Ekonomik Yaklaşım, Cilt : 20, Sayı : 72, ss. 1-20

CURRENT ACCOUNT DEFICITS, SUSTAINABILITY AND GLOBAL FINANCIAL CRISIS: EVIDENCE FROM TURKEY, 1987-2008

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Abstract

The objective of the present paper is to explore the sustainability of external position of Turkey over the period $1987Q_1$-$2008Q_2$ by using the intertemporal approach to current account as well as some important macroeconomic indicators. The empirical methodology used to test the intertemporal model of the current account in this paper is the present value test. Turkey experienced large external deficits and over-valuation of the national currency over the period $2004Q_1$-$2008Q_2$. The empirical evidence presented in this paper indicates that current account deficits of Turkey were unsustainable over the period $1987Q_1$-$2008Q_2$. Furthermore, the empirical results of external sustainability reveal that the actual current account deficits were excessive relative to the optimal current account balances over the period $2004Q_1$-$2008Q_2$.

Keywords: *Current Account Deficits, Sustainability, Cointegration*

CARİ AÇIK, SÜRDÜRÜLEBİLİRLİK VE KÜRESEL FİNANSAL KRİZ: TÜRKİYE'YE İLİŞKİN AMPİRİK KANITLAR 1987 - 2008

Özet

Bu makalenin temel amacı cari işlemler hesabına ilişkin dönemlerarası yaklaşımı ve bazı önemli makroiktisadi göstergeleri kullanarak, Türkiye'nin cari işlemler hesabının sürdürülebilirliğinin $1987Q_1$-$2008Q_2$ dönemi için incelenmesidir.

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Cari işlemlere ilişkin dönemlerarası modeli bu makalede kullanılan ampirik yöntem şimdiki değer testidir. Türkiye ekonomisi $2004Q_1$-$2008Q_2$ döneminde yüksek dış açıklar ve ulusal paranın aşırı-değerlenmesi olguları ile karşılaşmıştır. Bu makalede sunulan ampirik kanıtlar Türkiye'nin cari açıklarının $1987Q_1$-$2008Q_2$ döneminde sürdürülemez olduğunu göstermektedir. Ayrıca, dış sürdürülebilirliğine ilişkin ampirik sonuçlar gerçekleşen cari işlemler açıklarının optimal cari işlemler hesabı değerlerine göre aşırı olduğunu göstermektedir.

Anahtar Kelimeler: *Cari Açık, Sürdürülebilirlik ve Eşbütünleşme*

1. Introduction

The rapidly growing current account deficits of Turkey especially over the period 2004-2008 generated a great concern about the issue of the sustainability of the country's external imbalances. Turkey experienced expanding current account deficits over that period, reaching a magnitude of $37.7 billion in 2007 (a record high for the entire Turkish economic history until that date) or 8.1% as a ratio to the aggregate GDP. On the other hand, the financial crisis in developed economies in the third quarter of 2008 had a major effect on emerging economies. Developing countries have confronted serious external financing pressures especially given global deleveraging and large borrowing needs of developed countries. Thus, Turkey that relied on international capital inflows to finance large and persistent external deficits during $2004Q_1$-$2008Q_2$ has started to suffer from tighter external financing conditions triggered by global financial crisis. Furthermore, economic growth in Turkey has been impeded by international financial constraints and weak external demand after the third quarter of 2008.

While the total imports have slowed down significanty after the third quarter of 2008 due to weak economic growth performance and the real depreciation of the currency, recession in advanced economies of Europe has already led to a significant contraction in total exports from Turkey. Since the slowdown in total imports has been faster than that in total exports, the external position of Turkey has improved significantly after the first quarter of 2009. However, the weak external financing environment has produced large ouput costs for Turkey that has relied on international financial inflows to fund the activities of corporate sector. A large number of empirical studies reveal that countries that have experienced sudden declines in international capital inflows and/or current account reversals have suffered from significant reductions in investment and economic growth (see, for example, Calvo et al. (2004), Edwards (2005, 2006), Frankel and Cavallo (2004)).

