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EXPANSIONARY FISCAL CONSOLIDATIONS:  
NEW EVIDENCE FROM TURKEY

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# **Expansionary Fiscal Consolidations: New Evidence from Turkey**

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## Abstract

After the February 2001 crisis, Turkey started to implement a new economic program. One of its aims was to reduce public debt that had jumped to a record high level. The resulting fiscal consolidation was rather exceptional. By the end of 2006, public debt-to-GDP ratio had declined by 43 percentage points. Despite this outstanding fiscal consolidation, the average growth rate attained in this period was almost twice that of the long-term growth rate. Given that shallowness of the Turkish financial markets had lead to credit constraints, it was tempting to study the reasons behind this performance. We argue that fiscal consolidation sharply reduced default risk, increased business confidence and improved banks' and non-financial firms' balance sheets, causing, in turn, a significant rise in credit supply and demand. Improvement in the private sector's balance sheets and a decline in the option value of waiting, both together, boosted private sector demand.

2001

.2006

43

## I. Introduction

Just three months after the 2001 February crisis, Turkey started to implement a new economic program. The fiscal consolidation, especially that of the 2003-2005 period was rather remarkable. There were two other fiscal consolidation efforts in last two decades: 1994-1995 and 2000. The 2003-05 episode was unique in sharply reducing public debt, real interest rates and inflation, leading to a sustained growth during and after the fiscal consolidation episode, both relative to other emerging economies and in absolute terms, building confidence and triggering a significant credit growth.

Expansionary fiscal consolidations are seen elsewhere as well. Giavazzi and Pagano (1990) show that private demand grew vigorously despite a reduction in the budget deficit of 7.2 percent in Denmark between 1983 and 1986, and of 5.7 percent in Ireland between 1987 and 1989. Alesina and Perotti (1996) identify five more such episodes: Belgium 1984-87, Canada 1986-88, Italy 1989-92, Portugal 1984-86, and Sweden 1983-89. Giavazzi and Pagano (1996) find that for a panel of nineteen OECD countries sharp and persistent fiscal actions have non-standard effects on private consumption. Using a larger dataset, Giavazzi *et al.* (2000) and Giavazzi *et al.* (2005) confirm these findings.

Fiscal consolidation causes expansion mainly through two channels: by increasing confidence and decreasing default probability especially in economies with high public debt – the credibility channel – and increasing expected permanent income –the expectations channel.<sup>1</sup> For the second channel to be operative, private agents should not be credit constrained.<sup>1</sup> Perceived from this perspective there are two important features of the Turkish economy to be considered: Firstly, in the aftermath of the 2001 crisis, the banking sector in Turkey was in turbulence that required immediate action. The rescue operation significantly hiked the public debt-to-GDP ratio (to 104 percent from 54 percent). Secondly, the Turkish financial system is shallow compared to that of other countries whose experiences are analyzed in the above cited studies, For example, the credit to GDP ratio was merely one fourth the average of the enlarged European Union in 2006.

Two questions follow: First, given credit constraints, how did the Turkish economy enjoy a sustained high growth period during and after the 2003-05 fiscal consolidation, both relative to its counterparts and its own long-term growth? Second, why did the 2003-05 consolidation lead to significantly different results from the first two? The purpose of this study is to draw lessons and shed some light on further research by answering these questions.

We show that while both channels were operative in the 2003-05 fiscal consolidation episode, the 2000 program suffered from extreme weakness in the banking sector and consequently failed. The 1994-95 consolidation episode faced important credit constraints: during the 1990s consumer loans were almost non-existent. Moreover, fiscal consolidation efforts were short-lived, and the first seeds of the deterioration in the balance sheets of the banking sector were sown during this period. This experience shows that in addition to initial conditions generally mentioned in the literature such as the level of public debt, the strength of the financial and corporate sector's balance sheets is important as well. Without solving balance sheet weaknesses it is highly difficult, if not impossible, for a fiscal consolidation effort to be successful. The repercussion of this conclusion for empirical studies is that panel studies should be used to control for balance sheet differences between the countries.

Our second main conclusion is related to the appropriate choice of the fiscal consolidation indicator. Despite the importance given to the credibility channel in theory (a rise in

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<sup>1</sup> The early 1980 fiscal consolidation in Ireland led to standard Keynesian results, whereas the 1987-89 fiscal consolidation was expansionary. Giavazzi and Pagano (1990) state that one of the main reasons underlying the expansionary effects of the second Irish stabilization was a rise in consumer lending. See also, Blanchard (1990), Perotti (1999) and the discussion in Section II.

confidence and a decline in risk premium on interest rates), the empirical research has relied almost entirely on primary budget balance figures, which exclude interest payments, to identify fiscal consolidation episodes. While this mismatch between the theoretical and empirical literature is justified by abstracting from inflation adjustment, for further research one wonders whether fiscal consolidation episodes that are identified based on budget balance data, inclusive of nominal or real interest payments, will change the results of earlier studies.<sup>2</sup> When one notes that the empirical literature has remained inconclusive as to whether high public debt leads to non-Keynesian effects for fiscal consolidation, this possibility does not appear improbable.

The plan of the paper is as follows. Next section explains the direction of the paper and shows its relation to the literature. The third section provides some stylized facts on the positive impact of fiscal consolidation on banks' and non-financial firms' balance sheets. The fourth section, first analyses the impact of macroeconomic discipline on the default risk, then turns to the relationship between default risk and business confidence. In the fifth section we analyze the determinants of private investment and consumption. We show that the post-crisis credit expansion and confidence build-up played an important role in rapid consumption and investment growth. The last section concludes. Meanwhile, all information regarding the data and its sources is provided in the appendix.

## **II. Motivation and Relation to the Literature**

### ***1. Importance of Public Debt and Credit Constraints***

If the initial value of public debt is high and there are widespread concerns regarding the sustainability of debt, a credible fiscal consolidation at that time minimizes debt repudiation risk in the future. This immediately decreases the default premium, leading to a significant decline in real interest rates. Moreover, the usual crowding-in channel is also effective in reducing interest rates. This is the credibility channel. Provided that the fiscal consolidation is perceived as permanent and regarded as credible, it signals an end to past lax policies. For economic agents, this means that there is no more need for higher and distortionary taxation in the future, which consecutively causes an increase in the expected permanent income, which in turn raises the current level of private demand. This is the expectations channel at play. For the second channel to be effective, the share of credit-constrained consumers among total consumers should be low.

