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FISCAL SUSTAINABILITY, BANKING FRAGILITY AND BALANCE SHEETS: 2000-2001 FINANCIAL CRISES IN TURKEY

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ABSTRACT

FISCAL SUSTAINABILITY, BANKING FRAGILITY AND BALANCE SHEET EFFECTS: 2000-2001 FINANCIAL CRISES IN TURKEY

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The aim of this thesis is to identify and assess the reasons of the Turkish financial crises based on various crises model explanations including the first, the second and the third generation models. It is argued that following factors played a crucial role in triggering crises in Turkey. Firstly, under the weak sustainable fiscal policies, implementation of the exchange rate based stabilization program caused the increase in vulnerabilities in the sectoral balance sheets and thus increased the prospective deficit considerations. Secondly, as seen on the international evidence, over-appreciation of the domestic currency put pressure on the current account deficit and other macroeconomic indicators. Thirdly, domestic and external factors also worsen the perceptions on the sustainability of the disinflation program leading to sharp capital outflows.

Within this context, fiscal and current account sustainability are empirically tested under the light of the structural break analysis and it is found that fiscal stance and the current account deficit are both weakly sustainable implying the necessity of policy regime changes before the crises period. Having assessed the structural problems of the government, corporate and banking sector's

balance sheets, intersectoral risk matrix was constructed to analyze the risk accumulation in the sectors considering the impacts of the exchange rate based disinflation program and the ongoing economic imbalances. Both mismanagement of the risks and the structural weaknesses of some banks led to the deterioration of the expectations about the continuity of the program, by increasing tensions and prospective deficit perceptions in the markets. With speculative attacks, a sharp capital outflow was triggered the crises.

It is concluded that the causes of the 2000-2001 Turkish financial crises can be interpreted as an example of financial crises model encompassing all elements of the earlier models except seignorage issues.

Keywords: Financial Crises, FTPL, Fiscal Sustainability, Balance Sheets, Prospective Deficit.

ÖZ

MALİYE POLİTİKALARININ SÜRDÜRÜLEBİLİRLİĞİ, BANKA KIRILIGANLIKLARI VE BİLANÇO ETKİSİ: TÜRKİYE'DE 2000-2001 FİNANSAL KRİZİ

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Bu tezde, Türkiye'de 2000-2001 yıllarında yaşanan finansal krizlerin ortaya çıkış nedenlerinin saptanması amaçlanmış ve literatürde yer alan birinci, ikinci ve üçüncü kuşak kriz modelleri de göz önüne alınarak incelenmiştir. Sürdürülebilir maliye politikalarındaki zayıflığın geçerli olduğu bir ortamda uygulanan kur politikasının bir sonucu olarak sektör bilançolarında kırılganlıkların arttığı ve bunun beklenen bütçe açıkları üzerinde olumsuz etki yarattığı, diğer yandan, ekonomide uluslararası deneyimlerde de görüldüğü üzere kurun aşırı değerlenmesi sonucunda cari işlemler açığı ve diğer göstergelerde oluşan baskı ve gerek ulusal gerekse yurtdışı kaynaklı diğer faktörlerin de etkisi ile programın sürdürülemez olduğu algılamasının artması sonucunda hızlı sermaye kaçışı ile birlikte krizlerle karşı karşıya kalındığı savı vurgulanmıştır.

Bu çerçevede, kriz öncesi dönemde maliye politikalarının ve cari işlemler açığının sürdürülebilirliği ampirik olarak test edilmiş ve gerek maliye politikaları (açıklarının) gerekse cari işlemler açığının zayıf sürdürülebilir olduğu sonucuna varılmıştır. Bu durum kriz öncesi dönemde yapısal bir politika değişikliğine

ihtiyaç duyulduğuna işaret etmektedir. Devam eden ekonomik dengesizlikler ve dezenflasyon programı çerçevesinde uygulanan sabit kur rejimi ile firma ve bankacılık sektörü bilançolarının taşıdıkları risklerin ve kırılganlıkların hızla arttığı sektörler arası risk matrisi oluşturularak gösterilmiştir. Özellikle bankacılık sektöründe risklerin iyi yönetilememesi ve yapısal sorunlar nedeniyle zor durumda kalan bankalar, piyasalarda olumsuz beklentilerin doğmasına ve beklenen mali açık algılamasının artmasına neden olmuş, spekülatif hareketler ile birlikte hızlı sermaye çıkışı krizleri tetiklemiştir.

2000-2001 krizlerinin, literatürde geçerli olan kriz modellemelerinin temel nedenlerini, senyoraj gelirleri hariç tutularak, bünyesinde bulundurduğu ve yeni kriz modellerinin bir örneği olarak değerlendirilmesi gerektiği sonucuna varılmıştır.

Anahtar Sözcükler: Finansal Krizler, Maliye Açıklarının Sürdürülmesi, Fiyat Düzeyinin Maliye Teorisi, Bilanço Etkisi, Beklenen Mali Açıklar.

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I hereby declare that all information in this document has been obtained and presented in accordance with academic rules and ethical conduct. I also declare that, as required by these rules and conduct, I have fully cited and referenced all material and results that are not original to this work.

Date: March 4,2004 Signature:

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LIST OF ABBREVATIONS

BIS	Bank for International Settlements
BRSA	Banking Regulation and Supervision Agency
CAR	Capital Adequacy Ratio
CBRT	Central Bank of the Republic of Turkey
FGM	First-generation models
FX	Foreign Exchange
GNP	Gross National Product
IMF	International Monetary Fund
NDA	Net Domestic Assets
NPL	Non-performing Loan
PSBR	Public Sector Borrowing Requirement
RER	Real Exchange Rate
SDIF	Savings Deposit Insurance Fund
SGM	Second-generation models
TL	Turkish lira
TGM	Third-generation models

CHAPTER 1

INTRODUCTION

Over the decades, erratic movements of economic growth, high and persistent inflation rates, economic and political instability, openness to the large capital movements and dollarization after the financial liberalization, external shocks, affect adversely the performance of the Turkish economy under a vicious circle. On the fiscal side, high financing requirement of the government with high real interest rates and a very sharp increase in the debt to GDP ratio brought the debate of fiscal sustainability issues and deteriorate macroeconomic imbalances extensively. Rigid prices and thus the inflationary inertia gained momentum through backward looking expectations and financing problems of the government.

Under these conditions, Turkey attempted 16 times IMF stand-by agreements which ended with failure. As 17th attempt with IMF an ambitious disinflation program was introduced in 2000 to overcome the problem of inflation through strong fiscal adjustment, structural reforms as well as using pegged exchange rate regime as the monetary policy. However, in the midst of the program currency and banking crises hit the economy, generating a banking cost as 30 per cent of GNP, and severe contraction of the economy as 6.9 per cent

through snowballing effects of the crises among sectors. In fact, Turkey was not the sole example in this respect.

Starting from the 1980s, many developed and developing countries hit by serious currency and banking crises. Since the timely detection and the elimination of the triggering factors are important not to face with costly crises, many theories were developed. One of them was "first-generation" model developed by the Krugman (1979) and Flood and Garber (1984) emphasizing the monetization of the fiscal deficits as the primary reason in abandoning the exchange rate peg together with the deterioration of economic fundamentals. "Second generation" models was introduced by Obstfeld (1994). Self-fulfilling mechanisms, deterioration of the expectations due to the both the worsening of the economic fundamentals, the herd behaviour of the market and contagion effects of any external and/or internal shocks. The "third generation" model incorporates the broader view in explaining the financial crises by strongly emphasizing the balance sheet vulnerabilities of the both corporate and the banking sector. It is suggested that as seen in the South Asian experiences, the private sector's positions played an important role in triggering financial crises rather than the fiscal position of the government. Moreover, the structural issues such as implicit or explicit government guarantees that could raise the moral hazard problems as well as the prospective deficit perceptions in the market that more likely ends up with the most important triggering factor in financial crises.

There is now a growing body of literature[1] on the Turkish financial crises of 2000-2001. The seminal paper by Ozatay and Sak (2002), Boratav and Akyüz (2002) and Celasun (2003), comprehensively investigate various aspects of the crises. Ozatay and Sak (2002) stress the role of banking system fragility in the crises and convincingly argue the recent crisis cannot solely be explained by a single crisis model alone in the literature. Celasun (2003) focuses on the role of macroeconomic fundamentals and policies during both pre and post-crisis periods. Boratav and Akyüz (2002) discuss the evolution of the crisis from a political economy perspective and focus on the role of the IMF policies.

The purpose of this thesis is to analyze the causes of the financial crises not only in the light of the earlier generation crisis models but also the recent advances in the monetary macroeconomic theory and policy. In this context, our emphasis shall be the balance sheet approaches to financial crisis with a special reference to the recently developed fiscal theory of currency crises and prospective deficit literature.

It is known that emergence of vulnerabilities in one sector can spill over and generate additional risks for the others affecting the whole economy. Under the constraint of macroeconomic imbalances, opening of the economy to international financial markets that is to say financial liberalization; its timing and country's degree of readiness such as completeness of the related regulations and providing solutions to structural problems in each sector, and also the selection of the exchange rate regime in conducting monetary policy gained importance not

[1] Boratav.and Akyüz (2002), Celasun.(2003), Ekinci et.al. (2003), Keyder (2003), Ozatay and Sak (2002), Ozkan (2003), Uygur (2001), Yeldan (2001).

only as "shock absorbing" or "growth generating" factors but also as "risk/shock generating" factors potentially leading to a financial crisis. Those issues are also discussed in the thesis.

The study is composed of seven chapters. After an introduction, second chapter presents the literature survey on financial crises. Chapter two briefly introduces different crises models, which incorporates the impacts of fiscal deficits, seignorage revenues, deterioration of the economic fundamentals, self-fulfilling mechanisms, balance sheet effects, fiscal theory of price level under fixed exchange rate regimes, moral hazard problems and prospective deficit considerations as well as the herding behaviour of the market.

The third chapter provides both theoretical and empirical assessment about the fiscal and current account sustainability under structural break consideration by using Perron (1997), Zivot and Andrews (1992) including conventional testing such as ADF and KPPS, and also Auto Regressive Distributed Lag Models of Peseran, Shin and Smith (2001). Rolling Least Squares are employed for the period 1975-1999 and 1975-2001 to assess the fiscal and foreign deficit pattern before and during the implementation of the disinflation program. It is found that fiscal account deficit was weakly sustainable meaning that it was easily exposed to any shock in the future. It necessitates a policy regime change in order to put the deficit process into a strongly sustainable one. Even though there was a fiscal effort during the disinflation period, fiscal deficit remained high. However, during the crises, fiscal deficit did not switch to unsustainable pattern mainly due to the immediate IMF credits and also continuation of the decisive implementation of the

strong fiscal adjustment. However, Treasury had to accept high real rates under short maturities to rollover its debt.

Chapter three also emphasizes the developments after the full liberalization of the Turkish financial system in which current account financed itself with basically short term capital inflows making economy more sensitive to capital movements. The saving–investment gap of the government sector was covered by the private sectors' saving surpluses. With the deterioration of private savings during the disinflation program, due to the realization of the deferred consumption, the current account deficit was sharply widen. Current account was found to be weakly sustainable for 1975-1999 and 1975-2001 period implying likely deterioration of the current account balance or possibility of the unsustainable pattern in the future, if the economy faced with any shock or any structural change. Under a weak current account sustainability, implementation of the fixed exchange rate increased vulnerabilities in the external position of the economy. While in an open economy operating with flexible exchange rate, current account deficit has adjusted by allowing exchange rate movements, however, under fixed exchange rate there is no such an adjustment. In Turkey, with the implementation of fixed exchange rate regime, current account deficit reached to 4.8 per cent of the GNP requiring eventually a very sharp correction in the exchange rate leading to currency crises.

In the fourth chapter, roots of the Turkish financial crises are analyzed in the context of the government, corporate and banking sectors' balance sheets. Following the recently evolving balance sheet approach to financial crises literature, this chapter presents an intersectoral balance sheet matrix of the main

sectors to assess the risk accumulation in the economy prior to the crisis. The long history of the government deficits made macroeconomic balances more vulnerable. We argued that the financing of the government's budget through the banking system, increased the fragilities and led to a financial crisis together with other factors. The corporate sector had influenced from the ongoing macroeconomic imbalances and shaped their investment decisions accordingly. The behaviour of the households was also important part of puzzle feeding the both corporate and banking sector's positions. Chapter four presents that given the high deficit and debt of the government sector, fragilities of the corporate and banking sector's balance sheets, creating "domino and snowball effects" for each other deepening the impact of crises. To quantify this argument we set up an intersectoral risk matrix of the government including the central bank, corporate sector, the banking sector and their relations to rest of the world starting from the period 1999 December to the first crisis 2000 November in order to see the risk accumulations during the implementation of the exchange rate base disinflation program. An exercise about the short term liabilities presented a rapid accumulation of the short term liabilities of the banking sector. It crystallizes the dimension of the vulnerabilities in the banking sector that any upward foreign exchange movement considering their maturity and currency mismatched structure.

The fifth chapter assesses the impact of prospective deficits in Turkish context given the fact that the high cost of restructuring banking sector, as 29 per cent of GNP. The rapid accumulation of the market risks, namely interest rate and foreign exchange risks by "investing more in government securities" and "opening

foreign exchange positions" brought the hesitations about the soundness of the banking system in Turkey. Structural problems faced by all the sectors combined with excessive risk taking, made economy to much vulnerable to any deterioration in the fundamentals as well as any speculative attack. Moreover, with the experience of eight taken-over banks between the periods 1997-1999, the market perceived that "prospective deficits" would be the case, under the likelihood of further bailing out of the banks in distress, considering the implicit and explicit government guarantees and the fiscal cost of bailed out banks. The rumors about the distressed banks led to the sudden turbulence of the financial markets, and the realization of the risks. Both the mismanagement of the risks in the banking sector and the market's perception of the prospective deficits played a significant role in Turkish financial crises. In this sense, the prospective deficit argument of Burnside, Eichenbaum and Rebelo (1998) was also verified as triggering factor of the crises. Actually, after the crises period the number of bailed out banks gradually rose to 18.

The sixth chapter briefly provides the basics of the disinflation program and discusses some important additional factors triggering the crisis, including external factors, delays in structural reforms and privatization process and the developments of the macroeconomic variables, besides to balance sheet effects and prospective deficits arguments given in Chapter Four and Five. As shown in the international experiences, exchange rate based stabilization programs could create adverse developments in the economy as suggested by Eichengreen (2001, 2000), Calvo and Végh (2002), Végh and Rebelo (1995) and many others. In Turkey, macroeconomic variables presented almost the same adverse path comparing to

international experiences during the implementation of the exchange rate based disinflation program. After the initial positive impact of the credible disinflation program on interest rates, sharp fiscal adjustment, structural reform attempts, privatization and foreign financing facilities; sharp deterioration of the macroeconomic variables such as current account deficit, overshooting of the inflation rates and thus the over-appreciation of the domestic currency put stress on the economy. The period of December 1999 and November 2000 can be considered as the "road to twin crises" by accumulating risks and also increasing the stress in the economy.

The last chapter is devoted to some concluding remarks. We argue that the reasons of the recent Turkish financial crises can be interpreted as containing all the basic elements of the earlier crises models except the seignorage motive and thus can potentially be an example for new generation crises models.

CHAPTER 2

FINANCIAL CRISES: A REVIEW OF THE LITERATURE

2.1. Crises Models

Together with the liberalization and globalization of the international financial markets, many developed or emerging countries was hit by currency and financial crises such as Mexican crises 1973-1982, Argentina crises 1978-81, the European Exchange Rate Mechanism crisis in 1992-93, Mexico "tequila" crisis in 1994-95, to the South Asian crisis in 1997-98, the Russian crisis in 1998 and the Brazilian crisis in 1998-99, Argentina crisis in 2000, Turkey 2000-2001 crises. The reasons of the currency crises were tried to be identified by extensive amount of studies and many theories were developed through time in order to capture the evolving aspects of the crises under different approaches. Ghosh and Ghosh (2002) state that identification of the structural reasons of the crises is very important. Timely detection and elimination of the triggering factors and implementation of the decisive structural reforms might help to restore confidence in the markets.

The models, which explain the currency crises divided into three categories, namely the first, second, and third generation models. Krugman (2001) made a distinction among the crisis models. According to him, First-generation model (henceforth, FGM) of crisis was deserved by the government, moreover, it is

predictable and harmless meaning that there would be no post-crisis recession. The reason of the crises was the government's inconsistent and unsustainable policies. Since the timing of the crisis can be predicted by just looking at the economic fundamentals, the crisis does not actually damage the economy. With Second-generation models (henceforth, SGM), it becomes much less clear that the crisis is deserved, and it becomes unpredictable, though it is still mostly harmless. In the Third-generation models (henceforth, TGM), since the crisis is no longer mainly arising from the monetary policy, crises become an undeserved and unexpected phenomena and depreciation of the exchange rate becomes more a symptom than a fundamental aspect of these crises (Krugman, 2001).

2.1.1. First-Generation Model (FGM)

Until the mid 1990s, the "first-generation" model explained the currency crises usually because of the monetization of the fiscal deficits that would lead to reserve losses and eventually the abandonment of an exchange rate peg.

The first-generation models was developed by Krugman (1979) and Flood and Garber (1984) in order to explain currency crises in developing countries such as Mexico (1973-1982) and Argentina (1978-81), where both of the countries had the similar policy imbalances, domestic credit expansion under pegged exchange rate regime. The steady loss of foreign exchange reserves to defend the currency led to the crisis in those countries.

The government's seignorage needs to cover its deficit leads to an eventual collapse of a fixed exchange rate by provoking a speculative attack when foreign exchange reserves fall below a critical level. Krugman (1979) explains the process

as follows: "*Under a fixed exchange rate regime, monetization of fiscal deficits, which creates domestic inflation, leads to an appreciation in the real exchange rate. The deteriorating effect of increasing domestic prices on the current account balance causes a gradual loss of reserves and ultimately, leads to a speculative attack against the currency*". If the authorities are no longer able to defend the pegged exchange rate, they are forced to abandon the parity, followed by sharp devaluation with the speculative attacks.

The common factors in FGM can be grouped as expansionary domestic policies such as large fiscal deficits or excessive rates of credit expansion prior the crises together with the impact of fixed an exchange rate policy, in which under any speculative attack, central bank depletes its reserves and inevitably float the currency. Moreover, the deficiencies in the financial system and the inconsistent government policies lead to the crisis.

2.1.2. Second-Generation Model (SGM)

The "second generation" crisis models developed after the ERM crisis in 1992 and the Mexican crisis in 1994-95 by capturing the potential role economic fundamentals as introduced by seminal paper of Obstfeld (1994). As opposed to the FGM, in SGM seignorage was not the issue, however, fiscal problems were still important together with other imbalances in the macroeconomy. Another feature of the SGM is the importance of the self-fulfilling mechanisms in the markets. Even though the fundamentals were consistent with the peg, deterioration of the expectations about the currency in the market might lead to break the peg and ending up with currency, banking or debt rollover crisis. SGM

identifies the reasons of the currency crisis as self-fulfilling expectations as well as herd behaviour and contagion effects (Blejer, 1998).

SGM also differs from the FGM by concentrating on multiple-equilibrium models. The interaction between private sector and government could generate several possible solutions and equilibrium can exist on different solutions.

SGM focuses more on expectations which trigger the crises rather than on the development of economic fundamentals. While the Russian crisis in 1998 can be explained through the perception of weak government that preferred seignorage, the UK sterling crisis of 1992 was explained by the perception of government, which preferred domestic employment to exchange stability (Krugman (1999)).

The discussion of credible economic policy was introduced by Obstfeld (1986) emphasizing a credible government that tried to defend the pegged exchange rate or abandon it by following discretionary policy when economic conditions deteriorate. If the peg ceases to be credible, investors will demand higher interest rates to hold assets denominated in the country's currency in their portfolios. If the government defends the peg by providing those higher interest rates, it will worsen employment, reduce the growth and increase financial distress. The so-called optimizing models of currency crises view regime changes as conscious decisions taken by the government who decide and examine the costs and benefits of the defend or abandoning of the fixed exchange rate regime.

Obstfeld (1994) also developed several variants of SGM such as the introduction of budget-driven factors. Even though seignorage is not the cause of the crises per se, fiscal imbalances lead to the self-fulfilling crises.

Self-fulfilling expectations emerged mainly due to the inconsistency between the exchange rate and monetary policy, political instabilities, unexpected developments etc. However, financial crises are not always necessarily determined by the weak fundamentals, meaning that not all speculative attacks may be warranted by the weaknesses of fundamentals. Speculative attacks and herding behaviour of the market participants might lead to the sharp devaluations. The deterioration in the expectations might end with devaluation if the majority of small investors follow the big participants. The occurrence of contagion is the other element of the SGM. It is based on the perceived currency crisis in one country spreads to other countries which is in the region or highly dependent to the crisis countries with trade and financial linkages. Moreover, the international financial institutions also take their positions and reevaluate their portfolios by easily withdrawn their funds from both crisis and other countries.

2.1.3. Third-Generation Models

After 1997-98 Asian financial crisis Krugman (1999) and others developed "third-generation of currency crisis models". The crises emerged due to the financial vulnerabilities rather than fiscal imbalances. Excessive external borrowing, balance sheet vulnerabilities of the banking system and sharp capital outflows were the main features of the South Asian crises. Therefore, new model emphasizes the impact of moral hazard or asymmetric information problem that lead to increase of the risks associated with investing in emerging markets, the

herding behavior of market participants and the international contagion effects. South Asian crises led to the initiation of the third generation crisis models, which explicitly incorporated the role of the imbalances in the financial sector on financial and currency crises.

As Claessens et.al (1999) pointed out, prior the Asian crises, there is no evidence no of any fiscal problems and any seignorage needs, even surpluses was observed. Growth performance of crises countries was also high enough and there was not any current account problem, except Thailand and Malaysia. In general, those economies had not shown economic imbalances that were the subject of either the first or the second generation models. However, financial fragility were the main characteristics of South Asian countries through high leverage ratios of corporate and banking system especially from abroad by using the favorable atmosphere created by pegged exchange rate regime.

Besides the self -fulfilling "liquidity run" impact in Asian crises, the model draw attention to vulnerabilities in the corporate and financial sector followed by currency and then banking crises so called "twin crises". A wide range of models based on balance sheet analysis to understand how capital account movements generate currency and financial crises.

The studies under the framework of third generation crises point to weakly supervised and regulated financial systems, directed lending, moral hazard caused by government guarantees and distortions created by fixed exchange rates as well as currency mismatches, self-fulfilling runs or capital reversals.

The importance of the size of the devaluation for highly foreign exchange indebted sectors are presented investigated on real debt service burden and on economic growth. It is found that the initial currency depreciation is triggered by fundamental shocks, however, getting worse by self-fulfilling mechanisms, leading to a collapse of the pegged regime. Obviously, highly indebted private and banking sector in terms of foreign currency affected adversely.

Under the third-generation models, financial crisis is explained as international variants of "bank run" models by Chang and Velasco (2000), Burnside and others (1999) and Schneider and Tornell (2000) by combining moral-hazard-driven bubble with a balance-sheet driven crisis when the bubble bursts.

Third-generation model has also argued moral-hazard-driven lending in the banking sector through hidden subsidy to investment and implicit guarantees Krugman (1998), Corsetti, Pesenti, and Roubini (1998). The other pillar of the third generation model is developed by Chang and Velasco (1998a, b) to explain currency crises as the by-product of a bank run, modeled by Diamond and Dybvig (1983) as a self-fulfilling loss of confidence that forces financial intermediaries to liquidate their investments prematurely. Finally, a third pillar stresses the balance-sheet implications of currency depreciation.

Krugman (1998) argues that under the explicit or implicit government guarantees, banks borrow money from the international capital markets in order to extend loans to domestic companies. If the government does not strengthen control and regulation of the financial agents and serious problems of moral hazard occur. At that point, the market becomes aware of banks' exposure to

losses. Thus, any withdraw the funds from the domestic institutions trigger the currency crisis. The "over-borrowing syndrome" was also modeled by Corsetti, Pesenti, and Roubini (1998) emphasizing the role of moral hazard lending in rising hidden government liabilities. Under these conditions, the soundness of budgetary and macro economic policy was just an illusion.

2.1.4. Early Warning Systems

In very comprehensive study of Caprio and Klingebiel (2003), it is shown that 117 banking crises occurred in 93 countries and 51 non-systemic banking crises in 45 countries since the late 1970s. The cost of crises are obviously very high, reaching the minimum 10 percent of the gross domestic product.Therefore, early-warning signals that can help to anticipate and identify a crisis gained importance. However, reaching a consensus on common indicators is evidently not reliable. Even though general guidelines could be given by Kaminsky (2004), Kaminsky and Reinhart (2001), IMF (2000), Abiad (2003), early-warning indicators sometimes do not give the same correct signal for each individual country, so country specific indicators becomes much more sensible depending on the accuracy, coverage and the time lag of data.

There are clear linkages between macro prudential analysis[2] and early warning systems and other analytical tools to monitor vulnerabilities and prevent crises. Early warning systems generally focus on vulnerabilities in the external position, using macroeconomic indicators as key explanatory variables. IMF (2001) points out that macro prudential analysis focuses on vulnerabilities in domestic financial systems, using Financial Stability Indicators (FSIs) as the most

[2] See Appendix A and B.

significant statistical building block. While FSIs aim to predict banking and currency crises and it may ultimately be an important component of early warning systems.

In the literature, several approaches[3] are developed to anticipate the financial crises. Goldstein (1996) argues that the more number of early warning signals stand out, the greater the probability of crisis. Flood and Marion (1998) develop early warning indicators based on a sample of 25 emerging markets and smaller industrial countries. They concluded that a banking crisis appears in the cases of bank closures, bank merger or bank take-over by the public sector, whereas a currency crisis appears when the nominal effective exchange rate depreciates or when losses in reserves are incurred in the amount of three or more standard deviations from its mean. In the period from 1970-1995, the indicators correctly anticipated 80 to 100 percent of banking and currency crises. Indicators of banking crises are given such as an upward trend in real exchange rate, a fall in equity prices, money multiplier growth, a fall in real output, a decline in exports and a rise in interest rate; while the indicators of currency crises are classified under exchange rate appreciation, the existence of a banking crisis, a fall in stock indices, a decline in exports, an increase in the M2 to international reserves ratio, a fall in international reserves, current account deficit to GDP, the ratio of short-term capital inflows to GDP.

Kaminsky, Lizondo and Reinhart (1997), hereafter KLR, proposed an approach to measure the exposure of currency risk by using composite indices of macroeconomic variables. Macroeconomic variables are considered as

[3] See for details of empirical literature Abiad (2003).

fundamentals such as, nominal/real exchange rate, production, money supply growth rate, reserve level, etc. and their movements which can be leading, coinciding with currency crises. The indicators grouped into six broad categories: The external sector, financial sector, real sector, public finances, institutional and structural variables and political variables. These variables then classified into several sub-categories, end up with 103 indicators in total.

KLR found that output, exports, deviations of the real exchange rate from its trend, equity prices and ratio of broad money to gross international reserves are efficient indicators of the currency crises, while imports, differential between foreign and domestic real deposit interest rates, ratio of lending to deposit interest rates and bank deposits are inefficient in predicting currency crises.

In anticipating currency crises, the value-at-risk approach was used by Blejer and Schumacher (1998) considering rational expectation model and the credibility of the monetary authorities. The value-at-risk approach estimates potential costs of abandoning the current exchange rate regime and thus the potential solvency of the monetary authorities.

Ghosh and Ghosh (2002) examines the role of structural factors—governance and rule of law, corporate sector governance (creditor rights and shareholder rights), corporate financing structure—as well as macroeconomic variables in currency crises by using a known as a binary recursive tree technique which allows for interactions between the various explanatory variables. They found that structural vulnerabilities play an important rule in the occurrence of "deep" currency crises and that there are complex interactions between these structural vulnerabilities and macroeconomic imbalances.

Kaminsky (2003) identifies six types of crises by analyzing 96 currency crisis for 20 countries within 30 years period. Four types of crises are related with the domestic fragilities such as current account deterioration, fiscal imbalances, financial excesses and foreign debt unsustainability. Another one is emerged due to the sudden stop of capital inflows and the last type of crisis is related with the self-fulfilling mechanisms. She determined different aspects of the currency crises by using threshold methodology depending on the duration and the size of the crises.

2. 2. Balance Sheet Approach to Crises

Balance Sheet Approach serves to illustrate how sectoral balance sheet mismatches can help to explain the reasons and the severity of recent financial crises. With Balance Sheet Approach, it is possible to detect weaknesses that have the potential to spill over into other sectors. Moreover, cross-sectoral linkages can also be captured through the constructing a large matrix combining all the main sectoral elements, namely the government, corporate and banking sector. Analyzing individual sectoral balance sheets and their linkages to each other help to assess the fragilities in each sector and in the overall economy.

Krugman (1999) underline the importance of the balance sheets as the main reason of the second-generation crisis in his seminal paper. He emphasizes the deterioration of the corporate sector in the Southern Asia countries as the triggering factor for the crises.

The comprehensive study of Allen, Rosenberg, Keller, Setser and Roubini (2002), propose to use stock variables instead of flow for both country's aggregate and the sectoral balance sheets. They point out that the balance sheet crises arise from weaknesses in the both private and public sector's balance sheets. Any shock coming from the domestic or external economy could cause the reversal of capital flows, which could generate pressure on reserves and the exchange rate.

Recently, IMF (2003) pointed out that balance sheet approach should be used in Financial Stability Assessments Programs (FSAP) and Article IV Reports of the member countries due to the insufficiency of the traditional financial

programming approach in explaining the crises. IMF argued that analysis based on Balance Sheet Approach do not fail to detect the accumulation of unsustainable fiscal and current account positions.

With the loss of confidence, withdrawals of bank deposits, panic sales of securities, debt rollover problems are likely to be seen in the economy. Moreover, with the adjustment on exchange rate, interest rates and other asset prices, the balance sheets of an entire sector can sharply deteriorate depending on the existing mismatches in the sectoral balance sheets. Under free movement of capital, a sharp capital outflow, which creates a pressure on the exchange rate or erosion of the official reserves, will eventually ended with currency crisis.

If the banking sector heavily lend to the government, any concerns about the governments' fiscal sustainability would adversely affect the perceptions in the banking system through herding behavior either leading to a deposit run or withdrawal of cross-border lending by nonresident creditors. With a chain reaction, any destabilizing event on banks' condition reflected itself on the corporate sector by early recalling of the credits extending to corporate sector. Therefore, any sharp confidence loss about the soundness and solvency of the balance sheets of the banking system, the corporate sector, or the government can generate sudden reversal of the capital leading to the currency and then banking crises.

The examples of the balance sheet crises originating from the government sector and corporate sector are 1998 Russia-2001 Argentine crises and 1997-98 South Asian crises respectively. In all those crises episodes, banking sector played

a key role by limiting financing facilities to the corporate or government sector which need for fresh financing to debt roll-overs.

Box 1: Balance Sheet Risks for Different Sectors of the Economy

Risk Sector	Maturity Mismatch	Currency Mismatch	Capital Structure Mismatch	Solvency (Liab.v.Assets)
Government	Government's short-term hard currency debt (domestic and external) vs. government's liquid assets (reserves)* Short-term domestic currency denominated government debts v. liquid domestic currency assets of the government *Not all central bank reserves are available for government debt service; some may be pledged to back currency, lent to banks, etc	Government's debt denominated in foreign currency (domestic and external) v. government's hard currency assets (reserves)	N/A	Liabilities of government and central bank v. their assets. Assets include discounted value of future primary surpluses (including seignorage revenue) and the financial assets of the government and central bank, including privatizable state owned enterprises Liabilities may include implicit liabilities from pension plans as well as contingent liabilities stemming from government guarantees
Banks	Short-term hard currency debts (domestic and external) v. banks' liquid hard currency assets (and ability to borrow from central bank) Short-term domestic currency debts (often deposits)liquid assets	Difference between foreign currency assets (loans) v. foreign currency liabilities (deposits/interbank lines)	Deposits to capital ratio (closely related to capital to assets ratio)	Bank liabilities v. bank assets and capital
Firms	Short-term debts v. firms' liquid assets	Debts denominated in foreign currency (domestic and external) v. hard currency generating assets.	Debt to equity ratio	Firms liabilities v. present value of firms' assets
Households	Short-term debt v. liquid household assets	Difference between Foreign currency assets (deposits) v. foreign currency liabilities (often mortgages)	N/A	Liabilities v. future earnings (on wages and assets)

Risk Sector	Maturity Mismatch	Currency Mismatch	Capital Structural Mismatch	Solvency (Liabilies .vs.Assets)
Country as a whole	Short-term external debt (residual maturity) v. liquid hard currency reserves of government and private sector * *Foreign, exchange reserves of the central bank/government plus liquid foreign currency reserves of banks and firms	Net hard currency denominated external debt *External debt denominated in hard currency minus external assets denominated in hard currency	Net external debt stock (external debt minus external assets) relative to net stock of FDI. *Flow analogue: Heavy current dependence on debt rather than FDI to finance current account deficit	Stock of external debt relative to both external financial assets held by residents and the discounted value of future trade surpluses, (resources for future external debt service)* *A more complex analysis would need to include remittance of profits on FDJ as well. While such remittances are variable, they are another claim on the external earnings of the country as a whole
Note that debts between residents should appear on the sectoral balance sheet. Debts between non-residents, particularly if the debts are denominated in a foreign currency, can be a source of financial difficulty. For example, if the banking system borrows foreign exchange from the household sector and lends foreign exchange to firms, this should appear as a foreign currency asset on the household balance sheet and an equal foreign currency liability on the balance sheet of firms.				

Source: Allen et.al (2002). "A Balance Sheet Approach to Financial Crisis", IMF WP/02/210, pg 19-20

Box 1 continued

2.2.1. The Government Sector

The vulnerabilities of the government's balance sheet could easily pose the fiscal sustainability questions. The large fiscal deficits of the government together with its financing problem like in Russia, Turkey, and Argentina can trigger the financial distress in domestic banks, which held large amounts of the government's securities in their portfolios.

Allen et.al (2002) argue that the private sector's balance sheet problems often ended up with the deterioration of the government balances such as the burden of implicit and explicit guarantees of the government to the banking system's liabilities as seen in Indonesia, Thailand or restructuring of the bailed out banks or both as seen in Brazil, Turkey, Argentina. Thus the deterioration of

the government balances affects the domestic and external confidence adversely and leads to the snowballing effect for the rest of the sectors.

Goldstein (2003) explains the mechanisms of the currency crises and the unsustainable path of the government debt, emphasizing the deterioration of the government balances. Moreover, the government debt servicing capacity often displays a sizeable currency mismatch playing a crucial role in government's solvency such as in Mexico, Brazil, Argentina and Russia. Taxes are collected in terms of domestic currency while servicing government and/or private debt denominated in foreign currency. Therefore, it requires the generation of FX revenues from tradable goods sector. When private sector borrow from abroad, but produce for the non-tradable sector generating only domestic currency revenues. By this way, foreign exchange constraints became very important when there is sharp private capital outflow. With large depreciation of the currency, FX denominated debt will raise by bringing the likely unsustainability of the debt.

As Allen et.al (2002) pointed out the government is exposed to maturity and currency mismatches in its balance sheet as well as the solvency risk. In maturity mismatch framework the domestic and external short-term hard currency debt is compared with government's liquid assets including central banks reserves both in national and foreign currency. The gap between the short term assets and the liabilities increased the short-term borrowing requirement. The long-term domestic currency denominated debt sometimes even does not exist in many emerging market economies indicating the "original sin" debate. Therefore, many emerging markets need to borrow longer-term denominated in foreign currency

and borrow shorter-term denominated in domestic currency implying debt sustainability problems.

The government's balance sheet is also exposed to currency mismatch due to the gap between the foreign currency denominated domestic and external debt and the government's hard currency assets and reserves. The solvency of the government is considered by taking into account the liabilities of government as well as the assets including discounted value of future primary surpluses, seignorage revenue and the financial assets of the government and central bank, including privatizable state owned enterprises. Liabilities may include implicit liabilities from pension funds as well as contingent liabilities stemming from government guarantees. The attempts for the determination of the size of the government guaranteed external debt borrowed by the municipalities and non-financial state economic enterprises was very important in assessing the exact picture of the government's contingent liabilities.

Sturzenegger (2002) pointed out that the fiscal situation and at the soundness of the banking sector are hand in hand. According to him, "*.....the recent default experiences have shown that under an extremely fragile political system, using a fixed exchange rate to gain credibility and stability, runs unsustainable fiscal policies*". The fear of devaluation and fear of government default affect directly banks' balance sheets. Eventually, the capital outflows resulting from the fears of a banking collapse trigger the collapse of the currency, forcing a bailout of the financial sector, which makes the government bankrupt. The output collapse because of the financial sector crisis also contributes to the payment difficulties. In some cases, this vicious circle is created by negative

sentiment and market expectations that make the adjustment even more difficult and costly.

Hemming and Petrie (2000) argue that there are strong links between fiscal and financial sector vulnerability. While the fiscal vulnerabilities can manifest itself as a financial sector problem, resolution of the financial sector eventually increases the fiscal burden of the government.

2.2.2. The Corporate Sector

The macroeconomic environment is a very important determinant of the corporate sector's behaviour. The literature on the corporate sector investigates firms' response to macroeconomic shocks in fulfilling their obligations and their financing and investment decisions. Any deterioration of the macroeconomic balances or any external shock can also affect the corporate sector's soundness [4]. Corporations with large foreign currency denominated debts are vulnerable to real devaluations[5] like in Korea, Thailand, Indonesia, Turkey, Argentina, and Brazil, Uruguay. The pegged exchange rate regime, in place prior to the crisis, seems to have contributed to the development of large currency mismatches through the increase in the foreign exchange denominated debts of the corporate sector. A sharp deterioration of the corporate sector's health can be a triggering factor for the crises. It could lead to sudden reversal of capital flows and an exchange rate shock as seen in the Asian countries.

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[13] See Bernanke and Gertler (1995), Krugman (1999).
[5] Chang and Velasco (2000)

Ingves (2001) states that corporate sector is exposed to shocks coming from various sources. The factors[6] which create vulnerabilities in the corporate sector are listed as structural issues, access to non-bank financing, corporate governance, legal infrastructure, any shock to macroeconomic variables such as interest and exchange rate changes, capital inflow, domestic demand, terms of trade, deflation and productivity. Stone and Weeks (2001) argued that main characteristics of the financial crises in 1990s were the accumulation of financial distress due to the poor corporate governance, inadequate financial deepening, acceleration of the capital inflows, and, in many cases, overheating of the economy.

Empirical studies show that both corporate leverage and excess growth in bank lending can be listed significant indicators of the likely crisis. Corporate leverage, which is the availability of non-bank financing, and the legal environment are key elements in determining the size of crises. Kim and Stone (1999) empirically present that the levels of corporate leverage influence the ability of firms to withstand macroeconomic shocks. The more leveraged and the less liquid corporate sector always more exposed to shocks. Schumacher (2001) argued that if firms operate in highly volatile environments, then they tend to have lower leverage in order to reduce the possibility of financial distress and try to hold minimum risks. In case of any shocks, the excessive corporate leverage increases the vulnerability of firms and may deteriorate their repayment capacity. A positive correlation between the degree of corporate leverage and the volatility of the economic environment could be the important indicators of the probability of corporate financial distress. Highly leveraged firms could suffer or even go to

[6] See Appendix G: Determinants of Corporate Vulnerabilities

bankruptcy more likely, during the times of recession and high volatility of exchange rates and interest rates. However, leverage ratio as an indicator loose its significance when short-term borrowings of the corporate sector rise. The recent studies have examined the measures of corporate vulnerability are given in Appendix H.

The deterioration of the repayment capacity and creditworthiness of the firms lead to the worsening of bank asset quality and eventually higher NPLs. The quality of the banks' loan portfolios depends heavily on the financial conditions of its borrowers. Any macroeconomic shock leads to the increase in non-performing loans (NPLs), depending on the size and composition of corporate debt and thus directly leads to vulnerability in the financial sector. NPLs might be triggered by illiquidity, insolvency or a collapse in credit culture, known as strategic defaulting in the corporate sector.

Even though NPLs is a good indicator of the financial distress in the corporate sector, it can be shown on the balance sheets of the banks only after three months of first default, based on the international provisioning rules and regulations. Therefore, cash flow adequacy ratios of the corporate sector could be more timely indicators of banking problems than NPL figures.

The continuous trend in profits and also the sources of the profit are the important elements of the corporate sector's financial strength. Market structure, taxation policy of the government, industry characteristics and pricing mechanisms are the key factors that affect the profitability. As indicators of the profitability, return on equity, return on assets and operating income to sales ratios have to be considered. Earnings can be viewed as the capacity to repay its obligations.

According the Ingves (2001), the cash flow analysis, coverage ratio—earnings to interest expenses, is a better indicator than the corporate leverage ratios.

2.2.3. The Banking Sector

The fragile balance sheets of the banks can be accepted as the potential source of financial distress. Any shock to interest rates or exchange rates can deteriorate the financial situation of the banks and might cause a financial crisis depending on the size of vulnerabilities in the sector.

CAMELS, which stands for the initials of the Capital adequacy, Asset quality, Management, Earnings, Liquidity and Sensitivity to the market risk, is used for the rating of the banks to assess the soundness of the banking system. Each category is derived from the banks' balance sheets and used as vulnerability indicator for banks. Any deterioration in asset quality, liquidity of the banks or increase in the sensitivity market risks due to the internal or external shocks, macroeconomic imbalances as well as banks' own circumstances could affect the earnings of the banks directly and thus their capital adequacy.

Banks are the risk taking and profit maximizing institutions. The proper management of risks, the appetite of the taking risks featured their profitability or insolvency depending on size of the risks and its likely realization. Banks are exposed to different kinds of risk, namely credit risk, liquidity risk, and market risk (including interest rate, exchange rate, equity price and commodity price risks), depending on their portfolio choices, sizes and linkages with other financial and non-financial institutions.

Any confidence loss in the banking system could often not only trigger a deposits run but also lead to switch from domestic to foreign currency assets which create an additional pressure on the exchange rate. Under a currency mismatch of banks' balance sheets, a sharp devaluation of the exchange rate further weakens the financial status of the banks. Thus, banking and currency crisis may reinforce to each other, leading to the incidence of "twin crises" as frequently observed in international experiences.

Market risk presents the exposure of banks to any interest or foreign exchange movements.

i. Interest Rate Risk

Excessive interest rate risk can threaten banks' liquidity structure, earnings, capital and even solvency. Interest rate risk includes repricing risk, basis risk, yield curve risk, option risk, and price risk.

A sharp increase in interest rates leads to the increase in the cost of rolling short-term liabilities. While rise in interest rates increases cost of funds such as deposits, asset adjustment take a longer time compared to the liabilities so called repricing risk. Therefore, the gap between the cost of liabilities and proceeds from the assets could generate losses and bring solvency risk for the banks. Moreover, any shock to the asset prices, which resulted in the decline in the value of assets, lead to the reduction in the net worth. In some cases, net worth may turn to negative and bank becomes insolvent.

Maturity mismatch, which is the holding of long-term illiquid assets against short-term liabilities, generates liquidity and interest rate risks. If liquid assets do not cover the liabilities, a balance sheet is vulnerable to rollover risk,

which could be deteriorated further if both domestic and international lenders close to lines to those banks.

ii. Foreign exchange Risk

Foreign exchange risk emerged due to the differences between foreign exchange liabilities and foreign exchange assets. Carrying higher foreign exchange liabilities than the assets is called "open position". Even the volume of open position is in the regulatory limits, banks could still subject to foreign exchange risk in case where banks hold mostly illiquid foreign currency denominated assets to meet the foreign exchange obligations.

A currency mismatch, which is defined as the dominance of foreign currency denominated liabilities over domestic currency denominated assets making banks' balance sheets more vulnerable to any exchange rate shock. The general characteristics of the recent crisis episodes were the currency mismatch exposures as seen in Korea, Thailand, Indonesia, Turkey, Russia, and Brazil (in early 1998).

Liquidity Risk

Liquidity is crucial for the banks to sustain its viability. Liquidity risk is the potential threat to meet obligations in due date because of the insufficiency of the cash flows BIS (2000). Liquidity risk emerged due to the maturity mismatch between assets and liabilities, decrease in the asset quality, increase in the non-performing loans, decline in interest earnings and profits, increase in the cash demand due to the unexpected deposit withdrawals or international crises.

Liquid assets refer to cash and its equivalents that readily convertible to cash without a significant loss. The timely coverage of assets to liabilities is the

important indicator for the liquidity. Besides individual banks liquidity condition, the market liquidity is also important. The liquidity tightness and depth of the markets, heavy reliance of the interbank money market, volatility and high bid-ask spreads, turnover ratios, central bank lending to deposit-taking institutions are important indicators of the market liquidity. The significant changes in interbank credit limits or an unwillingness of lending may indicate the serious financial distress in the banking sector.

Credit risk

Barnhill, Papapanagiotou and Schumacher (2000) argued that in many countries credit quality is the most important source of vulnerability during periods of financial stress. Credit risk realized through facing problems in the recollection of credits, constituting almost 70 percent of the total risks in bank's balance sheets. It causes cash flow problems affecting adversely to bank's liquidity, earnings and solvency depending on its size and persistence. There are three main types of credit risk, namely, consumer risk, corporate risk, sovereign or country risk.

Credit risk can be triggered by lending boom, deterioration of the asset quality, lending concentration on specific industries, concentration on certain types of credits, connected lending, currency and maturity mismatch and inadequate provisioning. Procyclical effects can also be transmitted through capital, credit and provisions channels.

Earnings (Profitability) and Capital Adequacy

Profitability is an indicator of bank's capacity to carry risk providing a cushion against short-term problems. Moreover, it is a key source of capital generation. Sound banking practices require profitable and adequately capitalized banks.

Vittas (1991) suggests three operating ratios to analyze the performance of banks, namely operating asset, income equity ratios. Common operating ratios[7], for instance, are net income to average total assets known as "return on assets" (ROA) and net income to average equity also known as "return on equity" (ROE).

Capital is required as a buffer against unforeseen losses for the safety and soundness of a banking system. Capital absorbs possible losses, and thus provides a basis for maintaining confidence in a bank. Moreover, it is also the ultimate determinant of a bank's lending capacity. The Basel Accord currently allows for three tiers of capital, the first two measuring credit risk related to on and off balance sheet activities and derivatives, and the third for overall assessment of market risk. An 8 percent capital adequacy requirement should be taken as a minimum.

[7] See Appendix C: Financial Soundness Indicators

2. 3. Fiscal Theory of Price Level Based Explanations of the Financial Crises

Fiscal soundness is a key element for the implementation of the monetary policy. The political pressure arisen from the loose fiscal policy affect the market sentiment about the credibility of the monetary policy and put pressures on the interest rates. However, central banks remain cautious if the government has underestimated fiscal risks and try to avoid self-fulfilling deterioration of the market expectations.

Sargent and Wallace (1981) argued that price level determination is mainly the domain of the monetary policy. In the periods of fiscal distress, the central bank may be "given" a seignorage target, and it is growth in the monetary base, not fiscal disturbances per se, that causes inflation. The first-generation theory on currency crises adopts the same view when it models monetary authorities as being constrained to meet seignorage target.

Fiscal Theory of Price Level (hereafter FTPL) suggests a different alternative approach to modeling monetary-fiscal interaction during fiscal stress. Proponents of FTPL[8] state that determining nominal price level yields intertemporal government budget balance. Equilibrium is defined as the initial value of government debt equals to the present value of future primary surpluses, inclusive of seignorage FTPL demonstrates that when monetary and fiscal interactions take this form, the price level is uniquely determined through the changes in the fiscal variables, but not the changes in the monetary base.

[8] Canzoneri, Cumby and Diba(1998), Cochrane (1998, 2001), Leeper (1991), Sims(1994), Woodford (1995, 2001). Leeper and Sims employ passive-active dichotomy of fiscal policy. Woodford uses similar classification into Ricardian and Non-Ricardian fiscal policy.

In the seminal paper, Woodford (1995) proposes a non-Ricardian assumption and points out that allowing the price level fluctuation with unexpected shocks ease the government's budget constraint through taxing bondholders thereby reducing government's nominal liabilities. Present value of future surpluses equals to the government's outstanding nominal debt/price level. If real government debt were grow to explosively, no adjustments to fiscal and monetary policy would be made it in line.

Carlstrom and Fuerst (2000) define weak and strong form of FTPL, which proposes that the price level is determined by fiscal budget constraints of the fiscal authority. Therefore, fiscal policy determines future inflation. A passive fiscal policy response to the increase of debt with future real taxes, while active fiscal policy uses the combination of real taxes and unanticipated inflation.

- (Weak- form of FTPL) If monetary authority responds to the inflation weakly by passive monetary policy, the fiscal authority controls price level by responding weakly to the real debt, with active fiscal policy.
- (Strong- form of FTPL) If monetary authority responds to inflation strongly, by active monetary policy, fiscal authority responds real debt strongly by passive fiscal policy and monetary authority generally controls the price level.
- If both policies are passive, equilibrium is undetermined, if they are both active, equilibrium does not exist as suggested by the FTPL.

Weak-form of FTPL assumes the fiscal authority dominates and determines the primary budget surpluses, forcing monetary authority to generate seignorage to maintain solvency. In the Weak-form of fiscal theory, monetary authority is forced to remain 'weak' so fiscal policy determines future inflation by determining future money growth meaning that fiscal policy remain exogenous while money supply movements are endogenous. Central bank forced to create seignorage to avoid default through the rise in debt to GDP with an unsustainable rate. Sargent (1986) describes it as "game of chicken". Thus, it is still agree with the quantity theory in the sense that prices are driven by current or future money growth. Sargent and Wallace (1981) argued that tight money today increases price level, occurs because future money growth and hence the future inflation, increases. The theory simply hypothesize that the ultimate driver of the money supply is the fiscal authority. In other words, fiscal policy is exogenous while money supply movements are endogenous.

The central bank is the residual buyer of the treasury debt under the active-fiscal, passive-money coordination scheme. When the central banks buy treasury securities from the market, bank's government security holdings increases relative to money base. Market believes that redemption of the government securities would be realized by the central bank. Therefore, government securities are considered as riskless in terms of default.

Strong-form of FT argue that fiscal policy determines future inflation, but independent of future money growth. Unlike the weak-form of FT, where inflation is still a monetary phenomenon, strong-form maintains that fiscal policy affects the price level and the path of inflation independent of monetary policy changes.

Strong-form of FT assumes that fiscal budget constraints limit the initial price level. Without this constraint the initial price level may be indeterminate, even if the money supply is given exogenously, i.e. even if the monetary authority moves first by committing to a path for the money stock. Strong-form assumes both monetary and fiscal policy are given exogenously and that prices adjust to ensure solvency.

Lawrence and Fitzgerald (2000) states that FTPL is also dealt with the question of how much price stability is desirable. Sims (1999) and Woodford (1998) point out that allowing the price level to fluctuate with unexpected shocks to government budget constraint produce public finance benefits. For example a bad fiscal shock drives prices up, this is equivalent to taxing the holders of the government's nominal liabilities.

Corsetti G., B. Mackowiak (2001) argued that fiscal theory of price level can help to explain the financial crises by analyzing the position of the fiscal authority. They proposed that currency crisis associated with fiscal imbalances which have been at the center of the currency crises in emerging markets, including Mexico 1994-95, East Asia 1997-98, Russia in 1998, Brazil in 1998-99 and Turkey in 2000-01. Long-term domestic currency denominated debt allows a room for the government to delay devaluation depending on the government's willingness to tolerate high interest rates, without making immediate strong fiscal adjustment.