Various studies have provided evidence supporting the idea that large and persistent external deficits are one of the principal factors explaining currency crises (see, for example, Corsetti et al. (1998), Radelet and Sachs (2000), Kamin et al. (2001), and Edwards (2004)). On the other hand, many crisis models suggest that a currency crisis is independent of the current account deficits (see, for example, Calvo (2000), Chang and Velasco (2000), Atkeson and Rios-Rull (1996)). Furthermore, a vast number of empirical studies have found little or no evidence supporting the relationship between external deficits and currency crises (Frankel and Rose, 1996).

Turkey experienced three major financial crises in 1994, 2000 and 2001. Turkish current account deficits reached to high levels before these crises in Turkey's recent economic history. Although the current account deficits of Turkey (as a ratio of GDP) in the period 2004-2008 exceeded those in crisis periods, the large external imbalances did not lead to a currency crisis. Edwards (2001) provides empirical evidence confirming that there are costs associated with large external deficits. However, this does not imply that a large deficit always lead to a crisis.

This paper employs an intertemporal model of the current account to explore the sustainability of the current account deficits in Turkey over the period $1987Q_1$-$2008Q_2$. Moreover, the paper utilizes some macroeconomic indicators to examine the sustainability of current account position of Turkey.

The intertemporal model of the current account is derived from an intertemporal optimization with the objective of consumption smoothing over time. The most commonly used methodology to test the intertemporal model of the current account is the present value test, as developed by Campbell and Shiller (1987) and Gosh and Ostry (1995). The standard one-good intertemporal model suggests that the current account balance equals the present value of expected changes in a country's net output, defined as output less investment and government expenditures.

Milesi-Feretti and Razin (1996a) make a clear distinction between the concepts of solvency and sustainability. First, an economy is identified as solvent if the present discounted value of future trade surpluses is equal to current external indebtedness. However, such a definition is difficult to apply because it relies on future events and policy decisions. Second, the definition of sustainability requires imposing some additional constraints to pure intertemporal solvency. If the current account deficits of an economy can be sustained under current economic policy stance without leading to a currency crisis, then external imbalances are sustainable. On the other hand, actual current account balances should be compared with the

theoretically predicted (or optimal benchmark) balances in order to determine the excessive external deficits.

2. Macroeconomic Indicators of Current Account Sustainability

One of the main objectives of this paper is to examine the sustainability of external deficits in the case of Turkey by using some important macroeconomic indicators. Milesi-Feretti and Razin (1996b) discuss several potential macroeconomic indicators in order to evaluate the sustainability of current account deficits. The macroeconomic indicators selected for assessing external sustainability of Turkey are presented in the remaining part of this section.

2.1 Exchange Rate Policy

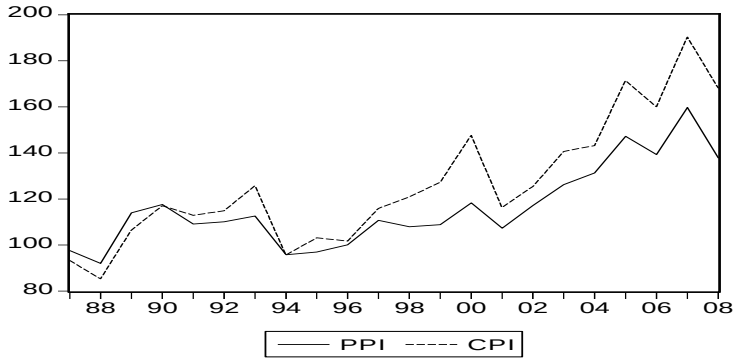
Following the 1980 reforms of financial liberalization, policy authorities adopted an actively managed, flexible exchange rate system. The policy of continual real depreciation until 1989 encouraged the rapid expansion of exports. The final step in the process of external financial liberalization was the removal of restrictions on international capital movements in 1989. From the late 1980s onwards, increased public sector borrowing requirements raised the domestic interest rates above foreign rates, attracting short-term capital inflows (Asikoglu and Uctum, 1992). During this process, the main determinant of the exchange rate became the speculative capital inflows, leading to a sizeable real appreciation of the national currency. Consequently, the current account deficit to GDP ratio increased to approximately 6 percent of the GDP in 1993. Turkish economy underwent a severe currency crisis in early 1994, resulting from policy based on hot money inflows and real appreciation of the currency.