Blanchard (1990) formalizes the expansionary effects of tax increases at high levels of debt. In his model, expansionary effects depend on two conditions: the less the consumers are credit constrained and the higher the level of debt is, the higher the likelihood of the expansionary effects. Along the same lines Sutherland (1997) considers the non-linear effects of debt. The model he develops has the property that at low levels of debt fiscal policy has the standard effects. On the contrary, at high levels of debt, fiscal policy works non-traditionally (consolidations have expansionary effects). Perotti (1999) also emphasizes the importance of debt and credit-constraints on whether a fiscal consolidation is going to be expansionary or contractionary. He shows that in times of "fiscal stress" fiscal consolidations have very different effect on private consumption than in "normal times". In the formal model he develops, the higher the initial level of public debt (fiscal stress), is at present, the higher the expected future tax rate will be in the future. Such expectations render fiscal

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<sup>2</sup> For example, Alesina and Perotti (1995, pp. 212) states that "...there is no universally accepted method of defining what part of the current budgetary position reflects an exogenous action. ... For instance, should interest payments be adjusted for inflation? ... Addressing the second problem presents difficulties that are more practical in nature. ... We largely take care of the inflation-adjustment problem by excluding interest payments from our measures of the budgetary position of the government." Afonso *et al.* (2006) stresses that by using total balance instead of primary balance, one may better capture benefits (lower interest rates) of consolidation.

consolidation expansionary under a sufficiently high level of debt. He further shows that the less credit constrained the consumers are the higher the likelihood of the occurrence of expansionary fiscal consolidations is.

## **2. Fiscal Consolidation**

The first issue is to identify the relevant indicator of fiscal policy. The existing literature generally filters out the impact of automatic stabilizers from the observed budget balance figures. One frequently employed method for the fiscal indicators of the developed world is the one proposed by Blanchard (1993), which cyclically adjusts primary budget balance for year-to-year changes in the unemployment rate. Some researchers raised doubts with regards to the importance of automatic stabilizers for emerging markets and developing countries. The generally stated fact is the absence or unimportance of unemployment benefits.<sup>3</sup> To overcome this shortcoming, Ortiz *et al.* (2007) adopt the method that has been applied in Chile since 2001, to extract the effect of macroeconomic fluctuations on fiscal accounts of their sample of emerging economies.<sup>4</sup> They define the structural balance (including the interest payments) as the difference between structural fiscal revenues and observed fiscal expenditures. Structural fiscal revenues are defined as the level of revenues that would be achieved if output were at its potential level. Note that by making use of structural balance rather than the structural primary balance this method implicitly overcomes the mismatch problem stressed in the introduction.

In what follows we use three alternative fiscal indicators. The first one is the cyclically adjusted primary budget balance as in Blanchard (1993). The second is the structural budget balance as defined in Ortiz *et al.* (2007). The third one is the cyclically adjusted operational budget balance, which corrects the impact of inflation on cyclically adjusted budget balance but keeps the effect of real interest rate fluctuations. In the first and third indicators the cyclical adjustment is performed only for the budget revenues.<sup>5</sup>

The second issue is how to define a fiscal consolidation episode. Following the existing literature we focus on discretionary changes of fiscal policy. One commonly used definition of sharp fiscal consolidation is by Alesina and Ardagna (1998, pp. 496): “a period of fiscal adjustment is a year in which the cyclically adjusted primary balance improves by at least 2% of GDP, or a period of two consecutive years in which the cyclically adjusted primary balance improves by at least 1.5% of GDP per year, in both years.” The criteria for a discretionary improvement in fiscal balance used in Darby *et al.* (2005) is an improvement in the cyclically adjusted primary balance by at least 1.5 percentage points in a given year. Giavazzi and Pagano (1996) define a fiscal adjustment as that which happens when the accumulated change in the cyclically adjusted primary balance is above 4, 3, and 2 percentage points of GDP respectively in four, three and two consecutive years or the change is of 3 percentage points of potential GDP in one single year.<sup>6</sup>

Table 1 provides the evolution of the three alternative measures of fiscal policy mentioned above and the relevant fiscal impulses in the 1991-2006 period. In order to identify fiscal consolidation episodes, we use the definition proposed by Giavazzi and Pagano (1996). Since the three indicators are based on three different concepts, we slightly modify their definition: we select consolidation episodes if at least two of the three indicators agree and furthermore if the third indicator does not indicate a deterioration (a negative impulse) in the same period.

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<sup>3</sup> See, for example, Purfield (2003, pp.48), Ortiz *et al.* (2007, pp. 8-9), and for the Turkish case see World Bank (2006, pp. 50-51).

<sup>4</sup> The methodology is explained in detail in Marcel *et al.* (2003).

<sup>5</sup> See appendix for details.

<sup>6</sup> See, also Aarle and Garretsen (2003) for these alternative definitions.

Three episodes are identified: 1994-95, 2000, and 2003-05. Following Alesina and Ardagna (1988), the averages of various fiscal indicators 'before', 'during', and 'after' each fiscal consolidation periods are given in Table 2. Only in the 2003-05 fiscal consolidation, do the interest expenditures and public debt-to-GDP ratios decline both during and after the episode with respect to the period preceding the consolidation. Moreover, the reductions in these ratios are rather sharp. Note also the significant increase in structural and operational balances in the last consolidation episode.

### **3. Macroeconomic Performance**

Table 3 documents the macroeconomic performance around the fiscal consolidation episodes. The 2003-05 episode is significantly different than its predecessors both causing and sustaining high growth, sharply reducing inflation and interest rates and leading to confidence build-up (an increase in confidence index and a decline in Turkish spreads measured by the EMBI index, which we will turn to in Section IV). Note the distinguished behavior of private investment and consumption in the last consolidation attempt. Table 4 compares the growth performance of Turkey with respect to various country groups in the same period. Only in the last fiscal consolidation episode, the difference between the growth rates of 'during and before' and 'after and before' periods are higher than all of the country groups shown in the table.

## **III. Balance Sheet Effects**

### ***1. Financial Deepening***

Özatay and Sak (2002) investigate underlying reasons of the 2001 crisis in Turkey. They focus on the banking sector structure in the period preceding the crisis as the potential culprit and provide strong evidence that point to the weakness of the banking sector. After 1992, growing government debt instruments outstanding and the increasing financing needs of the Treasury led the government to finance some activities through loans from state banks. Instead of repaying the principal and the interest accrued, the Treasury allowed these nonperforming loans to be treated as performing loans by the state banks.<sup>7</sup> Consequently, the state banks, which approximately constituted 40 percent of the assets of the banking system at that time, were extremely dependent on overnight funds. Within the private banking system there were some midsize banks that were heavily concentrated in government debt instrument business. As the state banks, they were carrying these instruments by borrowing in the extreme short.

This weakness which continuously increased in the second half of the 1990s and reached a record high level during the second fiscal consolidation episode is one of the important reasons why the first two fiscal contractions were not successful. However, the economic program in the post-crisis period first stopped the deterioration in the banking sector and then improved its strength. Problematic private banks were taken over by the Savings and Deposit Insurance Fund. The overnight borrowing of these banks was significantly reduced, and some of the banks were recapitalized or merged, or both, while some were actually sold. There was a dramatic change in the governance structure of state-owned banks. Accumulated debts of the Treasury to these banks were paid and the state banks were recapitalized. The number of branches and employees were significantly reduced. These measures which pushed up the public debt-to-GDP ratio by 50 percentage points and immediately led to widespread sustainability concerns could not have been taken without the ambitious and sustained fiscal consolidation of the post-crisis period. As we show below, as time passed, the fiscal consolidation diminished such concerns.

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<sup>7</sup> The Treasury was directly controlling these banks and at that period it was also the banking supervision authority.