Mackowiak (2001) argued that in fixed exchange rate regimes, to make exchange rate peg sustainable, the governments must follow a fiscal policy that matches fluctuations in public debt with future real taxes. But, sometimes, adverse

fiscal shocks can cause an expansion of debt under fixed exchange rate regime. In order to assess the likelihood and the expected size of devaluation, private agents must form expectations regarding future policy response to the expansion of public debt. Mackowiak (2000) also argued that a sustainable fixed exchange rate must be supported by passive fiscal policy.

Daniel (2001) blends FTPL and first generation ideas in a model of currency crises. She developed "A Fiscal Theory of Currency Crises" and state that the long run sustainability of the fixed exchange rate regime system depends on the present value of future fiscal surpluses, implying the a need of passive fiscal policy. Daniel (2001) argues "...*When the fiscal authority chooses the PV of surpluses inconsistent with the pegged rate, the monetary authority is forced to abandon fixed exchange rate* (pg. 967)". The monetary authority does retain discretion, through its choice of the composition of government debt, in determining the timing and characteristics of the exchange rate crises. Thus, while fiscal policy is responsible for generating the crises, monetary policy is responsible for its characteristics, timing and the size.

In her model, the equilibrium where the exchange rate and price of LT bonds adjusts to clear the goods market. Goods market equilibrium together with government behavior assured that the present value of government debt is zero under the limit. Hence, this is a "fiscal theory of exchange rate", analogous to the "fiscal theory of price level".

Daniel (2001) stated that the second-generation crises theory argues that exchange rate collapse is due to fundamentals. However, the theory shifts the focus for the cause of collapse away from monetary policy toward fiscal policy. It

demonstrates that fundamentals-generated collapse need not occur following a sustained period of policy misalignment and reserve loss. With the wording of Daniel " *...crises can occur instantaneously with the policy change or can even anticipate the policy change* (pg.926)". Therefore, a fundamental-based model can explain exchange rate crises, which seem to take markets by surprise, as well as those which occur when authority has substantial quantity of reserves.

2. 4. Prospective Deficit Based Explanations of the Financial Crises

Burnside, Eichenbaum and Rebelo (1998) argue that South Asian currency crises was caused by large prospective deficits associated with implicit bailout guarantees to failing banking systems. Expectation about the future deficits would be financed by seignorage revenues led to a collapse of the fixed exchange rate regimes in South Asia. Under a simple dynamic general equilibrium model in which speculative attack is inevitable once, the present value of future government deficit rises regardless of the government net foreign reserve position or the initial level of its debt. While government cannot prevent the speculative attack, it can affect its timing by borrowing. The longer delay, the higher inflation will be under flexible exchange rate regime. In the absence of the political will to raise taxes or cut spending, governments have to resort to seignorage revenues to pay the bailout of the banking system. Speculative attack occurs after the information about higher future deficits arrives but before the new monetary policy implemented. Macroeconomic indicators such as past inflation and fiscal deficits are not useful in predicting currency crises. Forecasting prospective deficits are useful thus reviewing the banking system prior to the crisis.

Main assumptions of the prospective deficits can be listed as

i) Foreign reserves did not play a significant role in timing of attack,

ii) Large losses in the banking sector were associated with large increases in governments' prospective deficits,

iii) The public knew that banks were in trouble before the currency crises.

First generation models of currency crises argued that ongoing fiscal deficits led to sustained reserve losses and to the eventual abandonment of fixed exchange rates. To explain this view, speculative attacks literature focuses on two types of policy experiments

i) an increase in fiscal deficit must eventually be monetized

ii) an exchange rate peg that is unsustainable because it reduces the government's seignorage revenues without compensating fiscal adjustments.

To capture the effect of the prospective deficit on a fixed exchange rate regime, it is assumed that at time t agents receive information that future deficits will be larger than they originally believed under Calvo's (1987) small open economy model. The government's intertemporal budget constraint implies that a speculative attack is inevitable. This is true regardless of the government's initial level of foreign reserves and its initial debt position. Once the government learns that the present value future deficits has risen, the only choices left to it are when and how to raise the seignorage revenues required to meet its intertemporal budget constraint.

Burnside (2004) defines contingent liability as the likely future spending commitment, which creates substantial fiscal costs to government. Contingent liabilities of government such as social security, loan guarantees, commitments to provide commodities to the public at fixed prices, deposit insurance and guarantees to the creditors of public sector enterprises create a burden that could affect the sustainability of the government debt.

IMF (2003) listed the likely contingent liabilities of the government as state guarantees for non-sovereign borrowing and obligations issued by public or private sector entities, for various types of loans (e.g., mortgage, student, agricultural and small business loans) and private investments, trade and exchange rate guarantees, state insurance schemes (e.g., bank deposit insurance, income from private pension funds, medical insurance programs etc.), financial system bailout (support beyond contractual or statutory obligations under deposit insurance, to avoid a systemic crisis wish large economic costs), corporate sector bailout to prevent spillover of corporate sector troubles to the banking sector, clean-up of liabilities of entitles being privatized to attract investors, failure of non-guaranteed funds (pension fund, employment fund, or social security fluid), default of the central bank on its obligations through foreign exchange contracts or currency defense, implicit exchange rate guarantees provided by a fixed exchange rate regime with the central bank standing ready to defend the peg, implicit insurance for natural disaster relief.

It is a very well known international experience that in case of a systemic banking crises risk in among private banks and/or after its bailout and its resolution period through the recapitalization of the banking sector would generate a heavy burden on the government debt (IMF, 2002).

Besides likely bailing out cost of the distressed banks, the hesitations about the exact determination of the fiscal deficit played an important role for prospective deficits.

Moreover, Burnside, Eichenbaum and Rebelo (1998) state that past deficits are also accepted as an indicator of the government's prospective deficits

in predicting twin crises. Kaminsky, Reinhart and Rogoff (2003) define debt tolerance levels for different countries as an indicator of predicting crises by evaluating the previous experiences and debt developments of the countries.

Eichenbaum and Rebelo (2000) explained that in Korean and Thai currency crises, all the investors aware the troubles in the financial sectors before hand. Given governments' implicit guarantees to their banking sectors, market participants revised upwards their estimates of future government deficits. Given the difficulty of raising tax revenues or lowering government expenditures in the wake of a severe banking crisis, private agents expected that higher seignorage revenues would finance future deficits, at least in part. This led to expectations of higher future inflation rates and a reduction in the demand for domestic currency. The resulting drain on official reserves of foreign currency triggered the currency crises. Finally, because many financial institutions did not hedge the currency mismatch in their assets and liabilities, the currency crises exacerbated the initial banking crises and raised the associated fiscal costs.

Contrary to Krugman-Flood-Garber finding that running down an ongoing deficits makes the fixed exchange rate regime unsustainable (emphasizing that the deficits would be a real time indicator of fiscal unsustainability), Burnside, Eichenbaum and Rebelo (2003) argued that collapse of the fixed exchange rate regime occur after agents receive information about the higher future deficits but before the government starts to run those deficits or print money concluding that past deficits would be a useless indicator of fiscal sustainability.

Razin and Sadka (2003) explain the reason role of uncertainties behind the Brazilian debt crisis as the as forthcoming elections and with an expected regime

change in triggering the crisis rather then the contingency effects, even though the fundamentals were sound in the wake of the crisis, such as a non-negligible primary surplus, a relatively low debt to GDP ratio, low inflation.

Corsetti et.al (1998) states that while public deficits need not be high before a crisis, the eventual refusal of foreign creditors to refinance the country's cumulative losses forces the government to step in and guarantee the outstanding stock of external liabilities. To satisfy solvency, the government must then undertake appropriate domestic fiscal reforms, possibly involving recourse to seignorage revenues through money creation. Speculation in the foreign exchange market, driven by expectations of inflationary financing, causes a collapse of the currency and anticipates the event of a financial crisis.

As Calvo et al. (2003) argued that following a sudden stop fiscal sustainability deteriorates also due to the existence of contingent liabilities of the public sector, originated in the corporate and banking sectors. Under a heavily dollarized banking and corporate sector with the currency mismatch between assets and liabilities can lead to financial distress when there is a large devaluation. Even the fear of devaluation under a highly dollarized public debt lead to the initiation of expectations about the bailing out the banks and/or the corporate sector by incorporating the bailout cost as contingent liabilities to the sustainability analysis of the fiscal policies.

Burnside, Eichenbaum and Rebelo (2003) argued that sustainability of a fixed exchange rate regime requires that a government satisfy its intertemporal budget constraint without recourse to inflation-related revenues. Moreover, the ongoing deficits are neither a necessary nor a sufficient condition for the

unsustainability of a fixed exchange rate regime, but the prospective deficits are playing the crucial role as seen in 1997 Asia currency crises. A collapse of the fixed exchange rate regime after agents receive information about the higher future deficits but before the government starts to run those deficits or print money. Therefore, past deficits would be useless indicators of fiscal sustainability

2.5. Towards a Fourth Generation Model

The third-generation model introduced by Krugman (1999a) was in a sense to the Chang-Velasco bank-run models: it attempted to explain crises in terms of a flight of capital from an economy that was not fundamentally unsound. The fourth-generation crisis model looks like a third-generation model, but it considers asset prices other than the exchange rate also by incorporating balance-sheet effects and financial fragility. Therefore, fourth-generation crisis model may not be a currency crisis model at all; it may be a more general financial crisis model in which other asset prices play an important role.

Krugman (1999b) argued that fourth-generation model is necessary when considering the deficiencies in explaining the crises. In the forth-generation model, under imperfect capital market conditions, the ability of firms to generate profit may depend on getting sufficient funds by providing collaterals. Any foreign exchange depreciation, affect the liability side of that balance sheet adversely by reducing their net worth. On the asset side of the balance sheets, any decline in confidence leads to declining asset prices, under vicious cycle. A drop in asset prices because of its adverse effects on investment deflates the economy, validating that price decline; and the central bank is unable to stop the collapse into the bad equilibrium even by cutting rates all the way to zero.

Considering all the models which explain the crises from different aspects, brought in mind the possibility of combination of the all elements of the financial crises such as fiscal deficits, self-fulfilling mechanisms, deterioration of the macroeconomic fundamentals, fragilities in the corporate sector and banks' balance sheets, impact of the fixed exchange rate regime, risk accumulation, moral hazard and prospective deficit consideration somehow related to each other in triggering the financial crises.

CHAPTER 3

FISCAL AND CURRENT ACCOUNT SUSTAINABILITY

3.1. Literature Survey on Fiscal Sustainability

Adequate fiscal policies are crucial in achieving macroeconomic stability. Even though the impact of monetary policy is rapid comparing to the fiscal one, without effective fiscal policies, it would not give successful results in the long term.

Budget deficit is financed by either issuing domestic or foreign currency denominated interest-bearing debt, by printing money or by running down official international foreign exchange reserves. The government budget constraint provides the linkage between taxes, expenditure and alternative sources of financing of public imbalances.

The fiscal sustainability refers to the future implications of current fiscal policies, whether the government can continue to pursue its fiscal policies without endangering its solvency. Determining the sustainability of current fiscal policy stance is important for policymakers in order to make required policy corrections if necessary. A fiscal policy can be thought as unsustainable, if the government moves away from solvency. Solvency is a necessary condition for sustainability requiring that debt be fully repaid in the future, even though present policies may

not satisfy the government's intertemporal budget constraint. In contrast, sustainability also requires solvency, which is achieved under unchanged fiscal policy stance.

There are two approaches in evaluating the sustainability of public finances: The "Accounting Approach" and the "Present Value Constraint Approach" (Cuddington, 1997). According to the "Accounting Approach", the fiscal deficit is sustainable if it generates a constant debt to GNP ratio, given a specified GNP growth target and real interest rate. If the primary surplus to GNP ratio is equal to zero, the debt to GNP ratio will grow at a rate "r-g" where "r" and "g" are real interest rate and real growth rate of the economy respectively. If the government runs a primary deficit, the debt to GNP ratio will grow at a rate exceeding "r-g". Fry (1996) formulates the simplest case of price stability with no seignorage revenue as follows:

$$\Delta(\text{Debt/GNP})_t = (\text{Primary Deficit/GNP})_t + \{(1+r)/(1+g)-1\}_t * (\text{Debt/GNP})_{t-1}$$

From this expression it is clear that the required primary balance for a constant debt to GNP ratio is given by the rate of economic growth minus the real interest rate times debt to GNP.

$$\text{Required Primary Balance} = (g - r)_t * (\text{Debt/GNP})_{t-1}$$

According to the "Present Value Constraint Approach", a positive present value of the future primary surpluses is the precondition for a successful debt

reduction. Under the "No Ponzi Game"[9]condition, government debt at any point in time must equal the present value of expected future primary surpluses. If the present value of future surpluses is negative, then fiscal policy will be unsustainable regardless of the current debt level.

Sustainability can be achieved either by running a primary surplus or through seignorage revenues. There is a limit in seignorage revenues due to the decline in real money demand under high inflation. From the equation above, it is clear that the required primary balance for sustainability is a function of the real interest rate. Just running a primary surplus may not be sufficient if real interest rates are high. This could reflect a high-risk premium due to uncertainty or lack of depth of the financial sector.

The solvency constraint is derived to evaluate the sustainability of fiscal policy. Government solvency obtains when the present value of the government's present and future net liabilities is zero. According to Ageis and Montiel (1996), the public debt must be, at most, equal to the present value of seignorage revenue minus the present value of future primary deficits. This implies transversality condition. The debt/output ratio must grow at a rate below the real interest rate minus the rate of real growth for sustainability of the budget deficit. There are few attempts to evaluate the sustainability of fiscal deficits in the light of solvency constraint such as Buiter and Patel (1992) for India, and Haque and Montiel (1994) for Pakistan.

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[9] In the framework of the "No Ponzi Game", it is impossible for the government to borrow more simply in order to service its debt. See Agénor and Montiel (1996). At some point, debt should be serviced by running a primary surplus or by increasing seignorage revenue.

According to Blanchard et. al. (1990), a sustainable fiscal policy can be defined as a policy that the ratio of debt to GNP eventually converges back to its initial level. Ensuring the sustainability of fiscal imbalances necessitates fixing the deficit a level that does not require more financing then is compatible with sustainable external and internal borrowing with existing targets for inflation and output growth. Whether a given fiscal policy path is sustainable can be determined by projecting the future course of debt/output ratio for given predictions about the evolution of money demand, desired rate of inflation, the real interest rate and growth rate of the economy. If debt/output ratio to be rising continually, eventually violating the solvency constraint, fiscal adjustment or adjustments in other targets is required.

In general, there are two approaches in analyzing the sustainability of the fiscal policy in the literature. The first is the testing of the stationarity of the debt and or deficit. Results may vary according to the specification of the budget constraint. Hamilton and Flavin (1986) reject the nonstationarity of debt under the assumption of constant real rates and existence of transversality condition. Smith and Zin (1988) obtain same result with similar specification for Canada. Wilcox (1989) follows Hamilton and Flavin's (1986) to test the deficit sustainability. They found that present value borrowing constrained is not violated, meaning that sustainable fiscal policy. Wilcox (1985) use stochastic method contrary to Hamilton and Flavin and find out that current fiscal policy in US is not sustainable. Wickens and Uctum (2000), establish a government intertemporal budget constraint allowing for time-varying interest rates. They find out that fiscal policy is not sustainable in the long run for most of the industrialized countries over an

infinite horizon, but is sustainable in the medium term in the absence of ceilings. According to them, imposing ceilings generates unsustainability. The paper shows that the discounted debt/GDP ratio has zero-mean stationary process.

The second methodology for empirical testing of the fiscal sustainability is the cointegration approach. Trehan and Walsh (1988) analyzed cointegration between primary deficit, the stock of outstanding debt and interest payments for US. They found that fiscal policy is sustainable by presenting the deficit, inclusive of interest payments is stationary. Hakkio and Rush (1991) investigate the cointegrating relationship between government expenditures, inclusive of interest payments and the revenue and find out that sustainability does not hold. Trehan and Walsh (1991), Haug (1991) investigate the sustainability by using the same procedures.

Buiter and Patel (1992) argued that a continuation of fiscal deficit eventually threaten the solvency of the government. The use of seignorage or the inflation tax to close deficit was limited. Seignorage has a high cost in terms of additional long run inflation, and even maximal use of the inflation tax would not be sufficient to close the solvency gap. However, fiscal correction could not be succeeded in stabilizing the debt-GDP ratio. Buiter and Patel (1995) provide fiscal-financial-monetary plan and emphasize the importance of the primary surpluses in government's solvency. It is necessary but not sufficient condition for solvency. When the solvency condition is hold, the current face value of debt is not greater than the present discounted value of all future primary surpluses.

Bohn (1995) provides stochastic model in which intertemporal budget constraint implies that a government, which has an initial debt, must run a primary surplus in a certain period. Blanchard et al. (1990) built a sustainability indicator consisting of the difference between the current tax rate, and a sustainable tax rate constant over a finite horizon that leads to a stable debt/GDP ratio. They find that most OECD countries are pursuing sustainable fiscal policy in the medium term. Buiter et.al (1993) find the contrary results. Following Buiter (1985) and Blanchard (1990), many studies are deal with stabilizing fiscal policies either through the ratio of public sector net worth to GDP or through the debt to-GDP ratio.

On government net worth, many studies favor the debt-to-GDP criterion. Under this framework, sustainability indicators are calculated by projecting government revenue and expenditure based on current policies. The estimated primary deficits and tax ratios are then compared with the permanent primary deficit (primary gap indicator) or the permanent tax ratio (tax gap indicator) required to keep the debt ratio constant. The resulting gaps will provide a measure of the sustainability of the current fiscal policy stance.

The globalization of the international financial markets and recent crises in the past decade led to the development of new ideas in fiscal sustainability issues especially for emerging market economies. In this sense the impact of other macroeconomic variables, the behaviour of the international investors, credit ratings, the spreads of internationally traded bonds, the sudden reversal of the capital flows, governments' contingent liabilities, prospective deficits are become the new issues for fiscal sustainability, which are given below.

Reinhart, Rogoff and Savastano (2003), introduce the concept of "debt intolerance" and define it as the inability of emerging markets to manage levels of external debt that are manageable for advanced industrial countries. In their view, lower credit ratings are due to poor credibility (proxy by high levels of past inflation) and a history of repeated default. While they argue that some countries may not safely manage levels of external debt that are above 15 percent of GDP, IMF (2002) sets the threshold for a safe level of debt at around 40 percent of GDP.

Hausmann (2003), and Eichengreen, Hausmsnn and Panizza (2003) emphasize the role of original sin and suggest that foreign currency debt makes the cost of servicing the debt dependent on the real exchange rate, which is uncertain and pro-cyclical. As these elements increase the probability of being in a state of the world in which payment becomes very difficult, they will lead to lower credit ratings.

Sturzenegger (2002) developed a toolkit for the analysis of the debt problems in which emphasize the warning signals using Ades et al. (2000) methodology, estimating the probability of default of sovereign bonds and its output effects, setting up debt restructuring scenarios, assessing the financial costs of default static solvency analysis as well as the understanding the basics of debt sustainability analysis with the application of Brazil. In debt sustainability analysis he considers both the static and dynamic approaches. The former is established by considering various definition of debt including private sectors' as the ratio of GNP as the measure of the size of the stock of debt relative to the economy, and trade indicators such as export as the capacity to make repayment of the debt or the reserves. Moreover, he provides the ratio of interest payments to debt as the

indicator of the average cost of the debt. As the indicator of the burden of the interest payments on the budget, he use the ratio of interest to total revenue or taxes. On the dynamic sustainability analysis he argued that if the debt is to be paid, current debt levels have to equal the present discounted value of future fiscal primary surpluses.

A policy paper published by the IMF (2003) describes several methodologies to stress test standard sustainability analysis with shocks to the main macroeconomic variables and explicitly including contingent liabilities.

Calvo, Izquierdo and Talvi (2003) analyze the fiscal sustainability by emphasizing the effects of real exchange rate depreciation and emphasize that sudden stop in capital flows could also be a key determinant of sustainability. The sudden stop, which generates a substantial increase in the real exchange rate, leads sustainable fiscal and corporate sector positions turn into unsustainable ones, under heavily dollarized economies, because sudden stops in capital flows requires a rapid adjustments of the current account deficit that may lead a large depreciation. Calvo, Izquierdo and Mejia (2003), also argue a sudden stop in capital flows lead to the loss of access to credit markets. Furthermore, large liability dollarization may itself be a determinant of the probability of having a sudden stop.

IMF (2002) discusses the difference between solvency and sustainability. They suggest that solvency is only a necessary condition for sustainability because it could be achieved with very large and costly future adjustments. Sustainability, instead, requires achieving solvency with unchanged policies.

Croce and Ramon (2003) develop a recursive stochastic model to built fiscal sustainability indicators deriving primary surplus and discounted rate for target debt-to-GDP ratio. Indicator identifies the reaction function of the government to evaluate the sustainability of fiscal stance. Izquierdo and Panizza (2003) focuses on the role of currency and maturity mismatches, original sin, sudden stops in capital flows, debt intolerance, and concessional debt and draw attention from standard models of fiscal sustainability to deterministic and probabilistic models of fiscal sustainability following Mendoza and Oviedo (2003).

Edwards (2002) and IMF (2003) focus on debt sustainability in low-income countries. Barnhill and Kopits (2003) emphasize the impact of uncertainty on fiscal sustainability. The investor sentiments are volatile and at any shocks can be easily reflected to the domestic market by asking larger risk premium. Therefore, any sustainable policy stance may suddenly move to an unsustainable one because of the rapid capital outflow. They present under the value-at-risk models that the volatility of sovereign spread is a major source of fiscal vulnerability than terms of trade shocks.

3.2. Literature Survey on Current Account Sustainability

The balance of payments is the crucial indicator for the macroeconomic stability. There are several theoretical approaches to capture movements of the current account[10]. Solvency is related to the present value budget constraint of the economy. If present discount value of future trade surpluses is equal to the current external indebtedness, then an economy is on the solvent position. Implications of Corsetti and Roubini (1991) make it obvious that the current policy stance is sustainable if its continuation into the indefinite future does not violate solvency of budget constraints. Sustainability notion adds an idea to the solvency that policies remain constant for the indefinite future. Thus, external position is not sustainable if, under the assumption that policies do not change, the country violates its intertemporal solvency constraint. A country's net foreign liabilities are sustainable only if sufficiently large future trade surpluses exit in present value terms.

The empirical tests for external sustainability also parallel those for fiscal sustainability. Trehan and Walsh (1991) test for stationarity of the current account while Husted (1992) and Hakkio and Rush (1991) examine whether exports and imports inclusive of net interest payments are cointegrated. Ahmed and Rogers (1995) conduct a test on whether exports, imports, and interest payments are cointegrated.

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[10] Mundell; (1963), Flaming (1962), Masson and Knight (1986); Obstfeld and Rogoff (1996); Kareken and Wallace (1981); Dornbush (1986); Razin (1995).

In current account sustainability, in general it is accepted that the deficit over 5 percent GDP in last three or four years is a signaling alarm. Moreover, it should be considered carefully if the main reason of the current account deficit and its financing. If the source of deficit is coming from the high level of consumption spending and the deficit is financed by short-term debt or foreign exchange reserves, it could generate problems for the economy. Ferretti and Razin (1996) pointed out that "5 percent" is not sufficient to evaluate current account sustainability so that size of the current account deficit should be considered together with the exchange rate policy and other structural factors such as degree of openness, the levels of saving and investment, and the health of the financial system. They also point out that defining current account sustainability is difficult because current account imbalances reflect interactions among the savings and investment decisions of the government and domestic private agents, as well as the lending decision of foreign investor. The size of exports, situation of the exchange rates relative to historical averages, levels of domestic savings, stance of financial sector, composition of external liabilities, composition of capital inflows are the crucial determinants of the current account sustainability.

Wickens and Uctum (1993) developed a new test which is based on intertemporal budget constraint of the country, for the sustainability of current account deficits. They show that exogeneity of the trade deficit is necessary and sufficient condition for current account to be stationary if there is no such an feedback from national debtness to trade deficit. They found that U.S. current account is not stationary and does not satisfy its intertemporal budget constraints. However, it is also argued that failure to satisfy the intertemporal budget constraint

does not imply insolvency. This is because a change of policy could alter the process generating the primary current account or the real adjusted interest rate and satisfy intertemporal budget constraint.

Ahmed and Rogers (1995) test whether long-term data are consistent with intertemporal budget and external borrowing constraint following Hamilton and Flavin (1986) and also by incorporating policy regime changes. They found that a present value constraint, which is the net present value of the government budget and external trade balance, are zero. However, it is also noted that holding present value constraint over the whole sample period is not necessarily evidence of sustainable policies. Therefore, they examine the structural breaks in cointegrating vectors. Intertemporal budget constraints imply the existence of long run relationship between revenues and expenditures, probably under some specific cointegrating vectors.

Husted (1992) examines sustainability of external deficits by testing for cointegration between exports and imports plus interest payments abroad. He did not find any evidence of cointegration for whole sample, but if structural break considered in 1983, then sub-sample cointegration exist.

Akcay and Ozler (1998) state that openness of the capital account is not a clear indicator of sustainability of the current account. While openness makes country more vulnerable to sudden reversals of capital flows. Thus, capital inflows become the important determinants of the current account sustainability. Composition of the external debt in terms of maturity, portfolio investment, foreign direct investment, foreign exchange reserves are another indicators of the sustainability. Moreover, GNP growth rate, ratio of saving and investment to GNP,

ratio of merchandise exports to GNP and fiscal imbalances are the indicators of the current account sustainability. Akcay and Ozler (1998) conclude that even though the current account position of Turkish economy is "excessive", it is not unsustainable under optimal consumption-smoothing approach. However, large fiscal imbalances might be the indication of current account imbalances.

3.3. Twin Deficit Hypothesis

It is a controversial issue in the literature that imbalances in the fiscal balance can lead a predictable development on current account in an open economy. It is known as "twin deficit" that fiscal deficits and current account deficits are closely related so that reductions in the fiscal deficit are both necessary and sufficient to obtain improvement in current account balance. There are two approaches namely, traditional approach working under macroeconomic models (Mundell (1963), Dournbush (1976)) and optimizing behaviour approach (Frenkel and Razin (1986), Cuddington and Vinals (1986)), to explain the current account response to variation in the fiscal stance that have yielded divergent results. Conventional accounting relationship

(1) $Y = Cp + Ip + Cg + Ig + Ex + Imp + F$

(2) $Def = Cg + Ig - T$

(3) $Ca = -(Ex - Imp + F)$

(4) $Sp = Y - T - Cp$

(5) $Ca = (Ip - Sp) + Def$

Where Y is domestic output, Cp is private consumption, Ip is private investment, Cg is government consumption, Ig is government investment, Ex is exports, Im is imports, F is foreign assests, Def is government budget deficit, T is taxes, Ca is current account deficit, Sp is private saving. Equation 5 gives twin deficit relationship:

According to Chalk and Hemming (2000) even though there is not necessarily a direct correspondence between the 'twin deficits" fiscal and external sustainability are not entirely independent. They argue the followings:

i) If net foreign liabilities (in domestic currency terms) are greater than government debt, there has to be an excess of private saving over private investment (in present value terms) to cover the future external debt service.

ii) If there is fiscal sustainability but the external position is unsustainable then private saving is insufficient to cover external debt service. Consequently, private sector net external liabilities grow faster than the foreign interest rate and default on external debt service is more likely if there is no regime shift in macroeconomic policies.

iii) If the external position is sustainable, but fiscal policy is unsustainable then government's budget financing meet by domestic debt and eventually government default its debt, if there is no measure for fiscal policy changes.

Ferretti and Razin (1996) pointed out that if the private sector have the perception that today's higher public deficit requires a higher taxation tomorrow, then public savings will rise to fully offset public dissaving, without any change in the interest rate and obviously without any effect on investment. In this case,

bonds issued by the government to finance its deficit are not regarded as net wealth and do not influence current private consumption. The invariance between domestic saving and consumption .implies that the current account is unaffected. So in the case of debt-neutrality, there is no correlation between public sector deficit and current account imbalances (Barro, 1974). This statement is valid in the case of perfect substitution between savings of the public and the private sector.

It is argued that private sector tends to run a stable (I-S) relationship so that current account deficits tend to mirror fiscal deficits. Moreover, when current account deficits are accompanied by large fiscal imbalances, the government faces a "dual transfer" problem that requires collecting resources from private sector in order to service its both external and internal debt.

3.4. The Turkish Evidence

3.4.1. Developments in Macro Balances

Since 1980s, Turkey had been following export oriented growth model. Passing to full liberalization by the end of that decade, provide some opportunities, but also deepened the structural problems as a small open economy. High, volatile and persistent inflation and high budget deficit worsen all the balances. Populist policies, government subsidies, the heavy burden of State Economic Enterprises led to the deterioration of the fiscal balances. The unrecorded economy, the inability of widening tax base, tax evasions, inefficiencies in the tax system affect the budget revenues negatively. Moreover, the reversals in the tax policies were also the case, together with the "stop and go" policies in economic growth. On the financial structure side, Turkey rapidly established new financial markets and developed alternative financial instruments, but inevitably witnessed the "banker bankruptcy" and collapse of small size banks during the 1980s and early 1990s.

Table 1: Selected Macroeconomic Indicators

(%)	1980-1989	1990–1993	1994	1995-1998	1999	2000	2001
Growth Rate	4	6,1	- 6,1	6,8	-6,4	6,1	- 9,4
Inflation (CPI)	48,9*	67,2	125,5	81,2	68,8	39,0	68,5
PSBR/GNP	5,0	10,1	7,9	7,7	15,6	12,5	15,4
Primary Bal./GNP	-0,7	-0,6	3,8	2,4	2,0	5,7	6,7
Budget Bal./GNP	-2,8	-4,8	-3,9	-6,7	-11,7	-10,6	-15,5
Dom. Debt/GNP	19	17	21	20	29	29	68
Avg. maturity of Gov. Sec. (months)		10,3	3,7	9,7	16,7	14,2	4,9
Current Acc./GNP	-1,8	- 1,4	2,0	-0,8	- 0,7	-4,9	2,3
FX Position / CBRT Reserves		51	20	21	57	71	46
ST Foreign debt / CBRT reserves	2,9	2,2	1,6	1,1	1,0	1,1	0,9
Reserves/Imports (coverage of month)	1,7	2,9	3,6	4,6	6,8	5,5	5,6

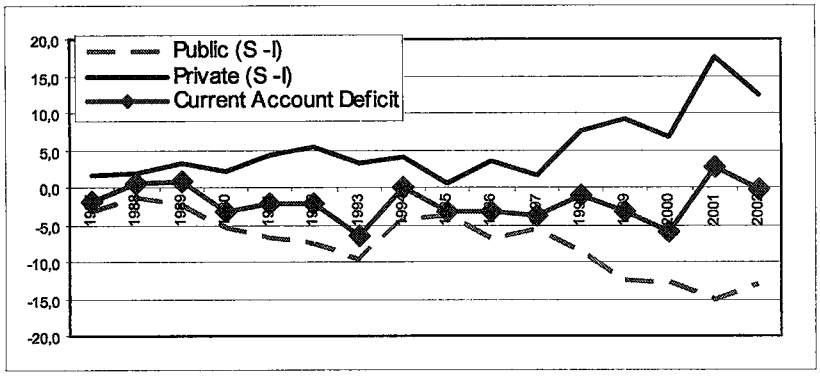
Source: State Planning Organization http://www.dpt.gov.tr, Central Bank of Turkey http://www.tcmb.gov.tr, Treasury http://www.treasury.gov.tr

1990s were the years of financial crises and contagion effects of external developments as well as the natural disasters for Turkey. High inflation was again the major problem. High public borrowing requirement brought a vicious circle through high borrowing rates and the budget deficits. There was a policy switch in Treasury's financing from monetization to government borrowing in the second half of the 1990s. Tax revenues became hardly to cover the interest payments on debt. Even though primary surpluses were generated since 1994, debt levels presented an increasing trend due to the high real interest rates which were above the growth rate very significantly.

The financing of the government budget was mainly realized through the commercial banking system generating vulnerabilities in their balance sheets. The

share of government securities in financial assets increased considerably not only for the banking sector but also corporate sector's portfolio due to the profitability of the securities. This creates the debates about the crowding out effect of high borrowing requirement of the government feeding with other economic imbalances as well as the uncertainties in the political and the economic agenda. Even, animal spirit of investments affected adversely from the shortening of the maturities and the uncertainties. Public saving investment gap was covered by up private saving surplus at some point and led to the generating current account deficit, by transferring foreign savings.

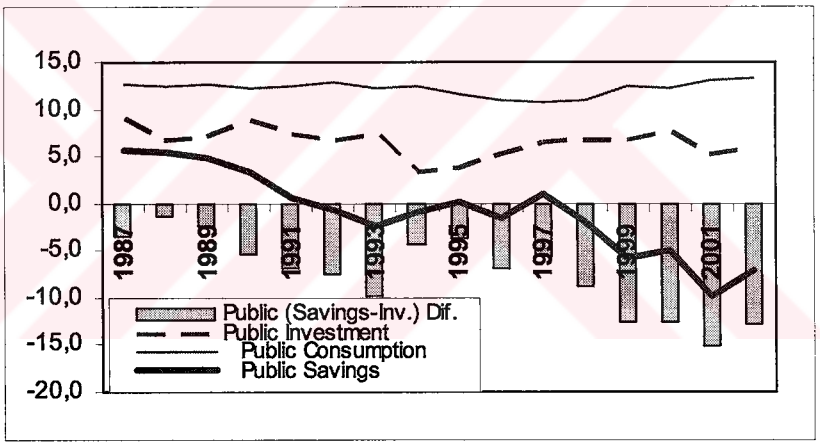
In the middle of second half of the 1990s, Treasury became had an difficulty in borrowing due to the increase in risk premium and expectations about the inability to roll over its debt. This led a further increase in interest rates and decrease in maturity. Treasury tried to find alternative ways of budget financing in order to roll over its debt. New borrowing instruments such as foreign exchange denominated debt and CPI indexed bonds were introduced together with searching for foreign borrowing.



Source: State Planning Organization, htpp://www.dpt.gov.tr

Figure 1: Macro Balances, % of GNP: 1987-2002

In the beginning of 1990s, saving-investment gap of the public sector increased sharply. The gradual decline in the disposable income of the public underpins the highly involvement and the mismanagement of the financial and real sector state economic enterprises in the economy. Political interferences, unproductive investments, irrational pricing of public goods, subsidies and over employment in state economic enterprises led to the deterioration of the public disposable income. The saving investment gap of the public sector started to increase and reached around 10 percent of the GNP until 1994. With strict measures to control public consumption after the 1994 crisis, the public dissaving was realized and remained on the average around 1 per cent of GNP until 1999.

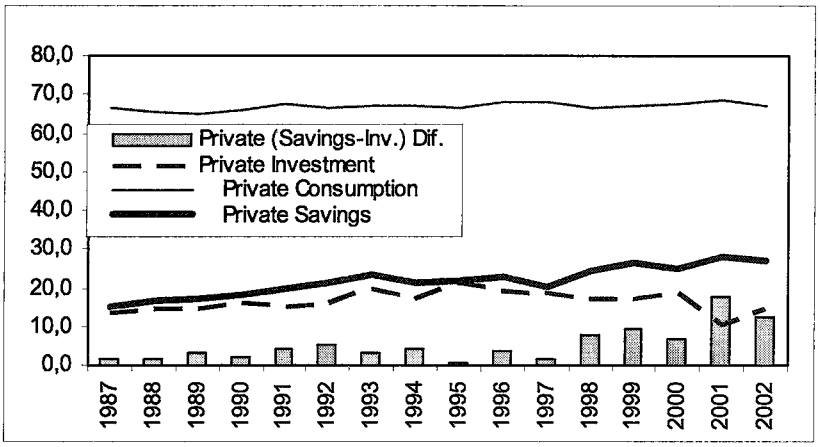


Source: State Planning Organization, htpp://www.dpt.gov.tr

Figure 2: Public Sector Balances, % of GNP :1987-2002

An unfortunate earthquake in the year 1999 led to a sharp increase in the public consumption around 1.5 per cent of GNP, while the public disposable income presented a very sharp decline, around 3 per cent of GNP, generating a historically high saving investment gap of the public sector. The saving investment gap of the public sector continued to increase and in the crisis year of 2001, it reached 15 percent of GNP under the least public disposable income and the worst

dissaving ratio. Obviously, all these developments reflected themselves in the public budget deficit as well as the current account deficit.



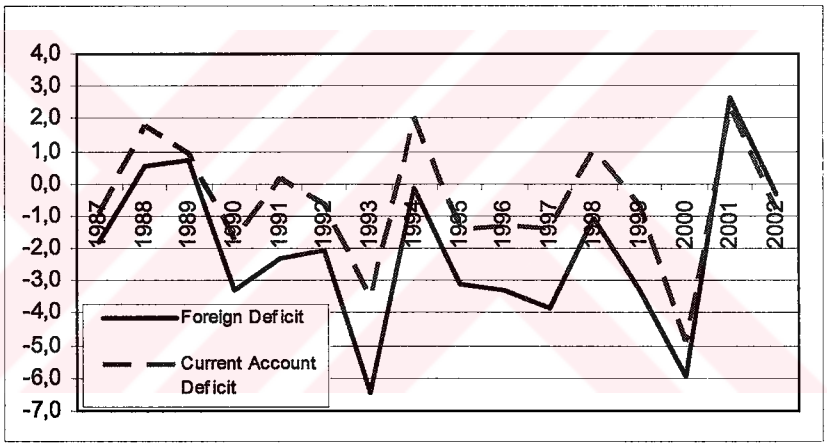
Source: State Planning Organization, htpp://www.dpt.gov.tr

Figure 3: Private Sector Balances, % of GNP: 1987-2002

The private sector, mainly corporate sector, always played a leading role in aggregate investment level of the economy and its investment behaviour is very much related to the structures of the economy. Therefore, cyclical trend of the investments cannot be separated from the problems of the economy. 14 per cent of contribution of the private sectors' investment to GNP during the early 90s reached 16 per cent before the 1994 crisis and then realizing the highest score of 21 per cent in 1995. Since then, both due to the structural economic problems and uncertainties on the political stance as well as the "crowding out" effect of the government securities led to the significant declining trend in the private sector's investment till to the 17 per cent of GNP just before the crises. Even though the existence of such a declining trend in investment, saving of the private sector reached its peak level in 1999 as 26 per cent of GNP, generating the historically high level of investment - saving surplus as 9 per cent of GNP. However, after the

crises of 2000-2001, private sector's investment declined sharply by causing a deep economic recession.

The public sector gap was financed by the private sectors' (i.e. corporate sector, financial sector and households) savings in addition to the foreign sources. The public sector gap creates fragilities in the balance sheets of the other sectors in the economy. Foreign deficit, the difference between public and private sector's saving - investment gap, implies the inadequate domestic resources. As seen in Figure 4, foreign deficit definition of the macro balances is in align with the current account as well as the external debt developments.



Source: State Planning Organization, htpp://www.dpt.gov.tr

Figure 4: Foreign Deficit – CA Deficit, % of GNP:1987-2002

Fiscal driven imbalances in Turkey, made all the sectors much more vulnerable to any domestic and/or external shocks. Therefore, fiscal sustainability became the primary issue in the viability of the economy. While the necessity of the fiscal adjustment became apparent, both domestic and foreign investors focused on the default risk of the Treasury. Thus, in the following section we test empirically both the sustainability of the fiscal and current account balances.

3.4.2. Empirical Testing on Fiscal Sustainability

In Turkey, high and persistent fiscal deficits have often been interpreted as one of the major sources of severe inflation rates sustaining for more than two decades, the basic problem has been its financing[11]. However, commercial banks have become the major source of the finance, and with the reserve accommodation, the size of the banking system assets increased correspondingly. The reliance on domestic debt finance has yielded high real interest rates and extremely short debt maturities, thus has led to an interest payments explosion[12]. The sustainability of the deficit finance under these conditions appears to be an important issue which worth to be investigated. Consistent with the Lucas (1976) critique, the parameters of the deficit process may not be invariant to a policy regime change. Therefore, tests for deficit sustainability must allow for changes in the processes generating deficits.

The traditional approach to fiscal sustainability deals with the stationarity of the government debt or deficit. There is a limit to finance budget deficits by issuing new debt as governments face an intertemporal budget constraint. A violation of the intertemporal budget constraint implies that the growth rate of

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[11]There are several comprehensive studies on Turkish fiscal policy. Recent studies include Özatay (1994, 1997) and Özmen and Koğar (1998), Anand and VanWijnbergen (1989) propose an accounting approach to fiscal sustainability and an application to Turkey. Özatay (1994, 1997) investigate the sustainability of fiscal policy. His results, based on the conventional unit root tests for various debt measures (discounted real debt stock, the size of the domestic debt relative to GNP and broad money), suggest ejection of the sustainability. Ozmen and Kogar (1998) investigate the sustainability of budget deficit and found weak sustainable fiscal balances considering structural break analysis.

[12]Interest payments on domestic debt (as a percent of GNP) increased from 2.4 in 1990 and to 10.6 in 1998 and 15 per cent in 2000. After the crises it reached 21 per cent of GNP by the end of 2001.The bulk of auctioned debt has been sold at maturities between three months and one year. The average real rate of return on auctioned government securities remained in between 20-30 % in that period. After the crises, domestic interest payments rose to 21 per cent of GNP by the end of 2001.

government debt is greater than the growth rate of the economy at the current fiscal stance. Under this condition, the fiscal policy cannot be sustained forever. The necessary and sufficient empirical condition for the consistency of the fiscal stance with intertemporal budget constraint is that the deficit process is stationary (Hamilton and Flavin (1986)), or government revenues and expenditures including interest payments are cointegrated (Trehan and Walsh (1991), Hakkio and Rush (1991) and Haug (1991). Quitos (1995) brought the analysis of weak and strong sustainability into the literature. The strong sustainability refers the stationarity of the debt process or the cointegration between budget revenues and expenditures implying there would be no any significant problem in fiscal problems at ceteris paribus. On the other hand, weak sustainability condition requires the growth rate of debt should be lower than the economic growth rate. Weak sustainability warns the authorities for the likely deterioration of the fiscal problems[13].

Chortareas, Kapetanios and Uctum (2003) analyze sustainability for a sample of Latin American countries, employing unit root tests incorporating nonlinear alternative hypotheses. These tests capture the thresholds or corridor regimes that international agreements or markets impose on emerging economies' public finances. They conclude that when such nonlinearities are taken into account, sustainability substantially improves.

[13]The recent literature on testing for the budget deficit sustainability contains Cuddington (1997), Buiter (1997), Bohn (1998), Balassone and Franco (2000), Chalk and Hemming (2000), IMF (2002), Wickens and Uctum (2000, 2003), Feve and Henin (2000), Calvo, Izquierdo and Talvi (2003), Goldstein (2003), Croce and Ramon (2003), Burnside, Eichenbaum and Rebelo (2003).

Empirical Results of Fiscal Sustainability

In empirical testing of fiscal sustainability in Turkey, we deal with two different samples, namely the period between 1975-1999 and 1975-2001 in order to assess the Turkish fiscal stance before the initiation of the disinflation program which was started in the beginning of January 2000, and to capture the deterioration in the fiscal balances with the crises by extending the sample to the end of the year 2001.

In the literature, the deficit sustainability issue is often investigated under an assumption that there is a single policy regime during the sample period. The sustainability of deficits, however, may not be invariant to a policy regime change. A policy regime change may lead to structural breaks either in the expenditures and/or revenues, hence in the deficit process itself. In such a case, employing conventional tests (such as the augmented Dickey and Fuller (1979) and Kwiatkowski et al. (1992) tests, hereafter ADF and KPSS, respectively) for the orders of integration of the variables of interest would be misleading as these tests are known to be biased towards not-rejecting non-stationarity if the data generation process is, in fact, stationary around a broken mean and/or trend (see, Perron (1989, 1997) and Lee (1997)). This is the case also for the tests of the null hypothesis of no cointegration (see, Gregory and Hansen (1996), Peseran, Shin and Smith (2001)).

The recent empirical literature which allow for an estimated structural break either in the individual series and/or in the cointegration vector in investigating deficit sustainability includes Quintos (1995), Haug (1995), Fountas and Wu (1996) and Crowder (1997). Quintos (1995) and Haug (1995) consider

Hansen (1992) recursive test of stability of the cointegration relation of interest. Crowder (1997) uses Hansen and Johansen (1993) procedure to test the stability of the cointegrating vector. Fountas and Wu (1996) apply Gregory and Hansen (1996) test, which allows the inclusion of a sequentially estimated break point in the cointegration analysis.

In this part, we investigate the integration properties of the series by employing not only the ADF and KPSS tests, but also recently developed procedures Perron (1997)) which allow stationarity around an endogenous structural break point under the alternative hypothesis, Zivot and Andrews (1992), hereafter ZA92, unit root tests which allows for a single break in the intercept, the trend or both. We use an autoregressive Distributed Lag (ARDL) modeling approach and the bounds testing procedure of Peseran, Shin and Smith (2001) for cointegration analysis.

Consider the following one-period government budget constraint:

$$\Delta Def_t = expen_t - rev_t \qquad (1)$$

where Def_t is real government debt, $expen_t = expen_t + i_t Def_{t-1}$ is real government expenditure inclusive of interest payments, rev_t is real government revenues[14] and it is the real interest rate (assumed to be stationary (I(0)) around a

[14]The budget constraint (1) excludes seignorage as our primary concern is the sustainability of the debt finance process. Virtually, any deficit is sustainable if an unlimited inflation adjustment through money finance is allowed. An unsustainable fiscal stance, however, means that there is a limit to the debt finance and deficit eventually must be financed via money creation (See, Sargent and Wallace (1981)).

mean i. Equation (1) states that in the absence of real seigniorage revenue, a government budget deficit has to be financed by new debt creation[15]. Defining

$E_t = expen_t + (i_t - i)Def_{t-1}$, (1) can be written as

$$Def_t = E_t - rev_t + (1 + i)Def_{t-1} \tag{2}$$

Forward substitution yields

$$Def_t = \sum_{j=0}^{\infty} \mu^{j+1}(rev_{t+j} - E_{t+j}) + \lim_{j\to\infty} \mu^{j+1} Def_{t+j} \tag{3}$$

where $\mu = (1+i)-1$. Using (1) and taking first differences of (3), we obtain:

$$expen_t - rev_t = \sum_{j=0}^{\infty} \mu^{j+1}(\Delta rev_{t+j} - \Delta E_{t+j}) + \lim_{j\to\infty} \mu^{j+1} \Delta Def_{t+j} \tag{4}$$

For the intertemporal budget balance or deficit sustainability to hold, the expected values of the limit terms in (3) and (4) must be zero. This condition implies that the government cannot retire its debt simply by issuing new debt perpetually. If the first difference terms in (4) are I(0), then $expen_t$ - rev_t must also be I(0). Thus, the condition for deficit sustainability can be tested by testing whether $expen_t$ and rev_t are cointegrated (if each of them are I(1)) with cointegrating vector (1, -1), or alternatively by testing for the stationarity of ΔD_t.

Quintos (1995) shows that a cointegration vector (1, -1) between GI_t and Rt or the stationarity of D_t is only a sufficient condition for deficit sustainability, and refers to it "strong" conditions of deficit sustainability. The "weak" condition, according to Quintos (1995), can be referred to as a case when the budget

[15]The variables in (1) can also be nominal or deflated by GDP. The main results are invariant to the measurement of the variables (see, Cuddington (1997, p.12)).

constraint holds and R and GI are cointegrated with cointegrating vector (1 - b), 0<b<1. However, as Quintos (1995, p.410) notes, "the condition 0<b<1 has serious policy implications because a government that continues to spend more than it earns has a high risk of default and would have to offer higher interest rates to service its debt". Thus, as Hakkio and Rush (1991, p. 433) note, b = 1 "is probably necessary" for the government to remain solvent.

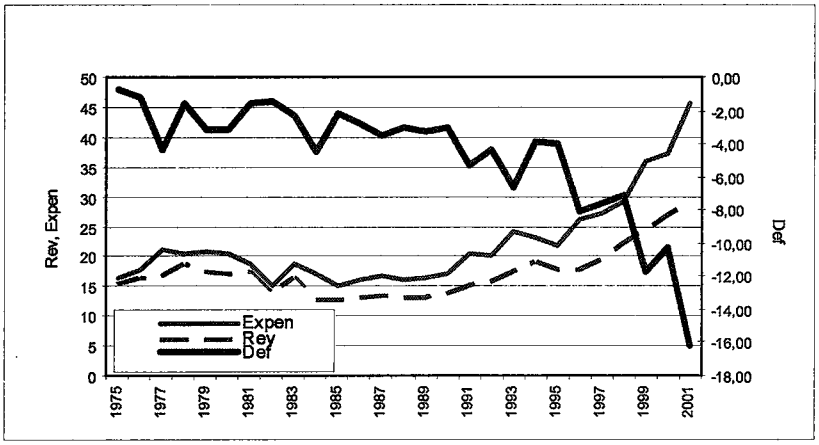
Table 2:Quintos Test (1995)

Values for b	Cointegration in $R_t = b_0 + b_1GI_t + u_{1t}$	Δbt	Conclusion
b =1	Yes	I(0)	Strong sustainability
b=1	No	I(1)	Weak sustainability
0 ‹ b › 1	Plays no role	I(1)	Weak sustainability
b = 0	Plays no role	I(1)	No sustainability

On fiscal deficit sustainability part of the analyses, our empirical relations of interest are basically

$$rev_t = b_0 + b_1expen_t + u_{1t} \qquad (5)$$

where, rev_t is government revenues as a percent of GNP and $expen_t$ is government expenditures including interest payments as a percent of GNP, u_t is a disturbance term. All variables are expressed as ratios relative to GNP in order to account for a growing economy. Figure 5 plots the data.



Source:Treasury, htpp://www.treasury.gov.tr

Figure 5: Fiscal Aggregates, % of GNP, 1975-2001

Given that the variables are I(1), the stationarity of residuals from the equations suggests that the specifications represent long-run equilibrium relationships (Engle and Granger, 1987). To test for the lack of cointegration we first consider the Engle and Granger (1987) two-step residual based cointegration test. We then proceed with the analysis of long-run relationships between the variables by employing an Autoregressive Distributed Lag (ARDL) modeling approach and the bounds testing procedure of Pesaran, Shin and Smith (2001).

As already discussed, the weak sustainability condition is satisfied if both rev_t and $expen_t$ are I(1), and cointegrated with $0<b<1$. For strong sustainability, the necessary and sufficient condition is b=1, that is $def_t = rev_t - expen_t$ is I(0)[16]. If there is a break either in rev_t, $expen_{tt}$ and/or def_t , then the use of conventional tests (such as ADF and KPSS) for their orders of integration or a cointegration between them may lead biased results towards not-rejecting non-stationarity (see, Perron (1989, 1997), Lee et al. (1997) and see, Gregory and Hansen (1996). Thus,

[16]Note that the strong sustainability condition does not require a = 0. As Ahmed and Rogers (1995) shows, a positive deficit is possible as long as the drift in rev_t exceeds the drift in exp_t enough to finance interest payments.

to investigate the integration properties of the series we employ not only the ADF and KPSS tests, but also the procedure developed by Perron(1997) and Zivot and Andrews (1992) which allow stationarity around an endogenously estimated structural break point under the alternative hypothesis. For the cointegration analysis, we employ Autoregressive Distributed lag model (ARDL) and bound testing procedure of Peseran, Shin and Smith (2001). In the following sections these procedures are briefly presented in the context of two generic I(1) variables y_t and x_t.