The Central Bank of Turkey implemented a controlled peg regime relying on relative purchasing power parity hypothesis during the period 1995-1999. The Turkish government started an exchange rate-based disinflation program with the financial and technical support of the International Monetary Fund (IMF) in December 1999. However, the program failed to prevent the crises in November 2000 and February 2001. International speculative capital fled the country and interest rates reached to extremely high levels. These crises were preceded by the over-valued Turkish Lira and current account imbalances (current account deficit-GDP ratio reached to 4.9 percent in 2000).

Following the collapse of the exchange rate-based disinflation program in February 2001, the Turkish government adopted a freely floating exchange rate

regime. However, the policy of real appreciation after 2004 had adverse effects on the external balance situation of the economy. The Turkish Lira appreciated in real terms significantly over the period $2004Q_1$-$2008Q_2$ and the real appreciation reached approximately 90 percent in 2007 according to the consumer price index (CPI)-based calculations. Using the producer price index (PPI), the Central Bank of Turkey calculated a real appreciation of almost 59 percent in 2007. Consequently, the current account deficit to GDP ratio increased from 0.8 percent in 2002 to 8.1 percent in 2007. The paths of the real effective exchange rate (REER) indexes calculated by Central Bank of Turkey are portrayed in Figure 1 below.

Figure 1. REER Indexes (based on PPI and CPI), (1994=100), 1987-2008.



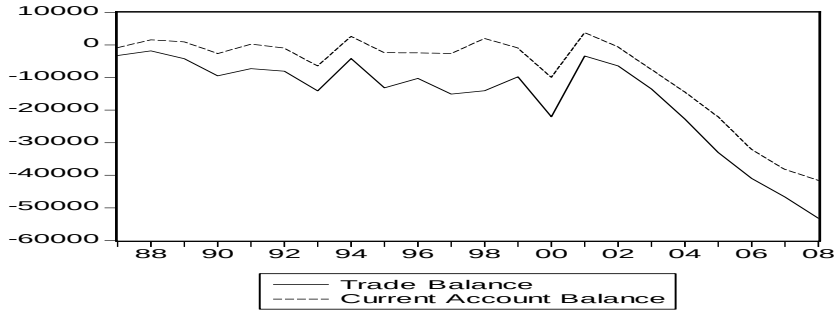
High rates of interest in Turkey over this period was the main factor in generating inflows of international financial capital, which in turn exerted upward pressure on the real exchange rate. International capital inflows led to a significant appreciation of the national currency, thereby deteriorating the current account position of Turkey. Since the exchange rate market lacked depth, the exchange rate depended on the decisions of international financial arbiters (Pamukcu and Yeldan, 2005). Thus, the structural overvaluation of the national currency over the period $2004Q_1$-$2008Q_2$ created ever-expanding current account deficits under the free floating exchange rate regime.

2.2 Large Trade Deficits and Structural Competitiveness Problems

An external imbalance resulting from a large trade deficit may be less sustainable because trade deficits may indicate serious competitiveness problems. Current account deficits of Turkey over the period $1987Q_1$-$2008Q_2$ resulted from

large trade deficits rather than from large negative net factor incomes. Figure 2 visually portrays the close development paths of trade balances and current account balances.

Figure 2. Turkey: Trade Balances and Current Account Balances, 1987-2008 (In billions of US$)



Although the post-2004 period indicates a period of acceleration of exports, the Turkish trade balances were deeply in deficit over the same period with the faster increase of the imports. As a result of sizeable real appreciation of the currency, traditional export industries lost their competitiveness and new export industries emerged over the period 2004-2008 (Voyvoda and Yeldan, 2006). Since they were mostly import-dependent, the growth of total exports required a rapid increase in total imports. Thus, the economic policy after 2004 generated a structural trade deficit problem in the Turkish economy.

On the other hand, given Turkey's dependence on the foreign oil, high oil prices contributed significantly to the deterioration of external imbalances during that period. However, the significant decreases in oil prices after the third quarter of 2008 have positively influenced the external balance situation of Turkey.

2.3 The Level of External Debt

A large burden of external debt will negatively influence the country's ability to finance its current account imbalances. Moreover, a large interest burden of external debt may reduce the capacity of an economy to acquire external resources for economic growth. External debt stock of Turkey increased from $113.8 billion in 2001 to $198 billion in the third quarter of 2008. This outstanding expansion of the foreign debt stock generated serious concerns about the external fragility of the

Turkish economy. In the same period, short-term debt accumulated rapidly and reached to $40 billion.