The sharp decrease in default risk of the government and the eventual improvement in business confidence reduced risks of the banking sector that accumulated to record high levels in the period preceding the crisis. For example, the share of non-performing loans in the loan portfolio dropped to 3.8 percent in 2006 from 25 percent in 2001 (Central Bank of Turkey (2007)). The strengthening of the regulation and supervision in the post-crisis period played an important role in improving the banks' balance sheets as well. Consequently, the credit extension capacity of the banking sector improved. Though Turkish financial markets are still shallow relative to the developed world, the restructuring in the banking sector and the fiscal consolidation of the post-crisis period has increased credit to private sector-to GDP ratio since 2002.<sup>8</sup> The consumer credit volume in particular expanded significantly, which, as we argue below, played an important role in boosting private consumption demand (Table 5).

## 2. Crowding-In the Corporate Sector

Kaplan *et al.* (2006) show that the share of financial assets in total assets of the non-financial firms in Turkey is relatively large when compared internationally, in the 1990-2004 period. They are mainly in form of government securities and time deposits the average maturity of which are extremely short, except for the last two years of their sample. Based on panel estimates for a sample of almost 5000 non-financial firms per year, they show that firms' demand for financial assets increase by macroeconomic uncertainty (as the public sector borrowing requirement-to-GDP ratio increases and real sector confidence index of the Central Bank of Turkey (CBT) indicates a decline). Moreover, using the same panel, they analyze the determinants of firms' investment behavior and find financial crowding out; they find that a rise in public sector borrowing requirement is detrimental to non-financial firms' investment expenditures.

While analyzing the evolution of the strength of the corporate sector is beyond the scope of this study, given these findings, it is natural to expect an increase in firms' physical investment by a credible fiscal consolidation program that reduces debt and real interest rates and increases confidence. As is shown below, this is indeed the case.

## IV. Fiscal Consolidation and Confidence

### 1. Default Risk on the Turkish Government Debt

A standard measure of the default risk of an emerging country is that country's component of the EMBI spread, which is the difference between the yield on emerging country sovereign bonds and the yield on bonds issued by a government of the industrialized world with identical currency denomination and maturity. Favero and Giavazzi (2005) show that, in Brazil, important financial variables, like exchange rates and domestic interest rates, fluctuated parallel to the EMBI spread over the 1999-2003 period. Ersel and Özatay (2008) document similar evidence for Turkey for the post-crisis period. Blanchard (2005) shows that the Brazilian spread and the probability of default moved together over the 1995-2003 period. The daily evolution of the Turkish component of the EMBI spread in the 30 July 1999 – 26 December 2006 period is shown in Figure 1.

To test the factors behind spread fluctuations, we first estimate a long-run equation of the form

$$s_t = \alpha_0 + \alpha_1 r_t + \alpha_2 \theta_t + \sum_{i=1}^n \beta_i x_{i,t} + u_t, \quad (1)$$

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<sup>8</sup> For example, in 2006, the credit to private sector-to GDP ratio was 94% in France, 85% in Greece, 95% in South Korea, 149% in Portugal, and 163.9 % in the UK, whereas it was 29% in Turkey. Figures are from the "Financial Structure Dataset" of the World Bank.



where  $s$  is spread,  $\alpha_0$  is the constant term,  $r$  is the Federal Reserve target rate,  $\theta$  is a proxy for the risk appetite of foreign investors,  $x_i$  is the  $i^{\text{th}}$  domestic macroeconomic variable, and  $u$  is the error term. The target rate directly measures the effect of international interest rate changes on spreads. Our proxy for the risk appetite of investors is the volatility implicit in US stock options and compiled by the Chicago Board Options Exchange -so called ‘VIX’.<sup>9</sup> A rise in VIX denotes a decrease in risk appetite of foreign investors.

The augmented Dickey-Fuller tests indicate that variables used in the regressions are not stationary in level terms (not shown). To capture short-run dynamics, while preserving the long-run information, we estimate an error-correction model:

$$\Delta s_t = \gamma_0 + \gamma_1 \Delta r_t + \gamma_2 \Delta \theta_t + \sum_{i=1}^n \eta_i \Delta x_{i,t} + \gamma_3 ec_{t-1} + \varepsilon_t, \quad (2)$$

where  $\Delta$  is the first difference operator,  $\gamma_0$  is the constant term,  $ec$  is the residual of the long-term equation (the error-correction term) and  $\varepsilon$  is the residual term.

We use both daily and quarterly data. Following the empirical literature on spreads that uses high frequency data, we proxy domestic variables by sovereign ratings.<sup>10</sup> When quarterly data (averages of daily variables where relevant) is used, public debt-to-GDP and primary surplus-to-GDP ratios are included to replace ratings. The estimation results of the long-term equations are given in the first and third columns of Table 6. The signs of all of the coefficients are as expected a-priori. The rating, global volatility index and debt-to-GDP ratio are significant. The short-run results are given in the second and fourth columns of Table 6. For the high frequency data, in addition to rating and risk appetite variables, the error-correction term is also significant. Except the target rate, all of the variables have the correct signs. In the quarterly estimate, risk appetite, primary surplus-to-GDP and public debt-to-GDP ratios, and the error correction term are significant and have the correct signs. These results indicate that an improvement in domestic macroeconomic fundamentals and an increase in risk appetite of foreign investors reduce default risk.<sup>11</sup> Furthermore, they show that fiscal consolidations that reduce public debt decrease default risk and its potential perverse effects on the real economy.

## 2. Business Confidence

The CBT, since December 1987, has been publishing a real sector confidence index. This is a diffusion index obtained as a weighted average of various qualitative answers given to a monthly business tendency survey and shown in Figure 2.<sup>12</sup> By construction, index values above 100 denote optimistic expectations regarding the economic activity. The sharp

<sup>9</sup> An alternative for VIX is the spread between 10-year US corporate bonds with BBB ratings (junk bonds) and 10-year US Treasury bonds. The estimation results are robust to this alternative specification and we do not report them.

<sup>10</sup> Cantor and Packer (1996, pp.49), for a cross-section of thirty-five countries show that sovereign ratings effectively summarize and supplement the information contained in macroeconomic indicators. Kamin and Kleist (1999) use ratings instead of various country performance variables. Similarly, Kaminsky and Schmukler (2002), to proxy domestic macroeconomic fundamentals, employ rating and outlook changes. Our assignment of numerical values to credit ratings is in essence as in Kamin and Kleist (1999). However, following Kaminsky and Schmukler (2002) we account for outlook changes as well. See data appendix for the details.

<sup>11</sup> Özatay *et al.* (2007), using high frequency panel data for 18 emerging countries, confirm these findings. Çulha *et al.* (2006) analyze possible effects of news releases on spreads during the 16 May 2001-31 December 2004 period. They classify news into three categories: (1) political news; (2) announcements by the IMF; (3) structural reform process towards the EU accession. Note that the first two of these categories are closely correlated with the continuation of the fiscal consolidation program. Their results show that news variables are always highly significant.

