The Brazil Trade Balance Between 1990 and 1998 (US $ Billion)
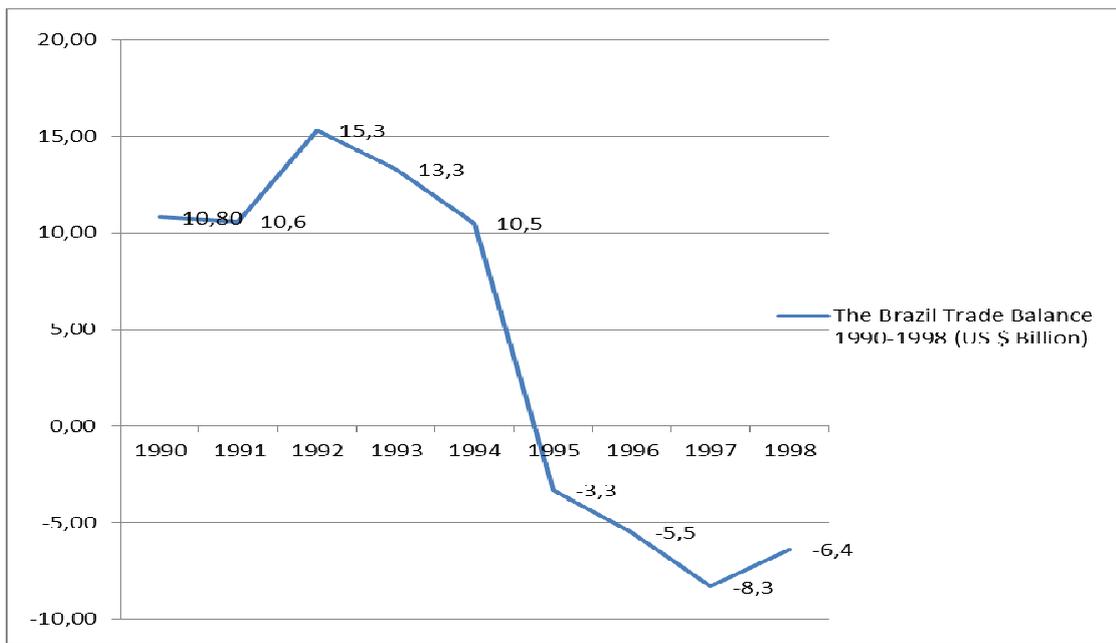
Data: Conjuctura Economica,various issues
Source: Ferreira, Afanso and GuisseppeTullio (2002), "The Brazilian Exchange Rate Crisis of January 1999" Cambridge University Press

CHART 8: The Brazil Current Account Balance (US $ million)
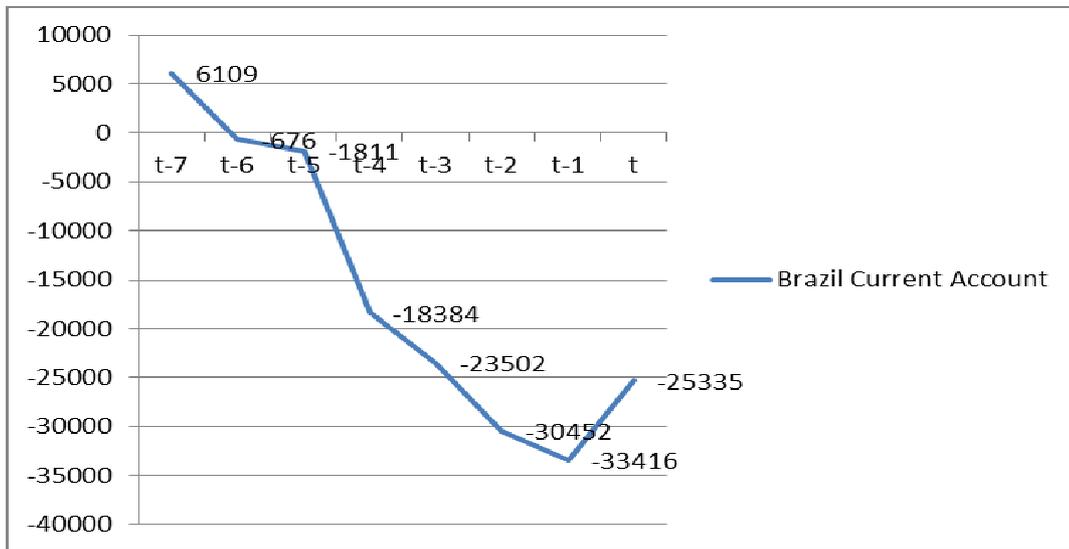
Data: Banco Central Do Brasil

On the other hand, this growing current account deficit was financed by capital inflow, which made Brazil very sensitive any change in the capital flow. Capital inflows were more than the need for current account finance so that the ratio of reserves increased (De Paula and Hose Alves, 1999). However in 1998 and 1999 Brazil lost nearly half of its international reserves to defend the currency. Chart 9 shows the trend of the international reserves. In the beginning of the program, high amount of international reserves were accumulated even it was doubled. However only in 6 months, Brazil lost $35 billion dollar.

CHART 9: The Brazil International Reserves (US $ Billion)
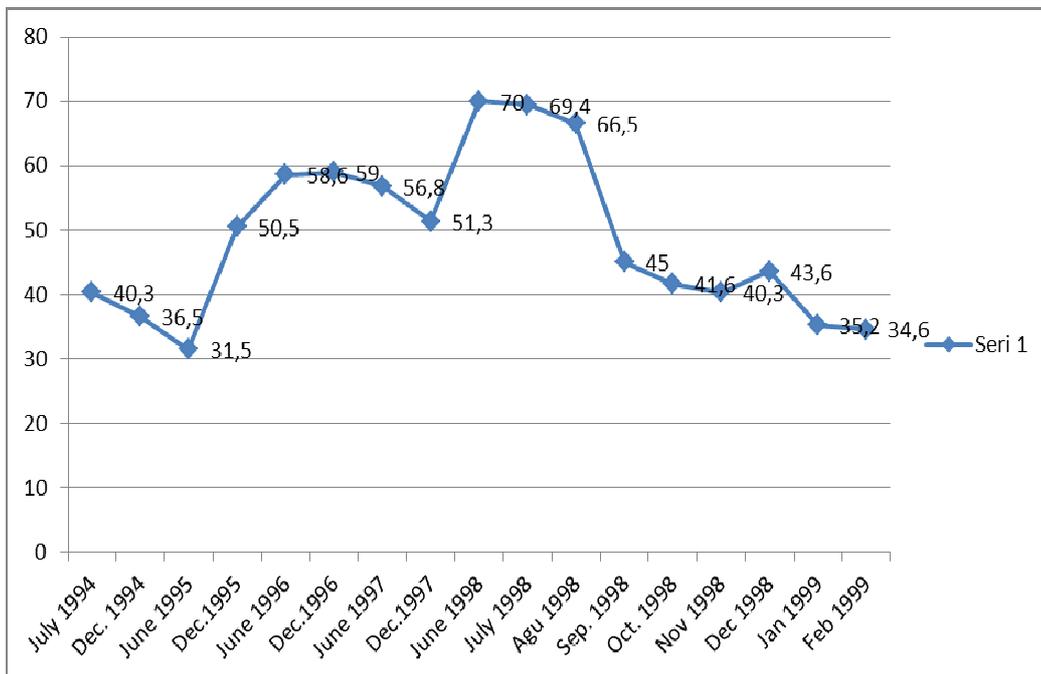
Data: Conjuctura Economica,various issues
Source:Ferreira, Afanso and GuisseppeTullio (2002), "The Brazilian Exchange
Rate Crisis of January 1999" Cambridge University Press