An examination of the data indicates that private firms (excluding banks) increased the external borrowing over the period 2004-2008. The rapid growth of external borrowing by private firms reveals that the foreign exchange exposure of Turkish economy increased over that period. Figure 3 displays the development of rapid expansion of the debt stock. Figure 4 reveals the path of one of most important indicators of external fragility: the ratio of short term external debt to Central Bank's international reserves. Rodrik and Velasco (1999) consider this ratio as the most crucial predictor of a currency crisis. This indicator reached to a peak with a ratio of more than 100 percent by the end of 1993 before the currency crisis in 1994. Moreover, the same ratio was considerably high before the 2000 and 2001 crises. However, this crisis indicator was at a significantly lower level in 2008 compared to the figures in crisis periods.

Figure 3. Turkey: Debt Stock, 1990-2008 (*In Billions of US$)*

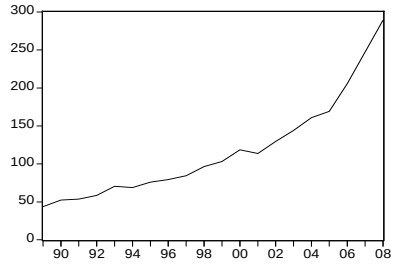
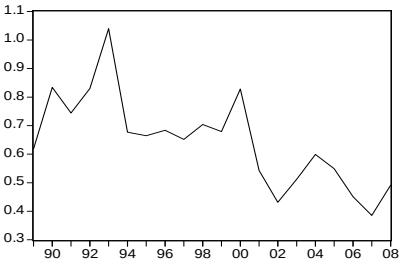


Figure 4. Turkey: Short-term Debt-International Reserves, 1990-2008



2.4 Sufficiency of Foreign Exchange Reserves

If foreign exchange reserves of a country are sufficient, the financing of current account deficits may not be a serious problem. Figure 5 visually presents the development of the conventional measure of reserve adequacy which express foreign exchange reserves in months of imports. In addition, Figure 6 portrays the path of the ratio of M2 to international reserves as an alternative indicator.

International reserves in months of exports were 10 months in 1999. Figure 6 reveals that international reserves in months of imports showed a downward turn in the course of 1999-2008. On the other hand, a visual examination of the ratio of M2 to foreign exchange reserves over the period 1987-2008 shows that there were

significant increases in this indicator especially after 2005. Thus, this alternative indicator points to unsustainability of external imbalances over the period 2005-2008.

Figure 5. Turkey: International Reserves in Months of Imports, 1987-2008

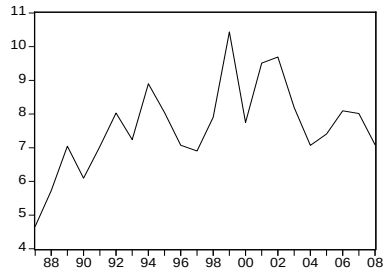
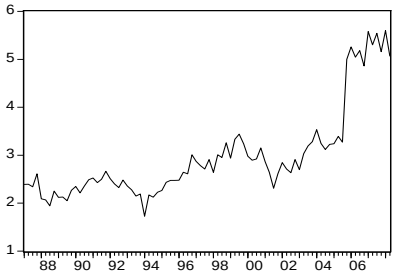


Figure 6. Turkey: Ratio of M2 to International Reserves, 1987-2008



2.5 Low Rates of Savings

Savings were low in Mexico and Chile in the periods preceding the crises. The saving rate of Chile amounted to 9 percent of GDP during the period leading up to its external crisis (1979-81), while Mexico's saving rate was 14 percent of GDP over the period 1991-93. However, in these crises episodes the low savings rates did not stem from public sector imbalances, but rather from low private savings (Milesi-Ferretti and Razin, 1996b).

Since international financial flows are volatile, domestic saving constitute a reliable source of finance for investment and long-run growth, reducing the potential risk of a crisis resulting from a sudden stop of international capital inflows. Furthermore, a strong dependence on foreign saving may lead to a problem of competitiveness due to the real appreciation of the national currency, creating a decline in the long-run economic growth (Prasad, Rajan, and Subramanian, 2006).