<sup>12</sup> See appendix for details.

turnaround in business confidence in the post-crisis period is evident. There is only one observation below 100 in the post-crisis period and it is related to the Iraq war (first quarter of 2003). Note that there were similar improvements after the 1994 crisis and the 1997 Russian crisis, but these turnarounds were temporary.

We, first, investigate the influence of fiscal policy on the logged business confidence index. Fiscal consolidation is represented by the evolution of public debt-to-GDP ratio. Second, the impact of first difference of logged EMBI spread on the confidence index is searched.<sup>13</sup> It is a-priori expected that as the debt-to-GDP ratio and default risk decrease there will be a parallel and significant increase in business confidence, which later is shown to be one of the determinants of short run changes in private investment. The results given in Table 7 are in line with this expectation. Fiscal policy, as reflected by the debt ratio and default risk both individually and taken together, significantly affects the real sector confidence.<sup>14</sup>

## V. Fiscal Consolidation and Behavior of Private Sector

### 1. Private Investment

We investigate determinants of private investment by referring to a fairly standard investment function. The accelerator effect, the user cost of capital, credit availability and the option value of waiting are our explanatory variables.<sup>15, 16</sup> The accelerator (various lags of income) and real volume of credit should have positive coefficients. The option value of waiting and user cost should be negatively correlated with private investment. Note that as business confidence increases the option value of waiting decreases. Hence, we proxy the option value of waiting by business confidence.<sup>17</sup> Note further that, as shown above, in the period analyzed fiscal consolidation (decline in debt to GDP ratio) caused an improvement in the business confidence.

We estimate both a long-run and a short-run investment equation. As the long-run determinants of private investment, we consider real GDP and real credit volume extended to private firms. While the results do not indicate co-integration, we still maintain the error-correction term in the short-run equation. Other significant short run determinants are the business confidence index and the first difference of the real volume of credit.<sup>18</sup> All the signs of variables' coefficients are in line with a-priori expectations (Table 8). Though the user cost of capital is correctly signed, it is not significant and not retained in the final estimate. These results indicate that, in the period analyzed both business confidence and credit to corporate sector played an important role in determining private investment.

### 2. Private Consumption

The change of consumption (consumption of non-durables and services) cannot be forecasted under the permanent income hypothesis:

$$\Delta c_t = \alpha + u_t$$

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<sup>13</sup> The business confidence index is I(0), whereas the spread and debt-to-GDP ratio are I(1).

<sup>14</sup> As a robustness test, we replace debt ratio by real primary budget balance. This variable is also highly significant and has the expected (positive) sign. We do not report these results in Table 5.

<sup>15</sup> For such a function, see, for example, Agenor (2004, pp: 53-67).

<sup>16</sup> Blanchard (1990) notes that fiscal consolidation will eventually decrease uncertainty leading to a decrease in precautionary savings and reduce option value of waiting by consumers to buy durables and by firms to take investment decisions.

<sup>17</sup> See Driver (2007) for the relationship between business confidence and manufacturing investment in the UK.

<sup>18</sup> Private investment, real credit, and confidence variables are logged and the first two are de-seasonalized by the tramo-seats methodology. See data appendix for further details.

where  $c_t$  is the log of consumption,  $\alpha$  is a constant term and  $u_t$  is innovation in the log of consumption which is orthogonal to all variables known at time  $t-1$  or before. In contrast to what permanent income hypothesis suggests, various empirical studies show that changes in consumption is significantly correlated with predictable changes in income.<sup>19</sup>

$$\Delta c_t = \alpha + \beta E_{t-1} \Delta y_t + u_t$$

where  $E_{t-1}(x_t)$  denotes the expected value of  $x_t$  as of  $t-1$  and  $y_t$  is the log of disposable income. The results of these studies indicate that  $\beta$  is significant and greater than zero but less than one. This fact is mainly explained by the existence of at least a proportion of consumers which are liquidity-constrained. However, as argued by Bacchetta and Gerlach (1997, pp: 210), “if the liquidity constraint interpretation is taken to be seriously, credit should be incorporated in the analysis”. They show that forecasted (ex-ante) consumer credit growth is a significant determinant of consumption growth in the United States, Canada, the United Kingdom, Japan and France. Ludvigson (1999) proposes a model with consumers whose access to credit varies stochastically with income to explain the sensitivity of consumption growth to predictable credit growth. He then shows that in US aggregate data predictable growth in consumer credit is significantly related to consumption growth.

Given that the Turkish financial market is relatively thin compared to those of the developed world and that Turkish consumers are much more credit-constrained, it is natural to expect a significant influence of consumer credit growth for the Turkish consumption growth. Following Bacchetta and Gerlach (1997) and Ludvigson (1999), we estimate the following equation:

$$\Delta c_t = \alpha + \beta_1 E_{t-1} \Delta y_t + \beta_2 E_{t-1} \Delta ccr_t + \beta_3 E_{t-1} \Delta rw_t + u_t, \quad (3)$$

where  $ccr$  is the real consumer loan stock,  $rw$  is the difference between the Treasury borrowing rate and the deposit interest rate (wedge), and  $u$  is the error term.<sup>20</sup>

The problem with the estimation of (3) is that the expected values are not observable: Furthermore, if expected values are proxied by the actual values then error term will be correlated with the explanatory variables. This renders estimation of (3) with OLS inappropriate. To overcome this problem, the procedure employed in practice is to estimate (3) by instrumental variables. We use variables lagged at least twice as instruments as in Bacchetta and Gerlach (1997) and Ludvigson (1999).

The results of this exercise are shown in Table 9. Clearly, changes in the consumer credit play an important role in explaining consumption growth. The wedge is correctly signed, but not significant. This may arise due to the lack of lending rate data. To check the robustness of our results, we further estimate (3) with the real interest rate instead of the wedge. Again the real interest rate is not significant, but correctly signed.

## VI. Conclusions

This paper provides new evidence for expansionary fiscal contractions from Turkey. We identify three fiscal consolidation episodes since 1990: 1994-95, 2000, and 2003-05. The 2003-05 consolidation led to significantly different results than the first two. The program of 2000 suffered from the extreme weakness in the banking sector and consequently failed. The banking sector was both the cause and victim of the 2001 crisis. The 1994-95 fiscal consolidation effort was short-lived and the first seeds of deterioration in the balance sheets

<sup>19</sup> See, for example, Flavin (1981), Jappelli and Pagano (1989), Campbell and Mankiw (1989 and 1991) and Deaton (1992).

<sup>20</sup> Since lending rate for the whole sample is absent, we use the Treasury borrowing rate as a proxy for the lending rate. For details and description of the other variables see data appendix.

of the banking sector were sown during that period. Also, throughout the 1990s – especially in the first half of the decade – consumer loans were almost non-existent. In sharp contrast, the post-crisis economic program gave importance to strengthening the banking sector, which initially caused a jump in the public debt-to-GDP ratio. Such a move could not have been taken without the sustained and ambitious consolidation of the 2003-05 period. Moreover, both the fiscal consolidation and the restructuring program increased the credit expansion capacity of the banking industry.