Foreign capital was not only short term but also there was FDI to Brazil. However FDI ratio was not evident, because the increase on FDI partly depended on privatization of public enterprises and mergers and acquisitions in the private sector (Cardoso and Helwege, 1999)

To provide continuity in the capital inflow required high interest rates. However high interest rates, and sterilization of the inflow induced increasing public internal debt, which deteriorated fiscal balance (Cardoso and Helwege, 1999)

On the other hand, government's several adjustments on the wages and salaries, fostered domestic consumption and import levels, which also contributed the current

account deficit. This contribution was associated with the difference between the domestic demand and domestic production (Ferreia and Tulio, 2002).

In addition to aforementioned loss in competitiveness, Brazil could not be called as high productive country. Cardoso and Helwege indicate that "*large and growing current account deficit would only be sustainable if equivalent levels of long-term external funding available associated with productive investment capable of generating a future flow of exchange revenues to sufficient to pay off outstanding debt*". Brazil faced this deficiency. Neither it attracted enough long term capital, nor its' productivity was high enough to generate future revenues.

c) Fiscal appearance

Like current account deficit, fiscal deficit had a growing trend. Especially in the election periods expansionary actions in the fiscal policy augmented public debts (De Paula and Hose Alves, 1999). Fiscal policy was not also consistent with the monetary policy, which was based on exchange rate policy and high interest rates. As Ferria and Tulio specify, fiscal policy was one of the main factor behind the economic disequilibria. Government expenditures and triggered demand sourced from overvalued currency and adjustment in wages fostered consumption ratio and decreased saving ratios. Consumption share in GDP grew from 79.3 % in 1992 to 82.8 % in 1997 whereas the share of investment only grew 0.6 % in the same period (Ferreia and Tulio, 2002). Table 15 shows Brazil Fiscal deficit ratios, public sector requirement and interest payment ratios. The increase on the operational deficit is observed, whereas public sector requirement were decreasing. Interest burden on the public debt increased in that period significantly.

Table 15 : Brazil Fiscal Deficit (all levels of govenment) -1990-1998-% Of GDP,			
Year	Public Sector Borrowing Requirement	Operational Deficit	Interest Payment
December 1990	29,6	-1,3	3,3
December 1991	23,3	-1,35	1,5
December 1992	43,1	2,16	4,42
December 1993	59,05	-0,25	2,42
December 1994	45,5	-1,37	3,92
December 1995	7,18	4,88	5,24
December 1996	5,87	3,75	3,66
December 1997	5,03	3,2	3,37
December 1998	8,03	7,54	7,51
Data: Conjuctura Economica,various issues			
Source:Ferreira, Afanso and GuisseppeTullio (2002), "The Brazilian Exchange Rate Crisis of January 1999" Cambridge University Press			

When the total debt structure is investigated, it can be seen as total foreign debt increased by $ 75 billion from 1995 to 1998 (Ferreia and Tulio, 2002). Government expenditures increased by 31 % in the same period (Ferreia and Tulio, 2002). GDP grew only 10.7 % in this period. Because of the high interest rates interest burden on public debt increased by 108 % (Ferreia and Tulio, 2002). In fact Brazil's public sector debt was not very high comparing to the international levels in 1999. However international investors' concern depended on this continuously increasing trend more than the international average and public debt seemed to be unsustainable in the international area and flamed the speculative attack (Ferreia and Tulio, 2002). Table 16 shows Brazil Public Sector net debt for 1994 and 1998 period.

Table 16 : Brazil Public Sector Net Debt -1994/1998 % of GDP			
Period	**Total**	**Internal**	**External**
December 1994	28,5	20,3	8,2
December 1995	29,9	24,5	5,4
December 1996	33,3	29,4	3,9
December 1997	43,9	31,1	12,8
December 1998	42,4	36,1	6,3
Data: Boletim da Macrometrica			
Source:Ferreira, Afanso and GuisseppeTullio (2002), "The Brazilian Exchange Rate Crisis of January 1999" Cambridge University Press			

4.5 2001 Turkey Crisis and Its Reasons

4.5.1 The Crisis Period

Turkey had a long history with the high inflation levels. In addition to this, high public deficit rates and fluctuating growth rates were other important problems of Turkey. Real interest rates increased after the 1994 Turkey Crisis and in 1997-98 the effects of the East Asia and the Russian Crisis caused instability of Turkey's economic balances. Consequently, the ratio of public deficit increased more and Turkey began to face difficulties in payment of debt and interests. According to the stand-by agreement, which was signed in 1995, Turkey adopted a managed floating regime. The Central Bank of the Republic of Turkey (CBRT) could intervene in the Foreign Exchange Market to minimize the fluctuations of exchange rate. Exchange rates were used as nominal anchor to fight with the high inflation rates and they were arranged parallel to the monthly inflation rates projected in the agreement (Görmez and Yilmaz, 2007).

However, Turkey needed any other program to alleviate these macroeconomic imbalances and provide consistent growth rates.

In the beginning of 2000, Turkey implemented another stabilization program with the support of IMF. This new ambitious Exchange Rate Based Stabilization Program (ERBS) mainly aimed to reduce inflation, which was lying between 65-90% since the beginning of the 1990s (0zkan, 2005). Beside strong exchange rate commitment, this program required tight monetary control, large fiscal adjustment and a set of structural changes to liberalize the economy (0zkan, 2005). This program was planned to last for three years and its essential targets were:

- To decrease Consumer Price Index (CPI) consistent with fiscal and monetary policies to 25% at the end of 2000, 12% at the end of 2001 and 7% at the end of 2002.

- To decrease the real interest rates.

- To enlarge the growth potential of the economy.

- To allocate the resources of economy effectively and efficiently.

The target and real values of Turkish Economy in 2000 and 2001 are given in the table 17.