Models Without Breaks

The integration properties of the individual series are first investigated by conducting augmented Dickey-Fuller (1981) (ADF(k)) tests with the lag length (k) selected to remove any manifest serial correlation. The results recorded in Table 3 suggest that each of rev_t, $expen_t$ and def_t is integrated of order one (I(1)). The non-stationarity of def_t suggests that $expen_t$ and rev_t are not cointegrated with a cointegration vector (1, -1) hence the strong form of deficit sustainability is not satisfied. We also considered Kwiatkowski et al. (1992) tests for testing the null hypothesis of stationarity against the alternative hypothesis of a unit root. The results of the KPSS tests presented in Table 3 are consistent with those of the ADF tests.

Table 3: ADF and KPSS Test Statistics

	Levels				First Differences	
	ADF		KPSS		ADF	KPSS
Series	$\lambda_t(k)$	$\lambda_m(k)$	$\eta_m(k)$	$\eta_t(k)$	$\lambda_m(k)$	$\eta_m(k)$
Rev						
1975-1999	-0.69 (0)	-0.07(0)	0.78(0)*	1.80(0)*	-5.44(0)*	0.29 (0)
1975-2001	-0.10 (0)	1.18(0)	1.20(0)*	1.08(0)*	-4.88(0)*	0.53(0)*
Expen						
1975-1999	-0.26(0)	1.18(0)	1.24(0)*	1.96(0)*	- 4.46(0)*	0.37 (0)
1975-2001	-0.10(0)	2.43(0)	1.54(0)*	1.06(0)*	- 4.23(0)*	0.60 (0)*
Def						
1975-1999	-3.32(0)	-0.67(0)	1.56(0)*	1.32(0)*	-6.30(0)*	0.11 (0)
1975-2001	-2.05(0)	0.24(0)	1.74(0)*	0.72(0)*	-4.11(0)*	0.19 (0)
5 % CV						
1975-1999	-3.63	-3.01	0.463	0.146	-3.01	0.463
1975-2001	-3.61	-2.99	0.463	0.146	-2.99	0.463

Notes: All the test regressions contain a constant term. The equations for λt and ηt include also a linear trend. Numbers in parentheses are the lags (k) used in the augmentation of the regressions. An asterisk (*) indicates that the relevant null is rejected at the 5 % level. The critical values for the ADF and KPSS are from MacKinnon (1991) and Kwiatkowski et al. (1992), respectively.

The following estimated static equation gives the result for Engle and Granger (1987) two-step residual based cointegration test between rev_t and $expen_t$ under the assumption of no structural change:

The OLS estimation of (5) yields:

$$rev_t = 5.30 + 0.55expen_t, \quad T = 1975\text{-}1999,\ R^2 = 0.839,\ DW = 1.25, \quad (6a)$$
$$(1.05) \quad (0.05) \qquad ADF(2) = -2.33$$

$$rev_t = 5.26 + 0.55expen_t, \quad T = 1975\text{-}2001,\ R^2 = 0.922,\ DW = 1.41, \quad (6b)$$
$$(0.73) \quad (0.03) \qquad ADF(2) = -2.28$$

where the values in parentheses are the standard errors. The ADF(2) test result suggests that rev_t and $expen_t$ are not cointegrated (the 5 % CV is -3.59) for each of the samples considered.

Models With Breaks

As the KPSS and ADF tests are biased towards non-rejecting nonstationarity in the case of structural breaks, we also consider the tests developed by Perron (1997) which allows for the presence of a change the trend and/or mean.

Perron (1997) innovational outlier model is based on the following regression:

$$y_t = \mu + \beta t + \theta DU_t + \delta D(T_b)_t + \varphi DT_t + \alpha y_{t-1} + \Sigma c_i \Delta y_{t-i} + e_t, \qquad (7)$$

Tb (1<Tb< T) denotes the time structural break, DUt = 1(t > Tb) and D(Tb)t = 1(t = Tb +1) with 1(.) the indicator function. Under the null hypothesis of a unit root, α is equal to 1. Under the innovational outlier model, the break is supposed the affect the level of the series (y_t) gradually, that is, there is a transition period.

The Zivot and Andrews (1992), (hereafter ZA92) unit root test allowing for a single break in the intercept, the trend or both. IO model to complete structural break analysis (Model C, level shift) is based on the following equation:

$$y_t = \mu + \beta t + \theta DU_t + \gamma DT^*_t + \alpha y_{t-1} + \Sigma c_i \Delta y_{t-i} + \varepsilon_{t2}, \qquad (8)$$

where $DT^* = 1(t > T_b)(t-T_b)$. Perron (1997) proposes two methods to select T_b endogenously. First, T_b is chosen as $t^*_\alpha = Min_{Tb} t_\alpha(T_b, k)$, that is, as the value which minimizes the t-statistic for testing the unit root null (α =1). Secondly, T_b is chosen to maximize the absolute value of t_θ (the t-statistic on the parameter associated with the change in either the intercept (IO1) or the slope (IO2)). The t-statistic on α to test the null $\alpha = 1$ at this T_b is denoted as $t^*_{\alpha,\theta} = t_\alpha(T^*_b, k)$, where T^*_b is T_b at the

maximum estimated $|t_\theta|$. The equations are estimated sequentially for $T_b = k_{max} + \eta T + 1, ..., T - \eta T - 1$, where k_{max} is the maximum order of the lag truncation parameter k and η is the trimming parameter. For each sequence of tests, we started with $k_{max} = 4$, and following Perron (1997), selected the final k by employing a general to specific recursive procedure based on the significance of the coefficient of the last lag.

The results of Perron (1997) test suggest that the estimated $|t\theta|$ is maximum at 1980 for both the revenues and expenditures including interest payments (as shares of GNP). However, the non-stationarity null cannot be rejected for each of these series even if this estimated break point is taken into account.

Perron (1997) test allows a trend in the process which may be relevant for testing the nonstationarity of the revenue and expenditure processes. However, a deficit process which is stationary around a positive trend is not consistent with the notion of deficit sustainability, therefore we choose to consider IO1 model of Perron (1997).

Table 4 presents the results of Perron (1997) tests obtained by the estimation of the IO1. The results suggest the rejection of the non-stationarity null at 10 % level for def_t .for the 1975-1999 sample if allowance is made for the estimated endogenous break points after 1994. This result is consisted with the earlier findings of Ozmen and Kogar (1998) that fiscal policy is weakly sustainable. Deficit become unsustainable, however, when the sample is extended to cover also 2000-2001 data, as suggested by the non-rejection of the non-stationary null. For $expen_t$ and rev_t the results suggest the non-stationarity by rejecting non-stationary null.

Table 4: Sequential Unit Root Tests of Perron (1997)

	M	β	Θ	Δ	A	T_b	t^*_α	l
Rev								
1975-1999	6.39	0.32	-4.53	3.49	0.57	1980	-2.61	0
1975-2001	2.96	0.03	3.53	-1.76	0.80	1996	-1.44	0
Expen								
1975-1999	5.70	0.48	-5.64	2.36	0.64	1980	-1.63	0
1975-2001	3.30	0.11	6.76	-4.83	0.78	1997	-1.26	0
Def								
1975-1999	-1.63	-0.21	-3.59	4.71	-0.23	1994	-5.21	0
1975-2001	-0.99	-0.23	-6.26	5.46	-0.06	1997	-4.38	0

Notes: The 5 % and 10% critical values for t^*_α are -5.23 and -4.92 respectively (IO1 model).

After investigating the sequential unit root tests of Perron (1997), we employ Zivot and Andrews (1992), it suggest that the deficit process is stationary even if the estimated mean shift in 1996 is taken into account under 5% critical level of -4.80 for the period 1975-1999.

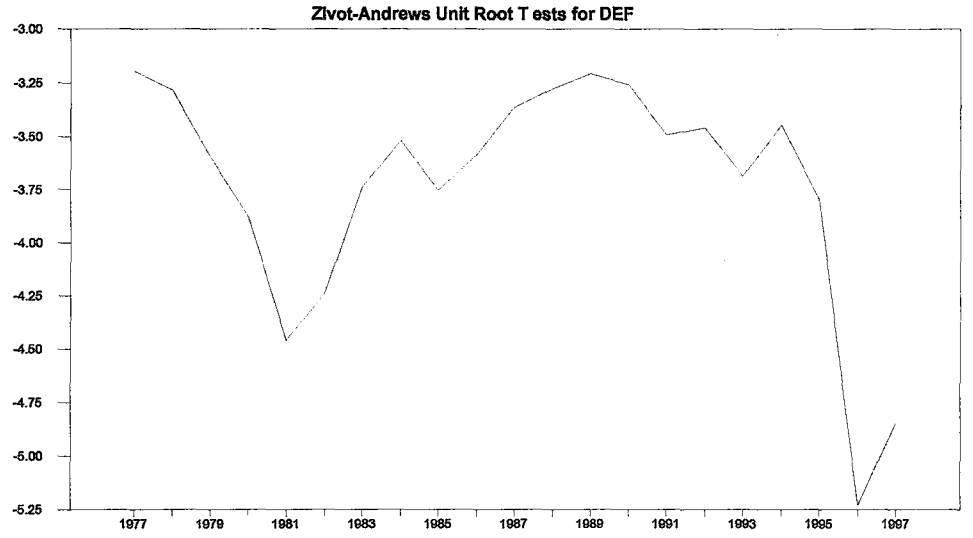


Figure 6 : Zivot Andrews Unit Root Tests 1975-1999 for Def

However, def becomes non-stationary consistent with the Perron (1997) results considering 1975-2001 period considering Zivot-Andrews (1992) test.

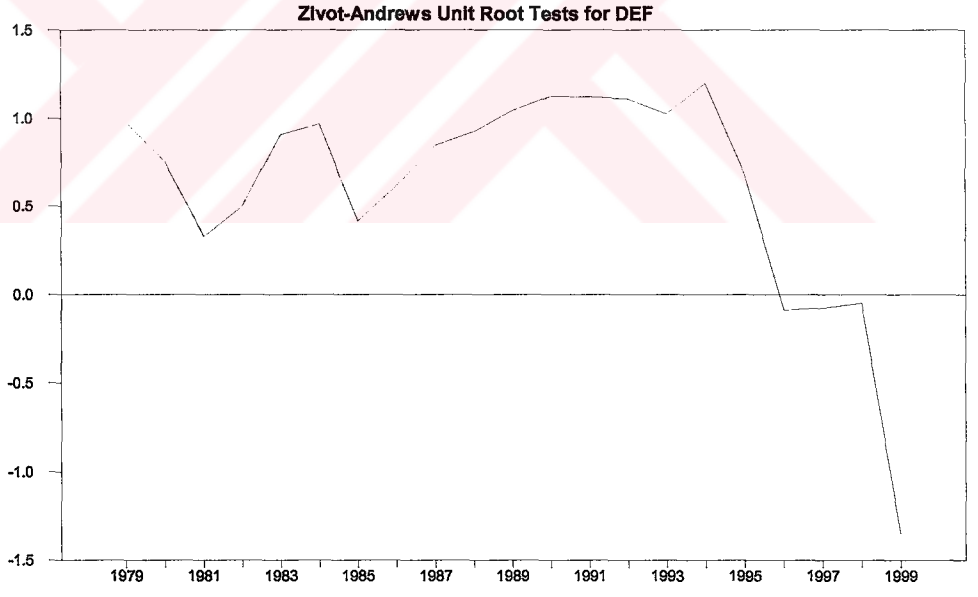


Figure 7 : Zivot Andrews Unit Root Tests 1975-2001 for Def

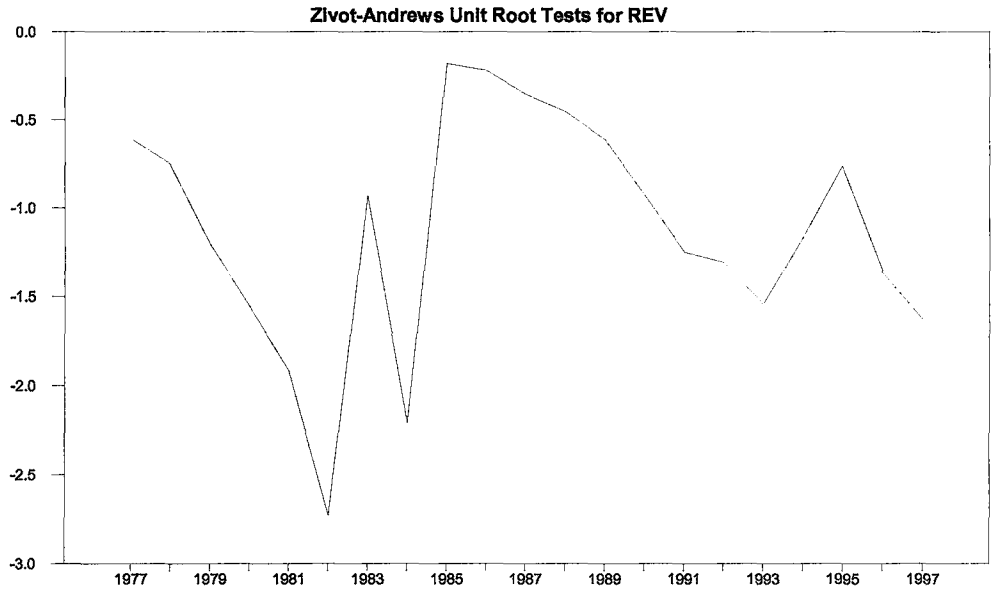


Figure 8 : Zivot Andrews Unit Root Tests 1975-1999 for Rev

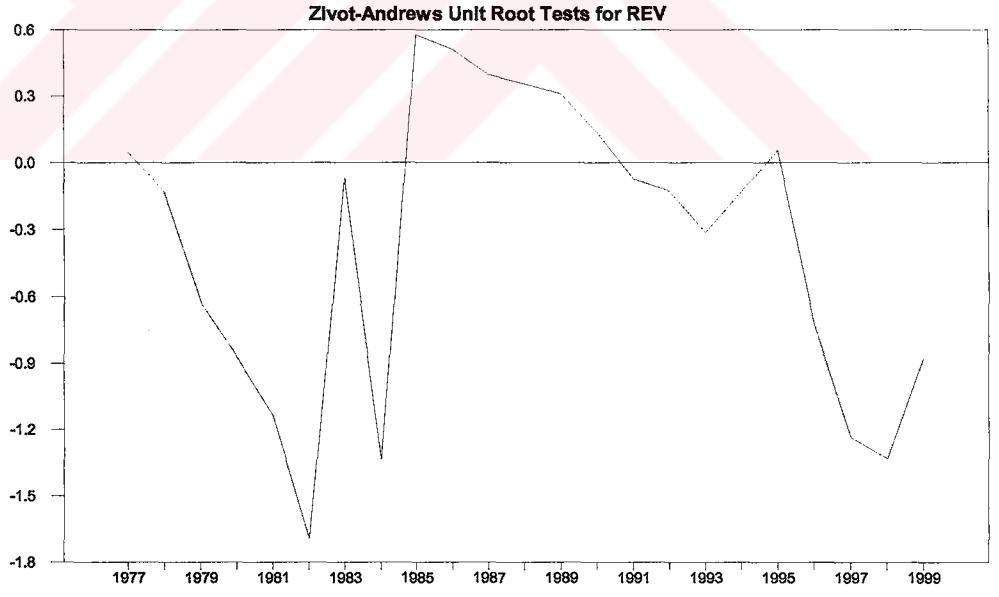


Figure 9 : Zivot Andrews Unit Root Tests 1975-2001 for Rev

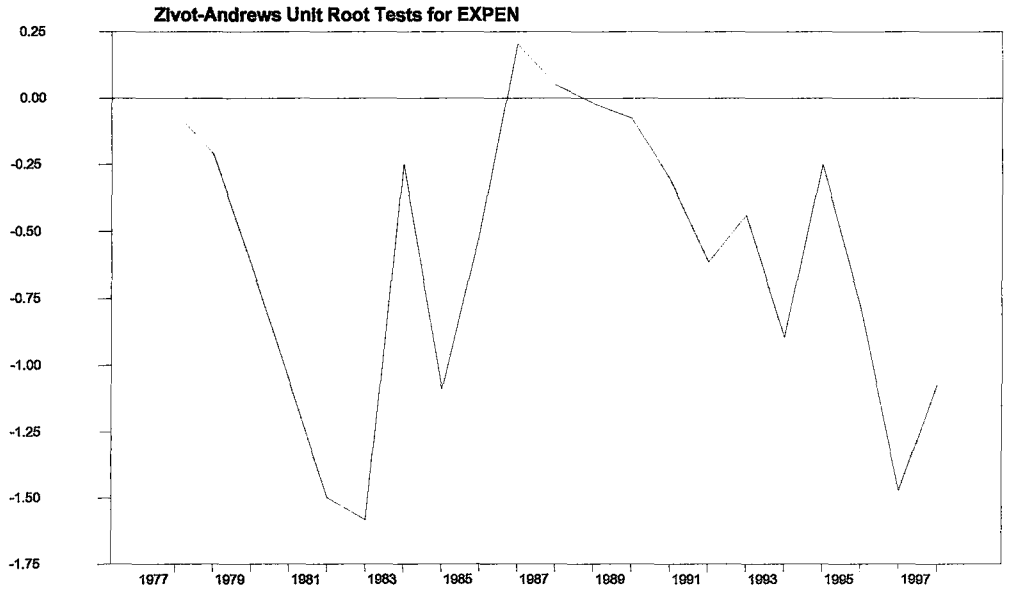


Figure 10 : Zivot Andrews Unit Root Tests 1975-1999 for Expen

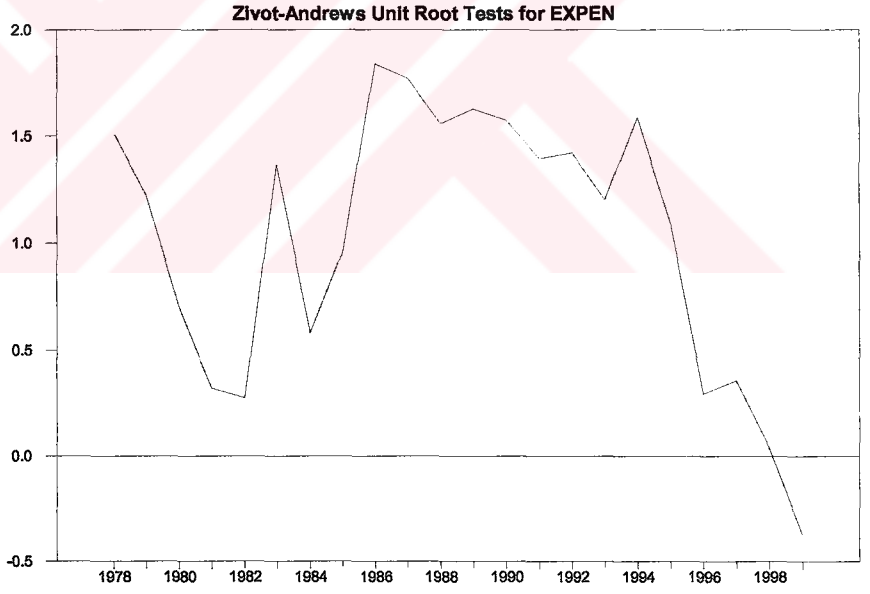


Figure 11 : Zivot Andrews Unit Root Tests 1975-2001 for Expen

The results of the Zivot and Andrews (1992) for the variables rev and expen suggest the non-stationarity at 10 % critical level, for both 1975-1999 and 1975-2001 period. Stationarity in def_t is consistent with the findings of

cointegration between rev_t and exp_t. with a unitary coefficient. However, since the coefficient of the cointegrating vector is less the 1, it gives the consistent result with the weak sustainability (Quintos (1995)) findings. Therefore, in order to estimate the cointegration coefficients, we employ ARDL method.

Cointegration and Testing for Fiscal Sustainability

For a bivariate k^{th} order Vector Autoregression (VAR(k)) system $z_t = (x_{1t}, x_{2t})$, an ARDL equation for x_{1t} and long-run forcing variable x_{2t} $(x_{1t} | x_{2t})$ can be written as:

$$\Delta x_{1t} = a + b_1 x_{1t-1} + b_2 x_{2t-1} + \sum c_i \Delta x_{1t-i} + \sum d_j \Delta x_{2t-j} + e w_t + \varepsilon_t \qquad (9)$$

where, $i = 1, ..n; j = 0, .., n$ and $n = k-1$ and w_t is a vector of exogenous components e.g. dummy variables and ε_t is a generic disturbance term. Pesaran, Shin and Smith (2001) provides the CV bounds to test the null of no cointegration ($b_1 = b_2 = 0$). The implied long-run relationship by (9) can be written as:

$$x_{1t} = \theta_0 + \theta_1 x_{2t} + \Phi w_t + v_t \qquad (10)$$

The corresponding conditional error correction (EC) model is

$$\Delta y_t = a + \alpha \hat{v}_{t-1} + \sum c_i \Delta x_{1t-i} + \sum d_j \Delta x_{2t-j} + e w_t + \varepsilon_t \qquad (11)$$

where $\hat{v}_t$ are the residuals from (10).

An important advantage of the bounds approach is that the variable system postulated to be cointegrated can contain both I(0) and I(1) variables.

To estimate the ARDL relationships, we started with setting a maximum VAR lag length k =4 and choose the optimum ARDL lag length according to the Schwarz's Bayesian Information Criterion (SBC) and Hannan-Quinn Criterion (HQC). The levels relationship for rev_t and $expen_t$ based on ARDL(0,2) chosen by both the SBC and HQC for the 1975-1999 sample is estimated as:

$$rev_t = 1.67 + 0.72expen_t, \qquad QB = 11.1 \qquad (12)$$
$$(1.22) \quad (0.06)$$

where the values in parentheses are the asymptotic standard errors and QB is the value of the Bounds Test (QB) to test the null of no cointegration between the variables. The 5 % CV bound for the QB is 4.94 and 5.73, hence the null hypothesis of no cointegration is strongly rejected suggesting that the equation represents a long-run equilibrium relationship.

The hypothesis that the expen coefficient is unity is strongly rejected with the computed asymptotic t-statistics, which is around 4 , implying the rejection of the strong sustainability. Since the coefficient is in between 0 and 1, it supports the weakly sustainability of fiscal deficit.

Considering the estimated break point by the Perron (1997) and ZA (1992), we augmented the ARDL equation with a dummy variable (D96) taking unity for the 1996-1999 sample and zero otherwise[17]. The SBC and HQC choose the appropriate ARDL lag length as ARDL(0,2) and ARDL (3,2), respectively. To

[17] As the fraction of observation for the dummy variable to the sample size is not large, the use of d96 is acceptable (see, Pesaran *et al.* (2001, p. 307)).

encompass the dynamic structure we prefer to retain ARDL(3,2). The estimated level relationship from the ARDL(3,2) model is

$$rev_t = -3.42 + 1.01expen_t - 2.95D96_t \qquad QB = 14.2 \qquad (13)$$
$$(2.16) \quad (0.11) \quad (1.02)$$

The QB statistic strongly suggests the rejection of the null of no cointegration. The long-run equilibrium relation result is consistent with the stationarity of def around an endogenous break point estimated earlier. When the break point is taken into account, the coefficient of expen is virtually unity, suggesting the sustainability of budget deficits. The equilibrium correction equation from the ARDL(3,2) equation is:

$$\Delta rev_t = -0.997ecm_{t-1} - 0.35\,\Delta rev_{t-1} - 0.35\,\Delta rev_{t-2} + 0.52\Delta expen_t \qquad (14)$$
$$(0.21) \quad (0.18) \quad (0.14) \quad (0.09)$$

$$- 0.22\Delta expen_{t-1} - 0.345\Delta expen_{t-2} - 2.94D96$$
$$(0.15) \quad (1.94) \quad (0.94)$$

$$R^2 = 0.88,\ \chi^2_{SC}(1) = 1.00(0.32),\ \chi^2_{N}(2) = 0.82(0.67),\ \chi^2_{H}(1) = 2.40(0.12)$$

where ecm is the equilibrium correction term ($ecm_t = rev_t + 3.42 - 1.01expen_t + 2.95D96_t$). $\chi^2_{SC}(1)$, $\chi^2_{N}(2)$, $\chi^2_{H}(1)$ denote χ^2 tests for the lack of residual autocorrelation, non-normality and heteroscedasticity, respectively with p-values given in (.). For these tests see Pesaran and Pesaran (1997, Ch. 18). The equation passes all the residual diagnostics hence can be interpreted as a valid representation of the data generation mechanism. The unitary ecm coefficient suggest a contemporaneous adjustment of rev to a deviation from the long run

equilibrium deficit process. This is consistent with the sustainability of the budget deficits during the sample period considered.

The estimation of the level equation for the whole sample (1975-2001) based on ARDL(0,2) yielded:

$$rev_t = 1.57 + 0.73expen_t - 0.90D96_t \qquad QB = 12.4 \qquad (15)$$
$$(1.16) \quad (0.06) \qquad (0.80)$$

Consistent with the results of the Perron (1997) and ZA analysis, the shift dummy variable D96 becomes insignificant for the extended sample. The coefficient of expen substantially decreases compared to that of the 1975-1999 sample and becomes statistically different from unity. That is, the deficit process moves to a weakly sustainable path during the 2000-2001 period.

The cointegration results suggest that the Turkish fiscal stance satisfies the weak sustainability condition when the break in the process occurred in 1996 is taken into account. However, as noted by Quintos (1995), the weak sustainability condition itself is inconsistent with the government's ability to market its debt in the long-run. This means that the debt-GNP ratio is diverging, and thus the fiscal policy is not sustainable. If the current debt finance policy is insisted to be continued, the government may be facing further problems in marketing its debt even at systematically higher real interest rates and much shorter maturities due to rising probability of debt default. Therefore, a policy regime change to alter to parameters of the deficit process is needed to achieve a sustainable new fiscal.

Deficit Sustainability: Evidence From Rolling Least Squares

Rolling least squares (RLS) methods, estimate the coefficients of a linear regression equation by the OLS method over successive rolling periods of a fixed length. As the magnitude of the coefficient of expen and rev are crucially important in determining whether the deficit are weakly or strongly sustainable, it may be helpful to estimate their evaluation through the sample period. To this end, we employ RLS estimation. Figure 12. plot the results for expen.

The figure presents that until the 1990s, coefficients of expen presents a strongly sustainable pattern. However, after then the magnitude of the coefficient declined to around 0.55 which is less than 1, presenting weakly sustainable fiscal deficit meaning that more vulnerable to any shock in the future.

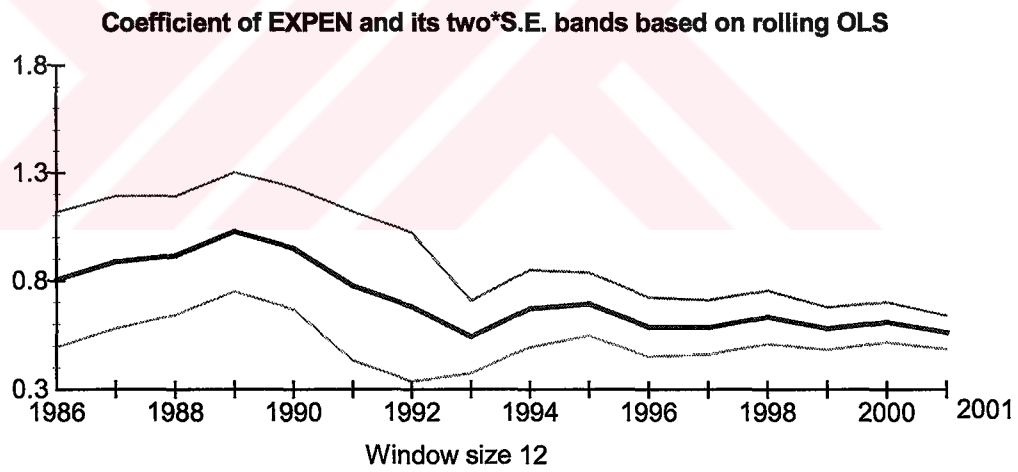


Figure 12 : Rolling Least Square Estimation for Expen

3.4.3 Empirical Testing on Current Account Sustainability

Husted (1992) presents a long-run equilibrium between exports and imports including interest payments and receivables. Then makes several assumptions to derive a testable model, which is given by the following regression:

$$ex_t = a + b\ imp_t + u_t \qquad (16)$$

where ex is exports of goods and services, Imp is imports of goods and services plus net interest payments and net transfer payments.

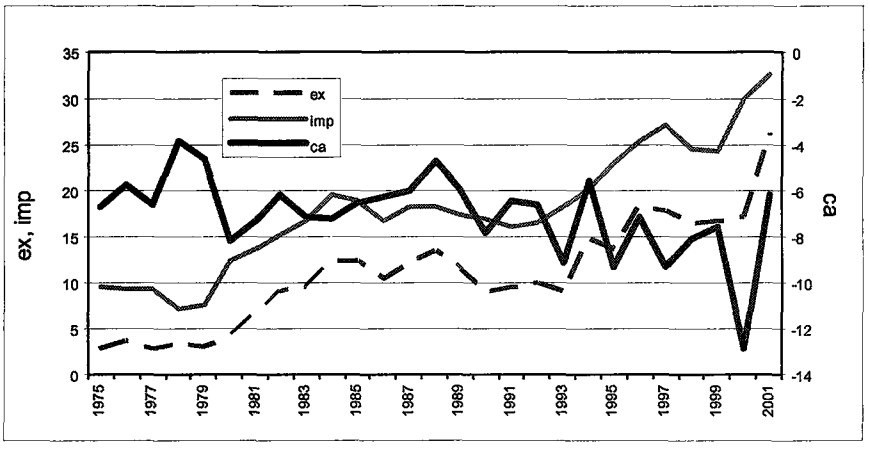
Following the parallel thinking with sustainability of the budget deficit, the economy to satisfy its intertemporal budget constraint, should be equal to one and u_t should be stationary. However, $b < 1$ is inconsistent with a finite external debt-to-GNP ratio, and hence with sustainability of external debts when exports and imports are measured relative to GNP. In this case, there is an incentive for the country to default on its international debts (Hakkio and Rush, 1991; Husted, 1992). The empirical tests for current account sustainability also includes Trehan and Walsh (1991), Ahmed and Rogers (1995), Wickens and Uctum (1983), Feretti and Razin (1996).

Empirical Results of Current Account Sustainability

In current account sustainability part of the analyses, our empirical relations of interest are basically

$$ex_t = c_0 + c_1 imp_t + u_{2t} \qquad (17)$$

where, ex_t is exports of goods and services and including interest transfers earnings as a percent of GNP and imp_t is imports of goods and services including interest payments as a percent of GNP and u_t is a disturbance term. Figure 13 plots the data.



Source: The Central Bank of the Republic of Turkey, htpp:// www.tcmb.gov.tr

Figure 13: Current Account Aggregates, % in GNP, 1975-2001

Given that the variables are I(1), the stationarity of residuals from the equations suggests that the specifications represent long-run equilibrium relationships (Engle and Granger, 1987). To test for the lack of cointegration we first consider the Engle and Granger (1987) two-step residual based cointegration test. We then proceed with the analysis of long-run relationships between the variables by employing an Autoregressive Distributed Lag (ARDL) modeling approach and the bounds testing procedure of Pesaran, Shin and Smith (2001).

As already discussed, the weak sustainability condition is satisfied if both ex_t and imp_t are I(1), and cointegrated with $0<b<1$. For strong sustainability, the necessary and sufficient condition is b=1, that is $ca_t = ex_t - imp_t$ is I(0)[18]. If there is a break either in ex_t, imp_t and/or ca_t , then the use of conventional tests such as ADF and KPS, for their orders of integration or a cointegration between them may lead biased results towards not-rejecting non-stationarity[19]. Thus, to investigate the integration properties of the series we employ as in the fiscal sustainability section

[18]Note that the strong sustainability condition does not require a = 0. As Ahmed and Rogers (1995) shows, a positive deficit is possible as long as the drift in rev_t exceeds the drift in exp_t enough to finance interest payments.

[19] See, Perron (1989, 1997), Lee et al. (1997) and Gregory and Hansen (1996).

not only the ADF and KPSS tests, but also the procedure developed by Perron(1997) and Zivot and Andrews (1992) which allow stationarity around an endogenously estimated structural break point under the alternative hypothesis. For the cointegration analysis, we employ Autoregressive Distributed lag model and and bound testing procedure of Peseran, Shin and Smith (2001). In the following sections these procedures are briefly presented in the context of two generic I(1) variables y_t and x_t.

Models Without Breaks

The integration properties of the individual series are first investigated by conducting augmented Dickey-Fuller (1981) (ADF(k)) tests with the lag length (k) selected to remove any manifest serial correlation. The results recorded in Table 5

Table 5 : ADF and KPSS Test Statistics

	Levels				First Differences	
	ADF		KPSS		ADF	KPSS
Series	$\lambda_t(k)$	$\lambda_m(k)$	$\eta_m(k)$	$\eta_t(k)$	$\lambda_m(k)$	$\eta_m(k)$
Ex						
1975-1999	-2.12 (0)	-1.40 (0)	1.94(0)*	0.99(0)*	-5.32 (0)*	0.06 (0)
1975-2001	-1.78 (0)	-0.11 (0)	2.06 0)*	0.69(0)*	-4.18 (0)*	0.18 (0)
Imp						
1975-1999	-1.71 (0)	-1.08 (0)	2.00(0)*	0.38(0)*	-3.43 (0)*	0.08 (0)
1975-2001	-1.46 (0)	0.10 (0)	2.20 0)*	0.30(0)*	-3.68 (0)*	0.20 (0)
Ca						
1975-1999	-5.16 (0)*	-3.85 (0)*	0.65(0)*	0.92(0)*	-8.50 (0)*	0.02 (0)
1975-2001	-6.33 (0)*	-4.37 (0)*	0.74(0)*	0.60(0)*	-9.17 (0)*	0.02 (0)
5 % CV						
1975-1999	-3.63	-3.01	0.463	0.146	-3.01	0.463
1975-2001	-3.61	-2.99	0.463	0.146	-2.99	0.463

Notes: All the test regressions contain a constant term. The equations for λt and ηt include also a linear trend. Numbers in parentheses are the lags (k) used in the augmentation of the regressions. An asterisk (*) indicates that the relevant null is rejected at the 5 % level. The critical values for the ADF and KPSS are from MacKinnon (1991) and Kwiatkowski et al. (1992), respectively.

suggest that each of ex_t, imp_t and ca_t is integrated of order one (I(1)). The non-stationarity of ca_t suggests that imp_t and ex_t are not cointegrated with a cointegration vector (1, -1) hence the strong form of deficit sustainability is not satisfied. We also considered Kwiatkowski et al. (1992) tests for testing the null hypothesis of stationarity against the alternative hypothesis of a unit root. The results of the KPSS tests presented in Table 5 is consistent with those of the ADF tests.

The following estimated static equation gives the result for Engle and Granger (1987) two-step residual based cointegration test between ex and imp under the assumption of no structural change:

The OLS estimation of (17) yields:

$$ex_t = -4.30 + 0.853imp_t, \qquad T = 1975\text{-}99 \qquad (18a)$$

$$R^2 = 0.945,\ DW = 2.31,\ ADF(1) = -3.48$$

$$ex_t = \underset{(0.85)}{-4.24} + \underset{(0.05)}{0.847}imp_t, \qquad T = 1975\text{-}2001, \qquad (18b)$$

$$R^2 = 0.934,\ DW = 2.49,\ ADF(1) = -3.76$$

The results suggest that both of the equations represent long-run equilibrium relationships. The Wald test for the restriction that the coefficient of sav is unity yielded $\chi^2(1) = 11.69[.001]$ and $\chi^2(1) = 11.55[.001]$, for the 1975-99 and 1975-2001 samples, respectively with the values in [.001] record the p-values. The rejection of the unitary coefficient hypothesis is consistent with the view that the current account deficits cannot be interpreted as satisfying the strong sustainability condition.

Models With Breaks

As the KPSS and ADF tests are biased towards non-rejecting nonstationarity in the case of structural breaks, we also consider the tests developed by Perron (1997) which allows for the presence of a change the trend and/or mean. The results of sequential unit root tests are given in Table 6, which is obtained by the estimation of the IO1. The results suggest the rejection of the non-stationarity null at 5 % level for ca_t .for both of the sample if allowance is made for the estimated endogenous break points after 1985, meaning that current account deficit is stationary. However, for ex_t and imp_t, the results suggest not rejecting non-stationary null in 5 % level implying non-stationarity of those variables.

Table 6 : Sequential Unit Root Tests of Perron (1997)

	μ	β	Θ	δ	α	T_b	t^*_α	L
Ex								
1975-1999	-0.18	0.78	-5.68	2.12	0.26	1988	-3.70	0
1975-2001	-0.92	0.99	-7.20	3.01	0.13	1988	-3.46	0
Imp								
1975-1999	3.45	0.75	-4.50	2.00	0.33	1987	-3.91	1
1975-2001	3.25	0.93	-5.76	2.64	0.24	1987	-4.27	1
Ca								
1975-1999	-6.50	-0.29	2.54	-0.96	-0.33	1985	-6.20	0
1975-2001	-7.39	-0.39	3.47	-1.37	-0.39	1985	-7.75	0

Notes: The values in parentheses are the t-ratios. The estimated truncation lag k is in brackets. The 5 % and 10 % critical values for $t^*\alpha$ are -5.23 and -4.92 respectively (IO1 model).

The results of the Zivot and Andrews (1992) for the variables ex and imp suggest that both are non-stationary at 10 % critical level, for both 1975-1999 and 1975-2001 period. The results are given in figure 14 through 19.

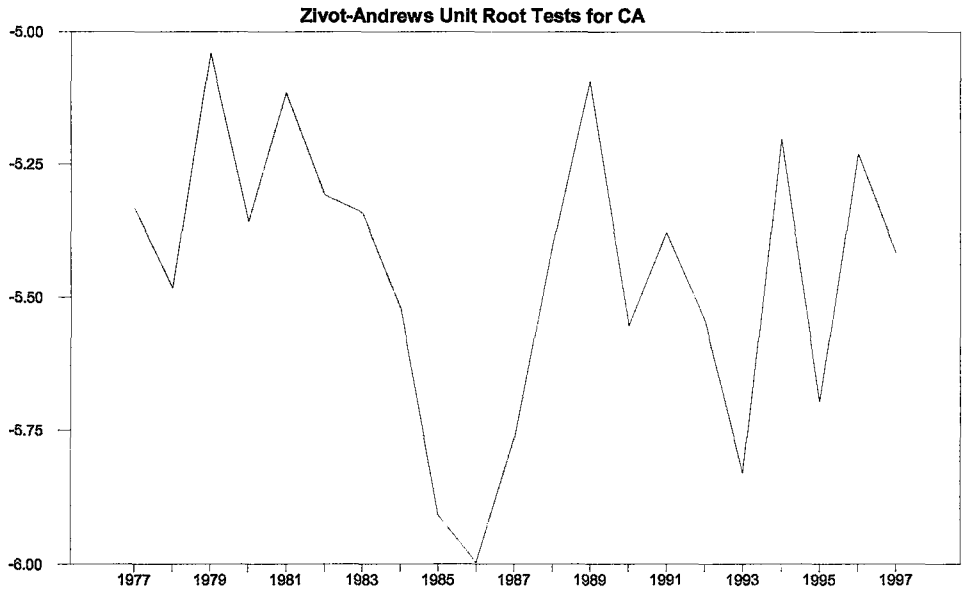


Figure14. Zivot Andrews Unit Root Tests 1975-1999 for Ca

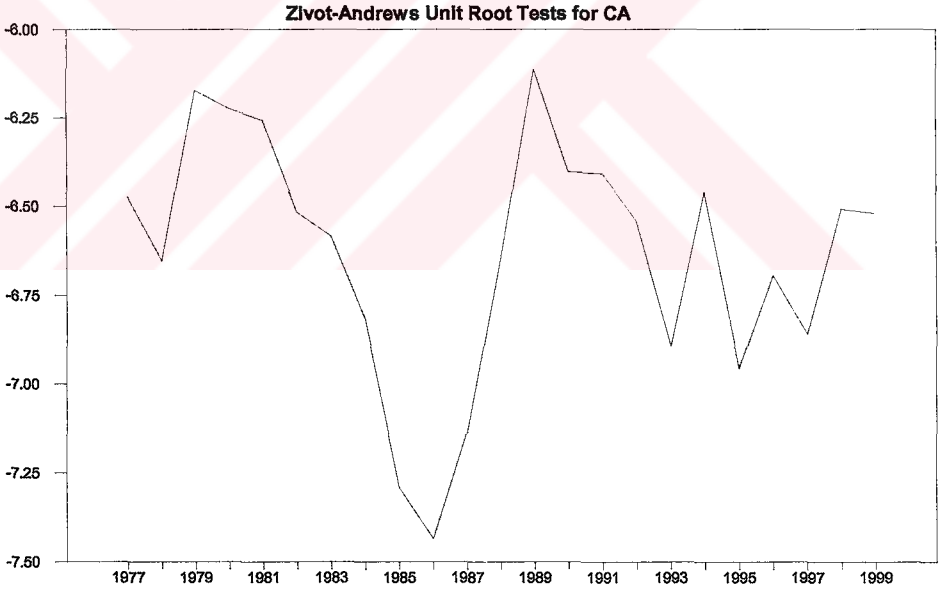


Figure15: Zivot Andrews Unit Root Tests 1975-2001 for Ca

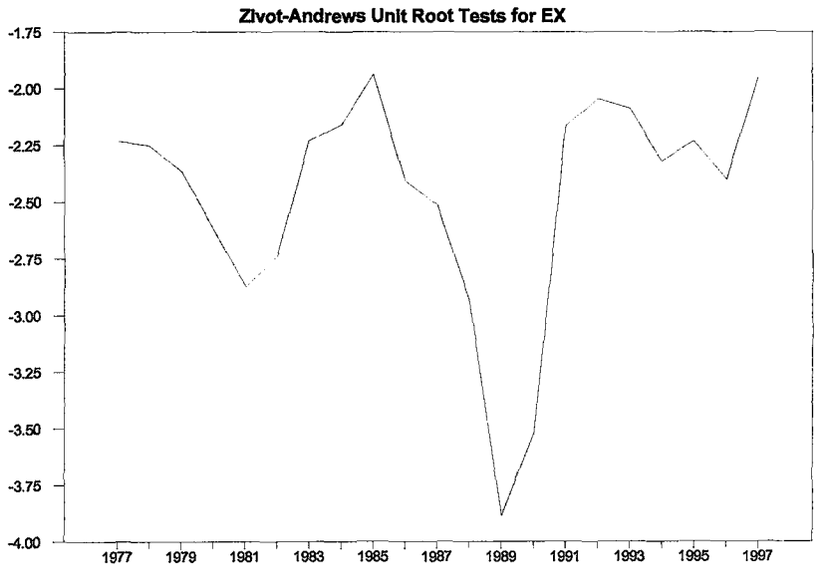


Figure 16: Zivot Andrews Unit Root Tests 1975-1999 for Ex

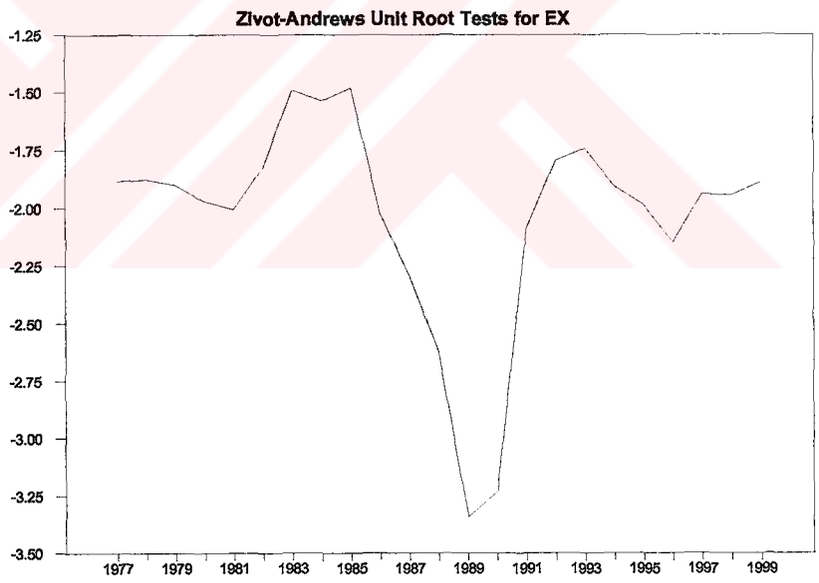


Figure 17: Zivot Andrews Unit Root Tests 1975-2001 for Ex

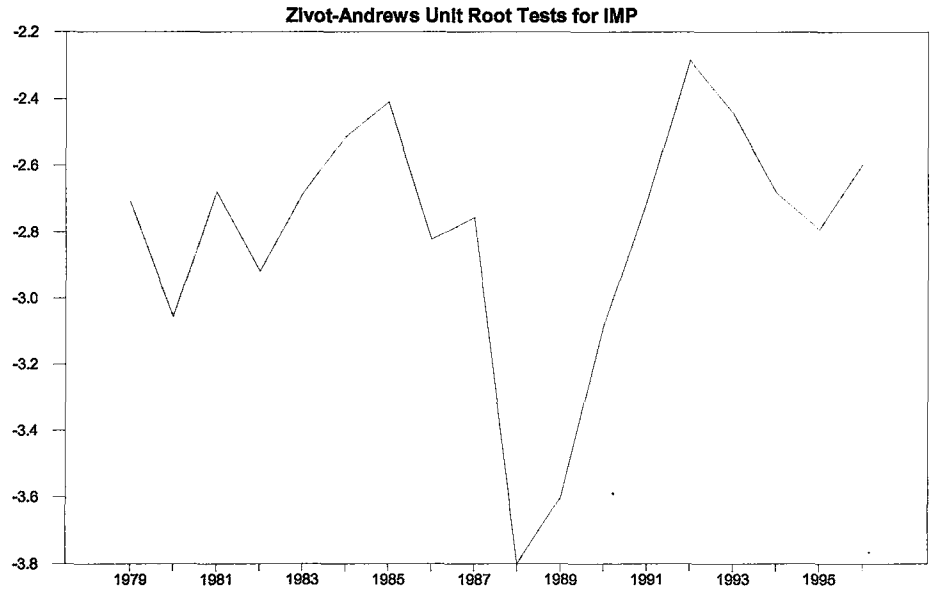


Figure 18: Zivot Andrews Unit Root Tests 1975-1999 for Imp

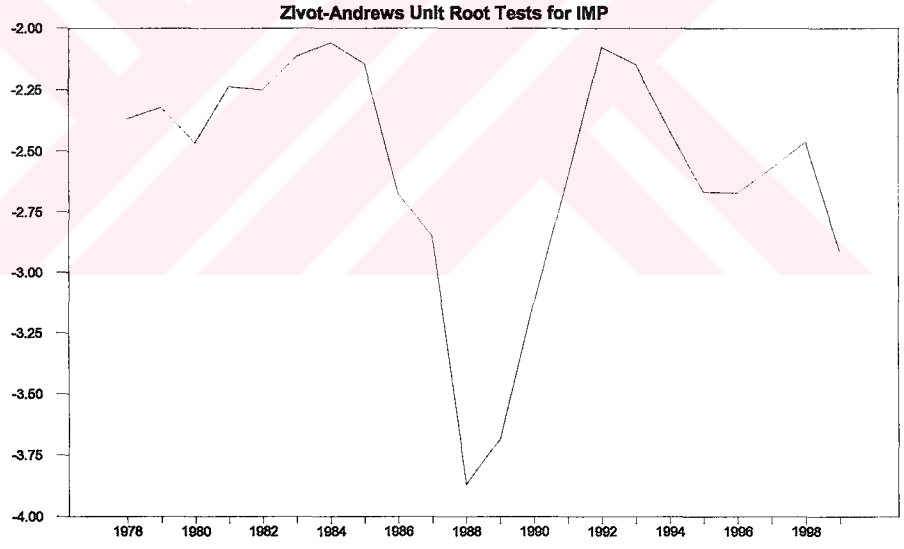


Figure 19:Zivot Andrews Unit Root Tests 1975-2001 for Imp

Since the findings of stationarity in ca_t is consistent with the findings of cointegration between ex_t and imp_t. with a unitary coefficient. However, since the coefficient of the cointegrating vector is less the 1, it gives the consistent result with the weak sustainability (Quintos (1995)) findings.

Cointegration and Testing for Current Account Sustainability

The levels relationships from the ARDL(0,1) and ARDL(1,1) equations chosen by the SBC and HQC for the 1975-1999 and 1975-2001 samples, respectively are:

$$ex_t = -4.01 + 0.849imp_t, \qquad T = 1975\text{-}99, \quad QB = 14.79 \qquad (19a)$$
$$\quad (1.06) \quad (0.06)$$

$$ex_t = -3.82 + 0.840imp_t, \qquad T = 1975\text{-}2001, \quad QB = 26.8 \qquad (19b)$$
$$\quad (0.71) \quad (0.04)$$

The value of the QB test suggest that the equations represent long-run equilibrium relationships (the 5 % CV bound for the QB is 4.94 and 5.73). The imp coefficient t is essentially the same across the samples[20]. Testing the imp coefficient is different from unity is strongly rejected. It implies that strong sustainability of the current account deficit is rejected. It is also different from zero, verifying the weak sustainability. It is also consistent with the results from the earlier breakpoint tests.

The equilibrium correction equation from the ARDL(1,1) equation is for the whole sample is:

$$\Delta ex_t = -1.46ecm_{t-1} + 0.47\Delta imp_t - 5.59D96 \qquad (20)$$
$$\quad (0.21) \qquad (0.14) \quad (1.13)$$

$$R^2 = 0.79, \chi^2_{SC}(1) = 0.001(0.99), \chi^2_N(2) = 0.55(0.76), \chi^2_H(1) = 2.33(0.14)$$

[20] The results from the equations augmented with a shift dummy variable suggested by the break point tests are essentially the same and the dummy variable is statistically insignificant. Therefore, we do not report the results with insignificant shift dummy variable to save the space.

where $ecm_t = ex_t + 3.82 - 0.840imp_t$. (21)

The equation passes all the diagnostics and hence can be interpreted in a valid representation of the data. The magnitude of the adjustment coefficient suggests that the adjustment of imp_t to a disequilibrium is comtemparanous. Testing whether the log-run coefficient of imp is different than one or not provides a support for weak sustainability condition for current account.

Current Account Sustainability: Evidence From Rolling Least Squares

In order to determine whether the current account deficit are weakly or strongly sustainable, we employ RLS estimation.

The figure 20 presents that until the 1994 coefficients of im presents a strongly sustainable pattern. However, after then the magnitude of the coefficient declined to around 0.75 which is less than 1, presenting a weakly sustainable current account deficit.