We show that both the credibility and expectations channel were operative in the 2003-05 fiscal consolidation episode. The Turkish experience indicates that when balance sheet weaknesses are extreme, without addressing them, it is highly difficult, if not impossible, for a fiscal consolidation effort to be successful. The corollary is that empirical research, which uses panel estimations, should control for balance sheet differences between the countries.

Despite the importance given to the credibility channel in theory, the empirical research has relied almost entirely on primary budget balance figures. In contrast, we identified the consolidation episodes using three alternative budget balance figures: primary, operative and total budget. For further research, one wonders whether fiscal consolidation episodes, identified based on budget balance data inclusive of nominal or real interest payments (hence, taking the credibility effects into consideration), will change the results of earlier studies.

A final note is on the role of the appreciation in the post-crisis growth performance. Immediately after the crisis, Turkey started to implement a floating exchange rate regime. Since then, the CBT has rarely intervened in the foreign exchange market. Hence, the real appreciation trend of the lira documented in Table 3 is the outcome of market forces not due to deliberate actions of the CBT. The most obvious consequence of appreciation is its negative impact on demand for domestically produced goods. However, in highly dollarized countries, it can also affect output through an entirely different mechanism. Kesriyeli *et al.* (2005) document that liability dollarization of the Turkish corporate sector firms is extremely high. Kara *et al.* (2007), using the extended Kalman filter method estimate the time-varying impact of the real exchange on output gap. They show that appreciation leads to a rise in the output gap leading to expansion in economic activity. These findings indicate the possibility that expansionary effects of fiscal consolidations in emerging markets can be sensitive to the initial level of dollarization. This is another avenue for future research.

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## Appendix: Data Sources and Definitions

**Tables 1 and 2:** Raw data is from the Treasury and the State Planning Organization and can be downloaded from <http://www.hazine.gov.tr> and <http://www.dpt.gov.tr>. We filtered out two one-off effects on the primary budget: privatization revenues and ‘duty losses’. Duty losses were in fact budget expenditures but not shown in the budget in the 1994-2000 period. For example, before 2001, agricultural support schemes were operated through state owned banks rendering these banks to register serious losses.<sup>21</sup> Using the terminology of Burnside et al. (2001), we can name them as prospective deficits associated with implicit bailout guarantees to a failing (public) banking system.

Cyclically adjusted primary balance/GDP = Cyclically adjusted primary revenues (excluding privatization revenues)/GDP – Observed primary expenditures (including duty losses)/GDP.

(A1)  $PR_t / GDP_t = 13.7 + 0.95 \cdot \text{trend} - 0.12 \cdot U_t + e_t$  (1990-2006, annual data).

PR: primary revenues net of privatization; U: unemployment rate; e: error term.

Cyclically adjusted primary revenues /GDP at period t is then calculated using A1 with  $U_{t-1}$  instead of  $U_t$ .<sup>22</sup>

Structural balance / GDP = B – T + T (Y\*/Y).

B: Observed budget balance (net of privatization revenues and duty losses) / GDP.

T: Observed budget revenues (net of transfers) / GDP; Y: GDP; Y\*: potential output calculated by the Hodrick-Prescott filter using annualized quarterly data for the period 1990-2006.

Cyclically adjusted operational balance / GDP = Cyclically adjusted primary revenues / GDP – Observed primary expenditures (including duty losses accumulated in state banks’ balance sheets) / GDP – RE / GDP.

RE = real interest expenditures = (Nominal interest expenditures / GDP) / (1 + annual average inflation rate).

**Table 3:** All data, except EMBI, can be downloaded from the CBT website: [http://www.tcmb.gov.tr/data/statistical\\_data/general\\_statistics](http://www.tcmb.gov.tr/data/statistical_data/general_statistics); EMBI: JP Morgan. See JP Morgan (2004) for details.

**Table 4:** International Monetary Fund, World Economic Outlook Database for October 2007.

**Table 5:** All original data for the banking sector is from [http://www.tcmb.gov.tr/data/statistical\\_data/general\\_statistics/deposit\\_money\\_banks](http://www.tcmb.gov.tr/data/statistical_data/general_statistics/deposit_money_banks) (or the other bank types). The banking sector includes deposit money banks, investment and development banks and participation banks. We adjust the stock variables (financial variables) and the flow variables (GDP) for the impact of inflation. Adjustment methodology is taken from the Financial Structure Dataset, World Bank: [http://siteresources.worldbank.org/INTRES/Resources/469232\\_1107449512766/FinStructure\\_60\\_06\\_final.xls](http://siteresources.worldbank.org/INTRES/Resources/469232_1107449512766/FinStructure_60_06_final.xls).

**Table 6:** Sovereign ratings of Turkey (S&P), Global volatility index (VIX), FED target rate: Bloomberg. The assignment of numerical values to sovereign ratings is as in Kamin and Kleist (2002), with 1 being the worst credit risk and 22 the best. We augmented the ratings with the outlook changes. Following Rozada and Levy-Yeyati (2006), we interpret the outlook as a five-notch grading scale around the credit rating: positive, positive watch,

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<sup>21</sup> See Treasury (2001).

<sup>22</sup> The method is identical to that used in Alesina and Perotti (1995, pp. 213).



neutral, negative watch, and negative. The outlook augmented ratings are computed by giving each notch a 0.2 value and adding to the credit rating.

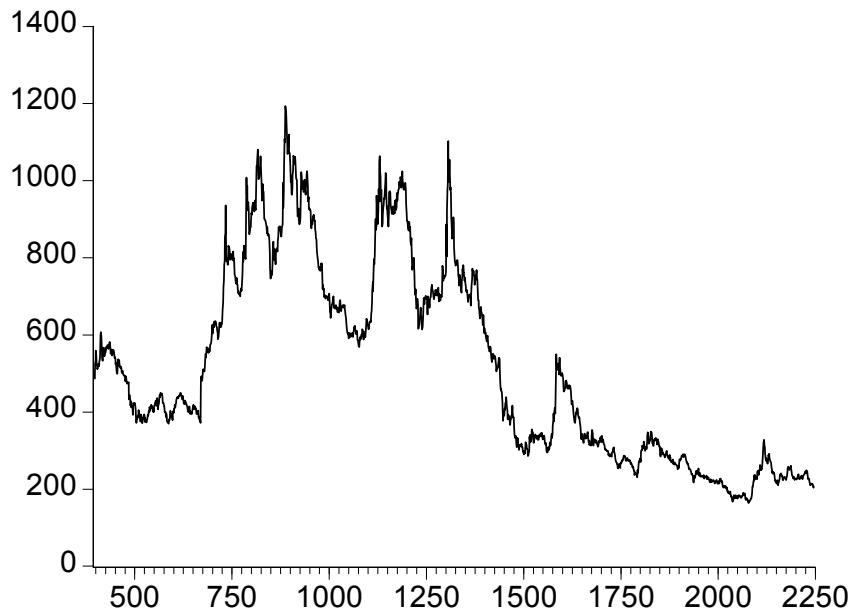
**Table 7:** Business confidence index: CBT website: [http://www.tcmb.gov.tr/data/statistical data/general statistics/confidence index-real sector](http://www.tcmb.gov.tr/data/statistical-data/general-statistics/confidence-index-real-sector): real sector confidence index. The methodology of the index is briefly discussed at the same website: [publications/periodic publications/business tendency survey](http://www.tcmb.gov.tr/publications/periodic-publications/business-tendency-survey) and real sector confidence index. Quarterly figures are the quarter averages of monthly data.