	1999	2000 target	2000 performance	2001 target *	2001 performance
Real Sector					
GNP growth rate	-6,1	5 to 5.5	6,1	-3,0 (5 to 6)	-9,4
WPI inflation**	62,9	20,0	32,7	57,6 (10 to 12)	88,6
CPI inflation**	68,8	25,0	39,0	52,5 (10 to 12)	68,5
Average T-bill interest rate					
Nominal	106,2	-	38,0	81,1	100,4
Real (backward looking)	25,2	-	-11,4	23,7	-
Real (forward looking)	32,0	-	-6,5	36,4	-
Consolidated public sector*					
Primary balance	-2,0	2,2	2,8	5,5 (5.0)	5,5
Net interest payment	22,1	17,2	21,9	22,6	25,0
PSBR (inc. CBRT profits)	24,2	15,0	19,1	17,1	19,5
Operational Balance	-12,4	-7,4	-6,6	-3,2	-
Net debt	61,0	58,0	58,4	78,5 (56,5)	93,5
Net domestic debt	40,9	-	38,8	44,3	53,9
External sector*					
Current account balance	-0,7	-1.5 to -2,0	-4,8	-0,6 (-1.5 to -2,0)	1,5
Net external debt	34,0	‹34,0	37,0	44,3	51,8

Table 1 7:

MACROECONOMIC TARGETS and PERFORMANCE OF TURKEY IN 2000&2001

Source: Akyüz, Yılmaz and Korkut Boratav (2003). *The Making of the Turkish Financial Crisis.*
www.econturk.org/Turkisheconomy/boratav.pdf
The authors formed the table from IMF Press Release No. 01/23, 15 May 2001 and CBRT (real sector performance figures for 2001)
* Figures in brackets give the targets set in the original stabilization program of December 1999
**12-month, end-of-period
*** In percent of Gross National Product

In this program, crawling peg was adopted with the basket of the dollar and the euro. The exchange rates were announced daily and based on the inflation target, which was used as a nominal anchor. This program was planned to be executed until December of 2002. In this period three times of widening the band were decided at around a central exchange rate path. The band was planned to be extended to 7.5 % until the December 2000, 15% until the June 2001 and 22.5% until the December 2002. In the beginning of

2003, freely floating exchange rate regime would have been adopted. This pre-announced exit strategy was held to avoid from the problems of Latin America Countries' previous exchange-rate-based stabilization programs. These programs were criticized of not paying enough attention to the real appreciation of currency without determination of any clear exit strategy. As the exit from the peg delays, currency misalignment and external imbalances would escalate (Akyüz and Boratav, 2002). However, the pre-announced exit strategy in Turkey's stabilization program did not prevent undesired consequences. Inability to reach targeted inflation ratios augmented devaluation expectations at the exit time and induced earlier attack on the currency (Akyüz and Boratav, 2002).

Another aspect of the program was "quasi-currency board", in which central bank could not print money against domestic assets. With the allowance of some flexibility, upper ceiling for each quarter was set to the stock of net domestic assets. This level was equal to the CBRT's net domestic asset at the end of the December 1999 (Akyüz and Boratav, 2002). Under the scope of CBRT's analytical balance sheet:

Monetary base= Net Domestic Assets + Net Foreign Assets

This means, the monetary base could only increase with the increase of the Net Foreign Assets come with capital flows. Since CBRT could not sterilize, the only tool for macroeconomic equilibrium was interest rate. When capital inflow was not enough to cover current-account deficit, interest rate would increase with the withdrawn of liquidity. Increased interest rates would attract capital and decrease import and provide external balance (Akyüz and Boratav, 2002).

The fiscal adjustments including additional taxation, cuts in the public spending and funds from pension reform were aiming to reach a surplus in 2000 and improvement

in the primary balance of the consolidated public sector budget (Akyüz and Boratav, 2002).

The other structural reforms were arrangements on civil servants' salaries according to the inflation target and if necessary correction related to the real inflation rates, privatization of state-owned enterprises, strengthening the banking system, improvements in agricultural policies and the pension system (Akyüz and Boratav, 2002).

Although net domestic asset target and primary budget deficit target were reached during 2000, inflation rates were over the target level, which caused significant appreciation in real exchange rates. Inconsistent wage increases in public and private sector with the program stemmed from collective union agreements or payment methods based on the backward indexation respectively and burden of state owned enterprises' losses on fiscal policies with requirement of price increases contributed to the rigidity of inflation (Akyüz and Boratav, 2002).

On the other hand, interest rates performed better at the same period. The average of first ten months of 2000 for annualized interest rates for three month treasury bills declined to 38 % from the ratios over than 100 %. This significant decline in interest rates alleviated the burden of interest payments and improved the budget (Akyüz and Boratav, 2002). There was a balance between capital inflows and interest rates. Although the program did not permit for sterilization, capital inflows helped to decrease the interest rates. On the other side of this relation, interest rates were high enough to attract capital (Akyüz and Boratav, 2002). Since capital inflows were more than to cover current account deficit, CBRT accumulated international reserves. However, capital inflows without sterilization and lower interest rates led to increase of domestic

liquidity, which strengthened the resistance of inflation (Akyüz and Boratav, 2002).
Table 18 shows the progress of capital flows in this period. In the period between
November 2000 and September 2001, high amount of capital outflow can be observed.

Table 18: BOOM AND BUST IN CAPITAL FLOWS IN THE TURKISH CRISIS		
(Millions of dollars)		
	January-October 2000	November 2000-September 2001
Net capital inflows	15.179	-12.416
Total net capital flows	12.474	-13.663
Changes in reserves*	-2.324	16.585
Errors and omissions	-2.550	-3.215
Current account balance	-7.598	293
Source: Akyüz, Yılmaz and Korkut Boratav (2003). *The Making of the Turkish Financial Crisis.*		
www.econturk.org/Turkisheconomy/boratav.pdf		
The authors formed the table from CBRT data		
* Includes IMF credits and changes in official reserves. Minus sign indicates increase.		

In the first period of the program, non-residents trusted IMF support that
motivated them to lend and invest heavily in Turkey. Although depreciation of Lira was
much lower than the pre-announced depreciation rates, residents were reluctant to have
Turkish Lira deposit. Residents' attitude towards the foreign currencies caused increase
on the foreign exchange rate deposit and decrease on Turkish Lira deposit. On the other
hand, banks took so many currency risks by mismatching the asset and the liability side
of their balance sheet and heavily borrowing foreign exchange currency based (Akyüz
and Boratav, 2002).

Real appreciation of the currency induced to increase on the import rates, which
deteriorated trade balance. Indeed, the negative effects of the appreciated currency on
the real sector were expected to be compensated by the increased activities of the real
sector with lower interest rates.   In the first part of the program, the interest rates

decreased substantially. However, this decrease could not encourage the firms, which were far away from investments for years, for import substitutions and export. Consequently, decreased interest rates increased the tendency of consumption and the resistance of inflation.

In addition to real appreciation of currency, increase of oil prices contributed the import rates, which increased by 35% in 2002 whereas export increased only 7%. This significant difference brought big burden on the capital account. Substantial international reserves accumulated in this period would not be enough to cover payments in the event of cease of capital inflow (Akyüz and Boratav, 2002).