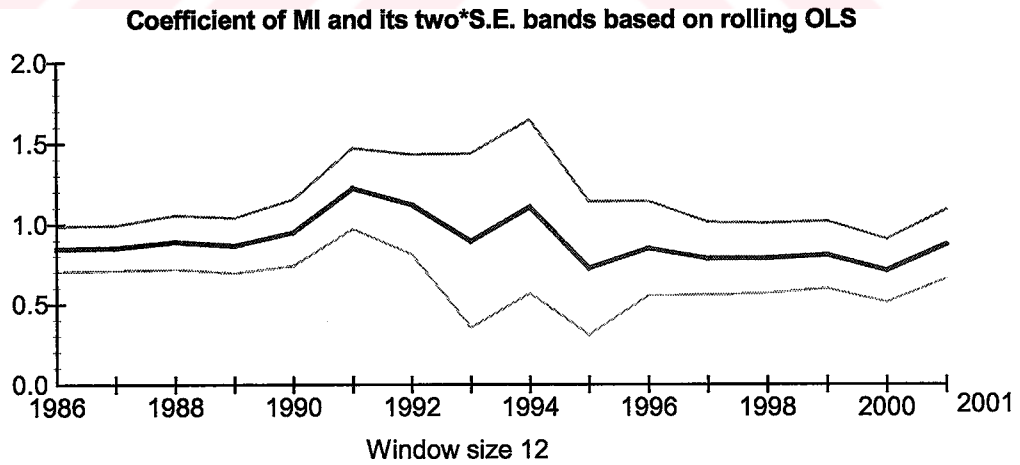


Figure 20: Rolling Least Square Estimates for Im

3.5. Concluding Notes

In this chapter, we tested whether the Turkish fiscal stance and current account deficit is consistent with the intertemporal budget constraint using both the conventional procedures and the recently developed methods which allow for the estimation of endogenous structural breaks in the processes generating deficits. The results from the conventional procedures which assume a single policy regime over the estimation period suggest that the budget and current account deficit process do not satisfy even the weak sustainability condition. However, when the estimated structural break in the deficit process occurred in 1996 is taken into account, the results suggest that both revenues and expenditures including interest payments and exports and imports including interest payments are found to be cointegrated. Thus, Turkish fiscal stance and current account deficit appear to satisfy weak sustainability condition. However, neither of the tests provided reliable evidence to reject the hypothesis that the deficits are not strongly sustainable.

The rejection of the strong sustainability of deficits has important policy implications. The weak sustainability condition, per se, does not rule out a diverging debt-GNP ratio and current account deficit in the long-run. Under this condition, fiscal or current account deficit could explode over time at a faster rate than the growth rate of the economy implying that both can switch to unsustainable path.

CHAPTER 4

BALANCE SHEET EFFECTS AND ROAD TO FINANCIAL CRISES: THE TURKISH EVIDENCE

"Risks are the edge of the knife,
one side is profitability the other is insolvency"

Since the end of 1989, as a fully liberalized economy, Turkey has gained access to international capital market. While macroeconomic conditions shaped the capital account movements, volatile inflows and outflows have also significant impact on the economy. The vulnerabilities built up in the economy through dollarization and shorter maturity structure of liabilities for all the sectors, mainly the government, corporate and banking sectors. Imbalances in the economy fed themselves with the deterioration of the sectoral balances making them more vulnerable to any sudden shock.

The long history of government sector imbalances and its way of financing has been the main source of inflation inertia and also the significant cause of the slow and erratic growth performance of the Turkish economy. Economic and political uncertainties affected expectations adversely leading to the increase in real interest rates and shorten the maturity structure of domestic borrowing. Such a vicious circle inevitably increased the rollover risk of the Treasury and adversely spread out other sectors. Deep-rooted problems of the Turkish banking sector and

the corporate sector combined with the fragilities emerged during the implementation of the exchange rate based disinflation program in 2000.

Box 2: Balance Sheet Vulnerabilities Prior the Crises

BALANCE SHEET VULNERABILITIES PRIOR THE CRISES

GOVERNMENT SECTOR

i. Low revenue structure due to unrecorded economy
ii. Tax policy reversals and tax foregiveness
iii. High real interest rates and thus high interest payments
iv. Social security institutions deficits
v. Absence of fiscal discipline in election periods
vi. Off-budgetary accounts
vii. Short maturity structure of domestic debt
viii. Currency mismatched
ix. Implicit & explicit government guarantees
x. State banks' duty losses
xi. Off-Budgetary institutions
xii. Election periods and Fiscal indisipline

CORPORATE SECTOR

i. Dependence on sources other than own funds,
ii. High leverage ratios,
iii. Large share of short-term liabilities,
iv. Currency mismatches in the assets and liabilities,
v. Reliance on interest earnings other than the operational profits

BANKING SECTOR

i. Limited size of financial system,
ii. High concentration and oligopolistic structure,
iii. Over reliance of banking system in government budget financing,
iv. Large size of state banks and their distortionary effects ,
v. Illuid structure of the state banks due to the duty losses,
vi. Large open position and dolarization of B/Ss
vii. Maturity and currency mismatched,
viii. Liquidity and interest rate risk,
ix. Deterioaration of the asset quality,
x. Excessive connected lending,
xi. Illusive profit generation in the absence of inflation-accounting,
xii. Oversized employment and branching,
xiii. Excessive risk taking & the absence of the risk culture,
xiv. Inadequate capital adequacy ratios considering the size of the risk acc.,
xv. Implicit and/or explicit govern. guarantees & moral hazard problem
xvi. Regulatory foreberance

Before concentrated on the government, corporate and the banking sectors in detail, Box 2 presents the main points of the vulnerabilities prior the crises. Obviously, structural problems of those sectors were formed by the macroeconomic imbalances and weak governance. In this chapter, having assessed the vulnerabilities of the sectors in the first section, intersectoral risk matrix are set up in order to see the deterioration of the balance sheets during the implementation of the disinflation programs. The chapter concludes that increase fragilities in balance sheets of the government, commercial banking and corporate sectors played a significant role in 2000-2001 crises.

4.1. Sectoral Balance Sheets

4.1.1. Government Sector Balance Sheets

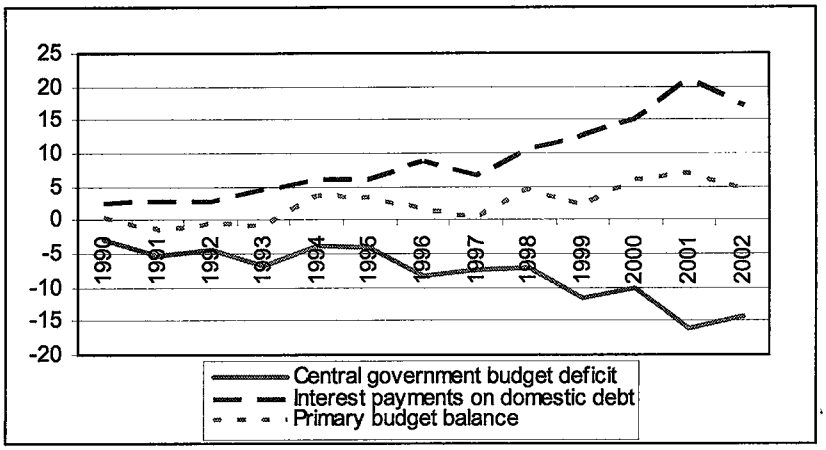
4.1.1.1 Structure of Government Balances

Budgetary Issues

Even though high budget deficit is one of the deep-rooted problems of the economy, its definition is crucial in assessing correct picture of the fiscal stance. While "conventional consolidated budget" tends to overstate the deficit due to the high amount of interest payments, "primary budget" totally ignores that part of expenditures. Even though the aim of the primary budget is to see the fiscal effort, it faced the problem of time inconsistency due to the accounting principles. However, operational budget definition, which includes the real interest payments on government debt, assist to get exact impact of fiscal deficits, even though different methodologies exist in the literature for its calculation[21]. Turkish evidence suggests that since 1994, a significant amount of operational budget deficit was realized, even though primary deficit was in surplus.

The coverage of the budget deficit is the second important point in making an assessment. Conventional consolidated budget deficit constituted almost 80 per cent of the public sector deficit. The rest was social security institutions, municipalities and state enterprises. Moreover, as noted in OECD (2001), many quasi-fiscal activities also performed outside the central consolidated budget via extra-budgetary funds, state banks, and state economic enterprises.

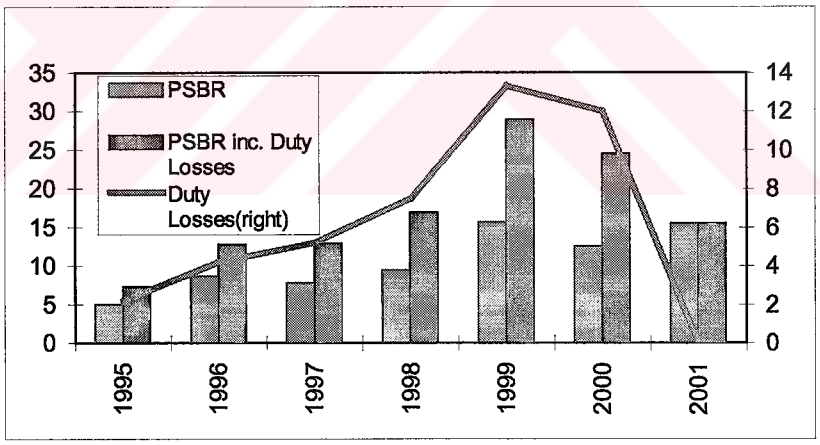
[21] Blejer (1994) , also see Koğar (1997), Türkan (1996), Atiyas et.al (1998), Yılmaz (2001), IMF (2001) for Turkish evidence.



Source: Treasury, http://www.treasury.gov.tr

Figure 21: Central Government Budget, % of GNP, 1990-2002

There were also duty losses of the state banks, which were not included in the calculation of official public sector deficit, known as "black hole". With the inclusion of huge missing part, public sector deficits increased sharply starting from 1996 presenting the exact magnitude of deficit.

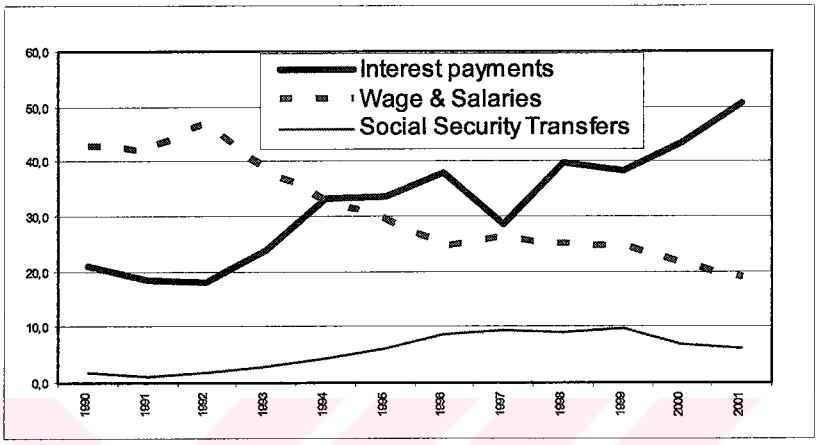


Source: Treasury, State Planning Organization http://www.treasury.gov.tr, http://www.dpt.gov.tr

Figure 22: Public Sector Borrowing and Duty Losses, % of GNP,1995-2001

Until 2001, end-year target of the government budget was never reached due to the execution of "supplementary budgets" with the extensive implementation of populist policies. The sources were used without enough appropriations in the budget. Moreover, fiscal discipline was weakened by the use

of extra-budgetary funds and quasi-fiscal activities of the state banks, which were carried outside the budget. The inefficiencies and mismanagement of the state-owned enterprises and also deficits of the social security institutions had widened fiscal deficit.

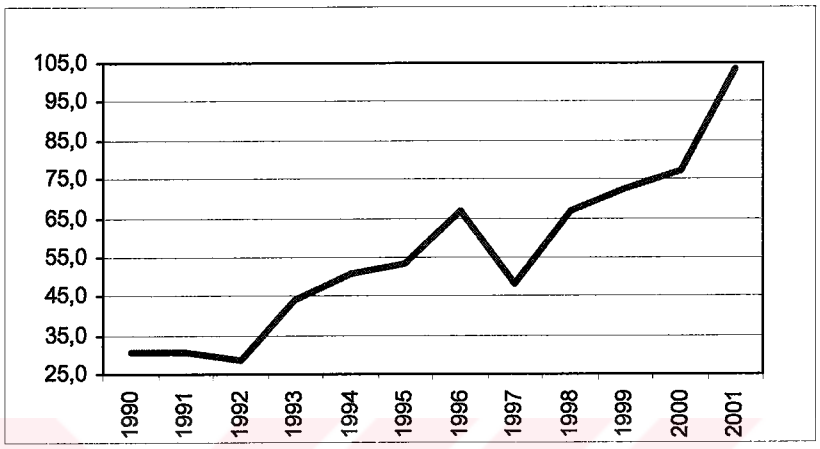


Source: Treasury http://www.treasury.gov.tr

Figure 23: Share of Expenditures in Total, %, 1990-2001

The expenditure part of the budget presented a sharp increase (Figure 5). With the high borrowing requirement together with the high inflation and inflationary expectations, interest rates on domestic borrowing had risen sharply, bringing the vicious circle on budget deficit via interest payments. The share of interest payments in total budget expenditures jumped significantly in 1994 and reached 40 per cent of the total expenditures in 1999 (Figure 23) as a major expenditure item. The ratio of interest expenditures to GNP was realized as 17 per cent in 2000, rising from 13 per cent in 1999. The personnel expenditures tended to decline as the size of the interest expenses increased through time. Under those developments, the ratio of primary expenditures to GNP remained limited. In fact, the ratio of central government primary expenditures to GNP is relatively small compared to the average of OECD countries by holding structural expenses almost

under control except electoral years (OECD, 2001). Transfers to the social security institutions had a third largest share after interest transfers and wage and salaries. It increased significantly after 1995, with the sharp deterioration of the social security institutions' deficit reaching 11 per cent of the total expenditures.



Source: Treasury, http://www.treasury.gov.tr

Figure 24 : Coverage Ratio of Interest Payments by Taxes, 1990-2001

Under an explosive trend of expenditures, the limited revenue generation in the budget led to the deterioration of the deficit. The large size of the unrecorded economy, tax evasions was the primary reasons of the low tax base structure in Turkey. Tax revenues became hardly covered the interest payments (Figure 24). Even though ambitious tax reform was introduced in 1998, the tax policy reversals and tax forgiveness were always on the fiscal agenda.

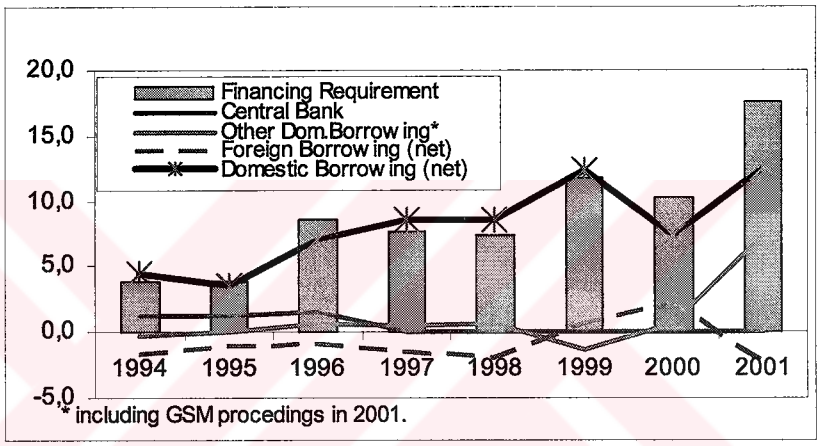
Table 7: Selected Revenue Indicators of the Government Sector

	1990	1994	1996	1998	1999	2000	2001
TAX REVENUES / TOTAL EXPENDITURES	67,6	65,5	57,0	59,2	52,7	56,4	49,0
TOTAL REVENUES / TOTAL EXPENDITURES	82,2	83,0	68,6	75,0	67,0	70,8	63,2
TAX REVENUES / GNP	11,4	15,1	15,0	17,2	18,9	21,1	22,5
DIRECT TAXES / GNP	6,0	7,3	5,9	8,0	8,6	8,6	9,1
INDIRECT TAXES / GNP	5,5	7,8	9,1	9,2	10,3		13,4
DIRECT TAXES / TAX REVENUES	52,1	48,3	39,4	46,6	45,4	40,9	40,5
INDIRECT TAXES / TAX REVENUES	47,9	51,7	60,6	53,4	54,6	59,1	59,5
Soure: SPO							

Source: State Planning Organization, http://www.dpt.gov.tr

Between 1994 and 2001, Turkey had been kept the net foreign repayer position and heavily borrowed from domestic markets. Since 1994, domestic borrowing has been the main source of budget financing, reaching 12.4 per cent of GNP in 1999. Starting from the second half of 1997, based on the agreement between the Treasury and the central bank, the short-term financing facility of the central bank has not been used in budget financing.

Government Domestic Borrowing

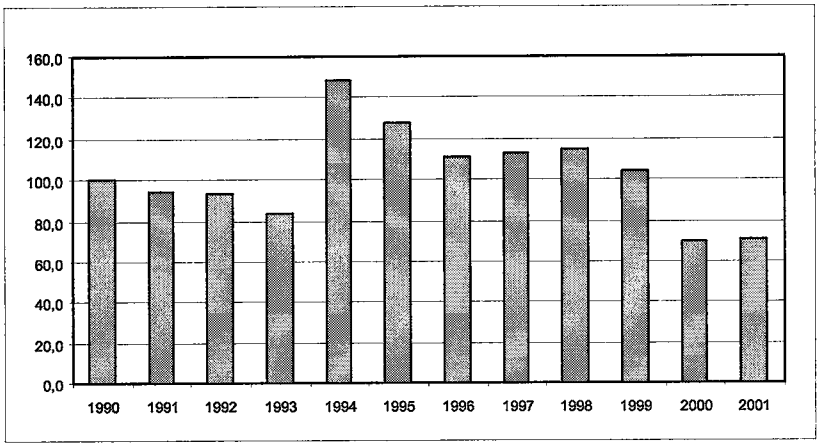


Source: Treasury http://www.treasury.gov.tr

Figure 25 : Consolidated Budget Financing, % of GNP, 1994-2001

Since the budget financing and also the external debt payments were realized by domestic borrowings, domestic debt stock presented an increasing trend since 1994. While the ratio of the domestic debt stock to GNP was 14 per cent in 1990, it jumped to 21 percent in 1994 with the crises and realized as 29 percent in 1999 with the accumulation of the fiscal problems. Through Treasury auctions "cash"[22] borrowings gained momentum after 1996 with the declining trend for maturity structure and increasing interest rates.

[22] Domestic debt consists of "cash" and "non-cash" securities. The "cash" stock of the government debt are accumulated mainly with the Treasury's auction to the market and used directly in the financing of the budget deficit and rolling of the domestic debt. "Non-cash" stock represents the



Source: Treasury, http://www.treasury.gov.tr

Figure 26 : Share of Domestic Borrowing in Budget Financing, %, 1990-2001

Given the borrowing requirement of the government, the political and economic uncertainties, external shocks had an adverse impact on borrowing rate and its maturities. The interest rates and maturity structure of the government borrowing reflected almost a mirror image. At the times of positive mood for internal and external economies, maturities were extending with relatively low rates.

The fiscal adjustment part of the disinflation programme, which initiated in 2000, relied on two pillars: the fiscal consolidation per se to move sustainable debt dynamics, and the realization of the fiscal reform to overcome the institutional weaknesses such as a budgetary process or public financing law as well as data aggregation on public deficit.

In 2000, the ratio of the domestic debt stock to GNP was realized as 29 per cent. With the decline in the real interest rates, contractionary fiscal policies, achievement of the high primary surplus (6.5 per cent of GNP), and high growth

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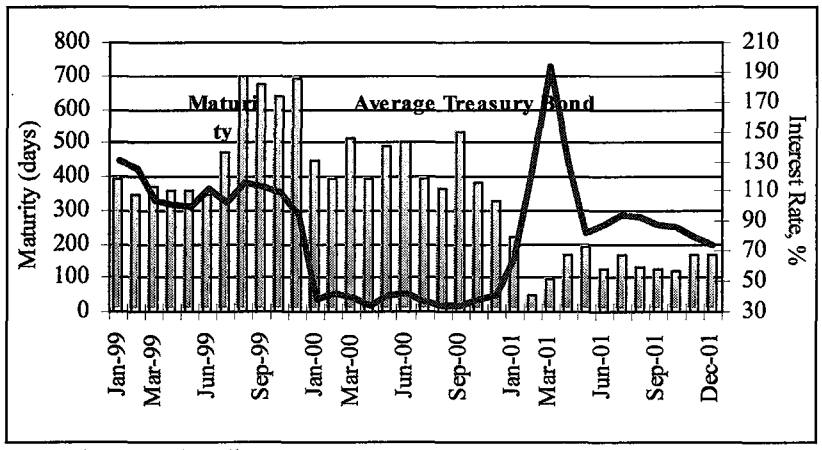
government securities, which is issued for the use "consolidation of debt amongst government institutions".

rate in 2000 brought the optimistic views about the debt sustainability. However, after the financial crises with the deterioration of the fiscal balances and higher real interest rates, debt to GNP ratio increased to 69 in 2001.



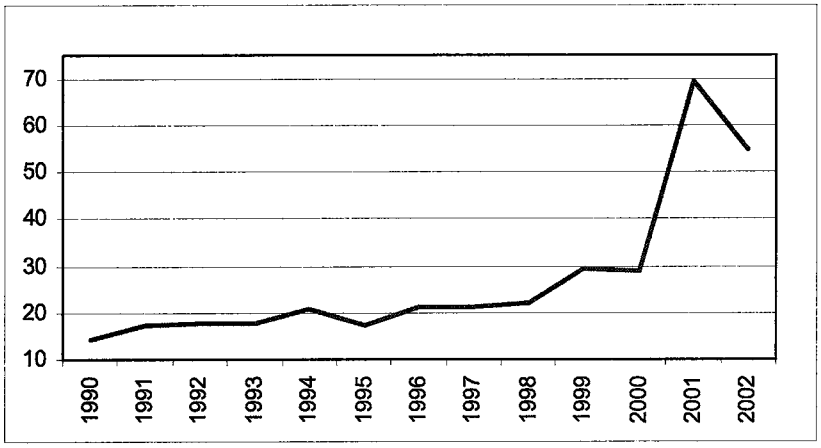
Source: Treasury, http://www.treasury.gov.tr

Figure 27 : Average Treasury Bond Rate and Its Maturity

Treasury tried to manage its debt in a sustainable fashion, by extending the maturity structure through the issuance of relatively long maturities. Looking into Figure 27, one could easily argue that the maturity structure of the government securities reflects the market expectations about the future. At the times of the initiation of the disinflation program in 2000, the maturity of the government securities were around 18 months which was consistent with declared date of exit from pegged exchange rate regime to switch managed floating. However, after September maturity declined gradually presenting the increased stress in the economy

Under the huge borrowing requirement of Treasury, high real interest rates were realized around 20-30 per cent attracting short-term capital inflow. In 2000, since both inflation rates and nominal interest rates declined sharply, real interest rate realized as negative in ex-post term. However, looking forward, ex-ante real

interest rates still provide positive interest rate around 10-15 per cent on the average.



Source: Treasury , http://www.treasury.gov.tr

Figure 28: Ratio of Domestic Debt Stock to GNP, 1990-2002

Since Treasury directly uses the proceeds from the privatization in debt reduction, the growth of the domestic debt to GNP ratio was remained limited. It was programmed as $7.6 billion, but realized as $5.9 billion in 2000. Of which $2.5 billion raised from the GSM license. Moreover, government foreign borrowings also helped to limit the domestic borrowing together with the high growth rate of the economy.

Table 8: Distribution of Domestic Debt Stock Among Economic Agents

	2000		2001	
	Billion TL	% Share	Billion TL	% Share
MARKET (All Banks+ Real Persons)	24,2	66,5	41,6	34,0
CBRT	1,5	4,0	32,6	26,7
of which debt to IMF	--	--	13,8	11,3
BANK RESTRUCTURING PRG.	6,8	18,6	37,8	31,3
PUBLIC BANKS	2,9	7,9	22,7	18,6
SDIF	3,9	10,7	15,1	12,7
OTHER	4,0	10,9	10,2	8,6
TOTAL	36,4	100,0	122,2	100,0

Source: Treasury, http://www.treasury.gov.tr

During the disinflation program, "cash" stock increased rapidly from 26 per cent in 1999 to 81 per cent in 2000. The fixed coupon securities constituted 66 per cent of the "cash" stock implying the risk that any upward interest rate movements adversely affect the banks' portfolio. With the experiences of the crises, banks were no more willing to hold their fixed coupon securities. Therefore, the share of fixed coupon securities in the cash stock declined from 66 per cent to 30 per cent in 2001.

Table 9: Structure of the Domestic Debt Stock

	1999		2000		2001	
	Million TL	% Share	Million TL	% Share	Million TL	% Share
CASH	20,4	89,0	29,6	81,3	58,4	47,8
NON-CASH	2,5	11,0	6,8	18,7	63,8	52,2
TOTAL	22,9	100	36,4	100	122,2	100
FIXED RATE	15,9	69,3	20,4	56,1	17,7	14,5
FLOATING RATE	5,9	25,8	13,0	35,7	60,9	49,9
FX DENOMINATED	1,1	4,9	3,0	8,2	19,5	16,0
FX INDEXED	0	0	0	0	24,0	19,6

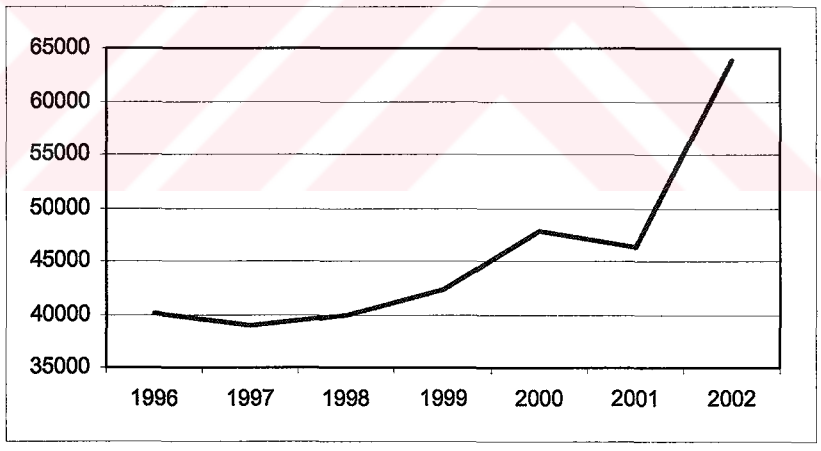
Source: Treasury, http://www.treasury.gov.tr

In order to deepen the market, in 2000, Treasury introduced new types of instrument so called Floating Rate Notes (FRNs) which, is based on the rate appeared in benchmark auction on quarterly basis or in the repo market, to protect banks' portfolio from the sharp increases in interest rates. FRNs' share was very limited around 20 per cent of the cash stock in 2000. Basically, due to the FRNs were given to the state banks and SDIF banks for their financial restructuring, its share reached 78 per cent in non-cash debt stock, constituting almost half of the total domestic debt stock in 2001.

Government External Debt

The "original sin"[23] refers to the incapability of borrowing from abroad in terms of "own" currency and even can not borrow from the domestic markets with fixed rates and long term maturities creating a financial fragility through currency mismatches or maturity mismatches. The "original sin" is also valid for the Turkish case where the government cannot borrow from abroad with its "domestic currency" as a small emerging country, and especially after the crises not even from the domestic markets.

In this section we emphasize the external debt, its composition as well as the maturity structure. Turkish government external debt started to increase in 1999 and in 2000 together with the foreign financing opportunities and IMF credits reached US$48 billion in 2001.



Source: Treasury, http://www.treasury.gov.tr

Figure 29 : External Debt Stock of the Government Sector, Billion $

The currency composition of the external debt was dominated by US dollar was more than 50 per cent in 2000. The rest was consisted of Euro (around 32 per cent) and SDR especially after IMF Stand-By agreements. The Euro/Dollar parity

[23] Eichengreen and Hausmann (1999), Hausmann and Panizza(2003), Eichengreen, Hausmann and Panizza(2003), Jeanne and Zettelmeyer (2002).

is crucial in this sense where during the year 2000, appreciation of Euro against Dollar contributes the limited growth of dollar denominated external debt. Moreover, government external debt has long term maturity structures which ease the debt management.

4.1.1.2. Risk Exposures of the Government Sector and Contingent Liabilities

The government sector carried out vulnerabilities due to its fiscal position. The high budget deficit and its financing problems deteriorated through time with very high real interest rates by bringing the debate of sustainability. Allen (2002) defined solvency as net asset is the ability to generate primary fiscal surpluses by raising more revenue from taxes than it spends. It is solvent as long as the present discounted value of all future fiscal primary balances is greater than the current stock of net government debt. Achieving high primary surplus for consecutive years, high economic growth rates as well as real interest rates low enough than the growth rate are the key factors contributing the sustainability of the fiscal balances. However, as an emerging market always open the threat of the contagion effect and political uncertainty.

Table 10: Maturity Structure of the Outstanding External Debt

	1997	1998	1999	2000	2001
TOTAL (MILLION $)	**84.243**	**96.418**	**102.980**	**118.685**	**113.806**
MEDIUM - LONG TERM	**66.552**	**75.644**	**80.059**	**90.384**	**97.565**
PUBLIC SECTOR	49.740	51.963	52.693	61.232	70.078
PRIVATE SECTOR	16.812	23.680	27.367	29.153	27.487
SHORT TERM	**17.691**	**20.774**	**22.921**	**28.301**	**16.241**

Source: Treasury, http://www.treasury.gov.tr

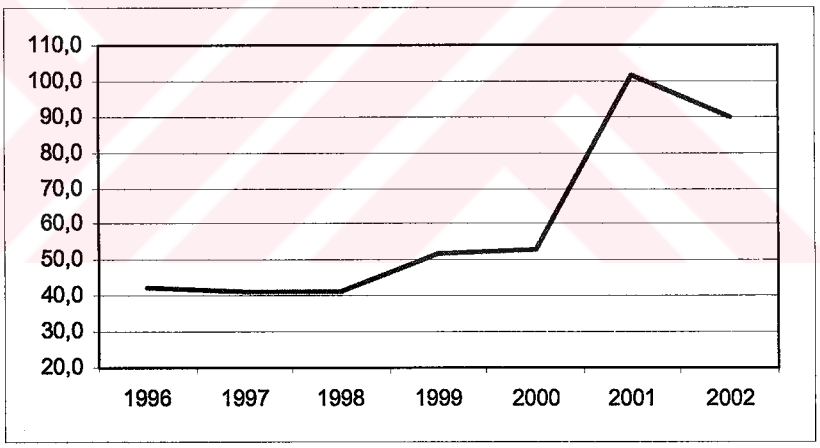
Even though the maturity structure of the external debt mainly consisted of medium and long term, the short maturity structure of the domestic borrowing creates weaknesses by generating interest risk as well as the roll-over risk exposures. Any sharp increase in the interest rates can create difficulties in servicing its debt by carrying excessive interest burden. With short-term maturity structure governments' balance sheet is also exposed to roll-over risk. Under a very short-term rollover requirement of the domestic debt, the risk premium will be high as expected indicating the widening of the sovereign spreads.

In terms of external public debt, it seems to be much smoother considering the relatively long maturity structure as 5 years comparing to the 11 months of domestic debt maturity. However, it is always exposed to the foreign exchange risk.

The composition of the debt structure by lender is also important in Turkey. Before the crises period, the main lender was the "market" heavily banks around absorbing almost 80-90 percent of the cash security issuances. However, after the crises with the restructuring of the banking sector, non-cash issuances of the treasury was increased in a great extent thus the main part of the obligation of the Treasury was became against to the public entities, namely state and SDIF banks as well as the central bank, which provides some flexibility in rollover its matured debt in terms of extending the maturity as well as the way of interest payments.

By looking at the at intersectoral relation between the government and the banking sector, one could easily see the risks associated to banking sector holding of the very large government securities portfolio, especially due holding of fixed

return securities before the crises. However, the fixed term securities are not a "threat" for the government rather an "opportunity" in high inflationary countries by providing a room deflating the real value of the debt. However, with short-maturity structure, Treasury has to issue new securities with increasing cost under increasing trend of interest rates. The reverse, the declining trends in interest rates helps to control the growth of debt stock. The lack of indexed or foreign denominated or linked securities always regarded as beneficial for the government. Prior the crises, it was the fact that Treasury issued mainly fixed term government securities as 66 percent of the total domestic debt stock. Therefore, due to the types of the securities the Treasury had minimized interest rate to risk by shifting it the banking sector.



Source: Treasury, http://www.treasury.gov.tr

Figure 30: Total Debt Stock of the Government Sector, % of GNP, 1996-2002

The total government sector debt, including external and the internal debt, to GNP ratio increased significantly in 1999 with the impact of the recession in the economy, however, in 2000 while foreign borrowing constitute a important share in budget financing and also due to the IMF and World Bank credits to the

government, external debt started to rise, moreover, domestic debt continued to steadily increase. After the crises, total debt stock of the government rose above 100 per cent which is very much above the Maastricht criteria. However, it should be kept in mind that those figures did not cover the implicit and explicit liabilities of the government. Including the private sector debt, banking sector's liabilities as contingent liabilities, which was guaranteed during the crises by the government, the ratio of government total debt to GNP would be much higher as will discussed in Chapter related to the "Prospective Deficit Considerations".

Even though the size of the Floating Rate Notes was limited as 20 percent of total debt in 2000, Treasury was also exposed to interest rate risk arising from FRNs which had longer-maturity but linked to the short-term interest rate for its coupon payments. Therefore, any upward movement of the interest rates directly affects the growth rate of government debt and thus the liabilities of the government increases sharply.

Table 11: External Debt Ratios, %

	1997	1998	1999	2000	2001
T.EXTERNAL DEBT / GNP	43,78	46,68	55,59	58,92	76,78
PUBLIC SECTOR / GNP	25,85	25,16	28,44	30,40	47,28
PRIVATE SECTOR / GNP	8,74	11,46	14,77	14,47	18,55
T.EXTERNAL DEBT / EXPORTS (FOB)	262,36	314,45	357,05	386,33	331,34
INTER.RESERVES (NET) / T. EXTERNAL DEBT	23,16	21,50	23,48	19,51	17,40
INTER.RESERVES (NET) / ST DEBT	110,30	99,77	105,50	81,81	121,91
CBRT RESERVES (NET) / IMPORT (FOB)	42,75	48,02	63,23	45,19	52,20
CUR.ACC.BAL./CENTRAL BANK RESER.(NET)	-13,52	9,57	-5,62	-42,41	17,12
CURRENT ACCOUNT BALANCE / GNP	-1,37	0,96	-0,73	-4,87	2,29

Source: Treasury, http://www.treasury.gov.tr

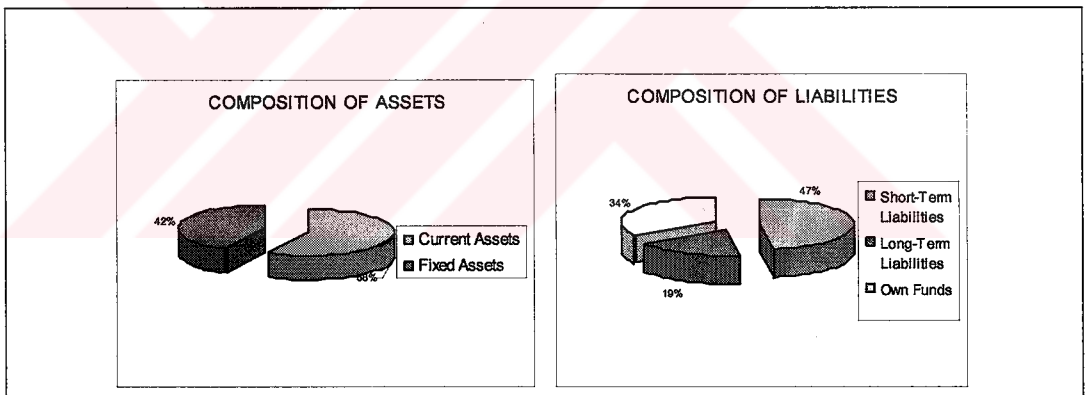
Before the crises period, the domestic debt was denominated mainly in national currency exchange shock, therefore was not exposed to FX risk. However, the share of public sector in total external debt was increased through borrowing from IMF and World Bank to 30 percent of GNP in 2000. The ratio of total external debt and its service to exports, the coverage of international reserves to short term debt and imports deteriorated sharply in 2000, presenting an increase in the fragility in external debt conditions (Table 11).

After the crises, Treasury began to issue foreign exchange indexed or FX denominated securities excessively in domestic borrowing in order to assist to close banks' short positions by swap operations as well as to get an easy access to markets again. Therefore, both through external public debt and domestic debt denominated foreign exchange, government was heavily exposed to foreign exchange risk.

4.1.2. The Corporate Sector Balance Sheets

The corporate sector is the engine of the growth in the economy. The stable macroeconomic conditions, foreseeable price movements shape firms' investment decisions. However, especially in developing countries, the corporate sector face with uncertainties and in order to continue its business in a profitable manner they have to hedge themselves.

The asset and liability structure of the corporate sector are designed according to the macroeconomic trends. Turkish corporate sector, in general, exposed to the similar risks reflecting in the economy. The operating environment, risks and tendencies could not be different than the general economic conditions for the corporate sector.



Source: Central Bank of the Republic of Turkey, Company Accounts, http://www.tcmb.gov.tr

Figure 31 : Balance Sheet of the Corporate Sector, Year 2000

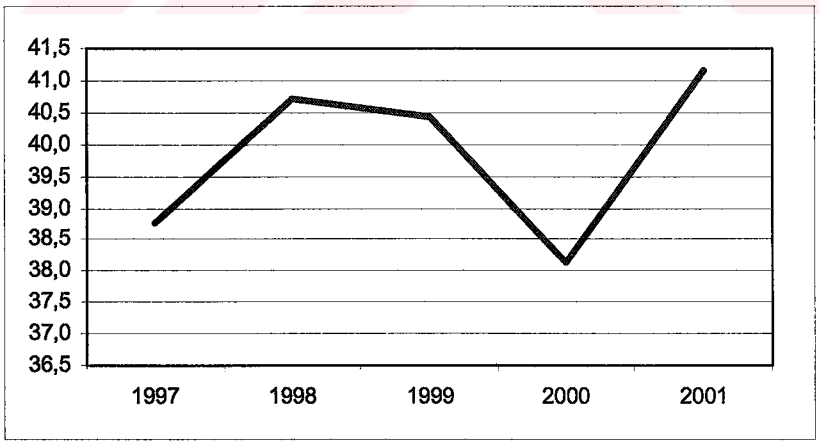
Corporate sector heavily depend on the sources other than own (Table 12). Over the decades the share of own sources of the corporate sector was around 60-65 per cent on the average.

Table 12: Source Structure of the Corporate Sector

	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001	2002
CAPITAL	40,3	41,6	38,7	44,4	41,1	41,3	39,0	38,8	35,5	36,1	31,3	36,7
OTHER SOURCES	59,7	58,4	61,3	55,6	58,9	58,7	61,0	61,2	64,5	63,9	68,7	63,3
ST	71,8	74,4	65,7	71,5	80,1	79,1	76,3	76,1	75,0	78,6	72,4	66,2
LT	28,2	25,6	34,3	28,5	19,8	20,9	23,7	23,9	25,0	21,4	27,6	33,8

Source: Istanbul Chamber of Commerce, "The First 500 Corporations Annual Report, 2001"

Corporate sector's other than own funds could be obtained from both domestic or external financial markets depending on their availability. Almost 80 percent of the banking credits extended to the corporate sector while around 40 percent of the corporate sector's borrowing was from the banking sector. This presents the interdependence between the banking and the corporate sector in Turkey. During the crises since some banks recalled the credits, many firms could not survive and some of them even went out of the business. Non-performing loans of the banks increased sharply with the realization of the credit risk.



Source: CBRT, Company Accounts, http://www.tcmb.gov.tr

Figure 32 : Share of Bank Loans on Corporate Sector Borrowing,%

In 2000, the share of corporate sector's borrowings from domestic banks declined to 38 per cent because of the availability of the foreign funds.

Table 13: Credits to Corporate Sector

SHARE IN TOTAL,%	1999			2000		
	ST	LT	TOTAL	ST	LT	TOTAL
CREDITS IN CASH	49,8	84,6	56,1	50,8	70,4	57,5
-TL	15,3	5,0	13,4	12,2	13,5	12,7
-FX	34,5	79,6	42,7	38,6	57,0	44,8
NON-CASH CREDITS	48,5	14,7	42,4	47,3	28,7	41,0
-TL	11,4	3,1	9,9	12,3	6,4	10,3
-FX	37,1	11,6	32,5	35,0	22,3	30,7
TOTAL CREDITS	100,0	100,0	100,0	100,0	100,0	100,0

Source: Central Bank of the Republic of Turkey, Company Accounts, http://www.tcmb.gov.tr

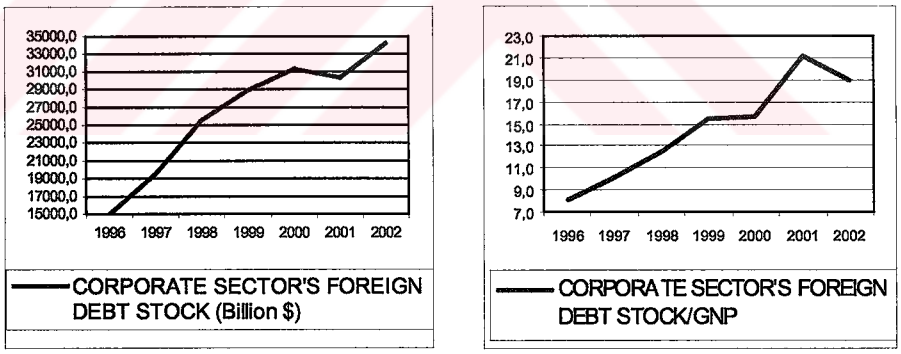
Borrowings in terms of foreign exchange could possible either through banking sector or through foreign creditors for big corporate groups. In banking sector almost 40 percent of the bank credits extended to the corporate sector was in the form of foreign currency which makes corporate sector extremely vulnerable to the foreign exchange movements. Table 13 presents that the foreign exchange denominated credits used by the corporate sector, for both cash and non-cash, has a significant share in total. Even though there is certain rules in extending foreign exchange denominated credits, corporate sector could affected adversely if borrower firm operates in non-tradable sectors whose liabilities are in terms of foreign exchange a great extent, however earnings are in terms of domestic currency.

Cespedes, Chang and Velasco (2002) stated that if the corporate sectors' liabilities are dollarized, a real devaluation has detrimental effects on corporate sector's net worth, which in turn has a negative impact on real output through

investment constraints and the decline in aggregate demand. With large currency mismatches, the corporate sector is exposed to a significant foreign exchange risk.

In Turkish corporate sector currency mismatches became significant prior the crises. They increased foreign exchange denominated liabilities with the appreciation of the domestic currency and under foreseeable foreign exchange rates. Given the fact that the heavy dependency of Turkish manufacturing industry to the imports of the intermediary goods and also the use of foreign sources for their financing made the corporate sector much more sensitive to the exchange rate movements.

The foreign debt stock of Turkish corporate sector was reached 31 billion US dollar in 2000. Firms use both banks channel to get credits as well as borrow directly from abroad if it is big enough and credible.



Source: Treasury, http://www.treasury.gov.tr

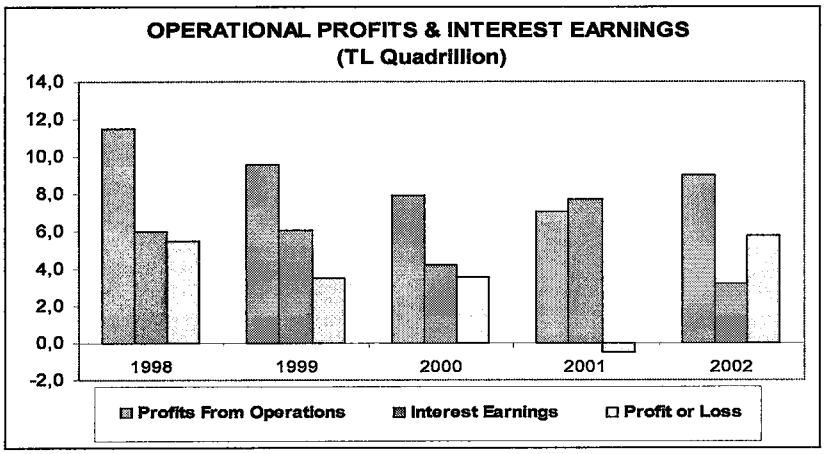
Figure 33 : Foreign Borrowings of the Corporate Sector

Credits extended to the exporters constitutes almost one fourth of the total credits in Turkish banking sector. From this situation, one can easily infer the size of non-tradable sector and how any shock to exchange rate could affect the sector and could lead to the repayment ability of corporate sector to banks. The credits

extended to the textile sector, which is the important export sector holding 13 per cent of the total credits, has been a declining trend since the 1998 Russian crises. The textile sector had already specific over-investment problems, when Russian crises hit the sector, leading a deterioration of the financial status of the firms and many of them even went to bankruptcy. Even though those kinds of sectors, operating in a tradable sector, has a capacity to export, they are vulnerable to the any external and the internal shocks affecting their competitiveness structure such as appreciation or depreciation of the national currency, developments in the terms of trade, exchange rate parity condition, external demand, capacity utilization, uncertainty in the politic situation and macroeconomic policies.

Hedging the currency mismatch in one sector meaning that the risk is immediately transferred to another sector and in an overall perspective in the economy, exposures remain largely unhedged. By lending to corporate sector in terms of foreign currency, banks reduce their net open foreign exchange liabilities position and transfer exchange rate risk to the domestic corporate sector. However, if the corporate sector hedges itself through off-balance sheet transactions, such as currency forward contracts with banks, the exchange rate risk is again transferred to banks as Allen et.al (2001) pointed out.

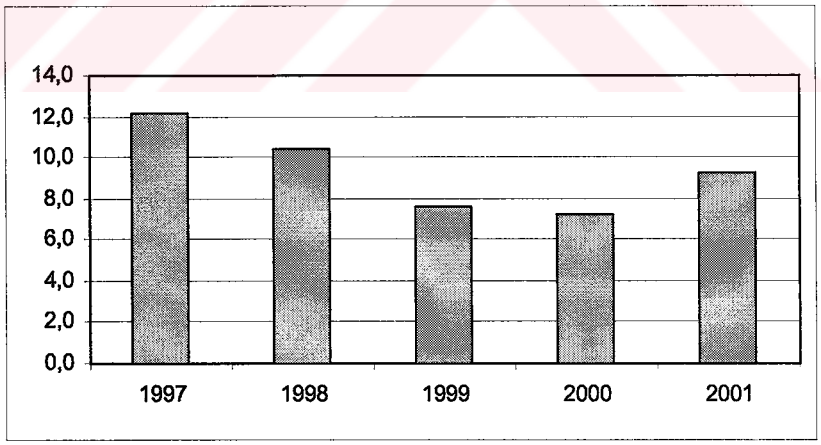
Interest rate was another risk factor for the corporate sector, who invested government securities in a great extent. During mid 1990's, in parallel to financing requirement of the government, Turkish corporate sector preferred to invest in government securities like the banking sector, instead of doing productive business. Therefore, the profits from normal business operations decline through time very significantly.



Source: Istanbul Chamber of Commerce, "The First 500 Corporations Report, 2003"

Figure 34 : Operational Profits and Interest Earning of the Corporate Sector

Profits from non-operational activities, mainly interest earnings rose sharply due to the investing in high yield government securities. The increase in the share of government securities in the corporate sector's portfolio made corporate sector much vulnerable to interest rate risk and earnings from the interest yielded assets declined sharply during the crises.

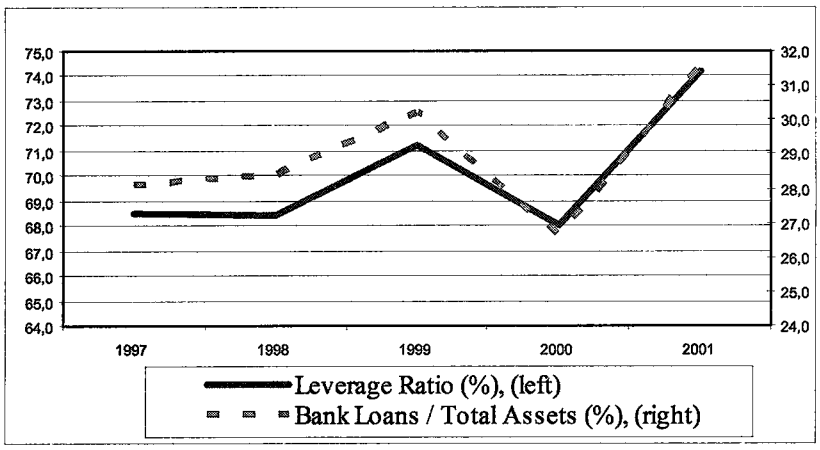


Source: Central Bank of the Republic of Turkey, Company Accounts, http:///www.tcmb.gov.tr

Figure 35: Share of Operating Profits in Assets, %

Capital structure mismatch risk results from relying excessively on debt financing rather than equity. The absence of an "equity buffer" can lead to financial distress when a sector encounters a shock. The crises in Korea and

Thailand are evidence of the risks of heavy reliance on debt financing. The resulting debt to equity ratios in both countries was very high before the crisis.



Source: Turkish Banking Association, http://www.tbb.org.tr

Figure 36: Leverage Ratios, %

Turkish corporate sector also heavily rely on the high debt equity ratios. Firms depend on banking sector in order to meet their financing needs. High leverage ratios could lead to the vulnerability in corporate balance sheets.

4.1.3. Banking Sector Balance Sheets

Macroeconomic imbalances threat the banking system's soundness and the solvency even though banks could generate the profits from those imbalances by accumulating the risks. Even though there is a general tendency in most of the developing countries as well as developed countries to use securities portfolio in making profit, instead of proceeding normal banking business activities, the credit risk still hold the 70 per cent of the total risk factor (BIS, 2002). Good risk management is the essential point of banking business, since each shock or/and any unexpected movements in domestic or external markets could lead to the realization of the risks in their balance sheets.

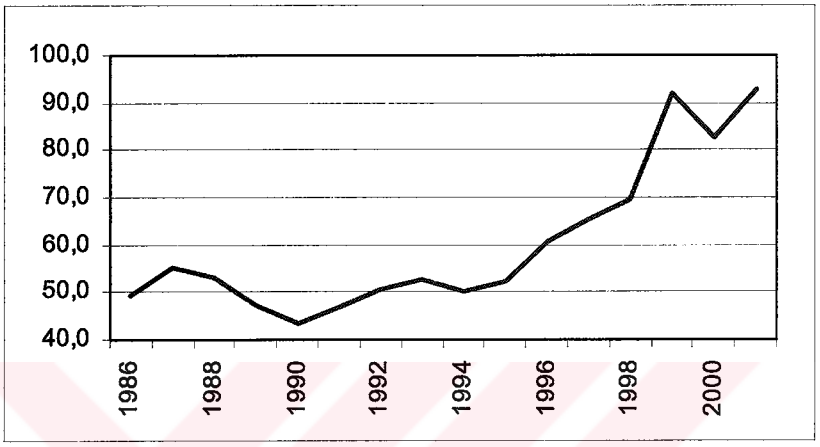
There is a strong relationship between the growth of the economy and the growth of the real credits. Banks are the financing institutions and their mission is to canalize excessive funds to scarce areas. Real sector and the banking sector are interconnected with each other. Any deterioration in real sector reflected itself as the increase in credit defaults. On the other hand, any deterioration in bank's financial position is reflected as the limiting the supply of credits to real sector. The household sector is also the other side of coin as banks' customer. Their disposable income; consumption-saving behaviour all reflect itself in their demand of credits as well as capacity to repay that affect the banks' credit risk.