**Table 8:** Credit to corporate sector: CBT website: [http://www.tcmb.gov.tr/data/statistical data/general statistics/deposit money banks-credits-sectoral breakdown-credit to private firms](http://www.tcmb.gov.tr/data/statistical-data/general-statistics/deposit-money-banks-credits-sectoral-breakdown-credit-to-private-firms) + [data/statistical data/general statistics/investment banks -credits-sectoral breakdown-credit to private firms](http://www.tcmb.gov.tr/data/statistical-data/general-statistics/investment-banks-credits-sectoral-breakdown-credit-to-private-firms). The deflator for the private investment is used to obtain its real value. Quarterly figures are the quarter averages of monthly data.

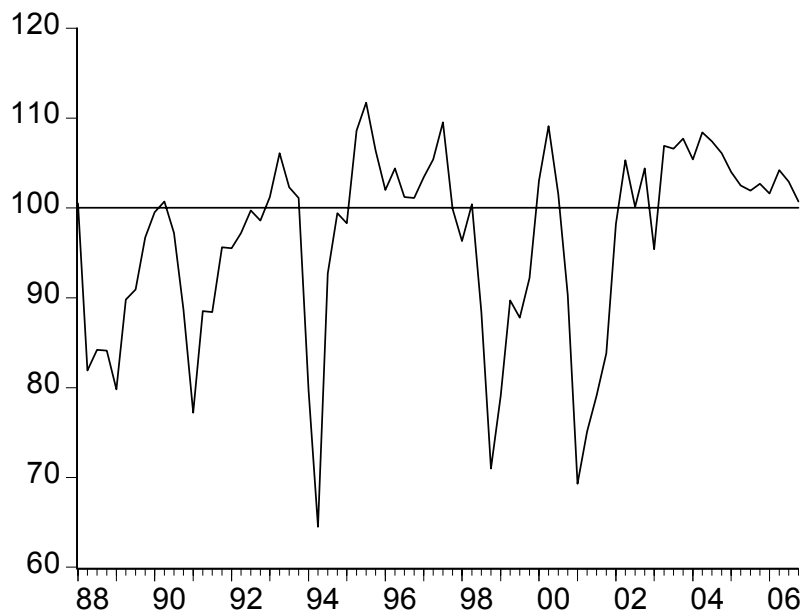
**Table 9:** Consumer credit: Obtained from the CBT website: [http://www.tcmb.gov.tr/data/statistical data/general statistics/deposit money banks-credits-sectoral breakdown-households](http://www.tcmb.gov.tr/data/statistical-data/general-statistics/deposit-money-banks-credits-sectoral-breakdown-households). The deflator for the non-durables and services consumption is used to obtain its real value. Quarterly figures are the quarter averages of monthly data. Disposable income: GDP less indirect taxes plus transfers. The last two variables are from the web sides of the Treasury and the State Planning Organization. The deflator for the non-durables and services consumption is used to obtain its real value.

Wedge: Difference between the Treasury borrowing rate and deposit interest rate. Borrowing rate is from the web side of the Treasury. Deposit rate is the weighted average of deposit rates at all maturities. Weights are the shares of deposits at total deposits. The relevant data can be downloaded from the CBT website: [http://www.tcmb.gov.tr/data/statistical data/general statistics/deposit money banks/deposits](http://www.tcmb.gov.tr/data/statistical-data/general-statistics/deposit-money-banks/deposits). Quarterly figures are averages of monthly figures.

**Figure 1: Turkish Component of the EMBI Spread: 30 July 1999 – 26 December 2006**



**Figure 2: Business Confidence Index: January 1988 – December 2006**



**Table 1: Fiscal Policy Indicators (% of GDP)<sup>a</sup>**

	<b>Cyclically Adjusted Primary Balance</b>	<b>Cyclically Adjusted Operational Balance</b>	<b>Structural Balance</b>	<b>Fiscal Impulse</b>	<b>Fiscal Impulse</b>	<b>Fiscal Impulse</b>	<b>Public Debt</b>
	<b>A</b>	<b>B</b>	<b>C</b>	<b>A<sub>t</sub>-A<sub>t-1</sub></b>	<b>B<sub>t</sub>-B<sub>t-1</sub></b>	<b>C<sub>t</sub>-C<sub>t-1</sub></b>	
1990	0.5	-1.7	-3.3				36.6
1991	-1.4	-3.7	-5.1	-1.9	-2.0	-1.8	38.8
1992	-0.6	-2.8	-4.4	0.8	1.0	0.7	40.6
1993	-1.3	-4.3	-8.0	-0.7	-1.6	-3.6	40.1
1994	2.3	0.0	-4.2	3.5	4.4	3.8	52.2
1995	3.6	-0.7	-3.8	1.4	-0.7	0.5	42.1
1996	0.0	-4.0	-10.4	-3.6	-3.3	-6.6	43.2
1997	0.0	-4.1	-9.6	0.0	-0.1	0.8	42.0
1998	0.5	-1.8	-13.7	0.5	2.2	-4.0	41.4
1999	-1.8	-6.3	-17.8	-2.3	-4.4	-4.1	52.6
2000	10.7	-5.0	-9.3	12.5	1.3	8.5	54.4
2001	6.2	-7.9	-15.0	-4.6	-3.0	-5.6	104.3
2002	4.5	-8.4	-13.7	-1.7	-0.5	1.3	90.7
2003	5.1	-7.9	-10.6	0.7	0.6	3.1	80.6
2004	5.7	-5.9	-7.6	0.5	1.9	2.9	74.9
2005	7.3	-1.0	-2.6	1.7	5.0	5.1	68.9
2006	6.0	-0.1	-2.4	-1.3	0.8	0.2	63.0

Notes:

<sup>a</sup> Author's calculations.

See appendix for details.