In November 2000, previous month's high current account deficit and high inflation rate deviated from the target level and suspicions about the stabilization program arose. In addition to these, political turbulence in the privatization process, worsening relationships with European Union, investigation of banks by the Saving Deposit Insurance Fund (SDIF) and effects of the Argentina Crisis depleted the confidence of foreign creditors. They refused to renew the contracts and lend more, which caused capital outflow and erosion of CBRT's international reserves. Domestic banks tried to exit from lira to decrease their open positions. The interest rates climbed and banks having large treasury bills, which funded with the borrowing in overnight markets faced with significant losses (Akyüz and Boratav, 2002). CBRT had to choose one of two options. CBRT would choose to continue on the crawling peg regime at the expense of the deep financial turbulence or to provide liquidity to the financial markets with the lender of last resort role at the expense of net domestic asset target (Akyüz and Boratav, 2002). Central Bank chose the second option and provided liquidity to the banks in trouble, which speeded up the erosion of international reserves.

In December 2000, IMF revised the exchange rate-based stabilization program with a new ceiling on net domestic assets. In addition to the changes in the program, a new agreement compromising financial package with IMF was signed. In the new agreement, there were some issues about fiscal and financial policies such as further spending cuts and tax increases, revision in agricultural support policies, privatization and restructuring of financial sector and extension of guarantees for foreign creditors (Akyüz and Boratav, 2002).

Although Turkey began to recover the 2000 November crisis after this new agreement with stop of capital outflow, increased international reserves, decrease of import levels and falls in inflation rates, suspicions on the sustainability over the peg were not removed. Since the external funds had short maturity, the maturity of the treasury bills began to decrease and the interest rates began to increase until 70% in the middle of the February. These high rates stimulated the doubts over the sustainability of public debts and the banks holding government bonds heavily. Political disturbance in the February scared financial markets and attack for the currency began. CBRT was obliged to abandon the peg not to lose all international reserves and began to float the currency before the pre-announced exit date (Akyüz and Boratav, 2002).

4.5.2 Reasons behind the Crisis

The 2000 November and the 2001 February crises were faced by Turkey under the adoption of a crawling peg regime. The February 2001 crisis had the characteristic of twin crises; Turkey faced currency crisis and financial crises sourced from weak banking sector at the same time. Turkish economy contracted by more than 9% in 2001, output

loss was significant and Turkish Lira lost nearly half of its value (Ozkan, 2005). In this period, nearly all aforementioned disadvantages of soft peg regimes appeared. Turkey's exchange rate-based stabilization program with crawling peg regime was exposed to speculative attacks, which forced CBRT to abandon the regime and float the currency. In addition to these, capital outflows occurred especially in November 2000, misalignment of the currency caused enlargement of current account deficit and liability dollarization ratio was considerably high. However, in the literature weaknesses of the Turkey's economic and financial structure were criticized for the crises period more than the implementation of the soft peg regime. Generally, before providing financial and institutional strong framework, implementation of such an ambitious exchange-rate-based stabilization program augments the likelihood of the crisis. The question about sustainability of high public debt ratios, high current account deficit and excessive fragile banking sector are usually shown as the main triggering factors of the 2000-2001 Turkey Crises. In the following section, fiscal appearance, external position and financial sector appearance before the crises period will be analyzed.

a) **Fiscal Appearance**

Turkey had a weak fiscal background before the crises. Although fiscal weakness is not usually shown as a sole reason for the financial crises, it is one of the important factors to provide confidence in the international markets. Political instability, populist policies and inefficient tax system can be counted as the main reasons behind the weak fiscal position in Turkey. Political instability since 1980s prevented governments to implement successive fiscal policies. To compensate the losers of liberalization period in 1980s, governments began to subsidize the agricultural sector via state-banks and the social security institutions via transfers" (Ozkan, 2005). Populist policies accelerated

after 1991 with different coalition governments, which considered next elections (Ozkan, 2005). In addition to these populist policies, inefficient tax system without superior control mechanism played an important role in the high public deficit. Chart 10 and 11 show increasing trend in Total Domestic Debt Stock/GDP and Gross External Debt Stock/ GDP ratios between 1989 and 2001.

Chart 10: Total Domestic Debt Stock/ GDP of Turkey (%)
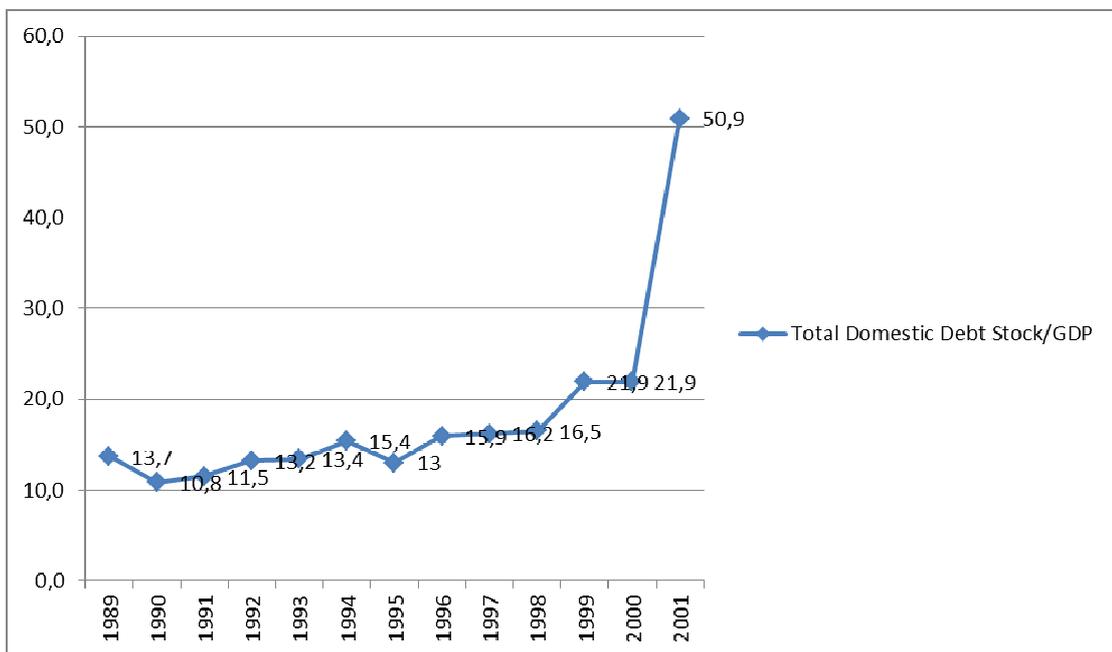
Source: Undersecretariat of Treasury-www.treasury.gov.tr