4.1.3.1. Structural Problems of the Bank's B/S

Low Asset Size

Banks constitute almost 90-95 per cent of the total financial system in Turkey. Special finance houses, factoring, leasing, financing companies and

pension funds hold the rest. Under the thin financial markets, asset size of the banking sector was around 60 per cent of GNP in the beginning of 1980s, however, it presented an improvement throughout the years and reached almost 90 per cent in 2001. It should be pointed out that, this ratio remains very low comparing to the EU countries[24].



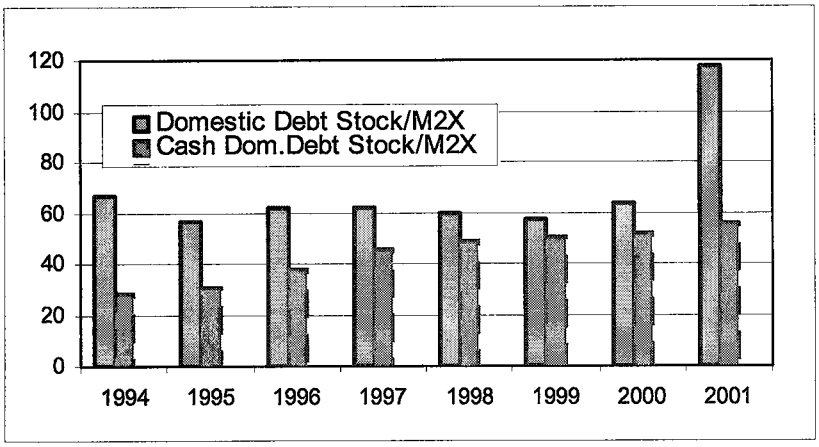
Source: Turkish Banking Association, http://www.tbb.org.tr

Figure 37: Turkish Banking Sector Assets, % of GNP, 1986-2001

Pressure on the financial Markets

Over the years the pressure on financial markets increased due to the increase in the financing needs of the Treasury. Since the domestic borrowing was carried through the banking sector, banks preferred to allocate its sources, Turkish lira and foreign exchange deposits and foreign borrowings, to the Treasury in a great extend in order to benefit high yield on government securities.

[24] See a comprehensive study of Pazarbaşıoğlu (2003) comparing Turkish banking system with the EU countries.



Source: Treasury and Central Bank of the Republic of Turkey, http://www.treasury.gov.tr, http://www.tcmb.gov.tr

Figure 38 : Share of Domestic Debt in Money Supplies, %, 1994-2001

The ratio of government securities to money supply M2X presents the pressure on the financial markets due to the large public borrowing requirement. It was around 60 per cent for total debt stock. It can be evaluated as the indicator of how large the government absorbs domestic savings, in the form TL and foreign exchange deposits, to finance its deficit. The ratio rose sharply to 117 percent in 2001 from 57 and 64 percent in 1999 and 2000 respectively with the restructuring of the banking system.

Ownership structure

The ownership structure of the Turkish banking system indicates the large size of the state banks even though its share had diminished from 45 per cent in 1990 to 31 percent in 2001. State banks have second biggest share after the private commercial banks. Since state banks were established for special purposes to subsidize the farmers and small and medium sized enterprises, non-performing loans on those credits led to the accumulation of losses in their balance sheets and became one of the factors, which led to the distortion in the market.

Table 14: Structure of Ownership, %

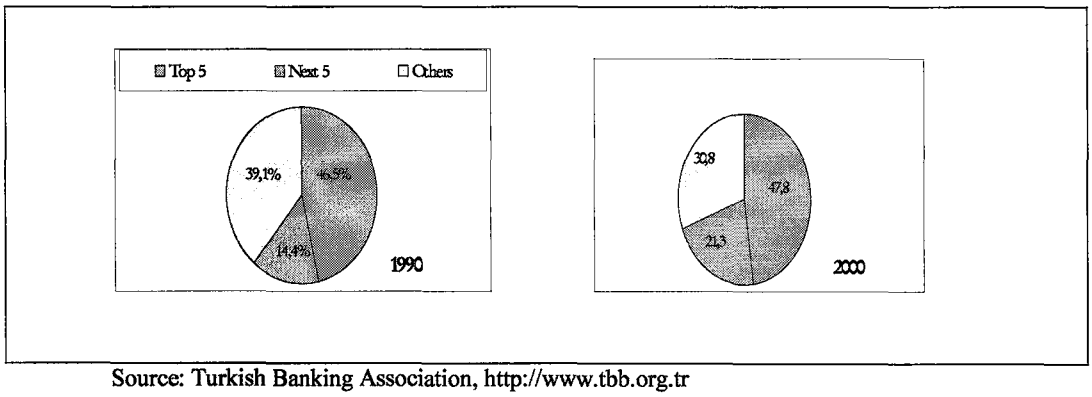
	1999	2000	2001
State Banks	35	34	31
Private Banks	48	50	57
Foreign Banks	3	3	3
Invest. and Dev. Banks	5	4	5
SDIF Banks	6	8	4
Sector	100	100	100

Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr

The share of privately owned banks presented a volatile pattern depending on the number of banks taken over by the SDIF. With the resolution of SDIF banks, the share of private banks is increased to 57 per cent from the minimum level of 48 percent in 1999. In Turkish banking system the share of foreign banks are 3 per cent and there is a room for the foreign bank entry.

Concentration

Turkish banking system has an oligopolistic structure, while 5 big banks constitute 48 per cent, the asset size of the 10 banks almost reached 60 per cent of the total sector in 2000 presenting an increasing trend in concentration comparing to last decade.



Source: Turkish Banking Association, http://www.tbb.org.tr

Figure 39 : Concentration of Banks, 1990-2000

Operational Structure

The number of banks declined in the banking sector through time. While in 1999 the number of banks was 81, after the crises it declines to 61 in 2001 through merger and acquisition, liquidation or the sale of the banks. During the crises downsizing in the number of branches and personnel was realized in order to minimize the operational costs. Comparing to the EU standards, Turkey are in line with the EU averages in this respect.

Table 15: Operational Structure of Banks

	Number of Banks			Number of Branches			Number of Personnel		
	1999	**2000**	**2001**	**1999**	**2000**	**2001**	**1999**	**2000**	**2001**
State	4	4	3	2.852	2.833	2.707	71.801	70.329	55.992
Private	31	29	22	3.922	3.777	3.493	75.518	71.155	63.697
SDIF	8	11	6	711	1.076	408	15.975	20,044	6.667
Foreign	19	17	15	118	115	230	4.782	3,743	4.275
Inv.- Dev.	19	18	15	29	29	19	5.836	6.461	5.644
Total	**81**	**79**	**61**	**7.632**	**7.830**	**6.857**	**173.912**	**171.732**	**136.215**

Source: Banking Regulatory and Supervisory Authority, http://www.bddk.org.tr

Distortion Created by State Banks

Analyzing by banking groups presents that state banks had the second largest share in the sector. Two state banks were placed in the top 5 banks of the sector. Their deposit and credit share was around 40 and 28 percent of the total respectively in 2000.

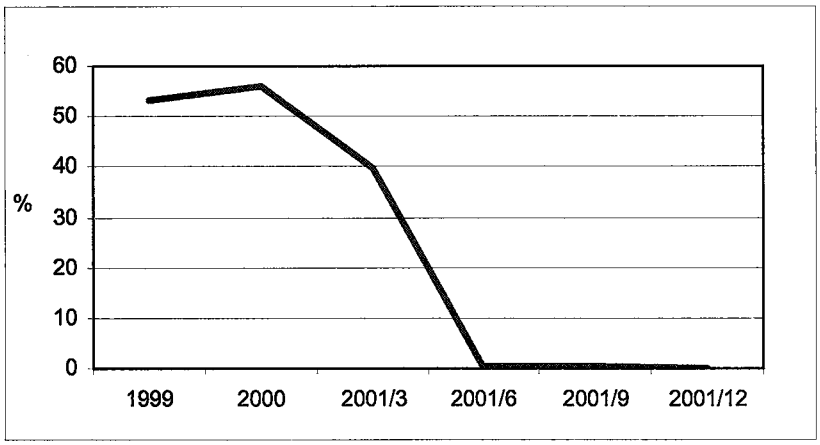
Moreover, assets and liability structure of the state banks also led to the distortions in the market. Almost 40 per cent of the total deposits were belonged to state banks.

Table 16 : Selected Balance Sheet Items of the State Banks

	ASSET		CREDIT		SECURITIES PORTFOLIO		DEPOSIT	
	QUADTR TL	% SHARE IN SECTOR	QUADTR TL	% SHARE IN SECTOR	QUADTR TL	% SHARE IN SECTOR	QUADTR TL	% SHARE IN SECTOR
1999	25,2	34,9	6,3	28,5	2,7	19,1	18,2	41,9
2000	35,7	34,3	9,9	27,7	3,2	17,3	23,5	39,9
2001	54,1	31,2	12,6	23,6	28,9	48,2	37,3	33,7

Source: Banking Regulatory and Supervisory Authority, http://www.bddk.org.tr

Based on their establishment purposes, state banks extent preferential credits to agriculture, housing sectors and small-medium sized enterprises. The subsidized credits which were below the market rate led to the deterioration of the financial status of the state banks. Treasury extended securities to cover those duty losses. Since the yield of those securities was lower than the others and also almost non-marketable, state banks faced with huge liquidity problems and because of this they offered high deposit rates and borrowed from interbank money market by accepting high overnight rates, which obviously create distortions in financial markets.



Source: Treasury and State Planning Organization http://www.treasury.gov.tr, http://www.dpt.gov.tr

Figure 40 : Share of State Banks' Duty Losses in Their Total Assets

Asset Concentration

The asset concentration among bank groups presents that private banks had extent 55 per cent of the credits in the sector while hold 51 per cent of the total government securities in their portfolio (Table 17). However, in 2001 the composition of securities was increased in state and SDIF banks. The share of state banks was very high especially in the deposits as mentioned previously.

Table 17: Concentration on Balance Sheet Items by Bank Groups

%, Year 2000

	Assets	Credits	Securities	Deposits
Public Banks	34,3	27,7	17,3	39,9
Private Banks	49,5	54,9	51,3	45,9
Foreign Banks	3,4	1,2	4,6	0,8
Dev. and Inv. Banks	4,5	5,8	2,1	-
SDIF	8,4	10,4	24,8	13,4
Sector	100	100	100	100

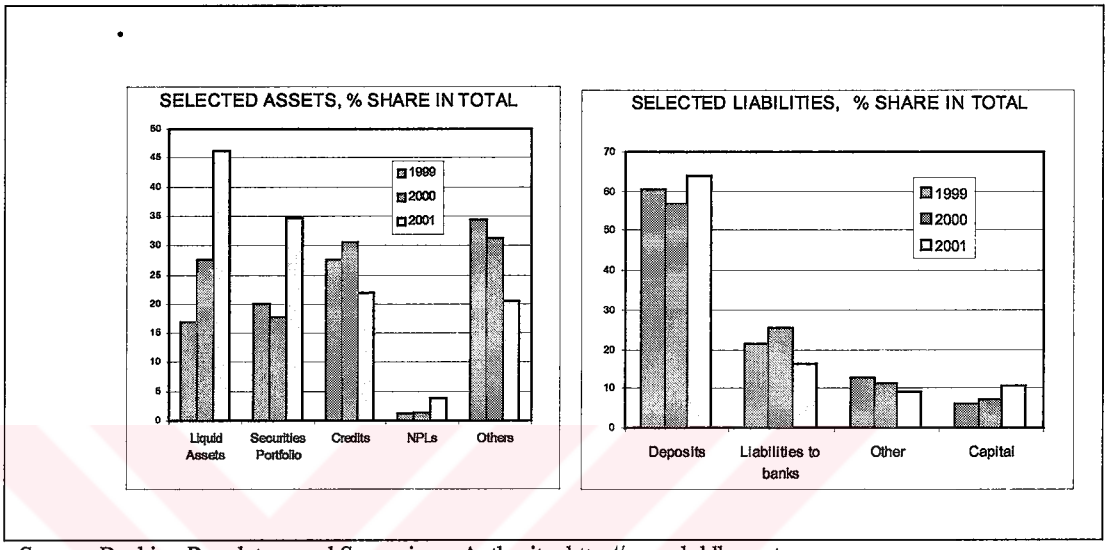
Source: Banking Regulatory and Supervisory Authority, http://www.bddk.org.tr

Shift from Credits to Government Securities

Relying on domestic borrowing for public sector deficit financing via banking sector brought a structural shift on asset side of the banks' balance sheet[25]. The composition of the assets of the banking sector changed drastically from credits to the government securities. As parallel to the "normal" business activities, the main portion of the assets were in credits as 54 per cent in 1980, the share of credits was around 45 per cent on the average between 1980 and 1997, however after then, it started to decline sharply to 43 per cent in 1995. Due to the both

[25] Until 2002, based on the accounting principles, banks hold government securities in their balance sheets' under two classifications. The first one was the securities trading portfolio and the second was the non-trading portfolio depending on the holding purpose of the securities. Should the securities hold for the trading purposes, it was classified under securities portfolio. Should the securities hold for the collateral or banks willing to hold them until the date of its maturity, it was classified under the second category. However, in this section, analysis covers both of the categories and calls it as securities portfolio.

domestic and external conditions as well as the gradual increase in the securities portfolio, the share of credits in total assets declined to 30 per cent in 1999. Even though it increased during 2000 to 33 percent, the year 2001 presented a sharp decline in the ratio.



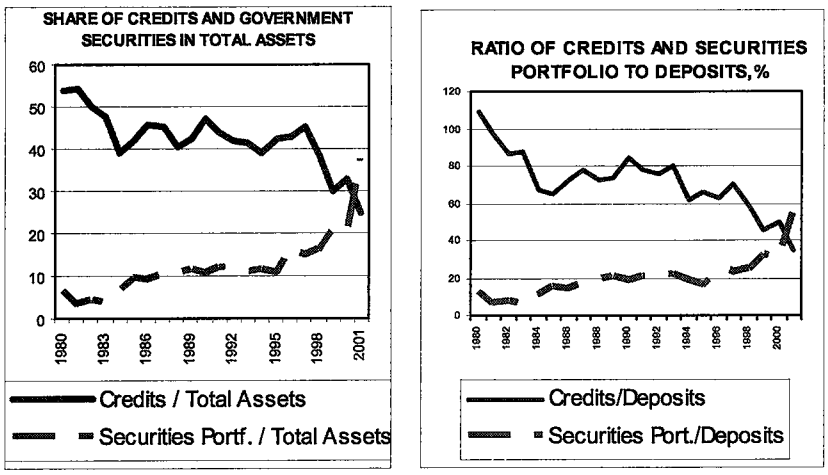
Source: Banking Regulatory and Supervisory Authority, http://www.bddk.org.tr

Figure 41 : Selected Assets and Liabilities of the Banking Sector

The level of the securities portfolio had been increased sharply throughout the years, its share in total assets have been increased from 6 per cent in 1980 to 11 per cent in 1995 and 21, 35 and 40 per cent for 1999, 2000 and 2001. Comparing to this trend with the international banking activities, it is observed that the share of securities portfolio only hold 11 per cent of the total assets while the share of credits are around 40-50 per cent on the average in EU countries.

Credits to deposit ratio, which measures how much resources was allocated as credit in banks balance sheet, declined through time significantly, mainly due to the attractive investment opportunities of the government securities. Banks became to allocate the great portion of the deposits for lending to the Treasury. While the ratio of securities portfolio to deposits was around 24 per cent in 1998, it rose to 32

per cent in 1999 and 2000 and reached to 54 per cent in 2001 due to the securities given for restructuring of state and SDIF banks.



Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr and Turkish Banking Association http://www.tbb.org.tr

Figure 42 : Indicators of Shifting From Credits to Government Securities

In shifting government securities, banks preferences were shaped through

i) Legal requirements: At the initial period of government borrowings, banks had to hold securities certain amount of securities for legal requirement. However, over time legal requirements holds only a small portion of banks portfolio comparing to their voluntary holdings.

ii) High real return: Due to the high yield of real interest rates on government securities, banks were getting to involve more in financing of the government' budget deficit. Banks bought 70-80 per cent of the issued securities from the primary market. Tax exemptions also increased the appetite of holding government securities.

iii) The establishment of new instruments and markets: An instrument of repo (repurchase agreements on government securities) was introduced in 1987. Establishment of the Istanbul Stock Exchange repo market and definite buying and selling market operations contribute to deepen and profitability of the government securities. The size of the repo in financial markets rose sharply, before the crises it reached TL 6 quadrillions just before the crises. Moreover, introduction of the "primary dealer" system[26] in 2000 aimed to encourage banks to participate auctions and buy the government securities by providing some facilities.

iv) Risk-free treatment of government securities in CAR: Besides the profitability, the government securities accepted as zero risk assets under the calculation of the capital requirements. Since credits accepted as risky assets, banks preferred to hold government securities instead of extending credit which necessitated holding.

The Distribution of the Government Securities Among Bank Groups

The share of securities portfolio in banks total assets declined slightly for all banking groups in 2000. However, due to the securities extended to public banks and SDIF banks in the form of non-cash and recorded as the fixed securities in banks' portfolio, their share increased by the end of 2001 through restructuring program. Moreover, in the decline of the private banks' share in securities mainly was coming from the taking over of three private banks, namely Demirbank in December 2000, Ulusal and Iktisat Bank in February 2001, which had the high securities portfolio in the banking sector.

[26] See Treasury web site: hptt/www.treasury.gov.tr

Table 18: Securities Portfolio , % Share in Total Assets

	1998	1999	2000	2001
Sector				
Trading portf./T. Assets	2,0	4,5	8,4	27,5
Securities port*./ T.assets	16,2	21,6	19,9	37,7
Public Banks				
Trading portf./T. Assets	10,7	10,7	6,2	5,6
Securities port*./ T.assets	11,0	12,2	10,0	54,5
Private Banks				
Trading portf./T. Assets	16,7	20,9	10,5	10,8
Securities port*./ T.assets	20,0	27,6	22,0	30,3
Foreign Banks				
Trading portf./T. Assets	23,2	31,3	12,9	7,9
Securities port*./ T.assets	23,9	32,9	22,8	23,9
SDIF Banks				
Trading portf./T. Assets	10,9	22,4	43,1	55,5
Securities port*./ T.assets	14,7	27,3	53,0	57,2

* including Non-Traded Securities Portfolio

Source: Turkish Banking Association http://www.tbb.org.tr

After the resolution of the bailed out banks through merging and acquisition, share of securities portfolio to total assets for the private banking group increased from 22 to 30 per cent in 2001. While the share of securities in total assets was 10 per cent for public banks in 2000, during the phase of the Banking Restructuring Program it rose to 54 per cent. Before the crises the share of SDIF banks in the securities portfolio was only 6 per cent, however due to the restructuring of them, it rose to 29 per cent by June 2001 and with the resolution of the SDIF Banks dropped till 3 per cent.

Even though the asset size of foreign banks was very limited, around 3-4 per cent of the total sector asset size during that period, the share of foreign banks securities was considerably, high as the 23 per cent of the total. However, it was observed that immediately with crises foreign banks run down their securities

portfolio until its share dropped to one or two per cent of the sectors' total securities. Foreign banks generally would prefer to remain liquid during the period of stressed conditions.

4.1.3.2. Response of the Banking Sector to Disinflation Program and Risk Accumulation

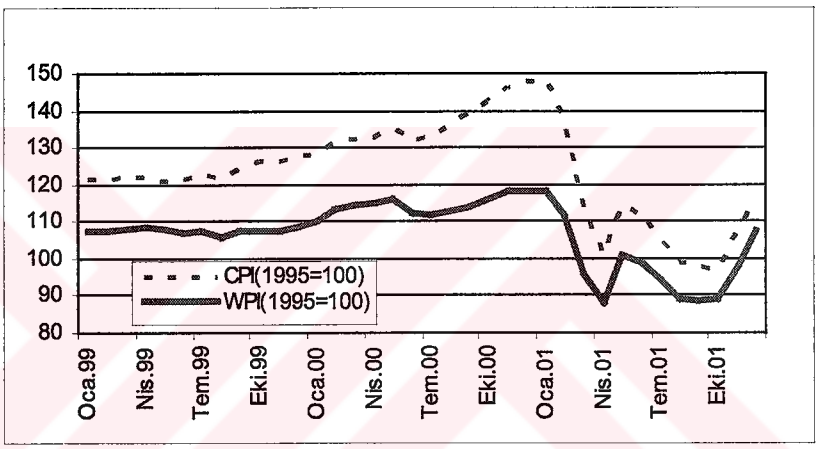
During the disinflation program, the structure of the banking sector had changed considerably. Banks had to not only manage their risks, but also prepare themselves for new challenges of doing banking business under low inflation environment. Therefore, they tried to diversify their asset and liabilities in order to be able to protect their competitive powers by taking excessive risks.

i. Currency Mismatch and Accumulation of Foreign Exchange Risk

With the adaptation of the exchange-rate-based "disinflation program"[27] supported by the IMF by the end of 1999, the interests on the government securities presented a significant decline from the level of 70 per cent to 35 per cent in annual basis in the beginning of 2000. This quick response of the interest rates in the beginning of the Program were basically resulted from the credibility of the Program with the support of international organizations, ability of the Treasury borrowing from international market, keeping domestic roll-over ratio around 70-75 and privatization receipts from the sales of big petroleum companies[28].

[27] See IMF (1999, 2000) Letter of Intent
[28] See OECD (2001) , Eichengreen (2001).

With the appreciation of the domestic currency, banks preferred to open their foreign exchange positions by accelerating their foreign exchange denominated liabilities. Banks converted foreign exchange to TL and invested in government securities, which had yield 10 per cent real interest rate by considering targeted end-year inflation rate. Taken into account the predetermined end year value of the TL against the basket (0.75 US dollar+1 Euro) and comparing it to the yield of government securities, opening FX position obviously provided a significant amount of profit for the banks.



Source: Central Bank of the Rpublic of Turkey, http://www.tcmb.gov.tr

Figure 43 : Real Effective Exchange Rate (1995=100)

Foreign exchange risk emerged mainly due to the gap between the foreign exchange denominated assets and liabilities, known as open position. In the literature[29], it is accepted that real exchange rate appreciation is one of the main reason of the financial crises. If the gap between the assets and liabilities are widening, the banking sector became more vulnerable to any upward movement of foreign exchange.

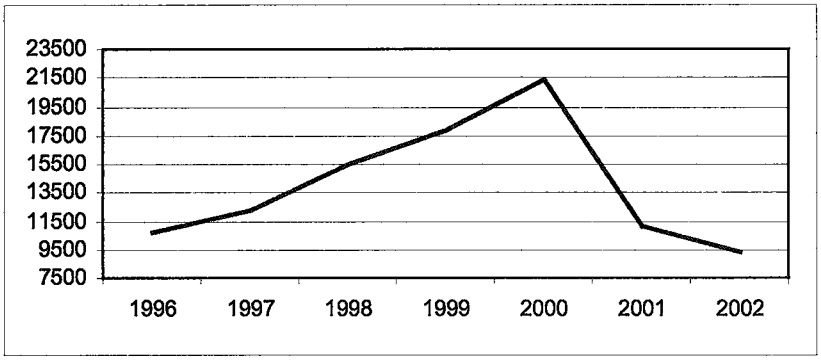
[29] Hermosillo (1999), Demirguc Kunt (1999), Kamisky (1999), Schneider and Torell (2000), Boire (2002).

Table 19: TL and FX Composition of Banks Balance Sheets, %

ASSETS						
	1999		2000		2001	
	TL	FX	TL	FX	TL	FX
State Banks	81	19	81	19	65	35
Private Banks	50	50	54	46	49	51
Foreign Banks	46	54	63	37	48	52
Inv.and Dev. Banks	48	52	51	49	44	56
SDIF Banks	81	19	65	35	66	34
Sector	62	38	65	35	54	46
LIABILITIES						
State Banks	80	20	80	20	63	37
Private banks	39	61	39	61	35	65
Foreign banks	32	68	37	63	39	61
Inv.and Dev. Banks	50	50	49	51	47	53
SDIF Banks	16	84	35	65	40	60
Sector	52	48	53	47	45	55

Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr and Turkish Banking Association http://www.tbb.org.tr

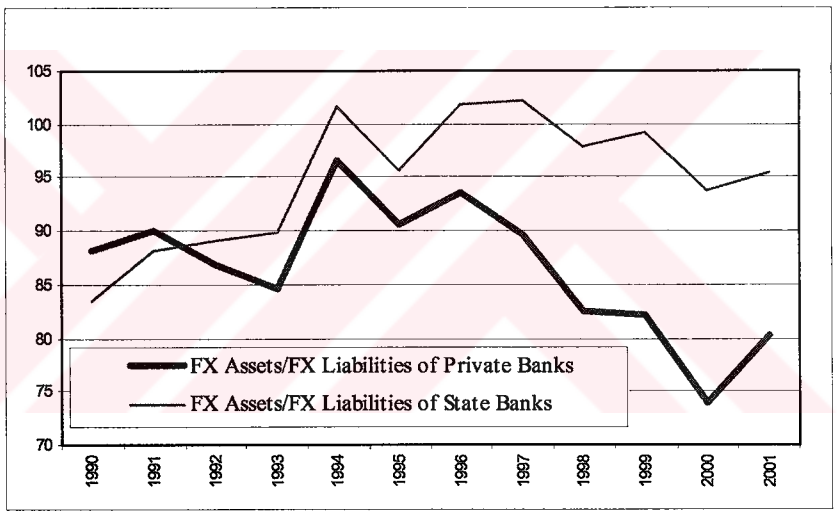
As can be seen from currency breakdown of the balance sheet table above, while privately owned commercial banks had almost 50 per cent weight in FX assets and FX liabilities hold 61 per cent of the total in 1999. The share of TL assets increased to 54 per cent in 2000, while the share of FX liabilities remained same deepening the currency mismatch in banking sector. However, it should be emphasized that before and after the crises state banks did not have any FX exposures.



Source: Treasury, http://www.treasury.gov.tr

Figure 44 : Banks' Foreign Debt Stock, 1996-2002,Billion US $

In 2000 foreign debt stock were increased from US$ 19.5 billion to US$21.5 billion (Figure 44). It was realized mainly through syndicated loans with maturity of 2 to 5 years. With the confidence of the international financial institutions to the disinflation program, banks could borrow relatively favorable rates comparing the previous years. Moreover, banks continued to hold foreign exchange denominated deposits as a cheap source of finance. Private commercial invested in TL denominated government securities and to extend credits consumer credits mainly by widening the gap between TL denominated assets and FX denominated liabilities.



Source: Turkish Banking Association http://www.tbb.org.tr

Figure 45 : Coverage of FX Assets to FX Liabilities

The coverage ratio of FX assets to FX liabilities also presented a sharp deterioration of the currency mismatch particularly in privately owned commercial banks before the crises. In 2000, FX assets for private commercial banks covered only 74 per cent of the FX liabilities. While the coverage of FX liabilities was very low for SDIF banks, state banks almost square in their position.

By November 2000, the open position carried by banks reached US dollar 18 billion just before the crises by taking considerable amount of foreign exchange risk. However, after the November crises banks, especially private commercial banks tried to close their positions. In the eve of the second crises, banking sector's open position was around US$ 15 billion.

Table 20: Open Position of the Banking Sector

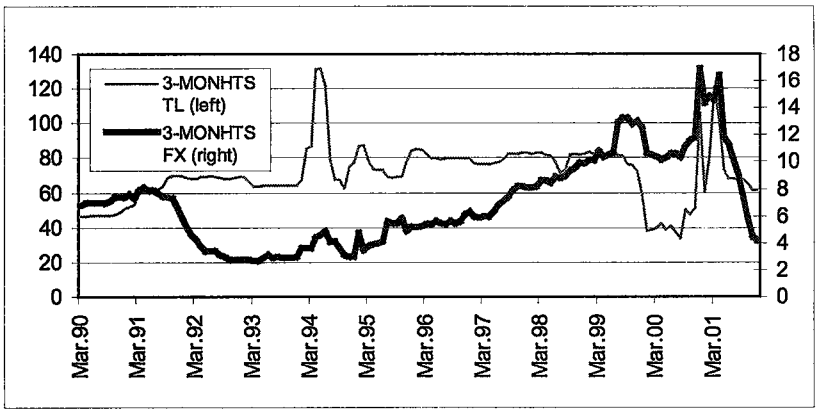
BillionUS Dollar	Balance Sheet Position (1)				Net Open Position (2)			
	Nov 2000	**Feb 19 2001**	**June15 2001**	**Dec 2001**	**Nov 2000**	**Feb 19 2001**	**June 15 2001**	**Dec 2001**
State Banks	-184	-28	95	191	-184	22	96	189
Private Banks	-10.674	-8.960	-6.131	-1.487	-954	-1.049	-374	110
SDIF Banks	-5.177	-4.537	-274	-441	-4.777	-4.529	-354	-441
Foreign Banks	-1.966	-1.434	-818	108	-110	-45	-15	-9
Inv.&Dev.Banks	-441	-333	-118	40	-108	-75	24	22
Sector (excluding SDIF)	**-13.265**	**-10.755**	**-6.972**	**-1.147**	**-1.356**	**-1.147**	**-269**	**312**
Sector (including SDIF)	**-18.442**	**-15.292**	**-7.246**	**-1.588**	**-6.133**	**-5.676**	**-623**	**-129**

Source:Banking Regulatory and Supervisory Authority, 2000 Annual Report
(1)Balance Sheet Position = FX Position + FX Indexed Position
(2)Net Open Position = Balance Sheet Position + Forwards

How the banks did open their FX positions under the strict prudential regulation was mostly debated after the crises. Banks could carry short position by complementing it with off-balance sheet items. While banks' on-balance sheet FX position was exceeding the prudential limit, with off-balance sheet activities banks could cover their FX liabilities. As of February 19, net open position was around US$ 1 billion for the private commercial banks indicating the large size of off-balance sheet activities. Including SDIF, banking sector's net open position was US$ 5.6 billion.

February 22, 2001 was the day of realization of the foreign exchange risk on banks' balance sheets with a sharp devaluation. It generated foreign exchange losses amounting US$ 4.7 billion by the end of 2001. Foreign lenders recalled credits partially during the crises and did not extent credit afterwards leading a sharp decline in banks' foreign debt stock amounting almost US$ 10 billion.

As mentioned above, banks opened their positions also through attracting deposits from domestic residents. Even though the exchange rate was determined under the pegged exchange rate regime and its appreciation was around 30 per cent, households continued to hold their savings in terms of FX denominated deposit. FX accounts did not melt down implying the strong dollarization in Turkey even it was not profitable to hold. In this behaviour of households, past unsuccessful stabilization attempts might play an important role. Banks took the advantage of this behaviour and also encouraged them to do so. Since TL continued to appreciate against foreign exchange basket, holding FX deposits became cheaper for the banks to allocate them in government securities. In order to continue to attract FX deposits, banks provide a limited decline for FX deposit rates, comparing to rate on TL denominated deposits.

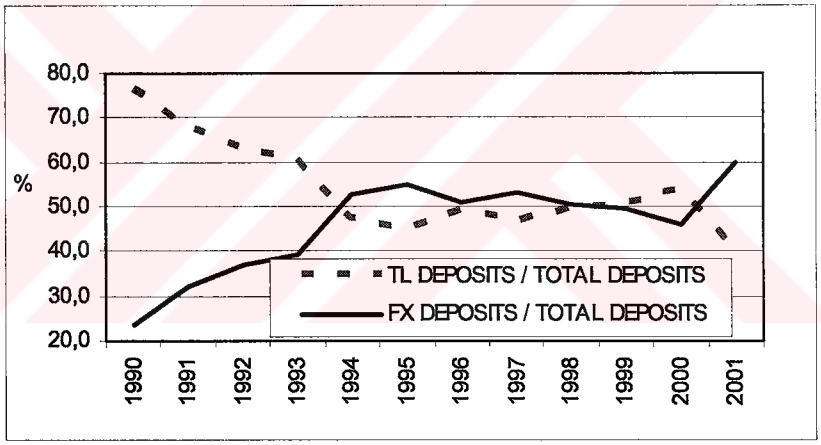


Source: State Planning Organization, http://www.dpt.gov.tr

Figure 46 : TL and FX Deposit Rates, %

The level of FX deposits (US$ 32.6 billion at the end of 1999) rose to US$ 38 billion in September 2000. However, in the last three months of 2000 with the increase in the yield of TL denominated investment instruments, FX deposits presented a decline however it was still above the previous year level by US$ 4 billion (BRSA (2000)).

The share of FX deposits in total deposits seemed to be decline in figure 47, however, during the year 2000 appreciation of TL against foreign currency should be take into account. After the crises, with the sharp depreciation of the domestic currency trend was reversed and the share of FX denominated deposits reached 60 per cent of the total deposits



Source: Turkish Banking Association http://www.tbb.org.tr

Figure 47 : Share of TL and FX Deposits in Total

ii. Maturity Mismatch and Interest Rate Risk

In the realization of the interest rate risk, the maturity mismatches of the banks sector plays a crucial role. The funding of long-term assets with short-term liabilities creates the maturity mismatch between the assets and liabilities of the banks. Based on the confidence on the disinflation program and positive expectations on financial markets, banks operating in Turkey adjusted maturity

structure of balance sheets in a way that taking long positions in assets and short positions in liabilities believing that interest rates and inflation would go down further. Substantial decline in the market interest rates encouraged banks to fund themselves in very short-term, while allocating their assets with longer maturities.

In 2000, average maturity of deposits was around 2.9 month[30]. Banks had to roll-over its liabilities in the form of deposit which constitute almost 65 per cent of the total liabilities in a very short period of time. Under these circumstances, it was obvious that any sharp increase in interest rates would lead to the rapid increase in the cost structure of the banks. On the contrary, banks would be benefited from the declining trend of the deposit rates by restructuring their liabilities with less cost.

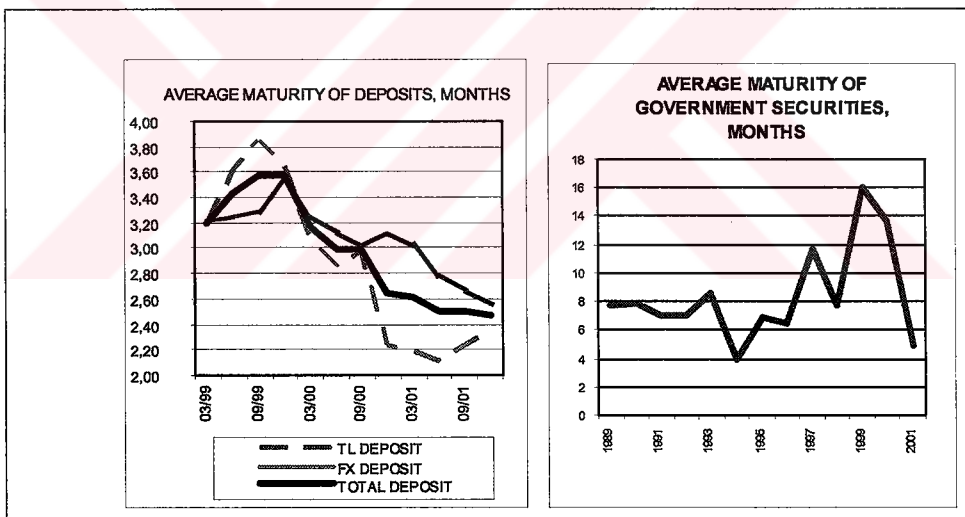
In the beginning of 2000, the average maturity of deposits was around 3.2 months and it declined through time. As of September it declined to 3 months and after November maturity of TL deposits declined until 2.2 months. It is worth to mention the volume of the repo as a financial instrument, which was the off-balance sheets item at that time, with the maturity of overnight or at most weekly basis, was very high in 2000. It presents how banks' operated under a short maturity structure.

Regarding the maturity structure of the banks' assets, which was mainly composed of securities portfolio and credits, one can easily see the long maturities of assets comparing to liabilities. The average maturity of the government cash securities was roughly 14 months in 2000. It constituted 78 per cent of the domestic borrowing. While government security issuance with long term maturity

[30] BRSA (2000 Annual Report).

is good for the government in terms of debt sustainability as an indicator of good debt management, from the banking side it has been deepen the maturity mismatches in banks' balance sheets. In fact, for sound economic policies and healthiness of the banking sector, the liability structure of the banks should be extended by achieving confidence in the domestic markets.

The share of medium and long term credits (1 year and up) in the total credits was in 21 per cent in 1998, then due to the increase in the average maturity of lending, it rose to 26 and 32 per cent in 1999 and 2000 respectively (BRSA, 2000). The average maturity of credits was generally concentrated on 24 months presenting long maturity structure of the banking sector relative their liabilities.



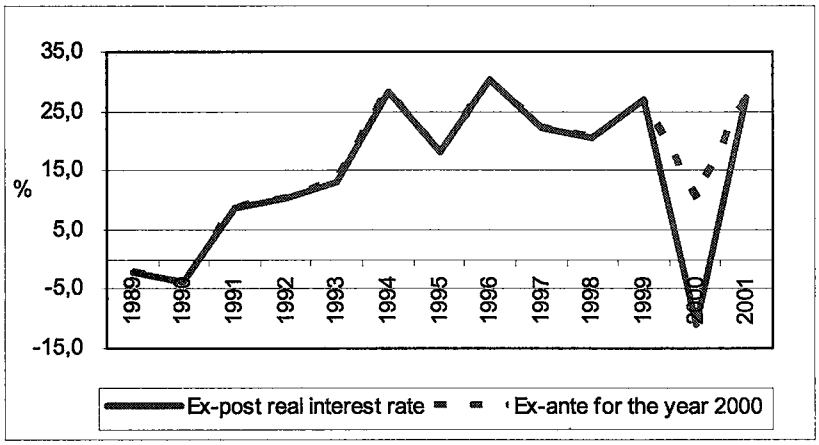
Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr, Treasury http://www.treasury.gov.tr and Central Bank of the Republic of Turkey http://www.tcmb.gov.tr

Figure 48 : Selected Indicators of the Maturity Mismatches

Due to the maturity mismatch in Turkish banking system, banks had an exposure to upward interest rate movements. Before the crisis, Turkish banking system were the primary buyer of the almost 80-90 per cent of the issued

securities. In 2000, banks hold largely fixed term government securities. The share of government securities in total banks' assets was around 18 per cent. Considering the large share, 51 per cent of the sector's securities portfolio, held at private commercial banks, the impact of the any interest rate movements on private banks' balances could be easily seen.

During the disinflation program banks aggressively invested in government securities expecting that interest rates would further decline. The disinflation program had an aim to change economic agents' expectations from backward looking to the forward-looking. The commitment given on exchange rates and sharp declining of the inflation and interest rates were strengthen the credibility of the Program. During the year 2000, while the ex-post real interest rates were negative, ex-ante real interest rates presented a positive trend around 10-15 per cent on the yearly average[31]. There were also other explanations[32] in adopting ex-ante interest rate rather than credibility of the program such as a "zero sum game" for the banks.



Source: Treasury http://www.treasury.gov.tr and author's own calculations

Figure 49 : Real Interest Rate on Government Securities

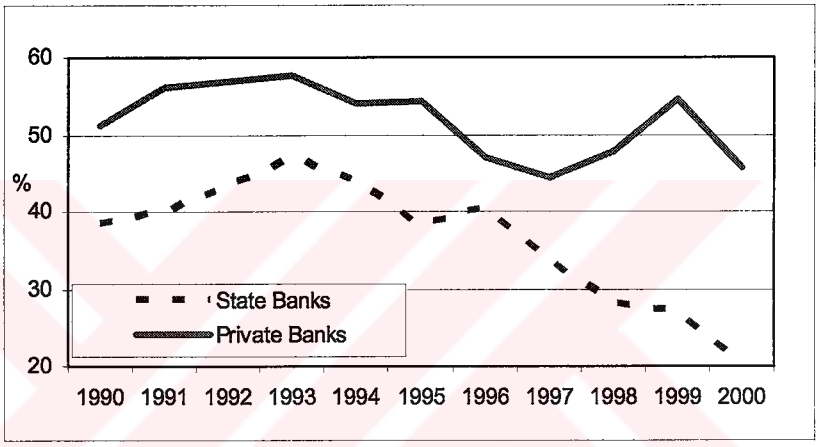
[31] OECD (2001)
[32] Ersel Hasan(2001)

Banks obtain sources from the domestic market in the form of deposits, from other banks in interbank money market, from the central bank or from foreign lenders as syndicated loans. When the interest rates went up, banks tried to liquidate government securities in the secondary market in order to "stop the loss" and to meet their short-term liabilities. Since the values of assets decline sharply, loss was incurred. Moreover, lenders of the syndicated loans asked additional collaterals to compensate the decrease in the value of collaterals. Therefore, Turkish banks had to carry the burden of rapid increase in cost structure due to the sharp increase in interest rates. Since maturity of assets was long, banks had no chance to adjust revenues with the same speed, and eventually end up with the deterioration of profits, facing with loss and even remained insolvent.

Demirbank was the chief example to understand the consequences of maturity mismatch and realization of the interest rate risk. Before the banking crises, Demirbank heavily borrowed from the interbank market on overnight basis to rollover its both Turkish lira and foreign exchange liabilities and continue to invest in government securities. However, during the turmoil, Demirbank could not finance its liabilities and need to sell out government securities in the secondary market with very low value and became insolvent.

iii. Liquidity Risk

The assessment about the liquid assets to meet the liabilities presents bank's liquidity needs and how much cost incurred as a result of the liquidation of the assets in hand with a lower value and even borrows with high rates. If the financial institution has a trouble with finding enough liquidity to meet its liabilities, it might try to find out new liquid resources. However, the tools for liquidity are very limited.



Source: Turkish Banking Association http://www.tbb.org.tr

Figure 50 : Ratio of Liquid Assets to Liabilities

The share of liquid assets in total assets was around 30 per cent for the banking sector until the year 2000. Remaining liquid has an opportunity cost of give up interest receivables in a great extent. However, in order to meet the current liabilities and to remain solvent, liquidity is the crucial one. In this sense banks' flow of funds gained importance in proper functioning of the banking system.

Liquidity structure of the state banks deteriorated through time, especially starting from 1997 with the heavy burden of duty losses. In 2000, state banks could not timely cover their vital liabilities which led state banks heavily borrowed from the market creating a great pressure on the markets. Private banks, even

though there was a huge discrepancy amongst them, remained liquid, however, in 2000 the liquidity squeeze was easily observed from the figure above.

If a bank is close to illiquidity, it would follow either liquidate its assets in the securities portfolio in the secondary market by taking into account the decline in assets value depending on the market structure or sell the fixed assets as soon as possible in a certain degree. The bank could also borrow from the interbank money market. The reliance of the interbank money market both in terms of frequency, maturity and the volume is a very good indicator of the financial problems as Suarez (2000) pointed out. There is also a general tendency that with liquidity problems, banks raise deposit rates in order to attract more sources as the state banks done in previous periods. It is obvious that this led to the increase the cost of financing. It is very likely to become insolvent due to the increase in the cost of liquidity.

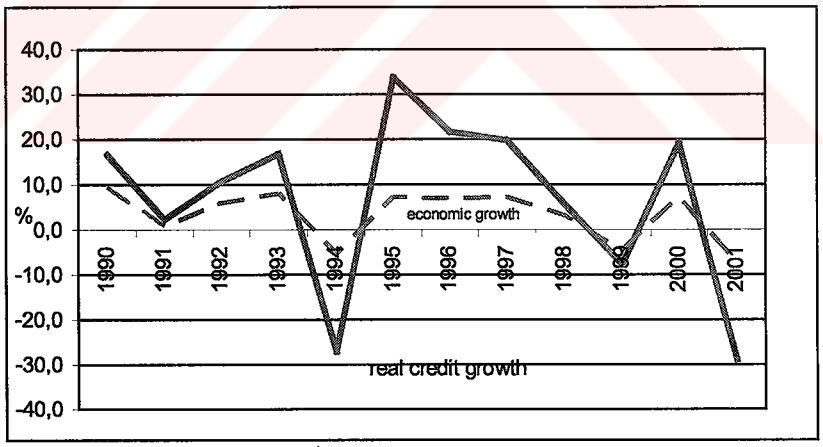
Each central bank involves in the liquidity process if observes any systemic risk as its lender of last resort function in terms of national currency. However, there is also other side of the coin, if the dollarization had such a high dimension in the country, the central bank could release foreign exchange and sterilize the market up to a certain limit depending on its reserves.

v. Credit Risk

The main factors, which increase the credit risk, are listed below:

Lending Boom

The cycle of the economy is much related to the credit risk. During the boom periods of the economy, banks extend much more credits without allocating necessary provisions for NPLs. Together with recovery in the economic activities, demand for credits are also increased. The competition in the banking sector sometimes leads to the extension of credits without proper credit analysis. Since the economic cycles present itself as boom and bust cycles, the more credit expansion in the boom period means more credit risk for the banks by passing through the contractionary period. Therefore in the literature, the lending boom is considered as the one of the main triggering factors of the credit risk.



Source: Central Bank of the Republic of Turkey, http://www.tcmb.gov.tr

Figure 51 : Lending Boom and Economic Growth

From the figure above the strong coinciding relationship between economic growth and credit growth can be observed easily. In 2000, while real economic growth was realized as 7.2 per cent, real credit growth reached 19 per cent with the

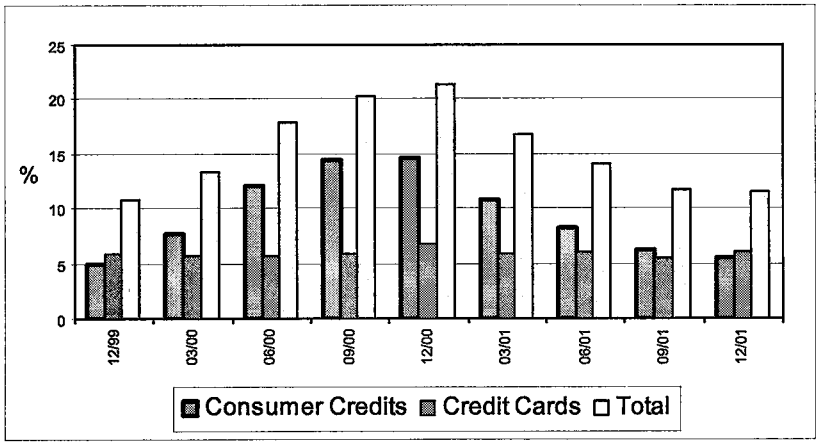
huge contribution of domestic consumption. Consumer credits stimulated high domestic demand in a great extent.

The ratio of total loans to total assets is a good indicator of lending boom. The share of credits in banks' total assets was realized as 30 per cent in 1999, it reached 33 per cent in 2000. Private commercial banks presented the highest increase in the bank groups as 4.2 per cent comparing to 1999. However, except the year 2000, credit to total asset ratio had been presented a declining trend.

Concentration on Retail Banking : Consumer Credits and Credit Cards

Economy was under the expansion and annual growth rate of the economy was realized as 7.2 per cent in 2000, of which durable consumption goods grew 27.5 per cent annually. Households who preferred to postpone expenditures previously, began to consume given the fact that there was no financial investment alternatives under the declining interest rates of deposits and government securities.

Under the competitive environment, banks sharply reduce their credits rates especially on consumer credits. The interest rate came down from 65-70 per cent to 20-30 per cent annually for the 1 to utmost 3 years maturity for vehicle credits.



Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr

Figure 52 : Share of Consumer Credits and Credit Cards in Total Assets

Real appreciation of the TL and low interest rates on consumer credits led to a sharp increase in imported cars as well as other luxurious imported products. Trade deficit increased from US$10.4 billion in 1999 to US$22.3 billion at the end of 2000. The current account deficit widened as 4.8 per cent of GNP by bringing hesitations about the sustainability of current account deficit in the domestic and international markets.

In 2000, the share of consumer credits in total credits rose sharply to 15 per cent, the use of credit card in total credits was also increased to 6 per cent bringing the share of credits extended to households in total credits to 21 per cent. During the crises with the sharp rise in interest rates, banks hit by consumer credits in a great extend. Vehicle and housing credits had a "fixed" term characteristics meaning that banks could not change the interest rate until the end of the term and can not recall them in advance. Due to the significant size of consumer credits, banks incurred losses after the crises. Since households' financial situation affected adversely from the crises, credit risk of the banks were realized partly due to the NPL on consumer credits.

Table 21: Breakdown of the Consumer Credits

Million TL		Consumer Credits Extended	of which Vehicle	of which Housing	of which Others
1999	TL	1.185.787	414.011	29.475	742.301
	FX indexed	63.278	33.143	17.033	13.102
	Total	**1.249.065**	**447.154**	**46.508**	**755.403**
2000	TL	5.354.974	2.249.283	519.327	2.586.364
	FX indexed	332.315	90.225	153.877	88.213
	Total	**5.687.289**	**2.339.508**	**673.204**	**2.674.577**
2001	TL	1.050.118	258.485	17.693	773.940
	FX indexed	96.794	27.525	30.399	38.870
	Total	**1.146.912**	**286.010**	**48.092**	**812.810**

Source: Turkish Banking Association http://www.tbb.org.tr

The share of FX indexed consumer credits in total consumer credits remained very limited perhaps due to the past bad experiences of the consumers on FX credits in 1994 crises. However, households suffered a lot from the credit card debits on which banks immediately charge high rates for the installments to hedge themselves for a sharp increase in interest rates.

Deterioration of The Asset Quality (Non-Performing Loans - NPLs)

During the disinflation program, banks were operated in a highly competitive environment under the declining trend of the interest rates. They tried to keep both TL and FX deposits as a source and tried to extent credits to the real and household sector in a competitive manner. The "credit race" affected the accuracy and efficiency of the 'credit analyses'.

During the crises period, credit rates rose to 4500-6000 per cent for the clients who wanted to solve liquidity problems. Some banks recalled their credits in advance, which deteriorated the real sectors' condition.

Aftermath of February 2001 currency crises, severe economic recession affected the balance sheets adversely through the realization of the credit risk. Corporate sector's default led to the deterioration of the banks balance sheets and non-performing loan reached the historically high values even though it did not present the actual figures for 2000. Banks tried to hide NPLs in their balance sheets in order not to allocate provisions, which was directly affect the profitability and capital adequacy structure of the banks by presenting NPL as live credits.