**Table 2: Fiscal Performance (% of GDP)<sup>a</sup>**

	<b>Cyclically Adjusted Primary Balance</b>	<b>Cyclically Adjusted Operational Balance</b>	<b>Structural Balance</b>	<b>Cyclically Adjusted Revenues</b>	<b>Non-Interest Expenditures</b>	<b>Interest Expenditures</b>	<b>Public Debt</b>
<b>1. 1994-1995</b>							
Before: 1992-93 (a)	-0.9	-3.6	-6.2	17.2	18.1	4.8	40.3
During: 1994-95 (b)	2.9	-0.3	-4.0	18.7	15.8	8.5	47.1
After: 1996-97 (c)	0.0	-4.0	-10.0	19.3	19.2	11.2	42.6
Difference: (b) - (a)	3.9	3.2	2.2	1.5	-2.4	3.7	6.8
(c) - (a)	1.0	-0.5	-3.8	2.1	1.1	6.4	2.3
<b>2. 2000</b>							
Before: 1998-99 (a)	-0.6	-4.1	-15.7	23.3	24.0	17.5	47.0
During: 2000 (b)	10.7	-5.0	-9.3	26.4	15.7	25.5	54.4
After: 2001-02 (c)	5.3	-8.2	-14.3	27.9	22.6	20.9	97.5
Difference: (b) - (a)	11.4	-0.9	6.4	3.1	-8.3	7.9	7.4
(c) - (a)	6.0	-4.1	1.4	4.6	-1.4	3.3	50.5
<b>3. 2003-2005</b>							
Before: 2001-02 (a)	5.3	-8.2	-14.3	27.9	22.6	20.9	97.5
During: 2003-05 (b)	6.0	-4.9	-6.9	27.0	21.0	12.9	74.8
After: 2006 (c)	6.0	-0.1	-2.4	28.5	22.4	8.0	63.0
Difference: (b) - (a)	0.7	3.3	7.4	-0.9	-1.6	-7.9	-22.7
(c) - (a)	0.7	8.1	11.9	0.6	-0.1	-12.9	-34.5

Notes:

<sup>a</sup> Author's calculations.

See appendix for details.

**Table 3: Macroeconomic Performance <sup>a</sup>**

	Cp	Ip	Cg	Ig	Y	$\pi$ (%)	R (%)	R (%)	RER Index	Confidence Index	EMBI Index
	Growth Rates (%)										
<b>1. 1994-1995</b>											
Before: 1992-93 (a)	5.9	19.7	4.6	3.9	6.3	68.1	86.6	11.1	116.4	100.2	
During: 1994-95 (b)	0.2	4.4	1.6	-23.6	1.6	97.7	140.6	21.7	96.2	95.2	
After: 1996-97 (c)	8.4	12.0	6.4	26.4	7.5	83.0	129.3	25.4	106.1	103.4	
Difference: (b) - (a)	-5.7	-15.3	-3.0	-27.5	-4.7	29.6	54.0	10.7	-20.3	-5.1	
(c) - (a)	2.6	-7.7	1.7	22.5	1.1	14.9	42.7	14.3	-10.4	3.1	
<b>2. 2000</b>											
Before: 1998-99 (a)	-1.0	-13.0	7.2	2.6	-0.7	74.8	112.6	21.6	120.8	88.1	511.0
During: 2000 (b)	6.2	16.0	7.1	19.6	7.3	54.9	36.2	-12.1	136.5	101.0	488.9
After: 2001-02 (c)	-3.5	-20.1	-1.6	-6.6	0.2	49.7	81.2	21.0	118.9	89.4	825.0
Difference: (b) - (a)	7.2	29.0	0.0	17.0	8.0	-19.8	-76.4	-33.7	15.7	12.9	-22.1
(c) - (a)	-2.6	-7.0	-8.7	-9.2	0.9	-25.1	-31.4	-0.6	-2.0	1.3	314.0
<b>3. 2003-2005</b>											
Before: 2001-02 (a)	-3.5	-20.1	-1.6	-6.6	0.2	49.7	81.2	21.0	118.9	89.4	825.0
During: 2003-05 (b)	8.5	29.8	0.2	3.2	7.4	14.4	29.0	12.8	146.7	104.6	418.4
After: 2006 (c)	5.2	17.4	9.6	-0.2	6.1	8.6	18.0	8.7	160.5	102.4	225.6
Difference: (b) - (a)	12.0	49.9	1.7	9.8	7.2	-35.3	-52.2	-8.2	27.8	15.2	-406.6
(c) - (a)	8.8	37.4	11.2	6.4	5.9	-41.1	-63.1	-12.4	41.7	13.0	-599.4

Notes:

Cp: private consumption; Ip: private investment; Cg: government consumption; Ig: government investment; Y: gdp;  $\pi$ : consumer inflation rate; R: Treasury borrowing rate; r: real interest rate; RER: real exchange rate, 1995=100, an increase denotes real appreciation; confidence index is the Central Bank business confidence index and EMBI is the JP Morgan's emerging market bond index (Turkey's spread).

See section IV and appendix for details. Except GDP and its components all of the values denote annual averages.

**Table 4: Relative Growth Performance of Turkey with Respect to Various Country Groups <sup>a</sup>**

	Turkey	Central and Eastern Europe <sup>b</sup>		Asean 4 <sup>c</sup>		Western Hemisphere		BRICK <sup>d</sup>	
	g (%)	g (%)	Δ	g (%)	Δ	g (%)	Δ	g (%)	Δ
<b>1. 1994-1995</b>									
Before: 1992-93 (a)	6.3	-2.5	8.8	6.3	0.1	3.9	2.5	6.2	0.1
During: 1994-95 (b)	1.6	4.5	-2.8	7.8	-6.1	3.3	-1.7	6.9	-5.3
After: 1996-97 (c)	7.5	3.6	3.8	5.4	2.1	4.4	3.1	6.4	1.1
Difference: (b) - (a)	-4.7	6.9	-11.7	1.5	-6.2	-0.6	-4.2	0.7	-5.5
(c) - (a)	1.1	6.1	-5.0	-0.9	2.0	0.6	0.6	0.2	0.9
<b>2. 2000</b>									
Before: 1998-99 (a)	-0.7	2.6	-3.3	-3.1	2.4	1.3	-2.0	5.2	-6.0
During: 2000 (b)	7.3	3.9	3.4	5.8	1.5	3.9	3.4	7.3	-0.1
After: 2001-02 (c)	0.2	3.1	-2.9	3.6	-3.4	0.4	-0.2	6.3	-6.1
Difference: (b) - (a)	8.0	1.3	6.7	8.9	-0.9	2.6	5.4	2.1	5.9
(c) - (a)	0.9	0.5	0.4	6.7	-5.8	-0.9	1.8	1.0	-0.1
<b>3. 2003-2005</b>									
Before: 2001-02 (a)	0.2	3.1	-2.9	3.6	-3.4	0.4	-0.2	6.3	-6.1
During: 2003-05 (b)	7.4	5.0	2.3	5.5	1.9	4.3	3.0	8.2	-0.8
After: 2006 (c)	6.1	6.4	-0.2	5.4	0.7	5.5	0.6	9.3	-3.1
Difference: (b) - (a)	7.2	1.9	5.3	1.9	5.3	3.9	3.2	1.9	5.2
(c) - (a)	5.9	3.3	2.7	1.8	4.1	5.1	0.8	3.0	2.9

Notes:

<sup>a</sup> For country composition of groups and data, see International Monetary Fund, World Economic Outlook. Country group composites are weighted by GDP valued at purchasing power parities as a share of total group GDP. g: GDP growth rate, Δ: the difference between the growth rates of Turkey and the relevant country group.

<sup>b</sup> Turkey is excluded from Central and Eastern Europe by the author.

<sup>c</sup> Indonesia, Malaysia, Philippines, Thailand.

<sup>d</sup> Brazil, Russia, India, China, Korea.