Chart 11: Gross External Debt Stock/ GDP of Turkey (%)
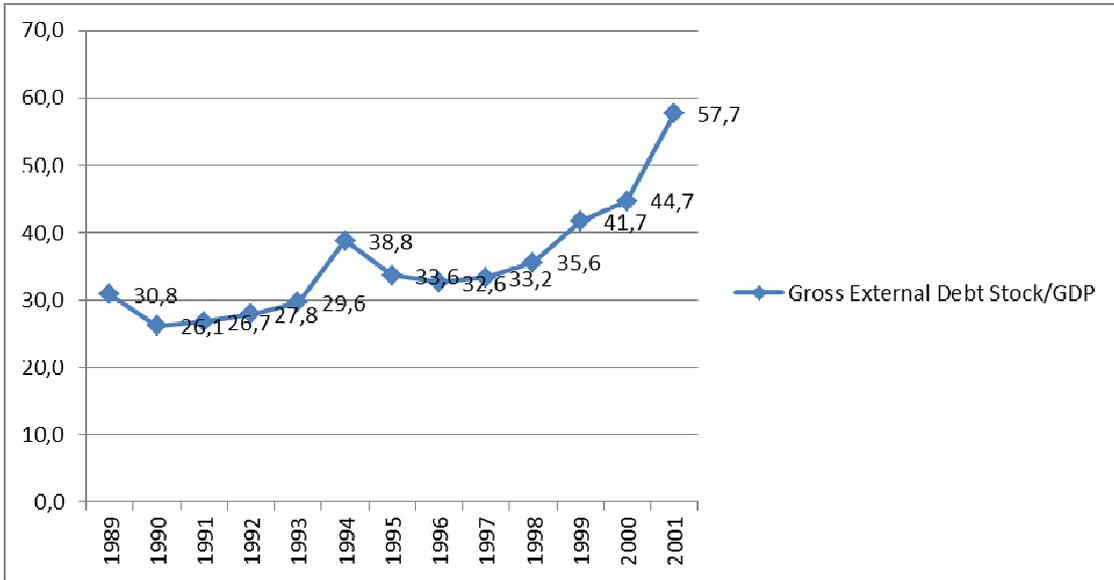
Source: Undersecretariat of Treasury-www.treasury.gov.tr

Required interest payments and maturity structure should also be considered when determining a country's debt-servicing ability (Ozkan, 2005). In table 19 interest payment/GDP ratio's increasing trend and in table 20 decreases in maturities can be observed.

Table 19: Interest Payment on Domestic Borrowing/GDP		Table 20: Maturity Structure of Domestic Borrowing				
Years	Interest Payment/GDP	Months	Maturity (months)		Months	Maturity (months)
1990	2,52	1999-01	13,2		1999-12	15,8
1991	2,67	1999-02	11,3		2000-01	14,8
1992	3,09	1999-03	13,0		2000-02	13,1
1993	4,28	1999-04	11,7		2000-03	16,8
1994	5,94	1999-05	12,4		2000-04	13,1
1995	6,02	1999-06	11,4		2000-05	16,2
1996	8,84	1999-07	15,6		2000-06	16,3
1997	6,72	1999-08	22,1		2000-07	12,9
1998	10,51	1999-09	20,2		2000-08	12,1
1999	12,64	1999-10	21,2		2000-09	15,2
2000	14,77	1999-11	14,6		2000-10	12,6
Source: Ozkan, Gulcin F. (2005). *Currency and Financial Crises in Turkey 2000-2001*. Blackwell Pulishing						
Data from The Undersecretariat of Treasury (www.treasury.gov.tr)						

The IMF stabilization program intended to improve the fiscal situation with aforementioned cautions and also succeeded to reach some fiscal targets. In 2000 and 2001 public sector increased its non-interest budget surplus to 6.1% and 6.7% respectively (Yeldan, 2002). However, these reached targets were not enough to improve fiscal sustainability. Climbing trend of domestic debt stock, public sector borrowing requirement (PSBR) and the burden of government securities with the increase of real interest rates contributed unsustainability of fiscal policy (Ozatay and Sak, 2002).

Shortly, unhealthy fiscal appearance of Turkey contributed the overall weakness of the economy and inappropriate public finances in the financial system increased the fragility of banking sector (Ozkan, 2005). This relationship will be explained in the one of the following part.

b) External Balance

Although there was an improvement of trade balance in the beginning of the stabilization program, in the following period it was deteriorated gradually thereby the current account balance. Table 21 demonstrates the evolution of trade account balance and current account balance in this period.

Table 21: Trade and Current Account Balances, 1996-2000 (in million US dollars)		
Year/quarter	Trade Balance	Current Account Balance
1996	-10582	-2437
1997	-15358	-2638
1998	-14220	1984
1999	-10443	-1360
2000 Q1	-3794	-2282
2000 Q2	-5938	-3265
2000 Q3	-6253	-1194
2000 Q4	-6311	-3024
2000	-22341	-9765
Source: Ozkan, Gulcin F. (2005). Currency and Financial Crises in Turkey 2000-2001. Blackwell Pulishing		
Data fom CBRT (www.cbrt.gov.tr)		

One of the disadvantages of soft pegs, real exchange rate appreciation contributed this deterioration. Table 12 shows balance of payment ratios and real exchange rate between 1995 and 2001. Inability to decrease the inflation parallel with the pre-announced devaluation ratios of the currency induced the real appreciation of the currency. As the competitiveness of Turkey decreased, trade account was destroyed. In addition to this, increase on imported oil prices contributed the current account deficit substantially.

Table 22: Balance of Payments (% of GNP) and real exchange rate							
	1995	1996	1997	1998	1999	2000	2001*
Current Account Balance	-1,4	-1,3	-1,4	1,0	-0,7	-4,9	1,9
Net Capital Inflow	2,7	3,0	3,7	-0,4	2,5	4,7	-8,7
Short Term	2,2	1,5	0,0	0,7	0,4	2,0	-7,2
Direct Investment	0,5	0,3	0,3	0,3	0,1	0,1	1,9
Portfolio Investment	0,1	0,3	0,9	-3,4	1,8	0,5	-2,4
Other Long-term	-0,1	0,9	2,5	1,9	0,2	2,1	-1,0
Real Exchange rate**	96,9	100	110,5	107,8	108,7	118,2	106,5

Source: Ozatay, Fatih and Guven Sak. (2002). "The 2000-2001 Financial Crisis in Turkey."

Data from CBRT (www. Cbrt.gov.tr)

*Except real exchange rate, provisional data

** Year-end values, 1995 average= 100. An increase denotes real appreciation.

On the other hand, external debt of Turkey increased in that period. Ozkan (2005) indicates the importance of ability of a country to service its debt, which is one of the indicators of healthy external balance. As table 23 shows, before crisis nearly 80% of the exports were used for debt servicing. This high ratio shows the severity of the current account deficit in that period.