Table 22: Non-Performing Ratio

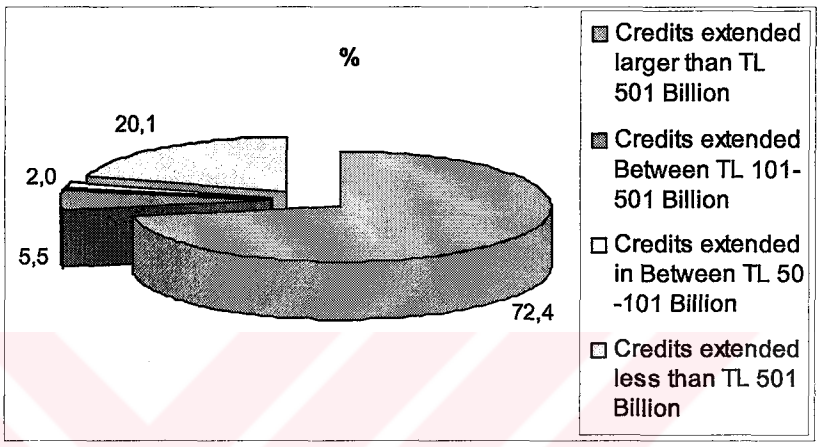
NPL RATIO (Gross NPL /Loans + Gross NPL)			
	1999	**2000**	**2001**
State Banks	9,6	11,6	37,3
Private Banks	3,7	6,0	21,3
Foreign Banks	2,3	3,4	5,5
Inv.& Dev.Banks	3,1	2,5	10,7
SDIF Banks	62,4	42,3	65,4
SECTOR	10,5	11,1	25,2

Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr

In 2001 within the framework of the restructuring of the banking system, 25 private and one public bank's balance sheets were audited by the external auditors twice and also examined by the BRSA. On June 2002, BRSA announced that based on December 2001 balance sheets, 70 per cent of the credit portfolios were investigated and many credits were classified in banks balance sheets as NPLs rather than "live" and necessary provisions were allocated. The NPL ratio rose from 4.6 per cent to 14.9 per cent for those audited banks. NPL ratio for the total banking sector jumped from 11 per cent to 25 per cent in 2001.

Discrepancies Between the Size of Credits and Number of Customers

In Turkish banking system there was a large discrepancy between the size of the credits and the number of customers. The distribution of credits among customers indicates inefficient functioning of the credit channel and the credit risk that banks carry on.



Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr

Figure 53 : Distribution of Credit Extended

The largest part of the credit (credits above TL 1/2 trillion) which constituted 72.4 per cent of the credits were extended only to 0.07 per cent of the total customers. High percentage of the large credits in total credits also indicated the connected lending activities of the banking sector which highlighted below.

Group Credits (Connected Lending)

Even though there were restrictions in the Bank Law, which was 25 per cent of the total brut credits, banks preferred to lend their groups and subsidiaries much more than the limit, by using back to back credits or by extending credit through their off-shore branches.

As the end of 2002, there were 25 group banks out of 42 Turkish owned banks in Turkish banking system. 18 out of 25 are the deposit banks and 6 are the investment banks. Considering the group banks which ware taken by the SDIF during the last 5 years one could easily see the transfer of depositors' money to their own groups reminding moral suasion in the banking sector.

Table 23: Loss of Saving deposit Insurance Fund (SDIF) Banks at the Time of Bailout and Sources Used By Own Groups

	Billion US Dollar	Share in Sources
Total Sources Used by Groups	**11.0**	
Of which/		
From Own Banks	9.1	82.6
From Other SDIF banks	1.9	7.4
Loss	**17.3**	
Of which due to the/		
Deterioration of financial position	3.2	18.7
Connected lending and misuse	14.0	81.3

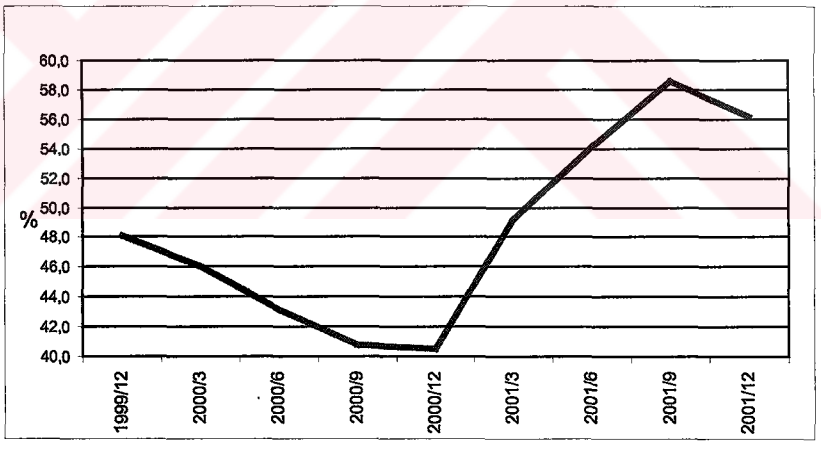
Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr

BRSA (2001) reports that among the reasons of the transferring banks to SDIF was banks' use of depositors money to finance their own groups. Some banks misuse and transfer those credits to their pockets, and some allocate credits for the sake of their groups but with a good return to the real economy. However, both types of banks were end up with insolvency and were transferred to SDIF. Between the period of 1998-2001, 13 banks out of 19 were transferred to SDIF due to their connected lending activities in addition to deterioration of their financial conditions. Table 23 presents that taken-over banks used 83 per cent of their sources from own banks and generated 81 per cent of their losses due to this

reason. Even this table is good enough to present the size of connected lending problem of the banking sector.

Currency Composition of Credits

Composition of the Turkish Lira and foreign exchange denominated credits is very important for assessing credit risk exposures. During the implementation of disinflation program, almost 40 percent of the total credits extended in terms of foreign exchange denominated credits, which attributed much more risk to the credits. Any sudden upward movements of the exchange rate led to the deterioration of the credit performance through the weakening of the financial healthiness of the corporate sector.



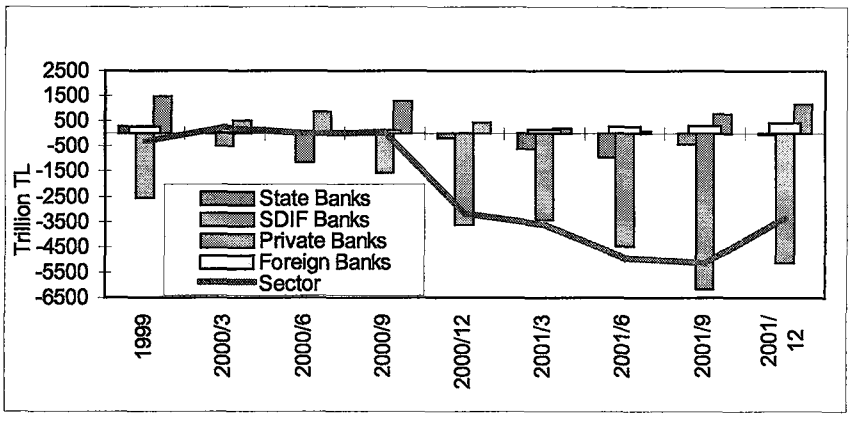
Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr

Figure 54 : Share of FX Credits in Total Credits

v. Earnings-- Profitability

In the absence of inflation accounting under high and chronics inflationary environment, banks seemed to be much more profitable. Banks concentrated on the securities activities rather then doing normal banking business due to the

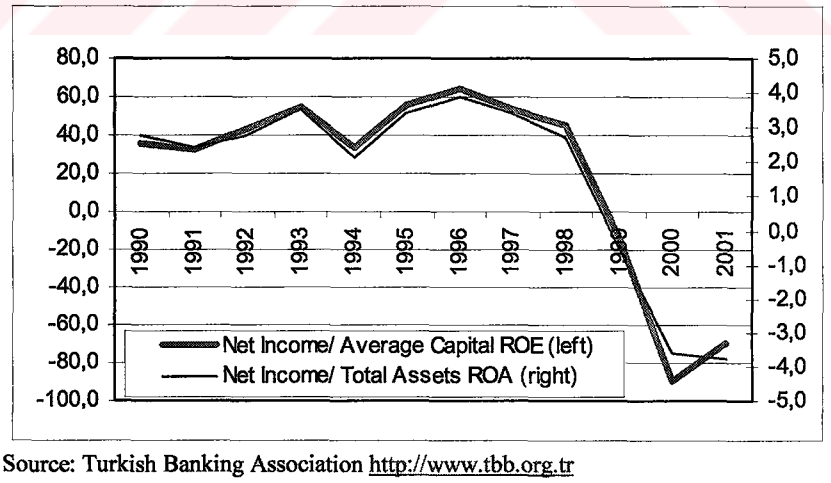
profitable government securities. Even though high profits seem to be realized, banking sector was subject to high intermediation costs.



Source: Turkish Banking Association http://www.tbb.org.tr

Figure 55 : Net Profit and Loss of Banks

The implication of the disinflation program was reflected itself in the end 2000 profit-loss accounts of the banks. Even though banks had a profit in 1999, (they were also subject to "windfall" taxes), both net income to average capital ratio and net income to total assets ratio presented a sharp decline in 2000.

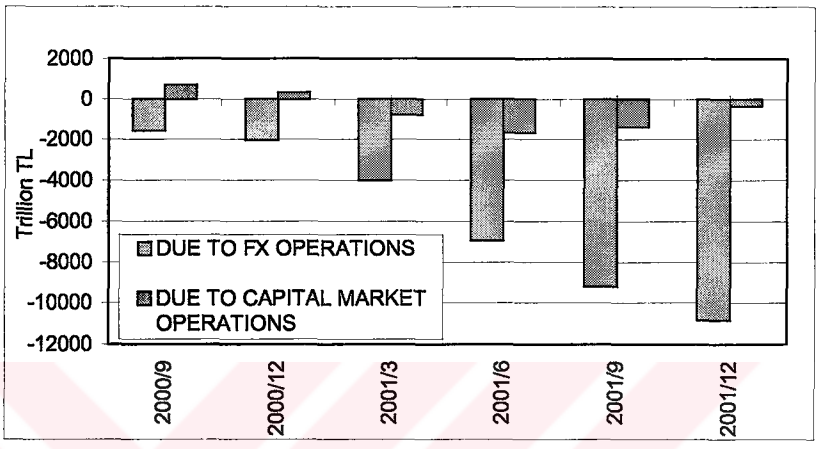


Source: Turkish Banking Association http://www.tbb.org.tr

Figure 56 : Profitability Indicators

While until the end of September 2000, private banks incurred profits; they turned to loss mainly due to the FX operations and capital account operations.

Sharp devaluation on February 2001 affect the whole banking system whose carrying large open positions and led to the huge due to the foreign exchange operations (Figure 57). Moreover, with the sharp increase in the interest rates led to the decrease in the value of securities and banks who needed to liquidate those securities in the secondary market faced with large losses.



Source: Turkish Banking Association http://www.tbb.org.tr and State Planning Organization http://www.dpt.gov.tr

Figure 57 : Losses Due to the FX and Capital Market Operations

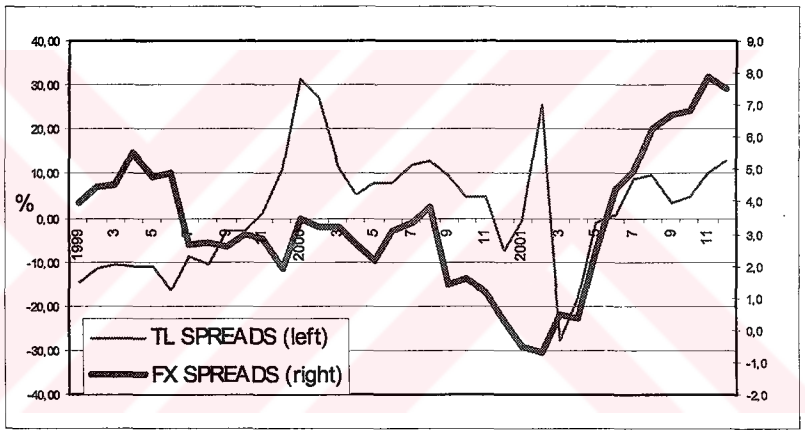
Net Interest Rate Margin Between Deposits and Credits

An analysis of the interest margin of a bank can highlight the impact of the interest rate movements on profitability of the banking system and also presents interest rate exposures of the bank. The large and medium sized banks tried to adjust themselves to a new low inflationary period[33] through reducing TL deposit rates in consistent with the decline in government securities rate. By this way banks tried to reduce the cost of borrowing.

The increase in the gap between credit and the deposit rates, favoring deposit rates indicate net negative interest margin. Continuity of the net negative

[33] See Moody's Investor Service (2000), Ersel (2001), Selassie Abebe (2000).

interest margin puts pressure on the financial markets and affects banks' profitability and solvency. During the Disinflation Program, the banking sector worked under the positive net income margin meaning that banks responded the declining trend of the interest rates quickly by taking the advantage of short-term maturity structure of the deposits and adjusted deposit rates downward. On November, with the first crises banks had to increase deposit rates significantly in order keep the deposits in their banks even though maturity declined to overnight. Even though credit rates increased sharply, due to their maturity structure, it did not provide profit immediately to cover the cost.



Source:Central Bank of the Republic of Turkey, Banking and Financial Institutions Department

Figure 58 : Interest Margins

However, it was the fact that there was a difference between the banks' groups' interest margins. While the private and foreign banks operated under net positive interest margin, state banks operated with negative interest margin due to preferential credits which was relatively low from the market rate and also state banks offered higher deposit rates in order to attract depositors to cure their liquidity problems, ending with costly structure for the state banks until their

restructuring program. This was one of the basic factors that led to the distortion in the market.

Almost Absence of Fees to Customers Due to Competition

During the disinflation period banking sector relied on the retail banking to make a profit under the declining trend of the interest rates. In order to attract more customer under such a high competition, many banks preferred not to charge fees in providing basic banking activities.

Moreover, banks heavily invest in technology for internet banking as well as call centers, increase their ATMs and even branches. While the internet and call centers helped to reduce the cost of banking, new branches and personnel increased operational cost of the banking system. In 2000, banks were obliged to pay "earthquake tax" from their 1999 profits. This tax affected adversely the profitability of the banking sector.

Capital Adequacy Structure of the Banking sector

Even though minimum capital adequacy ratio is determined by BIS as 8 per cent, emerging markets due to their structural characteristics capital adequacy ratio seems to be fulfilling the requirements but it is not the fact. Suarez (2000) argued that for emerging markets which are generally characterized as inappropriate account standards and reporting systems, improper classification of non-performing loans and deficient legal and judicial frameworks, unable to enforce supervisory actions, high concentration of asset ownership, both financial and real, that renders the potential equity market small and uncompetitive, the capital ratios can not be adequate for excessive risk-taking activities by banks.

Actually, it reflects the limitations of the capital adequacy requirement of the supervisory authority. Therefore, it is not the correct way of looking just only the capital ratios to assess the soundness and the solvency of the banking system. In Turkey, just before the crises the capital adequacy ratio of the private banks was around 15 per cent, which was sufficiently high above the regulatory limit of 8 per cent in 2000.

Table 24: Capital Adequacy Ratio

	1997	1998	1999	2000	2001/3	2001/6	2001/9	2001/12
State Banks	11,7	8,5	11,7	7,7	10,4	19,8	26,9	56,6
Private Banks	13,3	13,9	17,2	15,3	13,7	10,4	10,9	14,9
Foreign Banks	13,5	21,7	22,5	21,9	26,0	27,1	25,7	44,0
Investment Banks	17,6	24,4	25,0	32,5	32,8	31,0	31,3	41,6
SDIF Banks	-35,6	-37,4	-94,9	-62,3	-117,9	91,4	12,8	-10,7
SECTOR	**12,3**	**13,0**	**8,2**	**9,3**	**3,2**	**19,7**	**15,9**	**21,4**

Source: Turkish Banking Association http://www.tbb.org.tr

However, before the crises even though banks accumulated risks and had huge exposures to interest rate and the foreign exchange movements i.e. market risk, it was not considered in capital adequacy ratio calculation because of the absence of the risk weighted capital adequacy ratios at that time. If it were incorporated in the calculation, it is obvious that the capital adequacy ratio would be much lower or even negative for some banks.

Therefore, we could argue that capital adequacy ratio can be treated as the "necessary but not sufficient" condition for the sound and solvent banking system. The proper risk assessments should be done both by the bank through internal control mechanism and by the supervisory authority.

4.2. Intersectoral Asset and Liability Position of Turkey: The Balance Sheet Risk Matrix

4.2.1. Essence of the Intersectoral Asset and Liability Position

Assessing fragilities in the balance sheets of the government, corporate and the banking sectors assists the clear understanding of the crises. An identification of the risk exposures in one sector could give the insights about the deterioration of the vulnerabilities in the others.

To this end the matrix of intersectoral asset and liability position of sectors, which provides the information about the maturity, currency and capital structure mismatches as well as the short-term liquidity problems of the each sector, are constructed following the idea of Allen, Rosenberg, Keller, Setser and Roubini (2002). Since assets of one sector can be evaluated as the liability of the other sector, sectoral interdependence can create both "domino" and "snowballing" effect in the economy and eventually trigger the crisis. In this sense, assessments about the composition and size of the liabilities against asset structure of the balance sheets are very important to determine vulnerabilities in the economy and the financing needs of the sectors.

The Coverage of the Risk Matrix

The risk matrix of the sectors presents sectors' claims on (in columns) and liabilities (in rows) to each other and exposures to the rest of the world. Keeping in mind the conceptual and practical problems[34], the matrix is composed of four sectors, namely government, financial, non-financial and rest of the world (Box

[34] See Allen, Rosenberg, Keller, Setser and Roubini (2002) for details.

3). The general government sector, which contains local administration, non-financial state economic enterprises and other public sector, are given together with the central bank's balance sheet in order to consolidate available official resources of the country. Financial sector represents mainly commercial banks, while non-financial sector comprises corporate and the household sector. Rest of the world provides information about the sectoral foreign risk exposures (Box 4).

Box 3: Financial Interlinkages Between the Sectors in an Economy

Government sector
(Incl. Monetary authorities)

Assets	Liabilities
Financial claims on	**Financial obligations to**
Financial sector	Financial sector
Non-fin. private sector	Non-fin. priv. sector
Rest of the world	Rest of the world
	Net worth

Financial sector
(Banks and other financial institutions)

Assets	Liabilities
Financial claims on	**Financial obligations to**
Government sector	Government sector
Non-fin. priv. sector	Non-fin. priv. sector
Rest of the world	Rest of the world
	Net worth

Non-financial private sector
(Corporations and households)

Assets	Liabilities
Financial claims on	**Financial obligations to**
Government sector	Government sector
Financial sector	Financial sector
Rest of the world	Rest of the world
	Net worth

Rest of the world

Assets	Liabilities
Financial claims on	**Financial obligations to**
Government sector	Government sector
Financial sector	Financial sector
Non-financial priv.sector	Non-financial priv.sector
	Net international investment position

Source: Allen et.al (2002). "A Balance Sheet Approach to Financial Crisis", IMF WP/02/210 pg 14.

Box 4: Intersectoral Assets and Liability Position Matrix

INTERSECTORAL ASSET AND LIABILITY POSITION					
	HOLDER OF THE LIABILITY(CREDITOR)				
ISSUER OF THE LIABILITY (DEBTOR)	GEN. GOVERNMENT & CENTRAL BANK	COMMERCIAL BANKS	NON-BANK SECTOR	REST OF THE WORLD	TOTAL
GENERAL GOVERNMENT (inc. CBRT)					
Domestic Currency					
Total Other Liabilities					
Short Term					
in domestic currency					
in foreign currency					
Medium & Long term					
in domestic currency					
in foreign currency					
COMMERCIAL BANKS					
Total Liabilities					
Short Term					
in domestic currency					
in foreign currency					
Medium & Long term					
in domestic currency					
in foreign currency					
Equity (capital)					
NON-BANK SECTOR(HH & CORPORATE)					
Total Liabilities					
Short Term					
in domestic currency					
in foreign currency					
Medium & Long term					
in domestic currency					
in foreign currency					
Equity (capital)					
REST OF THE WORLD					
Total Liabilities (million $)					
Currency (					
ST,Medium and long term					
Equity					

Source: Allen et.al (2002). "A Balance Sheet Approach to Financial Crisis", IMF WP/02/210, pg 51.

4.2.2.Risk Matrix Application to Turkey

Analyzed Period

In order to present the existing vulnerabilities in sectors as the end-1999, sectoral balance sheets is analyzed, then to capture the accumulation of risks and the impact of the disinflation program on the sectoral balance sheets, November 2000 and February 2001 balance sheets are considered.

The Data

The data is available in the various issues *of Quarterly Bulletins of Central Bank of Turkey (CBRT)* for the government and the financial sector. Monetary survey statistics as well as the sectoral breakdown of the banks' balance sheets are used to construct monthly domestic asset and liability structure of the matrix. The maturity and currency breakdown are obtained from the balance sheets based on *Uniform Chart of Accounts*. The data is also available partly in *IMF's International Financial Statistics, Money and Banking Statistics* section. The risk exposures of the government and banks to the rest of world are established by using both *Balance of Payment Statistics Yearbook of the IMF*, the joint work of OECD, BIS, IMF and the World Bank *External Debt Statistics*, and also *International Investment Position (IIP)* of Turkey which is prepared by CBRT Statistics department for IMF International Financial Statistics.

To overcome the data limitations regarding the non-financial sector, both *CBRT Company Account Statistics* and *Monetary Survey Statistics* are used as the assets of the non-financial sector. Therefore, non-financial sector should be considered by taking into account those data limitations. The external liabilities of the corporate sector are obtained from external debt statistics, which provides consistency with IPP.

The Risk Matrix

The intersectoral risk matrix reveals the sectoral vulnerabilities by capturing risk accumulation between the sectors successfully. Under the fact of data limitations, identification of the intersectoral risk tendencies becomes crucial in explaining the potential fragilities in the economy.

This section provides a general overview of the risk accumulations in sectors until the crises period by comparing end-of 1999 balance sheets with the November, December 2000 and February 2001 balance sheets[35]. We evaluate the developments in the balance sheets by emphasizing the main vulnerabilities, which increased substantially during the implementation of the disinflation program, through maturity, currency and capital mismatches.

End-1999 Period

The analysis of the intersectoral asset and liability matrix of Turkey for December 1999 identified the pressure points and existed structural vulnerabilities in the economy. The maturity and currency mismatches in the banking system magnify the likely financing needs in case of any shock.

By the end of 1999, 53 per cent of government sector's liabilities, including the central bank, were in the form of manageable external liabilities with the long term maturity (US$53 billion). However, Turkish lira denominated liabilities classified as medium and long term maturity[36] (US$17 billion), created a

[35] Appendix R presents the Intersectoral Asset and Liability Positions of Turkey. Even though the Risk Matrix was established for end of 1999, November 2000, end of 2000, February 2001 and end of 2001 periods, the risk accumulation was evaluated only for 1999 and November 2000 due to the impact of the sharp devaluation on the conversion of Turkish Lira denominated assets and liabilities to US$ after February 2001.

[36] The maturity for 1 year and up is classified under medium and long term.

significant fragility factor for the government balances by taking into account the average maturity of government securities as 14 months. This situation also generates the question on the sustainability of fiscal balances.

The way of financing the government's high budget deficit appeared to be important risk factor for the banking sector. From the deposit bank's perspective, holding of the large size of (43 per cent) government's total liabilities in the form of government securities, transfers vulnerabilities from government to the banking sector. Therefore, banking balance sheets were subject to interest rate risk as well as the solvency risk depending on the Treasury's default risk in a great extent.

Analyzing the banks balance sheets crystallized the maturity mismatch problem of the banking sector. While the 75 per cent of the banks' securities portfolio was medium and long term government securities (14 months average maturity), deposit banks' with the same maturity hold only 11 per cent of non-bank sector's deposit[37]. This shows how the banking sector was exposed to the maturity mismatches. In case of any upward movement in the interest rates, banking sector's balance sheets affected adversely with the high cost of repricing.

Commercial banks' claims on corporate and the household sector were around US$ 30.6 billion in 1999. The large part of credits extended to the corporate and household sector was in short-term (74 per cent)[38]. The currency composition favors Turkish lira denominated credits for the short term maturities,

[37] 88 per cent of the deposits were under the maturity up to 3 months (BRSA 2000 Annual Report).

[38] In banks and non-banks' balance sheets 0-12 months refer to short-term while 12-24 and 24-up represents the medium and long term maturities. However, the maturity structure of the government liabilities to the rest of the world refers much longer time horizon for the long term like a 5-year or more.

whereas foreign exchange denominated or indexed credits were concentrated in the long term. The share of foreign exchange credits in total domestic credits was 48 per cent (US$14.7 billion) in 1999 meaning that doing so banks transfer the foreign exchange risk to the corporate and the household sector. However, realization of such an FX risk would lead to realization of the credit risk through the increase in non-performing credits.

While the short-term liabilities to the rest of the world were ignorable for the government sector (less than US$0.6 billion), it was vast for commercial banks (US$13 billion) and the non-bank sector (US$9 billion). A potential financing gap between the government sector's foreign exchange liabilities to the rest of the world ($53) and the country's total external foreign reserves ($23) was about $30 billion.

Non-bank sector's total liabilities (US$60 billion) were denominated mostly in foreign exchange (72 per cent). Of which US$19 billion was in terms of short term liabilities to the rest of the world. FX denominated credits used by the corporate sector were mainly in the form of export credit and trade credit, therefore the liabilities of the corporate sector was somehow hedged regarding the US$ 29.6 billion export capacity of Turkey in 1999. Therefore, foreign currency exposure of the corporate sector balance sheets' seemed to be limited.

Beyond potential financing gaps there was also capital structure mismatch in commercial banks. Total liabilities in the banking sector of about US$ 96 billion and equities were US$6 billion implying higher debt-to-equity ratio.

Financing Gap For the Year 1999

Even though the establishment of the intersectoral risk matrix has some data and accounting limitations, it provides useful insights about the sectoral risks. Having constructed the risk matrix, the financing gap of the sectors can be determined under different assumptions related to the behaviour of the both foreign and domestic investors.

In 1999, 48 per cent (US$ 46 billion) of the total liabilities of the commercial banks (US$ 96 billion) were denominated in foreign currency. US$ 18 billion of which was the liabilities to the rest of the world. The maturity structure of the foreign liabilities also presented a high concentration in the short term. Almost 80 percent of the foreign exchange liabilities fell due in the short term (US$37 billion) indicating liquidity and solvency risk for the commercial banks.

The exercise of the short term financing gap of the sector presents the main vulnerabilities in the economy. Under the assumption that none of the short-term debt was rolled over, US$27.5 billion short-term financing need was emerged for the commercial banks considering their foreign asset size as US$ 9.5 billion (Table 25).

Table 25: Financing Needs of the Sectors, Billions of US $ (end of 1999)

	Government Sector	Banks	Non-bank	Economy
Assets	23	9.5	?	33
Short-term liabilities	1	37	19	57
Net	**22**	**-27.5**	**-19**	**-23**

Assumption: Only banks foreign deposits were liquid and zero rollover of short-term liabilities

Source: Author's own calculations

The 2000 Period

Adding the 2000 developments into the picture presents the deepening of the fragilities in all the sectors, especially in the banking sector. Implementation of the disinflation program, which was basically relied on pegged exchange rate regime as a monetary policy, led to the appreciation of the Turkish lira against the US$ and Euro basket considerably. High real appreciation of the domestic currency was the soft-belly of the program. It led to initiate substantial increase in fragilities in both banking and non-banking sector. While carrying on high open position increase the foreign exchange risk for the former and increase in the imported good consumption of the households ultimately leading the deterioration of the current account deficit. The deepening of the currency and maturity mismatches until November 2000, eventually led to the crises. Even though there was a pre-determined exit strategy for the 18th months of the disinflation program, lack of action in early implementation of the managed floating system during

November 2000 crises, led to the worsening of the self-fulfilling expectations and deterioration of the investors' confidence ending up with the sudden and significant amount of capital outflow by the mid of February 2001.

The government sector continued to increase its liabilities to the rest of the world in year 2000 through the credits from the international institutions. The government securities held at the deposit banks presented a limited decline due to the relatively less borrowing requirement of the government. The reserves of the Central Bank of Turkey steadily increased to US$24 billion during 2000, however, it declines to US$21 billion by November crises. It again increased to previous level until faced with the February crises and Central Bank of Turkey lost almost US$6 billion during the crises.

In 2001, due to the non-cash government securities issued for the state banks and SDIF banks' financial restructuring, the share of non-cash debt sharply increased from 19 per cent in 2000 to 52 per cent in 2001 and leading to the ratio of the total domestic debt stock to GNP rose tremendously from 30 per cent to 70 per cent for the same period.

The deposits of non-bank sector increased in 2000 favoring the short term maturity (increasing to 93 per cent of the total deposits from 88 per cent in 1999). Even though the share of Turkish lira deposits increased to 44 per cent from 39 in 1999, the reason in this development was the appreciation of TL against foreign currency basket.

The sharp increase in the credits extended to private sector was observed amounting almost US$12 billion. The maturity structure was extended in 2000.

The share of medium and long term in total increased to 32 in 2000 from the 26 per cent in 1999. This situation made banking sector more vulnerable to any shock by increasing maturity mismatch between the assets and the liabilities. Even though the currency composition of the credits favored the domestic currency as 57 per cent in 1999, share of foreign exchange denominated credits increased to 69 per cent amounting US$15 billion in 2000. Even though credits extended in terms of FX helped to limit the currency mismatches, it increased the credit risk of the banking sector.

Financing Gap for the Year 2000

Of the commercial banks' total liabilities (US$ 109 billion) about 46 per cent were denominated in foreign currency (US$ 50 billion) and US$ 19 billion of it was to the rest of the world. Almost 87 percent of the foreign exchange liabilities fell due in the short term (US$42 billion). Under the assumption that none of the short-term debt was rolled over, and considering the liquid foreign assets (US$ 10 billion), US$32 billion short-term financing need was emerged for the commercial banks (Table 26).

Table 26: Financing Needs of the Sectors, Billions of US $ (November 2000)

	Government Sector	Banks	Non-bank	Economy
Assets	19	10	?	29
Short-term liabilities	1	42	21	64
Net	**18**	**-32**	**-21**	**-35**

Assumption: Only banks foreign deposits were liquid and zero rollover of short-term liabilities

Source: Author's own calculations

Comparing the end of 1999 financing needs of the sectors with the November 2000, presented that there was a sharp risk accumulation in terms of short-term foreign borrowing. This led to the increase in vulnerabilities for all the sectors. While the government sector still had a surplus for the short term financing needs, banking and the non-banking sector's financing gap were widen in a great extent. The aggregate financing needs of the economy increased US$12 billion within 11 months[39].

4.3. Concluding Notes

During the implementation of the disinflation program structural weaknesses of the sectors, especially in the banking sector, deepened and vulnerabilities became much clearer. The risks, namely market risk (foreign exchange risk and interest rate risk), liquidity risk carried by the banks were realized with the crises and credit risk continued to realize afterwards under the absence of risk culture and risk management.

The factors that deteriorate the banks' financial status were the sharp increase in the funding costs due to the increase in interest rates and maturity mismatch, capital losses due to a sharp mark-to-market decline in the value of government securities holdings, capital losses due to a sharp devaluation of the TL and the huge open foreign currency position and deterioration of asset quality as a result of the contraction in the real sector and the subsequent deterioration in the repayment capacity of corporate borrowers.

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[39] Even though it is not quantified here, considering the high volume of repo activities of some banks (mostly overnight) for the behalf of the foreign investors, which were mainly used by banks for foreign borrowings, it crystallizes the tremendous increase in risk accumulation of the banking sector.

With the domino effect, each sector carried the cost of crises and also somehow transferred into the other sectors. The cost of bailed out banks and restructuring process of the state and SDIF banks brought a significant burden on governments' fiscal balances. Banks generated losses due to the realization of interest and foreign exchange risk. Corporate sector did not meet its liabilities to the banking sector, many of them went to out of business by creating significant burden to banking sector through non-performing loans.

As a conclusion, in Turkey balance sheet developments can be considered as one of the important factors triggering the crises. Intersectoral risk matrix identified the accumulation of risks in terms of currency and short term maturity by considering sectoral financing needs which increased vulnerabilities in pre-crises period significantly leading an eventual 2000-2001 financial crises in Turkey.

CHAPTER 5

PROSPECTIVE DEFICIT CONSIDERATIONS: THE TURKISH EVIDENCE

Prior the year 2000, the experiences about the bailed out banks presented that the liabilities of the each bailed out bank was transferred to the Treasury by bringing a considerable burden on the debt dynamics. The long resolution period of the bailed out banks adversely affect the sustainability issues. With the experience of eight taken-over banks between the periods 1997-1999, the market perceived that prospective deficits would be the case under the full deposit insurance with the high likelihood of further bailing out of the problematic banks. Such rumors about the distressed banks in the market led to the sudden turbulence of the financial markets, and the realization of the risks. Both the mismanagement of the risks in the banking sector and the market's perception of the prospective deficits played a significant role in Turkish financial crises. In this sense the perspective of prospective deficit argument of Burnside, Eichenbaum and Rebelo (1998)[40] was somehow verified. They argued that Southeast Asian crises were caused by large "prospective deficits" associated with implicit bailout guarantees for both domestic and foreign creditors to failing banking systems. The speculative attack is inevitable once the present value of future government debt rises.

[40] Burnside C., M. Eichembaum, S. Rebelo (1998, 2000). Schneider M. and A.Tornell (2000).

Table 27: Banks Taken Over By SDIF

	1997	1998	1999	2000	2001	2002	Total
Number of Banks Taken Over	1	1	6	3	8	1	20
Number of Merged Banks	-	-	-	-	7	2	9
Number of Sold Banks	-	-	-	-	3	2	5
Number of Banks Licenses of which were Revoked	-	-	-	-	3	1	4
Number of Banks under SDIF	1	2	8	11	6	2	2

Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr

The fiscal cost of the bailout banks was realized as 14.9 per cent of GDP, adding the restructuring cost of state banks to that amount, it reached to almost 30 per cent of GDP:

Table 28: Fiscal Cost of Restructuring

	Billion $	(%) of GDP
State Banks	21.9	14.8
Duty Losses	19.0	12.8
Capital Support	2.9	2.0
SDIF Banks	21.7	14.9
Public Sources	17.0	11.7
Private Sources	4.7	3.2
TOTAL	**43.6**	**29.7**

Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr

Burnside (2004) presents the cost of Turkish financial crises by comparing Mexico and Korea and conclude that Turkey severely affected from the twin crises. Besides the likely bailing out cost of the distressed banks, the hesitations about the exact determination of the fiscal deficit, played an important role in prospective deficits. Even though the state banks carried out large losses, it did not incorporated into the public deficit.

Box 5: Changes in Output, Relative Prices and Budgets After Recent Crises

	Mexico	Korea	Turkey
	Jan 94	Oct97	Feb01
Changes in real GDP after the crisis (%)			
Year 1	-9.2	-13.0	-10.5
Year 2	-7.6	-10.0	-7.2
Changes in P/S after the crisis (%)			
Year 1	-32.0	-43.4	-21.0
Year 2	-29.6	-38.4	-10.9
Changes in government budgets after the crisis (% GDP)			
Fiscal cost of banking crisis	15.0	24.0	18.2
Explicit fiscal reforms	-2.5	11.9	3.3
Change in revenue due to recession	-6.5	-10.2	-4.4
Net fiscal cost to be financed	24.0	22.3	19.2
Increase in seignorage	1.7	1.7	1.8
Debt deflation	1.7	3.5	7.3
Chng in primary bal. due to change in P/S	9.1	4.4	1.2
Amount as yet unpaid	11.4	12.7	10.0

Source: Burnside (2004)."Currency Crises and Contingent Liabilities" Journal of International Economics, 62:2004, 25-52.

The missing element, which was called the "black hole", was the duty losses/ operational losses of the state banks. We mentioned it in the fourth chapter as one of the factor for distortion in the market. Since 1994, the duty losses was accumulated as a subsidizing credits to agricultural or medium sized industrial sector through the state banks based on their establishment purposes. The share of the duty losses reached 13 percent of GNP, including this item, domestic debt stock to GNP would rise to 43 per cent by the end of 2000.

Deposit guarantees accepted as one of the important source of prospective deficits. The history of deposit insurance scheme in Turkey went back to 1933 to protect depositors. The coverage presents differences through time. In 1992 foreign exchange deposits of the residents were also covered under savings

deposits. After the 1994 crises, deposits guarantee limits were demolished and a fully guaranteed deposit insurance system was introduced in order to prevent bank runs and likely systemic crisis. The limit was established as TL 100 billion (around US 70 million dollar) in June 2000. However, in order not to lead any systemic crises, deposit insurance limits were again removed and unlimited coverage were introduced for deposits as well as the other liabilities of the banking system after the November crises.

As it is stated by Demirgüç-Kunt (2001), deposit insurance leads moral hazard problems and reduced market discipline in the sector by encouraging excessive risk taking from both the banking sector by providing high deposit rates as well as for the investors who did not deal with the soundness of the individual banks. The deposits and/or the full liabilities of the banking sector are also accepted as one of the most important contingent liabilities of the government, in turn affecting the prospective deficit perceptions in the market. In fact after the crises Turkey faced with significant amount of contingent liabilities, amounting US $ 31.4 billion. (Table 29).

Table 29: Banks' Liabilities Transferred to SDIF After the Crises

(Billion US Dollar)	
Total Deposits	**25.9**
TL Deposits	10.6
FX Deposits	15.2
Other Liabilities	**5.4**
TOTAL	**31.4**
Memorandum items:	
Insured Deposits	16.8
Foreign Liabilities*	2.0
Foreign Assets	0.8
Foreign Liabilities (net)	1.3

*includes foreign borrowing and non-residents deposits

Source: Banking Regulatory and Supervisory Authority http://www.bddk.org.tr

Another factor which increases the prospective deficit perception is the government guarantees on private sector debt. The Turkish government had committed itself for various types of guarantees, including deposit insurance schemes and the coverage of even external debt of the private sector during the crises period in order to calm down the international lenders. The prime minister made an announcement on Dec 6, 2000 about the full insurance coverage of deposits as well as the external debt of the banking sector as Goldstein (2003) states that "*Private sector debt become liabilities of the public sector debt at the end...*" Therefore, the implicit or explicit guarantees to the private sector's external debt are considered as the contingent liabilities of the government which increase prospective deficit considerations. Brazil and Chile were the examples of the most of the external debt are private sector debt together with Korea and Taiwan who suffered from its contingent effects and prospective deficit as a triggering factors of crises.

Even though the external debt of the government presented an increasing trend, its ratio to GNP was around 23 percent. However, the increase in the private sector's external debt to GNP which was under the guarantee of the state, created prospective deficit considerations too. Adding the banking and corporate sector external borrowings and the central bank' borrowings to the public debt, the governments' external debt to GNP sharply rose to 55 per cent of GNP in 2000 from 47 percent of the previous year. The high external borrowings of the private sector send negative signals about the contingent liabilities of the private sector in distress. Contingent liabilities of the Turkish Treasury were another important element in triggering prospective deficits perceptions.

Moreover, it was also known from the Central Bank Law that, in case of systemic risk and depend on the request of the SDIF, the Bank could extent a credit as a lender of last resort as similar case with many central banks for the sake of the financial stability.

CHAPTER 6

2000-2001 TURKISH FINANCIAL CRISES

There is nothing new under the sun...

In Turkey, exchange rate-based stabilization program had been tried and failed just in the fourteen months of it's commence. IMF supported disinflation program was announced at the end of 1999 to end persistent and volatile inflation that had been suffered from almost over three decades and reached single-digit inflation within three years. It consisted of three pillars: a sharp fiscal adjustment, structural reforms and exchange rate policy. After from 16 unsuccessful disinflation program attempts with the IMF, it was well understood that only tight monetary policy could not provide sustainable reduction in inflation, without supported by fiscal and income policies as well as structural reforms. To this end, the program was prepared to cover all those elements. Privatization of the historically loss generated state-owned enterprises, implementation of a new agricultural subsidy policies, public management and social security reforms, banking sector reforms for safe and sound financial system constituted the main elements of the disinflation program. Monetary policy was based on a pre-announced path for the depreciation of the exchange rate being set equal to the end-year inflation target ("crawling peg"). This was helped to setting up a forward looking expectations immediately in the beginning of the program. It was also supported by public sector prices and incomes policies through indexation of rents,

the minimum wage and civil servants' wages to targeted rather than past inflation. Shifting formation of expectations from backward to forward looking was the main element of this disinflation program.

6.1 Main Features of the Monetary and Exchange-Rate Policies and Role of Exchange Rate Based Policy in Failure of the Stabilization Program

Starting from January 2000, the Central Bank quarterly announced daily basis pre-determined exchange-rate basket ($1+€0.75) path, based on the end-year target inflation of 20 per cent. By this way economic agents knew the depreciation of Turkish Lira against the exchange-rate basket for 3 months ahead.

Besides the impact of pegged exchange rate regime, enhanced credibility stimulated the decline in interest rates. CBRT business survey suggested the historically high confidence in the markets since the late 1980s.

In the beginning of the program, termination date of fully pegged regime was determined as the end of June 2001. With the pre-announced exit strategy, it was planned to limit the common risks, which are seen almost all exchange rate based disinflation experiences. After June 2001 the symmetrical widening band around the central exchange rate path was planned to be implemented as an exchange rate policy. The width of band was determined as 7.5 per cent by end 2001, 15 per cent by June 2002 and 22.5 per cent by the end of 2002.

Central Bank also specified quarterly targets on its balance sheet for net domestic assets (NDA) and net international reserves (NIR). Anchoring exchange rate was implementing together with "quasi-currency board" rules for monetary

policy, i.e., allowing capital inflows and outflows to be fully reflected in money supply changes while strictly targeting central bank NDA holding constant in nominal terms at their end-1999 level. A fixed NDA implies that any increase (decline) in the monetary base has to occur as a response to stronger capital inflows (or outflows), with interest rates being fully market determined . There was a direct link between the liquidity in the market and the capital flows and by this way, central bank wanted to avoid excess monetary expansion (beyond the foreign asset increase) through domestic credit extension.

There was a floor for NIR not fall below the targeted levels meaning that monetary expansion would be possible only through increases in net foreign assets of the central bank. So monetary base would be created through the reserve accumulation.

The Turkish exchange rate based stabilization program ended with the financial crises. As stated in the literature[41], exchange rate based programs are the victims of its own nature. Adding up the structural vulnerabilities and the free capital of movements in fully liberalized economies, economies present more or less same responses to the pegged exchange rate regime. Frankel (1999) argued in "impossible trinity" that the implementation of the strict rules in monetary policy under the fixed exchange rate regime might face with difficulties in financially open economy and ended up with crises through the triggering factors from the weak financial system.

Aşıcı and Wyplosz (2003) analyzed 55 cases of "exit from the pegged" dividing it into two, namely peaceful and trouble exit in order to find out the

[41] Calvo and Végh (1994, 1995), Frankel (1994, 1999), Reinhart and Végh (1994).

conditions for peaceful exit strategy. The exit is classified as "peaceful" if the depreciation rate does not exceed 25 per cent six months before and after de-pegging. They confirmed the importance of the macroeconomic factors such as trend of high growth, low inflation, high reserves to enhance the probability of peaceful exit from the pegged system. However, due to the data limitation they found some ambiguous results such that the fiscal discipline has not a direct effect on currency crises verifying the argument of Rebelo and Végh (2002) exiting peg is optimal when there is a fiscal shock. The adverse impact of the current account deterioration on crises is found to be indirect through external debt. Even though foreign exchange reserve losses is not so significant, it has reduced the odds of peaceful exit from the peg. High interest rates reduces the probability of peaceful exit. Incidence of other exits in the world, contagion effects and the rise in US interest rates affect the success of exit from the peg. Interestingly, efficient and deep financial markets do not contribute the likelihood of peaceful exit.

In many emerging countries the fixed exchange regime generally ended with currency crises and causing banking crises afterwards. Fixed exchange rate regime encourage banks to open their position meaning that increase foreign exchange liabilities compared to its foreign exchange denominated assets because of the profitability of borrowing in terms of overvalued foreign exchange and/or under foreseeable exchange rate regime. The currency mismatch in banks balance sheet make the sector much more vulnerable to any upward currency movements.

In the literature, there are two debates links between the foreign exchange regime and the currency mismatches. The majority view[42] suggest that fixed exchange rates encourage currency mismatches because banks and firms do not need to hedge foreign exchange denominated liabilities, because of the foreseeable exchange rate policy. Flexible exchange rate regime encourage banks to hedge their positions and match foreign exchange denominated liabilities with corresponding amount of foreign exchange denominated asset, which in turn reduce currency mismatches under dollarized economies. However, the other view[43] suggests that the greater foreign exchange flexibility increases the cost of hedging and therefore may not lead to lower currency mismatches. Arteta (2002) find out that floating exchange rate regime seems to increase rather than decrease the currency mismatches by encouraging deposit dollarization for households more strongly then they encourage matching via credit dollarization.

Sturzenegger (2002) pointed out that the exchange rate regime instability generates a banking sector uncertainty due to the fear of devaluation and default, which increases the balance sheet risks and have severe implications on their solvencies. Those fears about the banking system lead to the rapid capital outflows triggering the currency and the banking crises.

[42] Burnside et al. (2000), Mishkin (1996), Obstfeld (1998), Goldstein (2002).
[43] Eichengreen and Hausmann (1999), McKinnon (2001)

6.2 Response of the Turkish Economy to Exchange Rate Based Stabilization Program: Stylized Facts

Leaving the discussion of the program design deficiencies out of this thesis, we explore "stylized facts" as the response of the Turkish economy to exchange rate regime, which deteriorates sectoral fragilities. As we had already analyzed the sectoral fragilities in Chapter IV, here we concentrated more on the macroeconomic implications of the exchange rate based stabilization programs, which were almost seen in all episodes of crises[44] as suggested by Rebelo and Végh (1995) and Calvo and Végh (1999).

Economic Growth: *Almost in all experiences growth rate of the economy increased sharply in the beginning of the program. However, boom is followed by the deep recession.*

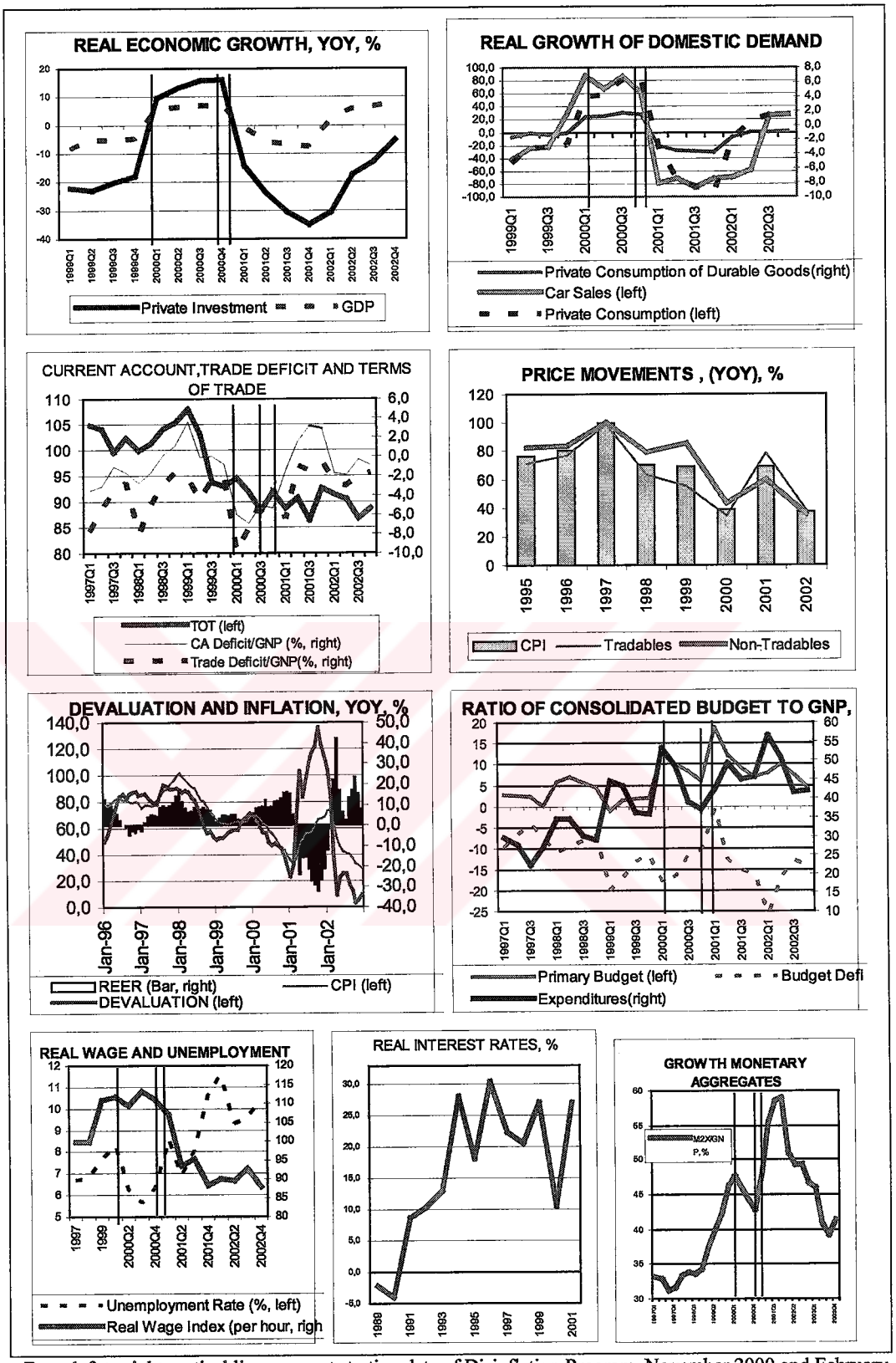
One of the aim of the disinflation program in Turkey was the realization of the single digit inflation as well as the reaching a sustainable growth path. After a deep recession followed by 1998 Russian crisis and with the adverse impact of the earthquake disaster in 1999, the 2000 economy faced with the sharp picking up in 2000 reaching 6.3 per cent annually. In this progress, credibility of the program, declining trend of inflation and the foreseeable exchange rate had an accelerator effect for investments leading to 17 per cent annual increase in fixed capital investment. Of which 37 per cent increase was realized in machinery and equipment investment of the private sector. Moreover, low interest rates led to an

[44] Argentina (1967, 1978, 1985, 1991), Israel (1985), Mexico(1987), Uruguay(1978), Brasil (1964, 1986)

economic boom through sharp increase in domestic demand amounting 9.8 per cent in 2000.mainly due to the realization of deferred consumptions and the attractiveness of the low rates of consumer loans.

Slow Convergence of Inflation to the Target: *International experiences present that in most of the cases, there was a slow convergence of the inflation rate to the devaluation rate.*

Using the exchange rate anchor, quasi-currency board rules and with incomes policy in Turkey, inflation fell steadily after peaking at 70 per cent in February. However, with the help of the initial progress of the privatizations as well as the steps taken in structural reforms, overall confidence led to continuos fall in interest rates and inflation rates especially in summer months. The control of the public prices contributed to slowdown of the inflation. It sharply declined by 30 per cent in 2000, from the end-1999 rate of 63 and 69 per cent level for WPI and CPI respectively. However, habit of backward indexation especially in wage contracts of the white collar labor and the behaviour of the private manufacturing prices due to the high domestic demand, limited the control of core inflation, led to the overshooting of the end year target by 13-14 per cent for CPI and WPI respectively. In this development, the rise in the oil prices had also put pressures on inflation as an external factor.



From left to right vertical lines present starting date of Disinflation Program, November 2000 and February 2001 crises respectively.

Source: Central Bank of the Republic of Turkey, State Planning Organization statistics in web sites.