**Table 5: Indicators of Financial Depth (% of GDP)**

	TA	CR <sub>co</sub>	CR <sub>hh</sub>	CR <sub>p</sub>	CR <sub>g</sub>	CR
<b>1. 1994-1995</b>						
Before: 1992-93 (a)	40.1	13.8	0.6	14.4	5.4	19.8
During: 1994-95 (b)	39.7	12.2	1.1	13.3	5.3	18.7
After: 1996-97 (c)	45.2	15.9	1.4	17.3	7.8	25.1
Difference: (b) - (a)	-0.4	-1.6	0.5	-1.1	0.0	-1.1
(c) - (a)	5.1	2.1	0.8	2.9	2.4	5.3
<b>2. 2000</b>						
Before: 1998-99 (a)	61.8	17.1	2.3	19.4	17.4	36.9
During: 2000 (b)	73.7	15.6	3.5	19.1	25.3	44.4
After: 2001-02 (c)	75.2	14.2	2.9	17.1	27.9	45.0
Difference: (b) - (a)	11.9	-1.5	1.2	-0.3	7.9	7.6
(c) - (a)	13.4	-2.9	0.6	-2.3	10.5	8.2
<b>3. 2003-2005</b>						
Before: 2001-02 (a)	75.2	14.2	2.9	17.1	27.9	45.0
During: 2003-05 (b)	66.0	13.3	4.9	18.2	26.1	44.3
After: 2006 (c)	74.7	19.1	10.0	29.0	24.7	53.8
Difference: (b) - (a)	-9.2	-0.9	1.9	1.0	-1.7	-0.7
(c) - (a)	-0.6	4.9	7.0	11.9	-3.2	8.7

Notes:

TA: total assets; CR<sub>co</sub>: credit to the corporate sector; CR<sub>hh</sub>: credit to households; CR<sub>p</sub>=CR<sub>co</sub>+CR<sub>hh</sub>. CR<sub>g</sub>: claims on the government. CR=CR<sub>p</sub>+CR<sub>g</sub>. Financial variables are adjusted for the effects of inflation using the methodology of Financial Structure Dataset, World Bank. See appendix for the details.

**Table 6: Determinants of the Turkish Component of EMBI Spreads**

	Daily: 30.7.1999-31.12.2006		Quarterly: 1999.III- 2006.IV	
	Coefficients and t-Statistics <sup>a</sup>			
	Long-run <sup>b</sup>	Short-run <sup>c</sup>	Long-run <sup>b</sup>	Short-run <sup>c</sup>
Constant	8.138 (48.9)	-0.0005 (-0.8)	3.121 (5.8)	-0.002 (-0.1)
FED target rate (logged)				
Level	0.005 (0.7)		0.095 (1.1)	
First difference		-0.021 (-0.6)		0.036 (0.2)
Global volatility index (logged)				
Level	0.634 (28.1)		1.167 (8.6)	
First difference		0.077 (6.6)		0.870 (5.1)
S&P rating (logged)				
Level	-1.814 (35.1)			
First difference		-0.215 (-2.5)		
Public debt-to-GDP ratio (logged)				
Level			0.881 (3.2)	
First difference				0.973 (2.6)
Primary surplus-to-GDP ratio				
Level			-4.246 (-1.5)	
First difference				-6.657 (-2.1)
Error-correction term		-0.005 (-1.7)		-0.621 (-3.0)
Co-integration t-statistic	-3.71		-4.45	
Number of observations	1846	1845	29	28
First order autocorrelation <sup>d</sup>		0.312		0.17
Fourth order autocorrelation <sup>d</sup>		0.56		0.15
First order ARCH <sup>d</sup>		0.00		0.64
Adjusted R <sup>2</sup>	0.86	0.03	0.87	0.64

Notes:

<sup>a</sup> Numbers in parantheses are t-Statistics.<sup>b</sup> The dependent variable is the log of EMBI spread.<sup>c</sup> The dependent variables is the first difference of logged EMBI spread.<sup>d</sup> Reported values are p-values.



**Table 7: The Impact of Default Risk and Debt Ratio on Business Confidence <sup>a</sup>**

	<b>I</b>	<b>II</b>	<b>III</b>
Constant	2.138 (4.2)	1.93 (5.4)	2.638 (5.9)
Lbc <sub>t-1</sub>	0.532 (4.8)	0.576 (7.3)	0.424 (4.4)
Distributed lag of the first difference of the logged EMBI spread <sup>b</sup>	-0.152 (-4.4)		-0.101 (-3.4)
The first difference of the logged public debt-to-GDP ratio		-0.521 (-4.7)	-0.435 (-3.8)
Sample	1999.III-2006.IV	1988.I-2006.IV	1999.III-2006.IV
Adjusted R <sup>2</sup>	0.76	0.57	0.83
First order autocorrelation test <sup>c</sup>	0.65	0.22	0.25
Fourth order autocorrelation test <sup>c</sup>	0.91	0.59	0.07
First order ARCH test <sup>c</sup>	0.56	0.07	0.46

Notes:

<sup>a</sup> The dependent variable is the log confidence index (Lbc<sub>t</sub>). The values in parentheses are the t-statistics.

<sup>b</sup> It consists of the equally weighted average of the current value and the first two lags of this variable.

<sup>c</sup> Reported values are the p-values.

**Table 8: Determinants of Private Investment: 1987.I - 2006.IV**

	Coefficients and t-Statistics <sup>a</sup>	
	Long-run: <sup>b</sup>	Short-Run: <sup>c</sup>
Constant	-0.275 (-0.16)	-1.588 (-4.54)
GDP	0.513 (2.06)	
Real credit volume	0.365 (3.56)	
Business confidence index		0.35 (4.55)
$\Delta$ real credit volume <sup>d</sup>		0.316 (2.73)
Error-correction term		-0.108 (-2.52)
Diagnostics		
Adjusted R <sup>2</sup>	0.73	0.47
Co-integration t-statistics	-2.04	
First order autocorrelation test (p-value)		0.74
Fourth order autocorrelation test (p-value)		0.98
First order ARCH test (p-value)		0.60

Notes:

<sup>a</sup> Numbers in parantheses are t-statistics.

<sup>b</sup> The dependent variable is the logged real private investment.

<sup>c</sup> The dependent variable is the first difference of the logged real private investment.

<sup>d</sup>  $\Delta$  is the first difference operator.

**Table 9: Determinants of Private Consumption: 1994.I - 2006.IV (Instrumental Variables Estimates)<sup>a</sup>**

<b>Disposable Income</b>	<b>Consumer Credit</b>	<b>Wedge</b>	<b>Adj. R<sup>2</sup></b>
0.339	0.04	-0.0001	
(3.2)	(2.3)	(-1.4)	0.38
0.339	0.0505		
(3.0)	(2.5)		0.36

Notes:

<sup>a</sup> Disposable income and real private consumption is de-seasonalized by the Tramo-seats methodology. All of the variables except the wedge are logged and first differenced. Instruments: Lags from 2 to 4 of all of the variables and the second lag of the error correction term between consumption and income. Numbers in parantheses are the t-Statistics.