Table 23:Some Fragility Measures of the External Sector			
Years	Debt Service/GDP	Debt Service/Exports	Interest on External Debt/Exports
1996	6,22	49,16	18,08
1997	6,46	47,29	17,47
1998	7,99	61,22	17,88
1999	9,89	68,89	20,5
2000	10,9	78,98	22,68

Source: Ozkan, Gulcin F. (2005). Currency and Financial Crises in Turkey 2000-2001. Blackwell Pulishing

Data from The Undersecretariat of Treasury (www.treasury.gov.tr)

c) Financial Sector Appearance

Turkish banking system had so many structural and behavioral weaknesses before the crisis. The main structural weakness was the lack of effective supervisor and regulator skeleton. There was no single regulator for the banks. CBRT, the Under-secreteriat of Treasury and the Capital Market Board had different regulation and supervision roles related to their own interests on the banks, which created confusion and some task gaps. The IMF supported stabilization program aimed to improve the regulation in the banking sector by establishing Banking Regulation and Supervision Agency (BRSA) as a single supervisor and regulator. However, delays in the construction of this institution induced postpones of effective regulation and a stronger banking sector before the explosion of crisis. Shortly, lack of effective regulation and legal framework on the banking sector increased moral hazard and imprudent actions of banks, which will be talked about in the next paragraphs.

Another weakness of the banking system was the existence of both state banks and private banks and their different characteristics. State banks, which were usually used as agents of governments' distributive policies, had accumulated high "duty losses" (0zkan, 2005).Short term domestic bank liabilities were not enough to finance their increased "duty losses" on the asset side (Ozatay and Sak, 2002). The Treasury's liquidation based on the government securities caused state banks to be more vulnerable to interest rate risks (Ozatay and Sak, 2002). On the other hand, private banks had substantial open foreign exchange positions generally stemmed from long history of high inflation rates and domestic banks' inability to borrow long term in Lira (Ozatay and Sak, 2002). With the adoption of soft peg regime, open foreign position of the

private banks increased. Pre-announced devaluation of the peg motivated banks to borrow in dollar to buy lira-denominated government bonds (Ozkan, 2005). However, the decrease of the nominal interest rates and the inflation rates over the target level induced lower returns on both the government bonds and credits to the real sector, thereby the profit of the banks decreased. Furthermore, the ratio of the government debt instruments in the balance sheet of private banks was quite high in the beginning of the program. This high ratio increased the fragility of the system, because there were suspicions on turning over the uncollected government debt instruments.

In addition to these, certain rate of the currency decreased the tendency of hedging. The low ratio of foreign exchange assets comparing to the foreign exchange liabilities induced private banks to be more vulnerable to the currency risk (Ozatay and Sak, 2002).

Not only open position, but also private banks had maturity mismatch in their balance sheet. While the liabilities were usually short-term based, assets were for long-term. This maturity mismatch contributed the weakness of the banking sector. In addition to these, private banks had substantial foreign exchange rate deposits of the residents in their liabilities, which increased the vulnerability for liquidity problems.

In table 24, main structural weakness of the banking system can be observed. Private banks' vulnerability to currency risk can be observed from the FX deposit/Lira deposit ratio and Share of FX loans ratio. Both ratios had an increasing trend before 2001 crisis. However, state banks were less exposed to the currency risk with quite lower FX deposit/Lira deposit and Share of FX loans ratios. The duty losses of the public banks were significantly high. The share of interest earning assets decreased, which shows banking sector's support the real sector with credit mechanism decreased.

Table 24: Structural Characteristics of Private and State banks*		1997	1998	1999	2000/1	2000/2	2000/3	2000/4	2001/1	2001/2
Loan/GDI **	Private	113,72	119,28	82,52	93,26	102,49	111,39	130,7	139	144,97
	State	86,24	87,86	66,27	n.a.	n.a.	n.a.	59,22	n.a.	n.a.
FX***/Lira deposit	Private	212,2	201,63	274,65	285,07	279,99	299,9	209,24	205,37	237,54
	State	46,37	35,61	26,49	31,66	32,42	33,13	29,37	37,12	37,12
Share of FX loans	Private	14,01	13,97	15,91	16,28	16,51	17,1	19,84	20,02	19,55
	State	3,07	3,18	2,3	2,13	2,78	2,85	2,54	3,36	2,78
Share of interest	Private	67,8	63,66	63,22	60,79	61,88	60,92	58,05	53,95	52,73
earning assets	State	36,63	35,34	28,85	n.a.	n.a.	n.a.	31,88	n.a.	n.a.
Share of accumulated	Private	-	-	-	-	-	-	-	-	-
duty losses	State	27,07	27,59	32,01	n.a.	n.a.	n.a.	30,68	n.a.	n.a.

Source: Ozatay, Fatih and Guven Sak. (2002). "The 2000-2001 Financial Crisis in Turkey."
Data from CBRT (www. Cbrt.gov.tr)
*End of period data
** GDI stands for "government debt instrument"
***FX is foreign exchange

Table 25 represents the commercial banking sector ratios between 1995 and 2001. Decreasing FX assets/ FX liabilities ratio, rapidly increasing FX liabilities- FX assets ratio, increasing non-performing loans/total loans ratio and decreasing liquid FX assets/ FX liabilities ratios give the signal of increasing commercial banking system's vulnerability to currency risk.

Table 25: Commercial Banking Sector Ratios (%) *	1995	1996	1997	1998	1999	2000.3	2000.6	2000.9	2000	2001.9
Non-performing loans/ Total loans	2,8	2,2	2,4	7,2	10,7	9,8	9,7	9,3	11,6	18,6
FX assets/FX Liabilities**	90,6	93,6	89,6	84,9	79,4	74,3	73	71,6	75,9	81
FX liabilities- FX assets (billion $)										
Excluding off-the-balance sheet	3	2,5	5	8,4	13,2	17,2	19,2	20,9	17,4	12,4
Including off-the-balance sheet	0,6	1,2	1,9	2,9	2,9	5,7	5,6	5,8	5,5	0,7
Liquid FX assets/ FX liabilities	44,8	44,6	41	39,5	40	36,6	35,2	34,4	35,9	38,3
Liquid assets/Total sources***	46,7	44	41,1	39,9	42,6	42,4	41	38,3	37,9	51,4

Source: Ozatay, Fatih and Guven Sak. (2002). "The 2000-2001 Financial Crisis in Turkey."
Data from CBRT (www. Cbrt.gov.tr)
*End of period figures
**FX denotes " foreign currency denominated"
*** Total Sources= deposits +non-deposits funds

Chart 12 shows the progress on non-performing loans where chart y shows FX assets/ FX liabilities ratio. 2001 crisis period is shown as t (time). Non-performing loans increased substantially until t, where FX assets/ FX liabilities ratio decreased continuously until t. The upward move of this ratio is coming from the recovery period in the last 10 months of 2001 after February.