Figure 59: Developments of the Selected Indicators During the Disinflation Program

Real Exchange Rate Appreciation: *Exchange rate based stabilization experiences present the over appreciation of the domestic currency.*

In Turkey over appreciation of the TL against foreign exchange basket became apparent after a couple of months of the disinflation program. In May, the cumulative increase in WPI reached 18,2 per cent. Comparing it to the year-end target of 20 per cent, making appreciation of the Turkish lira against the basket it obvious. In fact, taking into account CPI inflation real appreciation of TL was higher. The parity movements between US Dollar and Euro also affected the appreciation of TL against those currencies individually affecting the trade balance adversely.

The overvaluation of the domestic currency had an adverse impact on the economy. It had widened trade and current account deficit sharply through the increase in imports. Moreover, it had also affected the risk concentration of the banking and the corporate sector that borrowed heavily from abroad by deepening maturity and currency mismatch problems in their balance sheets as discussed in previous chapters.

A Deterioration of the Trade and Current Account and Its Financing: *During the implementation of the exchange rate based stabilization programs, commonly trade balance and the current account sharply deteriorate.*

In Turkey, foreseeable exchange rates and real appreciation of the Turkish lira against foreign exchange basket led to significant increase in imported durable and intermediary goods ending up with a sharp deterioration of the trade as well as the current account deficits. Moreover, unfavorable terms of trade developments

had an adverse impact on trade accounts. Besides the real appreciation, strong Dollar against Euro deteriorated trade balance considering the structure of the Turkish foreign trade partners in which imports mostly in terms of US dollar, while export receipts were in terms of Euro.

The high financing needs of the current account was met through capital inflow with the help of currency appreciation in 2000. With the introduction of the disinflation program and recognition of its credibility in international financial markets, large amount of capital inflow were realized mainly in terms of portfolio investment and borrowings of banks and corporate sector given the fact that foreseeable exchange rates and real exchange rate appreciation. Within nine months, portfolio investments reached to US $ 6.1 billion (Table 30). However, capital inflows was slowdown after the second half of the year, together with tensions arising in macroeconomy, slowdown in the process of privatization and other structural reforms as well as the concerns about Argentina's debt default. In November, during the crises capital outflow was realized as US$ 4.8 billion from portfolio accounts.

Table 30: Capital Movements (Billion US $)

	1999	JAN-SEPT 2000	NOV 2000	DEC 2000	JAN-DEC 2000	JAN 2001	FEB 2001
CAPITAL ACC.	**4,8**	**12,7**	**-3,0**	**-0,1**	**9,6**	**3,0**	**-3,4**
Of which							
PORTFOLIO	3,4	6,1	-4,8	-0,2	1,0	1,2	-3,6
BANKS (net)	0,8	2,3	0,9	-1,0	2,2	2,0	-1,3
CORP SEC.(net)	2,7	4,9	0,7	0,0	5,6	0,0	0,1
CHANGE IN CBRT RESERVES	**5,2**	**2,3**	**-5,0**	**-0,3**	**-3,0**	**2,7**	**-4,7**

Source: Central Bank of the Republic of Turkey, http:// www.tcmb.gov.tr

Fiscal Adjustment: *Sucessful stabilization experiences present a sharp fiscal adjustment either through major cuts in public expenditures or increases in taxes.*

In Turkey, together with economic boom and the continuation of the additional taxes, so called "earthquake taxes" led to a higher than expected tax receipts in 2000. In real terms primary public expenditures kept under control in, even though interest payment remained high due to the past borrowings. The target of primary surplus was overshot and realized as 5.7 per cent for the consolidated budget and 2.8 per cent for the public sector. Moreover, until the first crisis in November, falling interest rates contributed a significant decline (2 per cent of GNP as of September 2000) in interest payments especially for the following years' budget.

Real Wages and Unemployment : *In the initial period of stabilization programs, real wages generally tends to increase.*

In Turkey it gives ambiguous results. In manufacturing industry, real wages per hour increased for unionized public sector by 15 per cent while it declined for the private sector under the absence of job safety. The net salary of civil servants also declined 12 per cent due to the wage indexation to the targeted inflation. Unemployment rate remained high during the disinflation program even though economy was picking up in 2000.

An Ambiguous Response of Real Interest Rates: *Considering the previous experiences, on general ex-post real interest rates tends to decline in orthodox programs, while it presents an increase in heterodox programs.*

In Turkey during the disinflation program, decline in nominal interest rates was realized very sharply, however, in the first months of the inflation did not present the same deceleration rate so turning ex-post real interest rates to negative. Ex-ante interest rates presented a declining trend comparing the pre-disinflation period and remained within 10-15 per cent range.

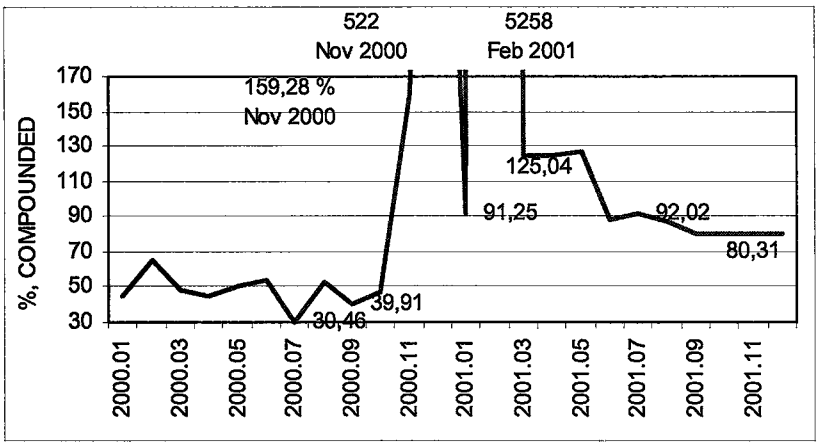
Demonetization of the Economy: *The ratio money supplies to GNP generally increases after the stabilization program.*

In Turkey, since there was a currency board rule and ceiling was determined for the volume of net domestic assets during the disinflation program, monetary aggregates did not presented an expansionary pattern and their ratio to GNP tended to decline. However, after November crisis, the Central Bank had to provide liquidity to the market and money supplies tended to increase as per cent of GNP aftermath of the crises.

6.3. Crises Period

November 2000 Crisis

Overvaluation of the exchange rate, overshooting end year target of inflation, delays in privatization and structural reforms, increase in the current account deficit and excessive risk accumulations in the banking sector led to the questioning the disinflation program. Even though the new banking supervisory and regulatory authority was established in June 2000, it became operational in September 2001. It had not been able to prevent the banking stress as Celasun (2003) argued. Ozatay and Sak (2001) also pointed out that regulatory forbearance together with the criminal activities in the banking sector increased tensions in the market. They also presented that financial stress index increased before and during the crises period. Uygur (2001) emphasized the increase in the volatility of the interest rates starting from October as an important component of the financial distress. Besides these, hesitations about the Argentina increased the risk perceptions of the domestic and international markets initiating a sharp rise in interest rates and capital outflows.



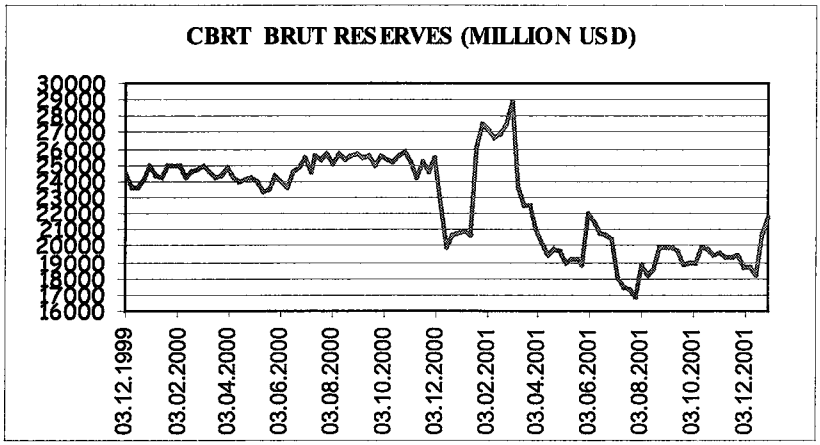
Source: Central Bank of the Republic of Turkey, http:// www.tcmb.gov.tr

Figure 60 : Interbank Overnight Rates, %

With the capital outflows and stress in the banking system, foreign exchange demand increased sharply in a very short period. Since central bank tied its monetary limits, it could not provide enough liquidity to the market leading a rise in interest rate. Financial situation of Demirbank, who invested in long-term government bonds with short term borrowing was worsened through declining value of its government securities portfolio. Since Demirbank formed its strategy based on further decline in interest rate, this adverse development worsened its liquidity conditions. The bank tried to cover its short-term liabilities from interbank market, but not found enough liquidity due the attitude of the market players. Market rapidly squeezed by both this bank and the state and SDIF banks' liquidity shortages. Since currency board rule was valid under the agreement with the IMF, central bank behaved according not to breach its net domestic assets and net international reserves limits. Therefore, providing foreign exchange in exchange with Turkish Lira leading to rise in interest rates and high liquidity shortage emerged in the market. On 22 November 2000, comparing a week before, on overnight basis interest rates rose to 1300 per cent from the 40 per cent. Both domestic and international markets frightened from unsustainable currency peg leading to the acceleration of the capital outflow and deceleration of the reserves. To meet the foreign currency demand o f domestic and foreign investor, the central bank had to sell foreign currencies amounting to US $ 6 billion. Due to the systemic risk in the financial system, negotiating with the IMF central bank used its lender of last resort function by providing liquidity to calm down the markets.

Together with the announcement of the strengthened program, which set a new level for the net domestic assets and the net international reserves, and the

IMF Supplementary Reserve Fund facility in early December, interest rates tended to decline. The pegged exchange rate regime continued to be implemented and the exit date remained same as the end of June.



Source: Central Bank of the Republic of Turkey, http:// www.tcmb.gov.tr

Figure 61 : Central Bank Brut Reserves

Full guarantee provided to all banking liabilities by the government. After the crises, government recommitted itself to the inflation target and tight fiscal policy while the no-sterilization rule was eased in favor of tightened monetary targets to offset part of capital re-flows. Banks who were in liquidity shortage, mainly state, SDIF and some private banks affected very adversely from the November liquidity crises. Within two weeks, on December 6, Demirbank was taken over by SDIF due to the sharp deterioration of the financial status of the bank.

February 2001 Crisis

Even though the adverse impact of November crisis decelerated in the market together with the measures taken by the central bank and the funding facility of the IMF, interest rates tended to decline and relative built up of the international reserves, the fragility was increased in the banking sector especially

for the illiquid state banks. Finally, on February 19, 2001 political disorder led to the loss of confidence in the market and banks rushed to buy foreign exchange with the perception of impossibility in defending the crawling peg further.

The central bank tried to defend its reserves by limiting liquidity extension to the market. This led to a sharp increase in interest rates over 2000 percent in simple term and the central bank had to sell foreign exchange amounting US $ 5 billion to the market. However, with the deterioration of the market conditions, on February 22, 2001 the Turkish government floated the Lira, abandoning the nominal anchor of the disinflation program.

6.4. Concluding Notes

There are many comprehensive studies[45] related to the crises period of the Turkish economy presenting the causes of the crises. It is widely accepted that tensions arising due to the both internal factors arising from adverse macroeconomic developments, delays in structural reforms and the increase in the sectoral vulnerabilities and external factors such as surge in oil prices, Dollar/Euro parity developments and stress in Argentina led to the reversal of the capital flows and triggered the crises.

Kaminsky (2003) classify 2001 crises in Turkey as financial excesses type, which could generate crises with the probability of 87.4 per cent. The main characteristics of the financial excesses, which were also observed in Turkey, are the real appreciation, high domestic credit /GDP growth and high fiscal deficits.

[45] Akçay. Alper and Özmucur (2001), Akyüz and Boratav .(2002), Celasun (2003), Eichengreen. (2001), Ekinci.(2003), Keyder (2003a,b), Ozatay and Sak (2002), Uygur(2002).

On the macro side, Turkey to some extent became a "victim of its own success" as interest rates had come down much faster than expected. However, the speed of the declining trend of inflation was behind the interest rates and depreciation of currency. This led to the sharp decline in real interest rates turning them to negative in ex-post terms and substantial real exchange rate appreciation building up competitiveness problems in international trade. Domestic demand pressure had exploded imports and led to the rapid current account deterioration. Moreover, it led to increase in monthly inflation rates which was also affected from the limited success in incomes policy leading to the slow convergence to the end-year inflation target.

Without solving the structural weakness of the banking system, implementation of the disinflation program and passing to low inflation levels, led to the increase in fragility in the banking sector by accumulation of risks which played a significant role in triggering crises.

In sum, considering international experiences, Turkish economy presented almost identical responses to exchange rate based disinflation program. Many exchange rate based stabilization attempts ended with balance of payment and currency crises. Given the structural vulnerabilities in the Turkish economy especially in the banking sector, more careful steps should be taken during the implementation of exchange rate based disinflation programs in terms of the measures for high domestic demand and acceleration of the privatization and the structural reforms. Moreover, severe banking crises are bringing in mind the necessity of completeness of the banking restructuring before the implementation

of the exchange rate based stabilization program regarding the huge amount of incurred cost of crises.

CHAPTER 7

CONCLUSION

In this thesis in order to explain the causes of the 2000-2001 Turkish financial crises, the crises generation models were reviewed including the first, the second and the third generation models which were mainly emphasized the impacts of fiscal deficits, seignorage revenues, self-fulfilling mechanisms, balance sheet effects, fiscal theory of price level under fixed exchange rate regimes, moral hazard problems and prospective deficit considerations on crises.

Balance sheet approaches to crises were assessed through the analysis on government, corporate and banking sectors balance sheets. Moreover, intersectoral risk matrix was established in order to see the magnitude of risks and the short-term financing requirements if risks were realized under certain assumptions. Besides, the prospective deficit perception of the market were considered as one of the most important triggering factor of the crises. The fiscal theory of exchange rate, the extended version of the fiscal theory of price level, were also integrated in to the reasons of the crises as a key issue in explaining the crises faced during the implementation of the exchange rate based stabilization program.

The persistent inflation and macroeconomic instability have prevented the achievement of sustained high growth in Turkey. Over the decades, the problems of Turkish economy has been featured by high and volatile inflation, high public

sector budget deficits, high real interest rates, pressures of the government borrowing on thin financial markets and dollarization of the economy after the financial liberalization.

Since fiscal stance and current account conditions were argued as important factors in triggering crises, fiscal and current account sustainability were empirically tested for pre and post-crises period. Under sustainability analysis, it was found that throughout the sample period both fiscal balances and current account deficit were weak sustainable, i.e. any further deterioration in fiscal balances or current account due to any shock or change in conjuncture could generate further problems and could turn it to the unsustainable path, and their way of financing played a triggering role.

Therefore, one of the argument of the thesis, which is the implementation of the exchange rate based disinflation program under such a weak sustainable fiscal policy in which budget financing was realized through domestic banking system and under such a weak sustainable current account deficit without solving the structural problems of the banking system, generated additional vulnerabilities in the banking sector and somehow prepared a ground for the crises, was confirmed.

Deep-rooted fiscal problems over the decades were also considered as another factor for the crises. Even though there was a fiscal effort during the disinflation period, fiscal deficit remained high. It had a significant impact in generating most of the vulnerabilities in the economy. However, fiscal stance did not turn to unsustainable pattern as econometric evidence presented. This was mainly due to the supplementary credit extending by IMF just after the crisis as

well as the continuation of the decisive implementation fiscal adjustment program. However, Treasury had to rollover its debt by accepting high real rates with very short maturities.

Under a weak current account sustainability, implementation of the fixed exchange rate regime and real appreciation of the domestic currency created vulnerabilities in the external position of the economy. Trade and current account deficit increased sharply. With the appreciation of the Turkish lira, the demand for imported goods increased significantly, especially in imported cars. The weakening of the Euro against US Dollar also adversely affect the Turkish foreign trade. Since the financing of the current account was met by the capital inflows, dependence of the "hot money" created additional fragilities in the economy.

In Turkey, throughout the years saving – investment gap of the government sector had been covered by the private sectors' saving surpluses plus the foreign savings to close the current account deficit. However, in 2000, with deterioration of the private savings which replaced by consumption, current account deficit was widen sharply. Under a weak current account sustainability, implementation of the fixed exchange rate created vulnerabilities in the external position of the economy. Together with other factors, such as delays in the structural reforms, slippage of the end year target of the inflation, foreign investors became very sensitive to those accumulated fragilities. As argued by Calvo, Végh (2003), Kaminsky et.al (2000, 2003), Reinhart et.al (2002, 2003), Frankel (2003) pegged exchange rate policy contribute adversely to the financial system stability, as it was seen in the Turkish case.

Moreover, combination of the weak fiscal position of the government with the implementation of the fixed exchange rate regime, brought into considerations about the "fiscal theory of exchange rate (currency crises)" explanations suggested by Mackowiak (2000), Corsetti and Mackowiak (2001) and Daniel (2001). They explain currency crises by analyzing the position of the fiscal authority arguing that sustainable fixed exchange rate must be supported by passive fiscal policy. In order to assess the likelihood and the expected size of devaluation, private agents must form expectations regarding future policy response to the expansion of public debt.

Daniel (2001) stresses that the long run sustainability of the fixed exchange rate regime system depends on the present value of future fiscal surpluses, implying a need of passive fiscal policy. She proposed that *"...When the fiscal authority chooses the present value of surpluses inconsistent with the pegged rate, the monetary authority is forced to abandon fixed exchange rate.... while fiscal policy is responsible for generating the crises, monetary policy is responsible for its characteristics, timing and the size*" (Daniel, 2001, pg. 967).

Another argument was the triggering effect of the prospective deficit perceptions which led to "herd behaviour" in the market. Combination of weak fiscal sustainability conditions with the prospective deficit considerations in the economy, played a significant role in Turkish financial crises. Accumulation of excessive risks in the banking sector generated hesitations about the solvency of the banking system and brought thoughts about the fiscal cost of likely bailing out of banks.

Deposit insurance was another factor that affect adversely the market discipline and initiated moral hazard problems both from bank and the customer side. Moreover, it was one of the main element of the prospective deficits generating a significant burden on government fiscal balances. In Turkey, just after the crises in order to calm down the markets, the coverage of government guarantees on deposits extended to meet whole banks' liabilities by the government. This also led to a sharp increase in government domestic debt.

In the thesis, it is also argued that balance sheet effects played a crucial role in triggering crises. In addition to the structural problems, during the disinflation program sectoral balance sheets were deteriorated in terms of maturity and currency mismatches especially in the banking and the corporate sector.

Over the decades structural problems of the Turkish banking sector, such as high concentration and oligopolistic structure, large size of state banks and their distortionary effects on the market, limited size of financial system, illusive profit generation under high inflation due to the absence of inflation-accounting, oversized employment and branching, excessive connected lending, excessive risk taking and the absence of the risk culture, inadequate capital adequacy ratios taking into account the size of the risk accumulation, implicit and/or explicit government guarantees, moral hazard problems, were accumulated.

Moreover, realization of the budget financing through domestic banking system over the years led to a shift from credits to government securities in banks' balance sheets which made them vulnerable to market risk. The share of government securities had increased in banks' portfolio significantly comparing to EU countries. With the implementation of predetermined exchange rate regime

and thus with the real appreciation of the Turkish lira against the foreign exchange basket, banks preferred to open their foreign exchange position by increasing foreign liabilities to invest in government liabilities expecting that interest rates and inflation would further decline. Banks preferred to borrow from abroad mostly through syndicated loans. Since there was no tendency in switching from dollarization, foreign exchange deposits of the residents were also used as a low cost source by banks. They benefited from the appreciation of Turkish lira by funding itself with cheap foreign exchange sources relative to Turkish lira funding. Investing on large securities portfolio under declining trend of interest rates through opening position, banks became vulnerable to market risk i.e. any upward movements in interest rate and the depreciation of the domestic currency.

Moreover, during the disinflation program, banks concentrated on retail banking by extending consumer credits and also tried to increase their market share in credits cards. However, through easing the credit conditions to households and the real sector during the boom cycle of the economy, asset quality deteriorated and finally with the crises non-performing loans increased significantly affecting profitability and capital adequacy of the banking sector adversely.

With the many banks became insolvent, the total number of banks taken over by SDIF increased to 21. With downsizing attempts and merging and acquisitions, banks tried to remain solvent, generating large losses due to the realization of interest rate, foreign exchange and credit risk, the latter was realized through time together with deep recession.

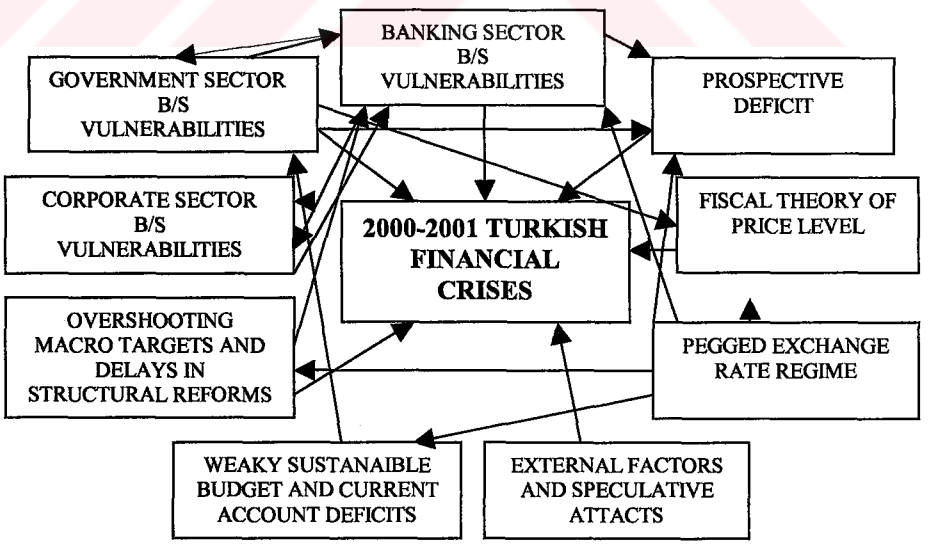
2000-2001 crises created a chain reaction among all sectors. From the government sector side; with the rise in Treasury interest rates, government deficit increased sharply due to the additional burden brought by interest payments. Moreover, after the crises, for restructuring of the banking sector, Treasury had to issue securities which led to increase domestic debt considerably. Consequently, crises in the financial system reflected itself on fiscal balances by generating additional burden of 39 per cent of GNP affecting all macroeconomic policies adversely.

The interaction between the corporate sector and banking sector was also very important. Any problem in one of them immediately spreads to other. Given the structural problems of the Turkish corporate sector, such as dependence on sources other than own funds, high leverage ratios, large share of short-term liabilities, currency mismatches in the assets and liabilities, reliance on interest earnings other than the operational profits, corporate sector was hit by three channels with the severe financial crises. The first channel was realized trough corporate sector's high borrowing from abroad. Since there was a currency mismatch problem in corporate sector's balance sheet, with the sharp devaluation it became hardly to meet foreign currency liabilities. The second pressure came from the banks side. Since banks were in trouble, with the crises they recall the credits and charge high interest rates. The non-performing loans of sector increased enormously, necessitating debt restructuring of the corporate sector, namely Istanbul approach. The third pressure on corporate sector came from the deep recession and squeezed domestic demand through significant decline in real income of the households. With both of those factors, corporate sector lost

repayment capacity, many of them incurred losses and even went out of business by creating a pressure on banks. However, unlike the South Asia crises, Turkish corporate sector was not a sole triggering factor for the crises. Even though the corporate sector involved in taking the excessive risk during the disinflation program, the role of corporate sector in the crises was not the reason but the consequence of crises through deep recession and deterioration of the banking sector.

Laid off employment in both real and the financial sector increased unemployment figures in the economy after the crises. The decline in real income affected both repayment capacity and the consumption pattern of the households which directly put a pressure on corporate sector and the banking sector respectively.

Box 6: 2000-2001 Financial Crises and Its Causes



In sum, many factors played a role in triggering Turkish financial crises (Box 5). Exchange rate based disinflation program per se was the primary factor in triggering crises. The program was victim of its own success. It created additional vulnerabilities in the economy as seen from other international experiences. Under weakly sustainable fiscal and current account deficit, implementation of exchange rate based disinflation end up the financial crises. One should take into account that crises was occurred in the midst of the implementation of the disinflation program where economic fundamentals were improving, interest rates, inflation were going down, foreign borrowings and short term capital inflow was sustained with the initial credibility of the program, declining trend in redemption ratios of domestic borrowing etc. Moreover, the exit date of fixed exchange rate regime had already determined with a predetermined widening band. Why everything was turned down and ending with the crises?

The sharp decline in the interest rates stimulated the economic growth through increasing domestic demand. The increase in import led to the deterioration of the trade balance and current account deficit, which was financed by capital inflows. Accumulation of risks in the sectors, especially in the banking sector, delays in implementation of structural reforms and privatization, Turkish economy began to give red alarms for self-fulfilling mechanisms. The expectations were played a significant role in sudden reversal of the capital inflows and triggering the crises. Loosening credibility due to the political disorder and with the rumors about the solvency of the banking sector, prospective deficit concerns were appeared in November 2000, produced a snowball effect by deteriorating the

expectations, especially on future fiscal deficit of the government, so called the prospective deficit, considering the extensive amount of risks taken by the banks.

External factors, such as oil price increases and the developments in the Euro/dollar parity deteriorates the terms of trade affected domestic economy, also stress about Argentina led to the capital outflow with the delays in structural reforms and over shooting of macroeconomic targets increased the hesitations about the sustainability of the program. The political disorder and deterioration of the expectations had loosened credibility of the program and sudden reversals capital led to the crisis.

It can be concluded that reasons of the 2000-2001 Turkish financial crises carries important elements of the crisis generation models, except the monetization of debt through seignorage. Therefore, Turkish financial crises can be considered as a "next generation" in explaining the reasons of the crises. Moreover, it could be suggested that the cost of crises would be less, if banking sector was strengthen through the adequate regulations and implementations of the full capacity autonomous body and also through restructuring of the state and some small and medium sized banks before the implementation of the disinflation program.

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APPENDIX A

EARLY WARNING INDICATORS

Indicators Proposed by Kaminsky, Lizondo and Reinhart (1997)

Capital Account: International reserves, capital flows, short-term capital flows, foreign direct investments, and the differential between domestic and foreign interest rates.

External Debt Profile: Public foreign debt, total foreign debt, short-term debt, share of debt classified by type of creditor and interest structure, debt service and foreign aid.

Current Account: Real exchange rate, current account balance, trade balance, exports, imports, terms of trade, price of exports. savings and investment.

International Variables: Foreign real GDP growth, interest rates, and price level.

Financial Liberalization: Credit growth, change in money multiplier, real interest rates, spread between bank lending and deposit interest rates.

Other financial variables: Central bank credit to the banking system, gap between money demand and supply, money growth, bond yields, domestic inflation, the parallel market exchange rate premium, the position of the exchange rates within the official band, M2 over international reserves.

Real Sector: Real GOP growth, output gap, employment -unemployment, wages, changes in stock prices.

Fiscal Variables: fiscal deficit, government consumption, credit to the public sector.

Institutional/Structural factors: Openness, trade concentration, exchange controls, duration of the fixed exchange rate periods, financial liberalization, banking crises, past foreign exchange market crises, and past foreign exchange market events.

Political variables: Electrons, electoral victory or loss, change of government, left-wing government, new finance minister, and degree of political instability.

Source:Kaminsky, Lizondo and Reinhart (1997). "Leading Indicators of the Currency Crises", IMF WP/97/79.

APPENDIX B

MACROPRUDENTIAL INDICATORS

Aggregated Microprudential Indicators	Macroeconomic Indicators
Capital adequacy	Economic growth
Aggregate capital ratios	Aggregate growth rates
Frequency distribution of capital ratios	Sectoral slumps
Asset quality	Balance of payments
(a) Lending institution	Current account deficit
Sectoral credit concentration	Foreign exchange reserve adequacy
Foreign currency-denominated lending	External debt (including maturity structure)
Nonperforming loans and provisions	Terms of trade
Loans to loss-making public sector entities	Composition and maturity of capital flows
Risk profile of assets	Inflation
Connected lending	Volatility in inflation
Leverage ratios	Interest and exchange rates
(b) Borrowing entity	Volatility in interest and exchange rates
Debt-equity ratios	Level of domestic real interest rates
Corporate profitability	Exchange rate sustainability
Other indicators of corporate conditions	Exchange rate guarantees
Household indebtedness	Lending and asset price booms
Management soundness	Lending booms
Expense ratios	Asset price booms
Earnings per employee	Contagion effects
Growth in the number of financial institutions	Financial market correlation
Earnings/profitability	Trade spillovers
Return on assets	Other factors
Return on equity	Directed lending and investment
Income and expense ratios	Government recourse to the banking system
Structural profitability indicators	Arrears in the economy
Liquidity	
Central bank credit to financial institutions	**Market-based indicators**
Deposits in relation to monetary aggregates	
Loans-to-deposits ratios	Market prices of financial instruments, incl. equity
Maturity structure of assets and liabilities/liquid asset ratios	Indicators of excess yields
Measures of secondary market liquidity	Credit ratings
Indicators of segmentation of the money market	Sovereign yield spreads
Sensitivity to market risk	
Foreign exchange risk	
Interest rate risk	
Equity price risk	
Commodity price risk	

Source: *Macroprudential Indicators and Data Dissemination—Background Paper* (SM/99/295, Supplement 1), p. 5.

APPENDIX C

SELECTED FINANCIAL SOUNDNESS INDICATORS

BANKS

Capital adequacy

- Regulatory capital (total and Tier I) to risk-weighted assets
- Assets to capital

Asset quality

- NPLs to total gross loans
- NPLs net of provisions to capital
- Sectoral distribution of loans to total loans
- Geographical distribution of loans (credit) to total loans (credit)
- Large exposures and connected lending to capital
- Foreign currency-denominated loans to total loans
- Gross asset position in financial derivatives to capital
- Gross liability position in financial derivatives to capital

Earnings and profitability

- ROA (net income to average total assets)
- ROE (net income to average equity)
- Interest margin to gross income
- Non-interest expenses to gross income
- Trading and foreign exchange gains (losses) to total income

Liquidity

- Liquid assets to total assets (liquid asset ratio)
- Liquid assets to liquid liabilities
- Customer deposits to total (non-interbank) loans
- Spread between highest and lowest interbank rate (market segmentation)
- Central bank lending to deposit-taking institutions

Sensitivity to market risk

- Duration of assets
- Duration of liabilities
- Net open position in foreign exchange to capital
- Net open position in equities to capital

Market liquidity :

- Average bid-ask spread in the securities market
- Average daily turnover ratio in the securities market

NONBANK FINANCIAL INSTITUTIONS:

- NBFI assets to total financial system assets NBFI assets to GDP

CORPORATE SECTOR :

- Total debt to equity
- Return on equity (earnings before interest and taxes to average equity)
- Earnings before interest and taxes to interest and principal expenses
- Corporate foreign currency debt to foreign currency assets

HOUSEHOLDS :

- Household debt to GDP
- Household debt burden to income

REAL ESTATE MARKETS :

- Real estate prices
- Loans outstanding to the real estate sector to total loans

Source: Evans O., A. Leone, M. Gill, P. Hilbers (2000). "Macroprudential Indicators of Financial System Soundness", IMF Occasional Paper 192, pg. 4

APPENDIX D:

FINANCIAL RISK MATRIX OF THE TURKISH GOVERNMENT

EXPLICIT RISKS

Direct-Open

- Domestic and external borrowing for budget financing
- External financing for project financing
- Expenditures envisaged in the budget for the current year
- Expenditures envisaged in the budget for the future years
- Expenditures made foe the losses which stem from the duty losses of the state banks and the quasi-fiscal operations of public institutions

Contingent-Open

- Repayment guarantees provided for domestic and external borrowing
- Investment guarantees provided in connection with the build-operate-transfer and build-operate models
- Guarantees provided in banking legislation
- Expenditures made to cover extra cost increases which may arise in public investment projects
- State subsidies (agricultural products, floods, war etc.)
- Guaranteed extended to the exchange rate
- Unemployment insurance fund
- Financing for the deficit of the social security system
- Losses of state enterprises (excluding duty losses)
-

IMPLICIT RISKS

Direct - Hidden (Implied)

- Retirement pensions that may be awarded in future in cases nut specified by law
- Expenditures of the social security systems in cases nut specified by law

Contingent - Hidden (Implied):

- Default by public institutions an the fulfillment of their obligations arising from international agreements which they have entered into with foreign countries without Treasury guarantee
- Default by local administrations in connection with their unguaranteed obligations
- Debts of privatized institutions
- Costs which may arise as a result of bank failures and are unrelated to the deposit guarantee
- Default by social security institutions in payments related to obligations that are not under state guarantee
- Default by the Central Bank warranty for the transfer abroad of private foreign capital
- Environmental damage and natural disasters
- Expenditures incurred duo to military operations
- Guarantees provided to Turkish Airlines for the insurance of third parties

Source: Treasury , Risk Management Report, April 2003, pg 76.

APPENDIX E:
FISCAL VULNERABILITY INDICATORS

- *Fiscal position indicators* – weak initial fiscal position; incomplete coverage of government fiscal activity; poor accounting and control; insufficient balance sheet information; sizable uncovered contingent liabilities; and significant quasi-fiscal activities.

- *Short-term fiscal risk indicators* – high sensitivity of short-term fiscal outcomes to changes in key macroeconomic variables; inappropriate debt structure; variable revenue sources and expenditure programs; calling of uncovered contingent liabilities; and other expenditure risks.

- *Longer-term sustainability indicators* – unfavorable debt dynamics; low government debt rating and/or high interest rate premia; adverse demographic trends; and rapid natural resource depletion and/or serious environmental degradation.

- *Expenditure indicators* – large share of nondiscretionary spending and/or transfers; excessive military spending; and significant gaps in expenditure (e.g., social security, safety net, health and education, infrastructure).

- *Revenue indicators* – inelastic revenue system; highly concentrated tax revenue; frequent tax law changes; extensive earmarking; and reliance on grants and other major nontax revenue sources.

- *Fiscal management indicators* – large expenditure arrears and use of netting arrangements; marked deviation between the original budget and the budget outturn; nonexistent or weak medium-term budget planning; long delays in preparing and auditing final accounts; large tax arrears and use of tax offsets; a large stock of tax refunds, especially for VAT; an out-of-date taxpayer register; and an ineffective tax audit program.

- *Government effectiveness indicators* – poor results from surveys of public sector performance, corruption etc.

Source: Hemming R. and M. Petrie (2000). "A Framework for Assessing Fiscal Vulnerability" IMF WP/00/52

APPENDIX F

GOVERNMENT SECTOR BALANCE SHEET, YEAR 2000

	BILLION TL	SHARE IN GNP,%
1.TAXES	31 009 237	24,7
A.DIRECT	11 960 364	9,5
B.INDIRECT	19 048 873	15,2
2.NON-TAX NORMAL INCOME	2 820 474	2,2
3.FACTOR INCOME	4 363 653	3,5
4.SOCIAL FUNDS		-1,9
5.(CURRENT TRANSFERS)	-2 411 122	-20,7
I.PUBLIC DISP.INCOME	-26 018 016	7,8
II.CURRENT EXPENDITURE	9 764 226	-12,3
III.PUBLIC SAVINGS	-15 481 515	-4,6
IV.INVESTMENT	-5 717 288	-6,9
A.FIXED INVESTMENT	-8 667 276	-6,8
B.STOCK CHANGES	-8 602 104	-0,1
V.SAVINGS-INVESTMENT DIFF.	- 65 172	-11,5
VI.CAPITAL TRANSFERS	-14 384 564	0,6
1.TAXES ON WEALTH	702 528	0,4
2.(OTHER TRANSFERS)	547 023	0,6
3.(INCREASE IN FIXED ASSETS)	751 089	-0,5
VII.CASH-BANK/BORROWING	- 595 583	10,9
1.CHANGE IN CASH-BANK	13 682 037	-1,2
2.FOREIGN BORROWING(NET)	-1 455 282	3,7
-REPAYMENTS	4 623 222	-3,3
-RECEIPTS	-4 121 415	7,0
3.DOM.BORROW./LEND.(NET)	8 744 637	9,3
4.STOCK CHANGES FUND	11 628 141	-0,9
BORROWING REQIREMENT	14 796 080	11,8
CONSOLIDATED BUDGET INTEREST PAYMENTS	20 439 862	16,3
PSBR (EXC.INTEREST PAYMENTS)	-7 108 154	-5,7

Source: State Planning Organization http://www.dpt.gov.tr

APPENDIX G

DETERMINANTS OF CORPORATE VULNERABILITIES

	Financial Accelerator Models				Collateral Models			
	BG(95)	K(99)	KS(99)	GCN(OO)		KM(97)		CK(OO)
Structural vulnerabilities								
Access to non-bank financing	X							
Corporate governance								X
Legal infrastructure								X
Macroeconomic shocks								
Interest rate change		X				X		X
Exchange rates changes				X				
Capital flows/Liquidity		X	X	X				
Domestic demand			X			X		
Terms of trade			X					X
Deflation				X		X		
Productivity								X
Corporate sector indicators								
Leverage	X	X	X	X		X		X
Foreign Debt				X	X	X		
Short-term or floating rate debt	X	X						
Liquid assets		X						
Marketable collateral		X		X			X	X
Asset prices		X		X	X X		X	
Current cash flow		X			X			
Dividends					X			
Banking indicators 1/								
Availability of credit		X						X
Cost of credit		X						

[1] Some studies lack specifically at bank vulnerabilities (capital adequacy and liquidity), which would fend into corporate vulnerability through the channels of availability (rationing) and cast of bank credit.
Legend: BG: Bernanke and Gesller K Keugman; KS: Kim and Stone; 1CM: Kiyotaki and Macre; CK: Caballero and Ksishnamurthy; CON: Gender, Gilchrist and Natalucci.

Source: "Macroprudential Analysis: Selected Aspects" Background Paper, Approved by S. Ingves, June 2001.

APPENDIX H

SOUNDNESS INDICATORS OF THE CORPORATE SECTOR

	BS (01)	BPS (00)	SW (01)	Fitch	SandP
Leverage					
Total liabilities to equity			X		
Total debt to total assets	X		X		
Total debt to equity	X				X
Total debt to capital	X				X
Long-term debt to equity	X				
Total debt to market value of equity		X			X
Total debt plus off-balance sheet (liabilities to capital plus off-balance sheet liabilities)					X
Profitability					
Return on equity				X	
Return on assets			X		
Operating income to sales			X	X	
Cash flow adequacy					
EBIT to interest expenses	X		X	X	
EBITDA to interest expenses				X	
Debt payback period				X	
Liquidity					
Current ratio	X			X	
Quick ratio	X				

Legend: BS: Begum and Schumacher; BPS: Bamhill, Papapanagiotou and Schumacher; SW: Stone and Weeks; Fitch: Fitch IBCA; SandP: Standard and Poor's.

Source: "Macroprudential Analysis: Selected Aspects" Background Paper, Approved by S. Ingves, June 2001 IMF (2001)

APPENDIX I

BALANCE SHEET OF THE CORPORATE SECTOR, YEAR 2000

ASSETS	Billion TL	% Sh.in Tot.
I-CURRENT ASSETS	42.913.248,3	57,0
A-Liquid Assets	6.228.038,0	8,3
B- Marketable Securities	3.374.041,8	4,5
C- Short-Term Trade Receivables	14.093.914,7	18,7
D- Other Short-Term Receivables	3.640.549,3	4,8
E- Inventories	9.929.277,4	13,2
F- Constr.and Restor.Costs Spread Over Yrs.	3.703.720,2	4,9
G- Prepaym.and Accr. Inc.for the Next Months	344.858,6	0,5
H- Other Current Assets	1.598.848,3	2,1
II- FIXED ASSETS	32.339.225,7	43,0
A- Long-Term Trade Receivables	608.298,3	0,8
B- Other Long-Term Receivables	543.500,6	0,7
C- Financial Fixed Assets	8.605.066,9	11,4
D- Tangible Fixed Assets	20.181.148,4	26,8
E- Intangible Fixed Assets	1.523.447,0	2,0
F- Assets Subject to Depletion	42.292,8	0,1
G-Prepaym.and Accrued Inc. for the Next Yrs.	448.562,8	0,6
H- Other Long-Term Assets	386.908,9	0,5
TOTAL ASSETS	75.252.474,0	100,0
LIABILITIES		
I- SHORT-TERM LIABILITIES	36.746.218,0	48,8
A- Financial Liabilities	12.042.815,7	16,0
1- Bank Loans	9.868.604,1	13,1
B- Trade Debts	12.207.451,8	16,2
C- Other Short-Term Debts	2.939.849,5	3,9
D- Advances Received	1.422.584,9	1,9
E- Remunerations Spread Over Years	3.690.275,8	4,9
F- Taxes and Other Liabilities Payable	1.135.836,4	1,5
G- Provisions for Liabilities and Charges	2.413.231,9	3,2
H- Defer.Inc.and Accr.Exp.for the Next Months	536.963,4	0,7
I- Other Short-Term Liabilities	357.208,6	0,5
II- LONG-TERM LIABILITIES	14.473.215,6	19,2
A- Financial Liabilities	9.446.021,9	12,6
B- Trade Debts	805.538,5	1,1
C- Other Long-Term Debts	1.219.670,2	1,6
D-Advances Received	732.625,5	1,0
E- Provisions for Liabilities and Charges	1.839.561,1	2,4
F- Defer.Inc.and Accr.Exp.for the Next Yrs.	210.392,3	0,3
G- Other Long-Term Liabilities	219.406,3	0,3
III- OWN FUNDS	24.033.040,3	31,9
A- Paid-in Capital	11.538.290,7	15,3
B- Capital Reserves	9.144.610,7	12,2
C- Reserves from Retained Earnings	2.856.568,7	3,8
D- Profit Brought Forward	641.660,5	0,9
E- Loss Brought Forward (-)	(2.043.818,0)	(2,7)
F- Net Profit or Loss for the Financial Year	1.895.727,7	2,5
TOTAL LIABILITIES	75.252.474,0	100,0

Source: Central Bank of the Republic of Turkey, Company Accounts 2000.

APPENDIX J

FINANCIAL RATIOS OF THECORPORATE SECTOR

FINANCIAL RATIOS OF THE CORPORATE SECTOR	1997	1998	1999	2000	2001	2002
LIQUIDITY RATIOS						
1-Current Ratio (%)	118,8	116,5	114,6	118,4	110,5	115,0
2-Quick (Acid-Test) Ratio (%)	82,6	82,6	84,3	86,0	80,7	84,2
3-Cash Ratio (%)	22,3	22,2	25,5	26,3	22,4	23,5
4-Inventories / Current Assets (%)	26,8	25,4	22,5	23,3	22,4	22,4
5-Inventories / Total Assets (%)	16,1	14,5	13,0	13,6	12,7	12,0
6-Inventory Dependancy Ratio (%)	243,9	263,3	288,9	267,8	313,0	296,7
7-Short-Term Receivables / Current Assets (%)	41,5	41,1	41,0	40,4	43,0	42,1
8-Short-Term Receivables / Total Assets (%)	24,9	23,5	23,7	23,5	24,3	22,6
RATIOS OF FINANCIAL POSITION						
1-Total Loans / Total Assets (Leverage Ratio) (%)	68,5	68,4	71,2	68,0	74,2	69,9
2-Own Funds / Total Assets (%)	31,5	31,6	28,8	32,0	25,8	30,1
3-Own Funds / Total Loans (%)	45,9	46,2	40,4	47,0	34,7	43,1
4-Short-Term Liabilities / Total Liabilities (%)	50,6	49,2	50,4	49,2	51,2	46,7
5-Long-Term Liabilities / Total Liabilities (%)	17,9	19,2	20,8	18,8	23,1	23,2
6-Long-Term Liabilities / Long-Term Liabilities and Own Funds (%	36,3	37,8	42,0	37,0	47,2	43,5
7-Tangible Fixed Assets (Net) / Own Funds (%)	86,7	90,9	94,4	86,5	109,6	95,5
8-Tangible Fixed Assets (Net) / Long-Term Liabilities (%)	152,2	149,7	130,3	147,3	122,5	124,2
9-Fixed Assets / Total Loans (%)	58,2	62,4	59,3	61,4	58,5	66,2
10-Fixed Assets / Own Funds (%)	126,8	135,1	146,9	130,5	168,6	153,7
11-Fixed Assets / Long-Term Liabilities and Own Funds (%)	80,8	84,0	85,2	82,2	89,0	86,9
12-Short-Term Liabilities / Total Loans (%)	73,8	71,9	70,7	72,4	69,0	66,8
13-Bank Loans / Total Assets (%)	28,1	28,4	30,2	26,6	31,6	28,5
14-Short-Term Bank Loans / Short-Term Liabilities (%)	32,0	32,5	34,1	30,0	30,9	28,3
15-Bank Loans / Total Loans (%)	40,9	41,5	42,4	39,1	42,6	40,8
16-Current Assets / Total Assets (%)	60,1	57,3	57,7	58,3	56,6	53,7
17-Tangible Fixed Assets (Net) / Total Assets (%)	27,3	28,7	27,2	27,7	28,2	28,8
TURNOVER RATIOS						
1-Inventory Turnover (Times)	0,0	0,0	19,0	0,0	20,7	13,6
2-Receivables Turnover (Times)	10,3	10,8	11,3	14,9	12,0	8,6
3-Working Capital Turnover (Times)	3,7	3,8	3,9	5,1	4,2	3,0
4-Net Working Capital Turnover (Times)	23,7	26,7	30,3	32,7	43,9	22,9
5-Tangible Fixed Assets Turnover (Times)	8,2	7,6	8,2	10,7	8,4	5,6
6-Fixed Assets Turnover (Times)	5,6	5,1	5,3	7,1	5,4	3,5
7-Own Funds Turnover (Times)	7,1	6,9	7,7	9,2	9,2	5,3
8-Total Assets Turnover (Times)	2,2	2,2	2,2	3,0	2,4	1,6
PROFITABILITY RATIOS						
1-Ratios Relating Profit to Capital						
a)Net Profit / Own Funds (%)	18,7	11,4	6,8	9,2	0,0	8,8
b)Profit Before Tax / Own Funds (%)	27,5	18,0	12,8	15,1	0,0	13,7
c)Profit Before Interest and Tax / Total Liabilities (%)	17,6	15,2	14,3	11,0	15,6	11,7
d)Net Profit / Total Assets (%)	5,9	3,6	2,0	3,0	0,0	2,7
e)Operating Profit / Total Assets-Financial Fixed Assets (%)	13,3	10,1	8,1	7,3	9,3	7,7
f)Reserves from Retained Earnings / Total Assets (%)	3,1	3,6	3,5	3,9	4,0	3,9
2-Ratios Relating Profit to Sales						
a)Operating Profit / Net Sales (%)	5,4	4,2	3,3	2,2	3,5	4,3
b)Gross Profit / Net Sales (%)	10,2	9,5	8,4	6,6	8,5	11,5
c)Net Profit / Net Sales (%)	2,6	1,7	0,9	1,0	0,0	1,7
d)Cost of Goods Sold / Net Sales (%)	89,8	90,5	91,6	93,4	91,5	88,5
e)Operating Expens / Net Sales (%)	4,8	5,3	5,1	4,4	5,0	7,2
f)Interest Expenses / Net Sales (%)	4,0	4,4	4,8	2,1	6,9	4,7
3-Ratios Relating Profit to Financial Obligations						
1-Interest Coverage Ratios						
a)Profit Before Interest and Tax / Interest Expenses (%)	197,3	159,8	134,7	178,3	95,3	154,9
b)Net Profit and Interest Expenses / Interest Expenses (%)	166,2	137,8	118,3	147,9	85,3	135,2
SOURCE:CBRT						

Source: Central Bank of the Republic of Turkey, Company Accounts, Various Issues.

APPENDIX K

BALANCE SHEET OF THE BANKING SECTOR, YEAR 2000

ASSETS	BILLION TL	% IN TOTAL ASSET
Liquid Assets	**33.470.774**	**32,2**
Cash	1.037.835	**1,0**
Banks	13.451.695	**12,9**
CBRT	1.263.118	**1,2**
Other Financial Ins.	27.288	**0,0**
Interbank	1.750.147	**1,7**
Securities Portfolio	11.991.268	**11,5**
Required Reserves	3.949.423	**3,8**
Credits	**34.205.860**	**32,9**
Fixed Assets	**15.396.913**	**14,8**
Non-Performing Loans	1.459.563	**1,4**
Cong	1.888.780	**1,8**
Non-traded portfolio	8.770.049	**8,4**
Fixed Assets	3.278.521	**3,1**
Other Assets	**21.014.490**	**20,2**
Total Assets	**104.088.037**	**100,0**
LIABILITIES		
Deposit	**68.442.406**	**65,8**
TL	36.915.796	**35,5**
FX	31.526.610	**30,3**
Non-Deposit Sources	**19.773.249**	**19,0**
Interbank	1.621.662	**1,6**
CBRT	99.673	**0,1**
Domestic Banks	2.188.503	**2,1**
Foreign Banks	10.938.878	**10,5**
Other Credits	1.645.874	**1,6**
Funds	2.632.034	**2,5**
Menkul Kıymetler	646.625	**0,6**
Other Liabilities	**8.671.638**	**8,3**
Own Funds	**5.047.971**	**4,8**
Paid Capital	5.577.159	**5,4**
Reserves	3.391.185	**3,3**
Revaluation Funds	3.131.357	**3,0**
Loss	-7.051.730	**-6,8**
Profit	**2.152.773**	**2,1**
Total Liabilities	**104.088.037**	**100,0**

Source: Turkish Banking Association, htpp://www.tbb.org.tr

APPENDIX L

COMPOSITION OF BANKS' BALANCE SHEETS (%)

Assets	**1990**	**1991**	**1992**	**1993**	**1994**	**1995**	**1996**	**1997**	**1998**	**1999**	**2000**	**2001**
Liquid Assets	32,8	35,5	38,4	41,4	39,3	36,9	36,4	33,5	32,4	35,9	32,2	33,3
Credits	47,0	43,9	41,8	41,4	39,0	42,5	43,1	45,5	38,3	30,1	32,9	24,6
Fixed Assets	8,0	8,5	7,9	7,1	8,0	7,6	7,3	6,7	7,9	9,4	14,8	33,6
Other Assets	12,2	12,1	11,9	10,0	13,6	13,0	13,2	14,4	21,4	24,7	20,2	8,5
Total Assets	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0	100,0
Liabilities												
Deposits	56,0	56,2	55,1	52,0	63,1	65,0	68,6	64,7	65,7	66,9	65,8	70,4
Non-Deposit Sources	20,2	19,3	22,2	26,2	17,3	14,3	14,2	16,6	15,5	17,2	19,0	16,0
Other Liabilities	13,7	14,9	14,0	12,5	11,1	11,8	8,3	9,2	9,9	10,0	8,3	6,4
Capital	7,8	7,2	6,0	6,7	6,3	6,1	6,0	6,5	5,8	2,7	4,8	5,8
Profit/loss	2,4	2,4	2,6	2,7	2,2	2,8	2,9	3,0	3,2	3,1	2,1	1,3
Total Liabilities	100	100	100	100	100	100	100	100	100	100	100	100

Source: Turkish Banking Association, htpp://www.tbb.org.tr

APPENDIX M

FORMULAS USED IN BANKING RATIOS

Liquid Assets = Cash + Due From Banks + Central Bank + Other Finan.Ins. + Interbank + Securities + Reserve Requirements

Average Total Assets = (Total Assets$_{(1st\ Year)}$ + Total Assets$_{(2nd\ Year)}$) / 2

Average Shareholders' Equity = (Shareholders' Equity$_{(1st\ Year)}$ + Shareholders' Equity$_{(2nd\ Year)}$) / 2

Average Share-in Capital = (Share-in Capital$_{(1st\ Year)}$ + Share-in Capital$_{(2nd\ Year)}$) / 2

Non-deposits Funds = Interbank + Central Bank + Other Funds Borrowed + Funds + Securities Issued

Contingencies and Commitments = Total Contingencies and Commitments- Other Contingencies and Commitments

Net Working Capital = Shareholders' Equity + Total Income(Current + Previous) - Permanent Assets except Affiliated Securities

Total Income = Current Year's Income + Previous Years' Income

Fx Position = Fx Liabilities - Fx Assets

Permanent Assets = Non-performing Assets(net) + Equity Participations + Affiliated Securities and Companies + Fixed Assets

Profitable Assets = Loans + Securities Portfolio + Banks + Interbank + Gov't Bonds Account for Legal Reserves

Non-Profitable Assets = Deposits + Non-deposit Funds

Total Income = Interest Income + Non-Interest Income

Total Expenditures = Interest Expenses + Non-Interest Expenses

Interest Income = Interest on (Loans + Securities Portfolio + Deposits in other Banks + Interbank Funds Sold) + Other Interest Incom

Other Interest Income = Income from Reserve Requirements + Other

Interest Expenses = Interest on (Deposits + Non-Deposits Funds Borrowed) + Other Interest Expenses

Other Interest Expenses = Interest on Interbank Funds Borrowed + Interest on Securities Issued + Other

Net Interest Income After Provision for Loan Losses = Interest Income - Interest Expenses - Provisions for Loan Losses

Non-Interest Income = Income from Commisions (net) + Inc.from Fx Transac.(net) + Inc.from Capital Market Transac.(net) + Other

Income from Commissions (net) = Fees and Commissions Received - Fees and Commissions Paid

Income from Fx Transactions (net) = Income from Fx Transactions - Loss from Fx Transactions

Income from Capital Market Transactions (net) = Income from Capital Market Transactions - Loss from Capital Market Transactions

Other Non-Interest Income = Dividends From Equity Participations and Affiliated Companies + Extraordinary Income + Other

Non-Interest Exp. = Salary&Empl'ee Bene.+ Res.for Retire.Pay + Oth.Provi. + Taxes and Duties + Rent. Exp. + Depr.& Amort. + Oth

Other Non-Interest Expenses = Extraordinary Expenses + Other

Operational Expenses = Salaries and Benefits + Reserve for Retirement + Rental Expenses + Depreciation and Amortization

Provisions = Reserves for Retirement Pay + Provision for Loan Losses + Provisions for Taxes + Other Provisions

Income Before Tax = Net Interest Income after Provision for Loan Losses + Non-Interest Income - Non-Interest Expenses

Net Income(Loss) = Income Before Tax - Provisions for Income Tax

2. The Banks are sorted alfabetically in the groups, as of the end of December 31, 2000.

3. The totals of each group includes the information of the banks operating in that group at the end of each year. Therefore, for some years, the group totals are not equal to the sum of the bank totals under that group.