Chart 12: Non-Performing Loans/Total Loans in Turkey
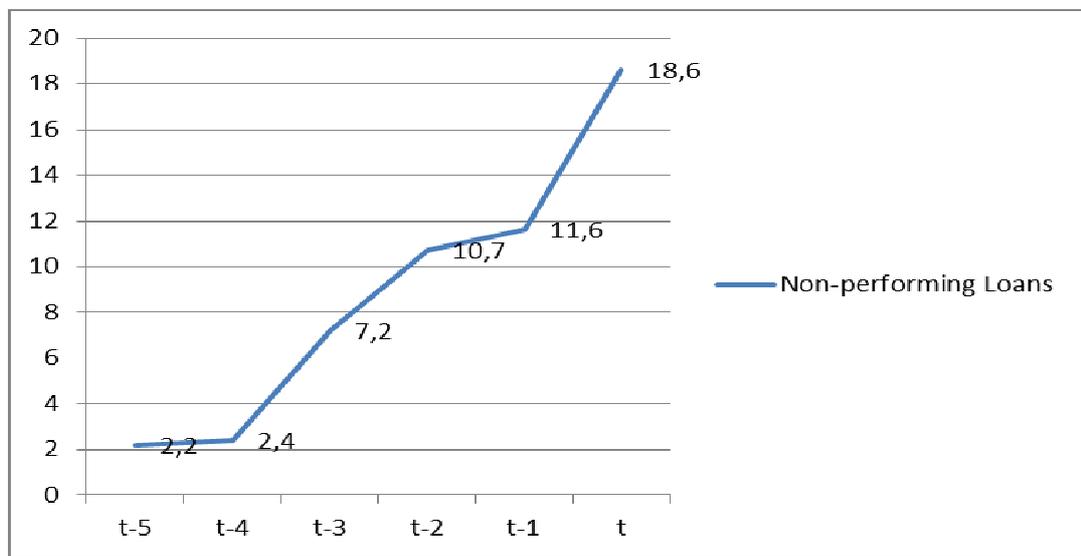
Data: CBRT (www. Cbrt.gov.tr)

Chart 13: FX Assets/ FX Liabilities in Turkey
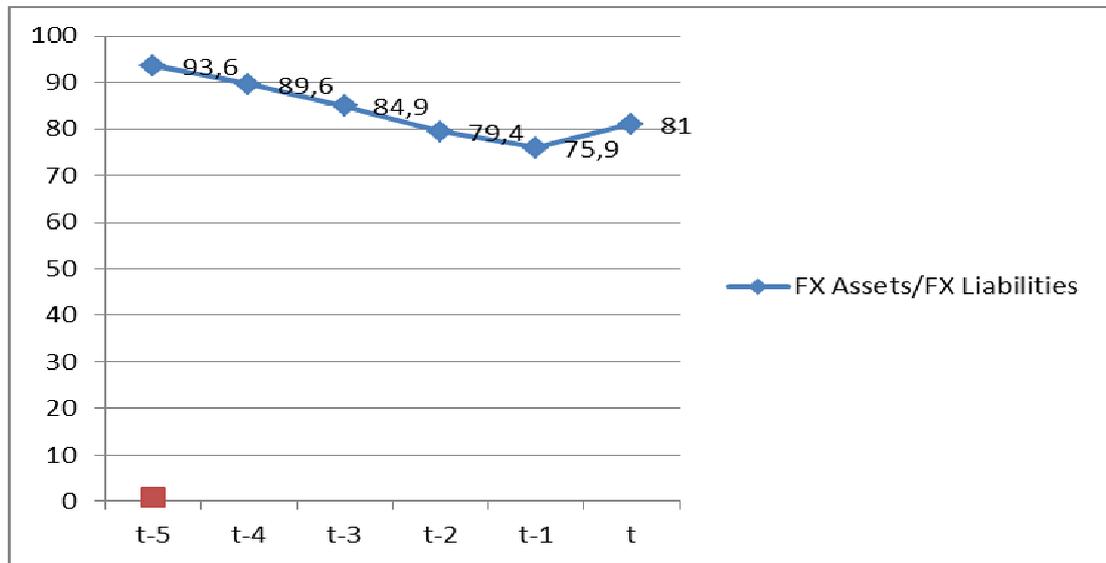
Data: CBRT (www. Cbrt.gov.tr)

4.6 Conclusion

In this chapter, four victim countries of currency crises are investigated. Mexico and Brazil are investigated as facing with currency crises and balance of payment crises, where the East Asia and Turkey are investigated as facing with currency crises and financial crises. These four examples has similar characteristic. All of them were emerging countries; all attracted too many capital inflow usually short-term based, all the countries did not have political stability, all had high amount of foreign debt substantially short-term based before the crises. In addition to these, Turkey and the East Asian countries had so many fragilities in their banking system and financial structures. All the countries were exposed to speculative attacks under the adaptation of the soft peg regimes and had to float their currencies with sharp depreciations.

Brazil, Mexico and Turkey adapted soft peg regimes as a nominal anchor to fight with high inflation rates, where East Asian countries adapted pegged their currencies to USA dollar to facilitate external financing of domestic projects. Brazil and Mexico managed to decrease inflation rates whereas Turkey was partly successful although she could not reach the targeted inflation levels. However all the countries lived soft peg regimes disadvantages, such as overvaluation of the currency and its reflections on trade balance, excessively borrowing of real and financial sector from abroad without using hedging opportunities with the confidence of known future values of their currencies. On the other hand, besides these devastating effects of the soft peg regimes, these countries had numerous distortions in their macroeconomic and fiscal balances and financial structures. These weaknesses attracted the international investors' attention and with the confidence depletion capital outflows began. The reality was, soft peg regimes accelerated the speculative attack with depletion of the investors for the central banks to defend the currency.

As a conclusion, soft peg regimes' effects on the crisis are not ignorable. However, countries' general monetary, fiscal and financial strong appearance play very important role to provide balances in all macroeconomic variables containing exchange rate mechanism as it can be observed from the examples investigated in this chapter.

BIBLIOGRAPHY

Akyuz, Yilmaz and Korkut Boratav. 2003. "The Making of the Turkish Financial Crisis." *Econpapers No:158*

Alesina, Alberto and Alexander F. Wagner. 2004. "Choosing (and Reneging on) Exchange Rate Regimes." NBER Working Paper No. 9809

Angkinand, Apanard. Eric M.P. Chiu and Thomas D. Willet. 2009. " Testing the Unstable Middle and Two Corners Hypotheses About Exchange Rate Regimes". *Open Economies Review, Vol. 20, No. 1*

Babula , A and I. Otker -Robe.2003. " Are soft pegs and intermediate pegs more prone to crisis? Washington" *International Monetary Fund: IMF Working Paper. No: 03/223*

Bordo, Michael D. and Anna J. Schwartz 1997. "Monetary Policy Regimes and Economic Performance: The Historical Record". *Nber Working Paper Series No. 6201*

Bordo, Michael D. 2003. "Exchange Rate Regime Choice in Historical Perspective". *NBER Working Paper No. 9654*

BRSA Working Paper. 2010. " From Crisis to Financial Stability" (*Turkey Experince*).

Calvo, Guillermo A. and Carmen M. Reinhart. 2000. " Fear of Floating*". NBER Working Paper No. 7993*

Calvo, Guillermo A. and Frederic S. Mishkin. 2003. "The Mirage of Exchange Rate Regimes for Emerging Market Countries".*NBER Working Paper No. 9808*

Cardoso, Eliana and Ann Helwege 1999. " Currency Crises in the 1990s: The Case of Brazil"

Coudert, Virginie and Couharde Cecile. 2008. " Currency Misalignment and Exchange Rate Regimes in Emerging and Developing Countries". *Review of International Economic, Vol 17, Issue 1*

Corsetti ,Giancarlo. Paolo Pesenti and Roubini Nourel 1998. " What caused the Asian Curreny and Financial Crisis? Part 1: A Macroeconomic Overview". *NBER Working Paper No. 6833*

Evangelist, Mike and Valerie Sathe 2006. " BRAZIL'S 1998-1999 CURRENCY CRISIS"

De Paula, Fernardo and Antonio Jose Alves,JR 2000." External financial fragility and the 1998-1999 Brazilian currency crisis" . *Journal of Post Keynesian Economics, Vol. 22, No. 4*

Edwards, Sebastian 1997." The Mexican Peso Crisis: How much did we know? When did we Know it?" *NBER Working Paper No. 6334*

Genberg, Hans and Alexander K. Swoboda. 2005. "Exchange-Rate Regimes: Does What Countries Say Matter?" *Graduate Institute of International Studies Geneva, Switzerland*

Ghosh, Atish R. Ann-Marie Gulde. Jonathan D. Ostry and Holger Wolf. 1996. " Does the Exchange Rate Regime Matter for Inflation and Growth?" *NBER Working Paper No. 5874*

Ghosh, Atish R. Ann-Marie Gulde. Jonathan D. Ostry and Holger Wolf. 2002. " Exchange Rate Regimes: Choices and Consequences". *Cambridge, Massachusetts: MIT Press*

Ghosh, Atish R. and Jonathan D. Ostry. 2009. " Choosing and Exchange Rate Regime". *IMF Publications: Finance & Development, December 2009, Volume 46, Number 4*

Gil-Diaz, Francisco.1998. "The Origin of Mexico's 1994 Financial Crisis". *The Cato Journal, Volume 17. No:3*

Griffith-Jones, Stephany 1997. " Causes and Lessons of the Mexican Peso Crisis" *WIDER working paper No:132*

Ferreira, Afonso and Giuseppe Tullio 2002. "The Brazilian Exchange Rate Crisis of January 1999" *Cambridge University Press*

Fischer,S. 2001. "Exchange Rate Regimes: Is the Bipolar View Correct*?" Distinguished Lecture on Economics in Government, Journal Of Economics Perspectives, Vol.15 No:2*

116

Fischer,S 1998. "The Asian Crisis: a View from the IMF" *Journal of International Financial Management and Accounting 9:2 1998*

Frankel, Jeffery. 2004. "Experience and lessons from Exchange Rate Regimes in Emerging Economies." *In Monetary and Financial Integration in East Asia: The way Ahead, edited by Asian Development Bank (New York: Palgrave Macmillan Press)*

Frankel, J.,E.Fajnzylber, S.Schmukler, and L. Serven, 2001. "Verifying Exchange Rate Regimes". *Journal of Development Economics, No 66, Volume 2.*

Frankel, Jeffrey A. 1999. "No Single Currency Regime is Right for All Countries or At All Times". *NBER Working Paper No. 7338*

Habermeier, Karl. Annamaria Kokenyne. Romain Veyrune and Harold Anderson. 2009. "Revised System for Classification of Exchange Rate Arrangement". *IMF Working Paper.*

Husain, Asim, Ashoka Mody and Kenneth Rogoff. 2005. "Exchange Rate Regime Durability and Performance in Developing vs. Advanced Economies". *NBER Working Paper No. 10673*

IMF Staff. 1998. "The Asian Crisis: Causes and Cures". *International Monetary Publications Volume 35, Number 2.*

Kaminsky, Graciela L. and Carmen Reinhart. 2001. "Bank Lending and Contagion Evidence from the Asian Crisis". *National Bureauof Economic Research*

Kaminsky, Graciela L and Sergio L. Schmukler 1999. "What triggers market jitters? A chronicle of the Asian crisis". *Journal of International Money and Finance*

Krugman, Paul R. and Maurice Obstfeld. 2004. "International Economics: Theory and Policy". *Pearson International Edition 8th Edition*

Krugman, Paul 1998. "What Happened To Asia?" *http://web.mit.edu/krugman/www/DISINTER.html*

Levy-Yeyati, Eduardo and Federico Sturzenegger. 2005, "Classifying exchange rate regimes: Deeds vs. words". *European Economic Review, Volume 49, Issue 6*

Levy-Yeyati, Eduardo and Federico Sturzenegger. 2007. "Fear of Floating in Reverse: Exchange Rate Policy in 2000s". *Bank of England Publications.*

Mishkin, Frederic S. 1998. "Exchange Rate Pegging in Emerging-Market Countries?". *National Bureau of Economic Research*

Mishkin, Frederic S. 1998. "Lessons from the Asian crisis". *National Bureau of Economic Research*

Ozatay, Fatih and Guven Sak. 2002. "The 2000-2001 Financial Crisis in Turkey". *Central Bank of Turkey and Ankara University*

Ozkan, Gulcin F. 2005. "Currency and Financial Crises in Turkey 2000-2001". *The World Economy, Volume 28, No:4*

Rogoff, Kenneth.Asim Husain. Ashoka Mody. Robin Brooks and Nienke Oomes. 200 4. "Evolution and Performance of Exchange Rate Regimes". *Washington. IMF Working Paper. No: 03/243*

Stone, Mark. Harald Anderson and Romain Veyrune. 2008. " Exchange Rate Regimes: Fix or Float." *IMF Publications. Finance and Development*

Tavlas, George. Harris Dellas and Alan C. Stockman. 2008. "The Classification and performance of Alternative Exchange Rate Systems". *European Economic Review, Volume 52, Issue 6.*

Wade, Robert. 1998. "The Asian Debt-and-development Crisis of 1997-?:" *Causes and Consequences World Development Vol. 26, No. 8,*

Wang, Yen Kyun. 2008. " Flexible BBC Exchange Rate System and Exchange Rate Cooperation in East Asia". *Korea Institute for International Economic Policy Working Paper*

Williamson, John. 2001. "The Case for a Basket, Band and Crawl (BBC) Regime for East Asia". *A chapter in Future Directions for Monetary Policies in East Asia, 2001 from Reserve Bank of Australia*

Willet, Thomas D. 2005. " Why the Middle is Unstable: The Political Economy of Exchange Rate Regimes and Currency Crises". *The World Economy, Volume 30, No: 5*

Whitehead, John C. 1997. "Lessons of the Mexican Peso Crisis" *Council on Foreign Relations of the United States of America*

Wong, Richard. 2000. "Asian Financial Crises: Causes and Development." *Hong Kong Institute of Economics and Business Strategy". The University of Hong Kong.*

Yagcı, Fahrettin. 2001. "Choice of Exchange Rate Regimes For Developing Countries". *The World Bank Africa Region Working Paper Series No:16.*

Yeldan, Erinc. 2002. "Behind the 2000/2001 Turkish Crisis: Stability, Credibility and Governance, for Whom?" *Bilkent University.*