4. A new ratio, "Standard Capital Ratio" was added to the "Ratios" pages. This was the ratio which was calculated by the banks according to the Decree no.23388 that was published by the Undersecretariat of the Treasury in the Official Gazette on June 30,1998. Standard capital ratios were sent to the Association by the banks and the Association did not make any calculation.

Source: Turkish Banking Association, htpp://www.tbb.org.tr

APPENDIX N

TURKISH BANKING SECTOR RATIOS,%

	1990	1991	1992	1993	1994	1995	1996	1997	1998	1999	2000	2001
Capital Adquacy												
(Capital+profit)/T. Asset	10,1	9,6	8,6	9,4	8,5	8,9	8,9	9,4	8,9	5,9	6,9	7,2
(Capital+profit)/(deposits + non-dep.)	13,3	12,7	11,1	12,0	10,6	11,3	10,8	11,6	11,0	7,0	8,2	8,3
Net woking Capital/T.Assets	2,2	1,1	0,7	2,2	0,5	1,4	1,6	2,8	1,1	-3,5	-1,7	-0,8
Asset quality												
T.Credits/ Total Assets	47,0	43,9	41,8	41,4	39,0	42,5	43,1	45,5	38,3	30,1	32,9	24,6
Fixed Assets/T. Assets	8,0	8,5	7,9	7,1	8,0	7,6	7,3	6,7	7,9	9,4	14,8	33,6
FX Ass./FX Liabilities	88,1	90,0	86,8	84,6	96,5	90,6	93,6	89,6	84,9	79,4	75,9	83,7
Liquidity												
Liquid Assets / Total Assets	32,8	35,5	38,4	41,4	39,3	36,9	36,4	33,5	32,4	35,9	32,2	33,3
Liquid Assets/(deposits+non-deposit sources)	43,1	47,1	49,6	53,0	49,0	46,6	44,0	41,1	39,9	42,6	37,9	38,5
Earnings												
Net profit/Loss for the period /Average total Assets	2,8	2,4	2,8	3,5	2,2	3,4	3,9	3,4	2,7	-0,6	-3,6	-3,8
Net profit/Loss for the period/Average Capital	36,0	32,6	42,9	54,5	33,5	55,4	64,3	54,1	44,9	-14,9	-89,8	-69,9
Net profit/Loss for the period/Average paid Capital	62,3	51,1	62,0	87,9	58,4	100,2	119,0	80,6	59,6	-12,7	-71,9	-63,4
Revenue and Expenses structure												
Net Interest Proceeds/Average total assets	6,4	8,9	8,9	10,7	11,6	8,4	10,5	10,5	12,3	8,8	3,5	4,7
Interest revenue/Interest expenses	135,5	145,5	143,2	167,4	150,5	140,3	147,2	144,5	147,8	129,5	127,7	145,2
Non-Interest revenue/Non-Interest expenses	57,7	27,9	33,4	15,0	-11,3	41,8	25,3	3,4	2,0	21,3	19,8	-47,9
Total Revenues/Total Expenses	112	109	111	117,9	109	116,4	116,6	116,2	113,5	103,9	95,8	106,6

Source: Turkish Banking Association, htpp://www.tbb.org.tr

APPENDIX O

RATIOS OF THE TURKISH PRIVATE BANKING SECTOR, %

	1994	1995	1996	1997	1998	1999	2000	2001
Capital Adquacy								
(Capital+profit)/Total Assets	8,5	8,9	8,9	9,4	8,9	5,9	6,9	7,2
(Capital+profit)/(deposits + non-deposit sources)	10,6	11,3	10,8	11,6	11,0	7,0	8,2	8,3
Net woking Capital/Total Assets	0,5	1,4	1,6	2,8	1,1	-3,5	-1,7	-0,8
Asset quality								
Total Credits / Total Assets	39,0	42,5	43,1	45,5	38,3	30,1	32,9	24,6
Fixed Assets/Total Assets	8,0	7,6	7,3	6,7	7,9	9,4	14,8	33,6
FX Assets / FX Liabilities	96,5	90,6	93,6	89,6	84,9	79,4	75,9	83,7
Liquidity								
Liquid Assets / Total Assets	39,3	36,9	36,4	33,5	32,4	35,9	32,2	33,3
Liquid Assets/(deposits+non-deposit sources)	49,0	46,6	44,0	41,1	39,9	42,6	37,9	38,5
Earnings								
Net profit/Loss for the period /Average total Assets	2,2	3,4	3,9	3,4	2,7	-0,6	-3,6	-3,8
Net profit/Loss for the period/Average Capital	33,5	55,4	64,3	54,1	44,9	-14,9	-89,8	-69,9
Net profit/Loss for the period/Average paid Capital	58,4	100,2	119,0	80,6	59,6	-12,7	-71,9	-63,4
Revenue and Expenses structure								
Net Interest Proceeds/Average total assets	11,6	8,4	10,5	10,5	12,3	8,8	3,5	4,7
Interest revenue/Interest expenses	150,5	140,3	147,2	144,5	147,8	129,5	127,7	145,2
Non-Interest revenue/Non-Interest expenses	-11,3	41,8	25,3	3,4	2,0	21,3	19,8	-47,9
Total Revenues/Total Expenses	109,5	116,4	116,6	116,2	113,5	103,9	95,8	106,6

Source : Turkish Banking Association, htpp://www.tbb.org.tr

APPENDIX P:
CAPITAL ADEQUACY RATIO OF SDIF BANKS

	2000	1999	1998	1997	1996	1995	1994
Adabank A.Ş.	71,3	33,1	22,8	22,1	11,5	19,4	-
Bayındırbank A.Ş.	12,6	11,8	33,1	-1,3	-	-	-
Ege Giyim Sanayicileri Bankası A.Ş.	7,8	13,9	11,2	8,1	13,7	13,2	-
İktisat Bankası T.A.Ş.	-	8,6	11,5	14,7	13,4	8,1	5,2
Kentbank A.Ş.	-	11,7	11,0	8,1	8,8	-	9,8
Milli Aydın Bankası T.A.Ş.	5,6	-5,1	10,7	9,9	13,1	17,0	7,6
Pamukbank T.A.Ş.	17,1	14,1	9,7	9,8	8,7	8,6	8,2
Sitebank A.Ş.	-	9,8	27,8	71,1	-	-	-
Toprakbank A.Ş.	-	5,1	9,2	8,6	7,9	9,4	9,3
Türkiye İmar Bankası T.A.Ş.	11,6	8,1	10,1	6,4	6,5	8,0	8,5
Bank Ekspres A.Ş.	1,2	-	-	12,1	8,4	12,4	11,2
Bank Kapital Türk A.Ş.	-	4,9	7,1	9,5	12,5	24,6	-
Demirbank T.A.Ş.	6,4	22,4	17,5	11,1	11,4	16,2	11,7
Egebank A.Ş.	-226,3	-289,0	9,7	-	-	-	-
Eskişehir Bankası T.A.Ş.	-99,6	-144,8	11,1	7,6	10,4	11,2	8,3
Etibank A.Ş.	-	8,0	10,1	-0,1	-	-	-
Interbank	22,3	5,9	-36,1	8,3	8,8	8,1	9,0
Sümerbank A.Ş.	-175,4	-118,0	10,0	8,1	8,6	-	-
Türk Ticaret Bankası A.Ş.	16,0	-1,0	-	-3,4	1,0	1,0	14,3
T.Tütüncüler Bankası Yaşarbank A.Ş.	-	-	6,9	7,2	-	-	-
Yurt Ticaret ve Kredi Bankası A.Ş.	-	-95,6	5,7	5,9	10,8	9,6	16,5

Source: Turkish Banking Association, htpp://www.tbb.org.tr

APPENDIX R

INTERSECTORAL ASSET AND LIABILITY POSITION OF TURKEY 1999-2001 (Million US Dollar)

HOLDER OF THE LIABILITY(CREDITOR)

ISSUER OF THE LIABILITY (DEBTOR)	GENERAL GOVERNMENT & CBRT						COMMERCIAL BANKS					
	1999	2000	2000/11	2001/2	2001/3	2001/12	1999	2000	2000/11	2001/2	2001/3	2001/12
GENERAL GOVERNMENT & CBRT												
Domestic Currency							989	913	780	747	538	603
Total Other Liabilities							44.094	53.394	42.915	42.094	42.661	43.493
of which government securities							19.483	21.761	15.359	21.276	21.662	38.781
Short Term							4.871	3.873	2.304	5.319	5.265	7.950
in domestic currency							4.871	3.873	2.304	5.319	5.265	7.950
in foreign currency												
Medium & Long term							14.612	17.888	13.055	15.957	15.796	30.831
in domestic currency							13.658	16.821	12.303	14.914	14.764	29.931
in foreign currency							955	1.066	753	1.043	1.032	1.900
COMMERCIAL BANKS												
Total Liabilities	9.811	15.870	17.521	14.514	18.466	8.332						
Liabilities to CBRT	4.325	8.342	9.448	7.104	12.598	4.048						
Central Gov Deposit	5.486	7.528	8.073	7.409	5.868	4.284						
Other Liabilities												
Short Term												
in domestic currency												
in foreign currency												
Medium & Long term												
in domestic currency												
in foreign currency												
Equity (capital)												
NON-BANK SECTOR(HH & CORPORATE)												
Total Liabilities							30.691	42.484	42.235	33.859	29.267	24.325
Short Term							22.559	29.229	29.058	22.922	19.492	15.325
in domestic currency							12.859	18.005	17.958	12.997	10.623	8.413
in foreign currency							9.700	11.224	11.100	9.925	8.869	6.911
Medium & Long term							8.133	13.255	13.177	10.936	9.775	9.000
in domestic currency							3.042	7.131	7.050	5.228	4.223	3.060
in foreign currency							5.091	6.124	6.127	5.709	5.552	5.940
Equity (capital)												
REST OF THE WORLD												
Total Liabilities (million $)	29.177	22.172	18.820	21.432	18.445	18.767	9.569	11.007	10.330	9.673	9.969	10.293
Currency	1.343	469	662	928	858	1.081	962	597	618	748	544	1.116
ST,Medium and long term												
Equity												

ISSUER OF THE LIABILITY (DEBTOR)	NON-BANK SECTOR(HH & CORPORATE)						REST OF THE WORLD					
	1999	2000	2000/11	2001/2	2001/3	2001/12	1999	2000	2000/11 (1)	2001/2 (2)	2001/3	2001/12
GENERAL GOVERNMENT & CBRT												
Domestic Currency	3.496	4.762	3.698	3.255	2.895	3.102						
Total Other Liabilities	3.341	4.035	3.968	3.110	2.667	1.957	53.369	62.901	57.392	61.747	61.747	70.687
of which government securities												
Short Term												
in domestic currency												
in foreign currency							656	1.653	625	1.608	1.608	590
Medium & Long term												
in domestic currency	3.341	4.035	3.968	3.110	2.667	1.957						
in foreign currency							52.704	61.248	56.757	60.139	60.139	70.097
COMMERCIAL BANKS												
Total Liabilities	68.027	75.364	71.984	63.976	61.299	66.937	17.940	21.460	18.962	18.371	18.371	11.208
Liabilities to CBRT												
Central Gov Deposit												
Other Liabilities												
Short Term	60.573	70.687	67.859	59.816	57.608	62.847						
in domestic currency	37.178	45.121	39.600	37.305	34.544	38.130						
in foreign currency	23.394	25.566	27.459	22.510	23.064	32.717	13.172	16.900	15.812	15.280	15.280	7.997
Medium & Long term	7.454	4.677	4.925	4.034	3.691	4.091						
in domestic currency	3.016	559	914	350	242	615						
in foreign currency	4.438	4.118	4.011	3.704	3.449	3.276	4.768	4.560	3.150	3.091	3.091	3.211
Equity (capital)												
NON-BANK SECTOR(HH & CORPORATE)												
Total Liabilities							28.948	31.319	28.219	29.361	29.361	30.353
Short Term												
in domestic currency												
in foreign currency							9.093	9.748	10.094	9.748	9.748	7.654
Medium & Long term												
in domestic currency												
in foreign currency							19.855	21.571	18.125	19.613	19.613	22.699
Equity (capital)												
REST OF THE WORLD												
Total Liabilities (million $)	2.878	2.558				3.133						
Currency												
ST,Medium and long term												
Equity												

ISSUER OF THE LIABILITY (DEBTOR)	TOTAL					
	1999	2000	2000/11	2001/2	2001/3	2001/12
GENERAL GOVERNMENT & CBRT						
Domestic Currency	4.477	5.675	4.468	4.001	3.433	3.704
Total Other Liabilities	100.764	120.329	104.266	106.951	107.076	116.137
of which government securities						
Short Term	5.527	5.526	2.929	8.927	8.873	8.540
in domestic currency	4.871	3.873	2.304	5.319	5.265	7.950
in foreign currency	656	1.653	625	1.608	1.608	590
Medium & Long term	70.657	83.170	73.761	79.206	79.602	102.885
in domestic currency	16.998	20.855	16.271	18.024	17.431	30.888
in foreign currency	53.659	62.314	57.510	61.182	61.171	71.997
COMMERCIAL BANKS						
Total Liabilities	96.778	112.694	108.457	96.754	98.136	88.477
Liabilities to CBRT	4.325	8.342	9.448	7.104	12.598	4.048
Central Gov Deposit	5.486	7.528	8.073	7.409	5.868	4.284
Other Liabilities						
Short Term	73.745	87.687	82.871	75.036	72.889	70.844
in domestic currency	37.178	45.121	39.600	37.305	34.544	38.130
in foreign currency	36.566	42.466	43.271	37.730	38.344	40.714
Medium & Long term	12.222	9.227	8.075	7.145	6.782	7.302
in domestic currency	3.016	559	914	350	242	615
in foreign currency	9.206	8.668	7.161	6.795	6.540	6.687
Equity (capital)	6.222	9.719	5.765	3.418	3.571	10.191
NON-BANK SECTOR(HH & CORPORATE)						
Total Liabilities	59.639	73.803	70.454	63.220	58.628	54.678
Short Term	31.621	38.977	39.152	32.670	29.240	22.979
in domestic currency	12.859	18.005	17.958	12.997	10.623	8.413
in foreign currency	18.763	20.972	21.194	19.673	18.617	14.565
Medium & Long term	28.018	34.826	31.302	30.549	29.388	31.699
in domestic currency	3.042	7.131	7.050	5.228	4.223	3.060
in foreign currency	24.976	27.695	24.252	25.322	25.165	28.639
Equity (capital)	26.231	39.806	0	0	0	21.487
REST OF THE WORLD						
Total Liabilities (million $)	35.622	36.735	29.150	31.105	29.414	32.313
Currency	962	697	1.281	1.676	1.402	1.116
ST,Medium and long term						
Equity						

Source: 2000-IV, 2001-I,II,III,IV, 2002-IV Quarterly Bulletins of CBRT, Monetary Survey, External Debt and International Reserves tables and International Investment Position of Turkey prepared by CBRT Statistics Department
(1) September 2000 data is used.
(2) March 2001 data is used.

APPENDIX S

TURKISH SUMMARY

Gerek gelişmiş gerekse gelişmekte olan ülke ekonomilerinde ağır maliyetlerle yaşanan finansal krizler, ekonomistleri bu krizlerin çıkış nedenlerini araştırmaya yöneltmiştir. Finansal krizlerin milli geliri düşürücü etkisi ve krizler sonrasında finansal sistemin yeniden yapılandırılması çalışmaları neticesinde kamu maliyesine ve dolayısıyla ekonomiye büyük maliyetler getirmesi, krizlerin çıkış nedenlerinin belirlenmesi ve öncü göstergeler yardımı ile tahmin edilmesi konusundaki çalışmaları ön plana çıkmıştır. Finansal krizler, içinde bulunulan dönemlerin, bölgelerin ve ekonomilerdeki farklı kırılganlıkların izlerini taşıdıklarından, krizlerin oluşum nedenlerine ilişkin farklı modellerin ortaya çıkmasına neden olmuştur.

Bu tezde, Türkiye'de 2000-2001 yıllarında yaşanan finansal krizlerin ortaya çıkış nedenlerinin saptanması amaçlanmış ve daha önce ortaya atılmış olan birinci, ikinci, üçüncü kuşak kriz modellerinin yanı sıra, sektör bilançolarının krizlere etkisi, parasal krizlerin maliye teorisi ve beklenen mali açıklar literatürü ışığı altında incelenmiştir.

Tezde bütçe ve cari işlemler açığında zayıf sürdürülebilir durumun geçerli olduğu bir ortamda kura dayalı dezenflasyon programı uygulanmasının bankacılık ve firma bilançolarında var olan yapısal kırılganlıkların artışına yol açtığı ve bunun

beklenen bütçe açıkları üzerinde olumsuz etki yarattığı, parasal krizlerin maliye teorisinde de belirtildiği gibi sürdürülen maliye politikaları ve beklenen açıkların sabit kur düzeyi ile tutarsız olduğu, diğer yandan, ekonomide uluslararası deneyimlerde de görüldüğü üzere kurun aşırı değerlenmesi sonucunda cari işlemler açığı ve diğer göstergelerde oluşan baskı ve yurtiçi/yurtdışı kaynaklı diğer faktörlerin de etkisi ile programın sürdürülemeyeceği algılamasının artması ile hızlı bir sermaye kaçışının yaşandığı ve ülkenin krizlerle karşı karşıya kaldığı savı vurgulanmıştır.

Bu çerçevede, kriz öncesi dönemde maliye politikalarının ve cari işlemler açığının sürdürülebilirliği ampirik olarak test edilmiş ve gerek maliye politikaları (açıklarının) gerekse cari işlemler açığının zayıf sürdürülebilir olduğu sonucuna varılmıştır. Bu durum kriz öncesi dönemde yapısal bir politika değişikliğine ihtiyaç duyulduğuna işaret etmektedir. Devam eden ekonomik dengesizlikler ve dezenflasyon programı çerçevesinde uygulanan sabit kur rejimi ile firma ve bankacılık sektörü bilançolarının taşıdıkları risklerin ve kırılganlıkların hızla arttığı sektörler arası risk matrisi oluşturularak gösterilmiştir. Özellikle bankacılık sektöründe risklerin iyi yönetilememesi ve yapısal sorunlar nedeniyle zor durumda kalan bankalar, piyasalarda olumsuz beklentilerin doğmasına ve beklenen mali açık algılamasının artmasına neden olmuş, spekülatif hareketler ile birlikte hızlı sermaye çıkışı krizleri tetiklemiştir.

Tezin ikinci bölümde literatürde yer alan kriz modellemeleri üzerinde durularak, Türkiye'de 2000-2001 yıllarında yaşanan krizlerin nedenlerini açıklayabilme kapasiteleri incelenmiştir. Krugman (1979) ve Flood and Garber (1984) tarafından geliştirilen "birinci nesil" kriz modelleri Meksika (1973-1982)

ve Arjantin (1978-1981) krizlerini açıklamak amacıyla ortaya konulmuş, bütçe açıklarının parasallaştırılması neticesinde enflasyonda görülen hızlı artış, yurtiçi paranın değer kazanması, cari işlemler açığının büyümesi ve spekülatif bir atak neticesinde merkez bankasının rezerv kaybı ile sabit kur sisteminin daha fazla devam ettiremeyeceğinin anlaşılması ile kur rejiminin hızlı bir devaluasyon ile terk edilmesi, krizlerin nedenleri olarak açıklanmıştır.

"Birinci nesil" krizlerde hükümetlerce senyoraj geliri yaratımı krizlerin nedeni olarak ortaya konulmuştur. Kriz öncesi yaşanan büyük bütçe açıkları ve bütçe finansmanının para basılarak sağlanması kriz geçiren ekonomilerin en belirgin özelliği olarak karşımıza çıkmaktadır. Krizler genellikle hükümetlerin uyguladığı tutarsız politikalar sonucunda ortaya çıkmakta, bu nedenle önceden hükümetlerce tahmin edilebilmektedir. Kriz sonrasında ise ekonomide bir daralma olmaması bu tip kriz modellerinin belirleyici özelliğidir.

1992'de İngiltere'de ve 1994-95'de Meksika'da yaşanan krizlerin açıklanması amacıyla "ikinci nesil" kriz modelleri ilk Obstfeld (1994) tarafından ortaya atılmıştır. Temel ekonomik yapıdaki bozulmalar ve kendi kendini besleyen beklentilerin kötüleşmesi, "sürü güdü"sü ve "bulaşma etkisi" ikinci nesil kriz modellerinde krizi tetikleyen temel etkenler arasında sayılmaktadır. Bu tip kriz modellemelerinde bütçe açıklarının parasallaşma yolu ile finansmanı görülmezken, bütçe açıkları yine de ekonomik dengesizlikleri artıcı özelliğinden dolayı önem taşımaktadır. İkinci nesil krizlerin tahmin edilmesi güç olmakta ve kriz sonrası ekonomide bir yavaşlama izlenebilmektedir.

Bütçe fazlaları ve yüksek büyüme kapasitelerine rağmen 1997-1998 yıllarında Güney Doğu Asya'da ortaya çıkan finansal krizler, birinci ve ikinci nesil

kriz bulgularına ters düşmektedir. "Üçüncü nesil" kriz modelleri bu nedenle özellikle Krugman (1999) tarafından ortaya atılmış ve temel olarak bilanço etkisine dayanan sorunlardan kaynaklandığı belirtilmiştir. Buna ilave olarak, "devlet garantisi nedeniyle ahlaki çöküntü", "asimetrik bilgi", "kötü yönetişim ve denetim", "banka iflasları, mevduat kaçışlari", "kredibilite kaybı" gibi faktörler de üçüncü nesil krizlerde ön plana çıkmakta, kriz sonrasında ülke ekonomilerinde hızlı bir daralma sürecine girilmektedir.

Krizlerin nedenlerinin araştırılarak, öncü göstergeler yardımı ile krizler oluşmadan önce önlem almak amacıyla "makro ihtiyatlı" analiz içinde "çekirdek set" ve "yardımcı set" olarak yer alan gerek makroekonomik gerekse finansal verilerden oluşan finansal istikrar göstergeleri seti IMF (2001) tarafından oluşturulmuştur. Krizlerin önceden belirlenmesine yönelik olarak "riske maruz değer", "eşik değer" modellemeleri yapılmaktadır.

Üçüncü nesil kriz modellemeleri ile gündeme gelen, ancak hızla önem kazanan bir konu ise "bilanço yaklaşımı" olarak adlandırılan ve bilançolardaki kırılganlıkların izlenmesi ile olası krizlerin önceden saptanmasına yardımcı olan bir methodtur. IMF(2002) bilançoların, veri sorunu bulunmakla birlikte, özellikle sektörel bazda izlenmesinin finansal krizlerin önlenmesi konusunda büyük önem taşıdığını vurgulamaktadır. Bilanço kırılganlıkları genel olarak aktif ve pasifler arasındaki vade ve para cinsindeki uyumsuzluklardan kaynaklanmaktadır.

Kamu sektörü, reel sektör firma bilançoları ve finansal kesimi temsilen bankacılık sektörü bilançolarında gerek yapısal sorunların derinleşmesi gerekse yurtiçi/yurtdışı şokların etkisi ile meydana gelebilecek kırılganlıklar birbirlerini "kartopu" ve "yayılma" yoluyla etkileyerek, sektörlerde var olan sorunları daha da

derinleştirmekte, dışa açık ekonomilerde ani sermaye kaçışları ile krizlere kadar sürükleyebilmektedir. Allen ve diğerleri (2001) böyle bir durumda bankacılık sektörünün iletken rol üstlendiğini vurgulamaktadır. Kamu sektörü bilançolarının kırılganlığı neticesinde doğan krizlere örnek olarak 1998 Rusya krizi, 2001 Arjantin krizi örnek olarak verilebilir. Kamunun gelirleri ve borçları arasındaki para uyumsuzluğu özellikle Meksika, Brezilya, Arjantin ve Rusya'da devletin iflası olasılığını gündeme getirmiştir. Eichengreen and Hausmann (1999), Eichengreen, Hausmann and Panizza (2002) tarafından geliştirilen "orjinal günah" argumanında ülkelerin kendi paraları cinsinden yurtdışından borçlanamamaları hatta uzun dönemli yurtiçi borçlanmalarında dahi yabancı para ile borçlanmak zorunda kalmaları, yurtiçi para cinsinden ise ancak çok kısa vadelerde borçlanılabilindiği vurgulanmaktadır. Bu durum ise gerek varlıklarının ulusal para, yükümlülüklerinin ise döviz cinsinden olması ile ortaya çıkan "para uyumsuzluğu" ile varlılarının uzun vadeli olmasın karşın, yükümlülüklerinin vadesinin kısa olmasından kaynaklanan "vade uyumsuzluğu" nedeniyle ülkede finansal kırılganlıklara yol açmakta, ekonomik büyüme ve sermaye akımlarında büyük oynaklıklara neden olarak uygulanmakta olan para politikalarını olumsuz yönde etkilemektedir. Para uyumsuzluğu ile ani bir devaluasyon ile döviz cinsinden ödenen kamu borçlarının hızlı artışı, devleti borçlarını ödeyemez duruma getirebilmektedir. Kısa vadeli borçların çok olması durumunda ise borçların çevrilebilirliği sorunu ile karşı karşıya kalınmaktadır.

Reel sektör firmaları kaynaklı krizlerin başında 1997-1998 Güney Doğu Asya ülkelerinde yaşanan krizler gelmektedir. Reel sektör bilançolarının vade ve para uyumsuzluğuna maruz kalması, likidite sıkışıklığı yaşanması ve yüksek

borçlanma oranları ile çalışılması, firmaların herhangi bir makroekonomik şoka, hızlı bir devaluasyona karşı dayanıklılığını azaltarak, geri ödeme kapasitelerini olumsuz etkilemiş ve krizlerin tetikleyicisi olmuştur.

Yaşanan bu krizlerin hepsinde bankacılık sektörü gerek hükümete gerekse firmalara kredi sağlamak açısından kısıtlar getirmek zorunda kaldığından krizlerin daha da derinleşmesinde önemli rol oynamaktadır. Bankalar "güven"e dayalı olarak çalışan, en basit anlamı ile ekonomideki fon fazlasının ihtiyaç duyan birimlere aktarımını kar amacı güderek sağlayan ve risk alan kuruluşlardır. Bankaların yoğun olarak hükümet bütçesinin finansmanı için fon sağladığı durumlarda, bütçe açıklarının sürdürülebilirliğine ilişkin herhangi bir olumsuz algılama dahi, uluslararası deneyimlerden de görüldüğü üzere, bankaların işleyişini tehlikeye sokarak bankalardan sürü güdüsü ile mevduat çekilişine kadar varabilmektedir. Bir döngü içinde zora düşen bankalar ise reel sektör firmalarına verdikleri kredileri ani bir şekilde geri çağırabilmekte, zincirleme bir reaksiyon şeklinde gelişebilecek olaylar sonucunda, yabancı sermayenin hızla çekilişi nedeniyle ülkede bir döviz krizi ortaya çıkabilmektedir. Likidite, döviz (para) krizleri bankacılık krizlerini beraberinde getirerek "ikiz kriz" olarak adlandırılan ve ekonomiyi derin bir daralma sürecine sokmaktadır.

Sektörler arasındaki sıkı ilişkinin olumsuz yanları bu durumda kendini göstermektedir. Küçülen ekonomi ile birlikte, reel sektör firmaları bankalardan kullandıkları kredileri geri ödeyemez duruma düşmekte ve iflasa kadar gidebilmekte, diğer yandan, kamu bilançoları gerek finansal sektörün yeniden yapılandırılması ve gerekse krizlerin getirdiği yüksek faiz oranları ile borçlanmaya katlanıldığı için daha da bozulmaktadır. Ani bir şokun yada yapısal ekonomik

faktörlerin tetiklediği krizler bütün sektörleri etkisi altına almaktadır. Nitekim IMF(2002) üye ülkelerin ekonomik durumlarının sağlıklı bir şekilde takibi için bilanço etkileşimlerinin üzerinde durmakta ve veri sorunu bulunmakla birlikte, sektörlerin yapısal sorunlarının iyi incelenmesi gerektiği, bir sektörün varlığının diğer bir sektörün yükümlülüğü olduğu mantığına dayanılarak hazırlanan Sektörler arası risk matriksinin önemini vurgulamaktadır.

Bankalar daha öncede belirtildiği gibi aracılık ettikleri finansal işlemlerde risk alarak karlarını maksimize eden kuruluşlardır. Kredi riski, likidite riski, piyasa riski (faiz, kur ve hisse sendi riski) bankaların en çok karşı karşıya kaldıkları finansal riskler arasında yer almaktadır. Kredi riski, kredi kullanıcılarının borçlarını geri ödeyememeleri durumunda ortaya çıkarak bankayı likidite sıkıntısına sokabilen ve en yaygın olarak görülen bir risk türüdür. Ekonomideki hızlı büyüme neticesinde gerekli kredi analizi yapılmadan verilen krediler, yeterli teminatların alınmamış olması, müşteri, bölge, sektör yoğunlaşmasının yüksekliği, kredilerin bankanın hakim ortaklarına kullandırılması, bankaların aktif kalitesini bozan ve kredilerin geri dönmeme riskini artıran unsurlardır. Bankalar riskli olarak bulunan kredileri için, Bank for International Settlement (BIS) uluslararası standardı olan minimum yüzde 8 sermaye yeterlilik oranını sağlamak ve kredi verilebilirliğinin devamının sağlanması açısından ilave sermaye bulundurmak zorundadır.

Piyasa riski, kur, faiz ve hisse senedi dalgalanmaları nedeniyle bankanın portföy değerinin etkilenmesi anlamına gelmektedir. Bilançolarda görülen vade uyumsuzluğu ve para uyumsuzluğu piyasa riskini artıran unsurlardır. Kısa vadeli fon toplayarak, uzun vadeli yatırım yapan bir banka piyasa riskinin bir bileşeni

olan "faiz riski"ne maruz kalabilmekte ve faiz oranlarında yukarı yönlü bir hareket meydana geldiğinde portföyünde hızlı bir zarara yol açılabilmektedir. Bilançolarda açık pozisyon olarak adlandırılan ve yabancı para cinsinden varlıkların yükümlülükleri karşılayamaması durumunda ortaya çıkan "kur riski" ise yerli paranın döviz karşısında hızla değer yitirdiği durumlarda bankalar için hızla zarara neden olmaktadır.

Likidite riski, vadesi geldiğinde bir bankanın yükümlülüklerini karşılayabilmek için gerekli nakite genellikle bilançolarındaki vade uyumsuzluğu nedeniyle sahip olmaması durumudur. Likidite riski bilançolarda taşınılan diğer tüm risklerin yansımalarını içermektedir.

Sermaye yeterliliği bilançolarda meydana gelebilecek herhangi bir şoka karşı bankanın dayanma gücünü gösteren bir kavramdır. Sermayenin risk ağırlıklı aktiflere oranı olarak hesaplanan sermaye yeterlilik rasyosu yukarıda bahsedilen riskler göz önüne alınarak hesaplanmaktadır. Basel kriterlerine göre, bir bankanın sağlıklı bir biçimde varlığını sürdürmesi için sermaye yeterlilik oranının en az yüzde 8 oranında olması gerekmektedir.

Sermaye yapısının yanı sıra karlılık durumu bir bankanın finansal yapısı hakkındaki en önemli göstergelerden biridir. Karın yüksek ve sürdürülebilir olması finansal yapının sağlıklı olduğunu göstermektedir. Kamu bütçesi finansmanının bankalar üzerinden yapıldığı ülkelerde güçlü bir faiz dışı gelir-gider yapısı karlılığının sürekliliği konusunda bankaların sağlıklı işleyişine işaret etmektedir.

Tezde yer alan savlardan biri krizler öncesi kamu, reel sektör ve bankacılık bilançolarında görülen yapısal sorunların uygulanan sabit kura dayalı istikrar

programı uygulaması sırasında giderek kötüleştiği, taşıdıkları kırılganlıkların arttığı ve bunun da krizi tetikleyen faktörlerden biri olduğudur. Türk ekonomisinin son 30 senedir karşı karşıya olduğu sorunlar; yüksek enflasyon, düşük ve dalgalı büyüme potansiyeli, artan kamu borçları ve bunun beraberinde bir kısır döngü mahiyetinde getirdiği yüksek reel faizler, faiz ödemelerinin bütçe harcamaları içindeki yüksek payı, gelir politikalarının eksikliği, maliye politikalarının sürdürülebilirliğine ilişkin tereddütler, politik istikrarsızlık, seçim ekonomisi uygulamaları, kamunun ekonomideki ağırlığı olarak sıralanabilinir. Bu sorunlar mevcut iken, 1990'lı yıllarda finansal liberalizasyon sürecine hızlı geçiş ile birlikte ortaya çıkan dolarizasyon süreci Türk bankacılık sektörünü daha fazla riske maruz bırakmıştır. Finansal liberalleşmeye yeterli yasal ve kurumsal alt yapı oluşturulmadan gidilmesi Türkiye, Brezilya, Şili, Endonezya, Meksika ve Venezüella gibi ülkelerde de görüldüğü üzere, bankacılık sisteminin yaşadığı krizlerde etkili olmuştur (Kaminsky ve Reinhart, 1995). Türkiye'de bankacılık sektörü güçlendirilmeden liberalizasyon uygulamalarına geçilmesi banka bilançolarının dolarize olmasına neden olmuş, politik ve ekonomik öngörünün azaldığı durumlarda, döviz tevdiat hesapları giderek artmış ve mevduat kısa vadelerde yoğunlaşmıştır. Bankaların yurtdışından borç kullanma imkanları arttıkça, pozisyon açarak toplanan fonların, kamunun finansman ihtiyacını karşılamak üzere getirisi yüksek ve sermaye yeterliliği hesaplamaları açısından sıfır risk ağırlığına sahip devlet iç borçlanma senetlerine (DIBS) aktarıldığı görülmüştür. Bu nedenle, banka bilançolarında kredilerin payı azalırken portföy yatırımları artmaya başlamıştır. Bankalar, döviz borçlanıp DİBS'lerine yatırım yapmak için büyük pozisyon açıkları taşımışlar, Şubat 2001 krizlerinde yaşanan

devaluasyondan sonra büyük zararlarla karşı karşıya kalmışlardır. Aktiflerin önemli bir kısmı DİBS'lerine yatırılmış olan banka bilançoları faiz riskine de maruz kalmış, ancak banka bilançolarında taşınılan risklerin bir bankayı iflasa kadar sürükleyebilecek boyutlarda olduğu maalesef krizler sonrasında anlaşılabilmiştir.

Krizler öncesinde Türk bankacılık sektörünün, öz sermayesi yetersiz, risk kültürü oluşmamış, enflasyon muhasebe standartları olmadığından doğru kar analizi yapamayan, bilançosunun önemli bir kısmı dolarize olmuş, vade ve para uyumsuzluğu bulunan, yüksek boyutlarda kur ve faiz riski taşıyan, büyük kamu açıklarının derin olmayan finansal piyasalarda baskısının hissedildiği, yoğunlaşmanın, kamu bankalarının payının, grup kredileri kullandırımının yüksek olduğu, mevduat güvencesi uygulaması neticesinde hem banka sahipleri hem de yatırımcılar açısından ahlaki çöküntüye sebebiyet veren bir çalışma ortamda içinde bulunduğunu söylemek mümkündür.

Kamu açığının finansmanında 1994 yılından itibaren net dış borç geri ödeyicisi durumunda olan Türk ekonomisi, o dönemden itibaren faiz dışı fazla vermeye başlamış, ancak vergi tabanının genişletilememesi, kayıt dışı ekonominin sistemdeki büyüklüğü, kararlı vergi politikaları uygulamalarının olmayışı, vergi afları, harcamaların gerek faiz ödemeleri, gerekse sosyal sigorta kurumlarının açıkları nedeniyle hızla artması, bütçe dışı fonların varlığı ve seçim ekonomisi uygulamaları ile nedeniyle mali disiplinin sağlanamaması, kamu bankalarınca üstlenilen görev zararlarının büyüklüğü gibi nedenlerden ötürü yüksek bütçe açıkları ile karşı karşıya kalmıştır. Bütçe finansmanında 1997 yılından itibaren Merkez Bankasından kaynak kullanımının tamamen kaldırılması ile birlikte sınırlı

dış borç imkanları iç borçlanma stratejisinin uygulanmaya başlanması, iç borcun yüksek reel faizler ile sürdürülmeye çalışılması, faiz dışı fazla verilmekle birlikte ekonominin sürdürülebilir bir büyüme eğilimini yakalayamaması, borçlanma vadelerinin kısa oluşu zaman zaman Türkiye'de borçların sürdürülebilirliği sorununu gündeme getirmiştir.

Kamu açıkları, bankacılık sektörü ve reel sektör kırılganlıkları veri iken kura dayalı istikrar programı uygulanması bu sektörlerde dolayısıyla ekonomide risk yoğunlaşmasını artırmıştır. İstikrar programının başlangıcından krizlerin yaşandığı dönemlere kadar sektör bilançolarında artan risk unsurları ortaya konmaya çalışılmıştır. Bu çerçevede, bir sektörün aktifi, diğer bir sektörün pasifini oluşturacağı bilanço mantığından yola çıkılarak, Allen ve diğerlerinin (2002) ortaya attığı "sektörler arası risk matriksi" Türkiye için sektörlerin birbirlerine olan alacak ve borçları ile dış alemle yaptıkları varlık ve yükümlülükler de dahil olmak üzere, 1999 yıl sonu, Kasım 2000 ve Şubat 2001 dönemleri için oluşturulmuştur. Risk matrisinde kamu, bankacılık ve reel sektör firma bilançolarının vade ve yerli-yabancı para cinsinden risklerin takibi için kısa–uzun dönem ile TL-döviz ayırımına gidilmiştir. Kısa vadeli döviz borçlarının tamamının geri çağrılması varsayımı altında, onbir aylık sürede sektörlerdeki varlıkların yetersizliği, vade ve para uyumsuzluğu nedenleriyle incelenen sektörlerde büyük bir finansman açığı ile görülmektedir. Veri kısıtına rağmen risk matrisi istikrar programı süresince vade ve para uyumsuzluğunun daha da kötüleştiğine ve sektörlerde hızlı bir risk birikimine yol açıldığını göstermektedir.

Bu şartlar altında, tezde ayrıca bütçe açıklarının ve cari işlemler açığının sürdürülebilirliği analizi ekonometrik olarak test edilmiştir. Her iki açık da zayıf

sürdürülebilir olarak bulunmuştur. Zayıf sürdürülebilir açıklar içinde bulunulan şartların değiştiği/kötüleştiği durumlarda sürdürülemez noktaya doğru hızla yaklaşabileceği ve devletin iflas riski ile karşı karşıya kalabileceği anlamına gelmektedir. Tezde zayıf sürdürülebilir bütçe ve cari açıklar altında politika değişikliğine gidilmesinin ekonomideki kırılganlıkları artırdığı ve yaşanan krizleri "ileride doğacak bütçe açıkları" beklentileri ile hızlı sermaye kaçışının krizleri tetikleri savı ileri sürülmüştür.

Cari mali politikaların sürdürülebilir olup olmadığının bilinmesi politikalarda yapılması gerekli olan değişikliklerinin önceden karar verilmesi açısından son derece önemlidir. En basit anlamı ile mali açıkların sürdürülebilirliği için borç dinamikleri içinde yer alan birincil fazlanın sağlanmasını, reel faiz oranlarının ise ekonominin büyüme hızının altında gerçekleşmesini ve gelecek dönemlerdeki birincil fazlanın şimdiki değerinin pozitif olması gerektirmektedir. Aksi taktirde, birincil fazla olsa dahi cari borç düzeyinden bağımsız olarak, maliye politikalarının sürdürülemez olduğu ortaya çıkarmaktadır.

Cari işlemler denkliğini özel sektör yatırım ve tasarruf farkı ile kamu bütçe açığı toplamı vermektedir. Bütçe açıkları özel sektör tasarruf fazlası ile yurtiçinden finanse edildiği müddetçe cari işlemler hesabı dengededir. Ancak, özel kesim yatırım tasarruf farkı tasarruf aleyhine dönüşmeye başladığı anda cari işlemler açığı verilmektedir. "İkiz açıklar" adı verilen bütçe açıkları ve cari işlemler açığı aynı anda ortaya çıkmaktadır.

Türkiye'de bütçe açıkları ile cari işlemler açığının sürdürülebilir olup olmadığı konusundaki ekonometrik testler literatürde standart methodlar olarak adlandırılan, açıkların durağanlık testleri ile hükümet gelirleri ile harcamaları

arasında çoklu bağıntı (cointegration) testleri Dickey ve Fuller (1979), Kwiatkowski (1992) kullanılarak yapılmıştır. Ayrıca, veride oluşabilecek herhangi bir kırınımı içsel bir model ile tahmin edilebilen Peron (1997) ve Zivot ve Andrews (1992) testleri de uygulanmıştır. Quintos (1995) sürdürülebilirlik kavramına "güçlü" ve "zayıf" sürdürülebilirlik kavramlarını getirmiştir. Güçlü sürdürülebilirlik borçlanma dinamiğinin durağan olması yada bütçe gelir ve gideri arasında çoklu bağıntının olmasını gerektirmektedir. Zayıf sürdürülebilir durumda ise, hükümet harcamalarına gelirlerinden fazla olarak devam ederse iflas riski ile karşılaşabilir ve böyle bir durumda reel faiz oranlarının da yükselmesi kaçınılmazdır. Türkiye'de bütçe açıkları ve cari işlemler açığı için zayıf sürdürülebilirlik koşulunun geçerli olduğu görülmektedir. Bu durum herhangi bir şok yaşandığı taktirde maliye politikası ve cari işlemler açığının sürdürülemez hale gelebileceğini göstermektedir.

Tezde Burnside ve diğerleri (1998, 2000) tarafından açıklanan "beklenen açıklar" üzerinde durulmakta ve Türkiye'de yaşanan krizleri tetikleyen ve sermaye kaçışlarının nedeni olarak değerlendirilmektedir. Kasım 2000 krizi öncesinde özellikle bankacılık sektöründe yaşanan güven bunalımı iki bankanın Tasarruf Sigorta Mevduat Fonu'na (TMSF) aktarılması ile sonuçlanmış, kamu bankalarında yaşanan likidite sorunu, piyasalarda TMSF'ye aktarılacak başka bankaların da olduğu söylentilerinin yayılması beklenen açıkları arttırıcı etki yaparak krizleri tetikleyici rol oynamıştır.

"Fiyat düzeyinin maliye politikası teorisi" argumanından yola çıkılarak döviz krizleri açıklayan "maliye politikalarına bağlı döviz kuru" teorisi Daniel (2001), Arteta (2001) tarafından geliştirilmiştir. "Fiyat düzeyinin maliye politikası

teorisi"ne göre aktif ve pasif maliye politikaları uygulamalarına göre merkez bankalarının para politikası uygulamaları şekillenmekte ve dolayısıyla ekonomideki fiyat düzeyini belirleyici bir faktör olmaktadır. Daniel (2001) maliye politikasının krizlerin ortaya çıkmasına neden olduğunu, para politikasının ise krizlerin büyüklüğü, süresi ve zamanlamasını etkilediğini savunmaktadır. Sabit kur rejimi altında kurun maliye politikası ile uyumlu belirlenmediği algılamasının olduğu noktada döviz krizi ortaya çıkmaktadır. Türkiye'de maliye politikalarının döviz krizi üzerindeki etkisini beklenen bütçe açıkları yardımı ile açıklamak mümkündür. Zayıf sürdürülebilir bir maliye politikası altında, sabit kur rejimi, beklenen mali açık algılaması ortaya çıktığı anda krizi tetikleyen bir etken haline gelmiştir. Dezenflasyon programı çerçevesinde sıkı maliye politikaları uygulanarak faiz dışı fazla verilmeye devam edilse de, bankacılık sisteminin taşıdığı kur ve faiz riski de göz önüne alındığında, sektörün sağlıklı işleyişi hakkında ortaya çıkan tereddütler ilerde bu bankaların Fona devredilerek kamuya büyük maliyetler getirebileceği beklentisi altında kur rejimi değişikliğini hızlı bir devaluasyon ile beraberinde getirmiştir.

Krizler sonrasında ortaya çıkan ve ekonominin her ajanı tarafından katlanılmak zorunda kalınan maliyetlerin büyüklüğü, sabit kur rejimine dayalı istikrar programı uygulamasına geçilmeden önce, kırılgan bir yapıda olan bankacılık sisteminin önceden rehabilite edilmesinin önemini akla getirmektedir. Özellikle kamu bankalarının yapısal bir sorunu haline gelen "görev zararları"nın kamunun piyasada baskı yaratmasını önleyecek şekilde önceden sağlıklı bir yapıya kavuşturulması, düzenleyici ve denetleyici otorite tarafından gerekli yasal düzenlemelerin hazırlanması, piyasa riskini de göz önüne alarak bankaların gerekli

sermaye koşulunu sağlaması, etkin denetimin gerçekleştirilmesi gibi önlemlerin istikrar programına başlamadan önce yerine getirilmiş olması, daha az bir maliyetle bankacılık sisteminin güçlendirilmesini beraberinde getirecek ve yaşanan krizlerin en düşük maliyet ile atlatılmasına yardımcı olabileceği düşünülmektedir.

Calvo and Vegh (1995), Reinhart and Kaminsky (1999), Sturzeneger (2002) ve diğer çalışmalar sabit kur rejimi uygulamasının ödemeler dengesi krizi ile birlikte finansal krizlere yol açtığını göstermektedir. Türkiye'de Kasım 2000 krizine kadar geçen 11 aylık sürede gerçekleşen ekonomik gelişmeler incelendiğinde, literatürde kriz öncesi görülen deneyimlere paralellik gösterdiği, hızlı iç talep artışı kaynaklı ekonomik büyümenin sağlandığı, enflasyon ve faiz oranlarının hızlı bir düşme eğilimine girildiği, yerli paranın döviz sepeti karşısında aşırı değerlendiği, cari işlemler açığının ithalatın artması neticesinde büyüdüğü, cari açığın finansmanının kısa vadeli sermaye girişleri ile sağlandığı, ithalatın ve kısa vadeli dış borçların rezervler ile karşılanma oranının giderek azaldığı, kurun değerlenmesi ile bankacılık ve reel sektöre dış borçlanma eğiliminin hızla artış gösterdiği, sıkı maliye ve para politikası uygulanmakla birlikte gerekli önlemlerin alınmasında gecikildiği görülmektedir. Bunun yanı sıra, yapısal reformlar ve özelleştirme hedeflerinin gerçekleştirilmesinde geç kalınması, dış faktörler olarak petrol fiyatlarının hızla yükselmesi, Dolar/Euro paritesindeki gelişmeler nedeniyle ticaret hadlerinin kötüleşmesi, Arjantin'de uygulanmakta olan istikrar politikasının sonuna gelindiği ve krize doğru gidilmekte olduğunun anlaşılması beklentilerin hızla kötüleşmesine neden olmuş, Türkiye'ye kısa vadeli olarak gelmiş olan fonların "sonda kalma korkusu" ile hızla çekilmesi ile krizi tetiklenmiştir.

Sonuç olarak, 2000-2001 krizlerinin, literatürde geçerli olan bazı kriz modellemelerinin temel nedenlerini, senyoraj gelirleri hariç tutularak, bünyesinde bulundurduğundan "yeni" kuşak modellerinin bir örneği olarak değerlendirilmesi gerektiği sonucuna varılmıştır.

VITAE

Çiğdem İzgi Koğar was born in 1966. After her graduation from Middle East Technical University, Department of Economics in 1988, she began to work at Central Bank of the Republic of Turkey. She worked at Statistics and Economic Evaluation Division and Research Department as an expert. In 1994, she obtained M.A. degree in economics from Boston College, USA. Between 1999-2001, she worked at Organisation for Economic Cooperation and Development (OECD) Economics Department, Turkey and Italy Desk in Paris and involved in the production of OECD Economic Surveys for those countries. After returning to Research Department of the Central Bank of Turkey, she joined her current Department of Banking and Financial Institutions as a manager of Financial Sector Assessment Division.