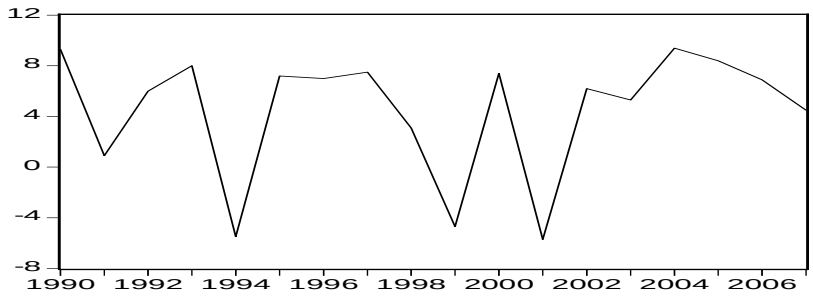
Over the period 2004-2008, Turkey has experienced a large decline in the aggregate private saving rate (more than 20 percentage points of GDP). Thus, the simultaneous increase in investment financed largely by external resources has resulted in large current account deficits over the period 2004-2008. Turkey's national saving rate, around 20 percent, also falls into the low range by international standards (International Monetary Fund, 2007). The strong reliance on foreign

saving exposes Turkish economy to adverse shifts in international financing conditions.

2.6 Economic Growth

High growth performance of a country strengthens its ability to sustain persistent current account deficits without increasing its external debt to GDP ratio. The Turkish growth patterns have been mostly driven by international financial inflows especially after the liberalization of capital account in 1989 (see, for example, Ertugrul and Selcuk (2000), Onaran (2006), Voyvoda and Yeldan (2006)). Declines in the GDP growth were directly related to the outflows of international capital as in both 1994 and 2001 crises. The growth performance achieved by Turkey over the period 2004-2007 closely followed heavy inflows of international financial capital. On the other hand, Turkey has entered a period of declining growth rates since 2005. The Figure 9 graphically displays rates of economic growth in Turkey over the period 1990-2008.

Figure 7. Turkey: Rates of Economic Growth (percent), 1990-2008



Since economic growth is mostly dependent on volatile international capital inflows, the continuity of GDP growth in Turkey becomes more and more uncertain in the future due to international financial constraints caused by global financial crisis. Emerging countries such as Turkey with high foreign financing needs and high ratios of short-term external debt will have significant disadvantages in facing the global financial crisis.

3. Intertemporal Model of Current Account, Data and Empirical Results

Obstfeld and Rogoff (1995 and 1996) present a detailed analysis of intertemporal model of current account that assumes intertemporal optimization by consumers and firms. The intertemporal approach emphasizes that consumption smoothing across periods is one of the main determinants of the current account. In testing sustainability of current account deficits, a predicted optimal current account balance can serve as a benchmark and be compared with the actual series (Gosh and Ostry (1995), Cashin and McDermott (1996), Ostry (1997), Callen and Cashin (1999), Bergin and Sheffrin (2000)). If the actual current account deficit exceeds the optimal (or benchmark) deficit, this is an indication of excessiveness of external imbalances. The mathematical derivation of the model and testing procedure are presented in the following paragraphs.

Consider an infinitely lived representative consumer in a small open economy that maximizes an intertemporal utility function subject to a budget constraint.

$$\sum_{t=0}^{\infty} \beta^t U(C_t), \quad U'(C) > 0; \quad U'' < 0; \quad 0 < \beta < 1 \tag{1}$$

$$\Delta B_{t+1} = B_{t+1} - B_t = rB_t + Y_t - C_t - G_t - I_t = CA_t \tag{2}$$

where C is private consumption, β is the discount factor, E is the expectations operator, B is the stock of foreign assets, and r is the fixed world interest rate. Y denotes real gross national income, G denotes exogenous government spending, and I denotes investment. CA represents current account balance. The utility function in (1) is a separable and quadratic utility function.

The solution for the optimal level of consumption is given by the following:

$$C_t = (1/\theta)\left[rB_t + r(1+r)^{-1} E_t \sum_{j=0}^{\infty} (1+r)^{-j} Z_{t+j} \right] \tag{3}$$

where $\theta = \dfrac{\beta r(1+r)}{\beta(1+r)^2 - 1}$ and $Z_t = Y_t - I_t - G_t$ denotes the net cash flows. Along the optimal path, consumption depends on the present discounted value of expected future stream of cash flows and the stock of assets at the time t.

The actual (or the consumption-smoothing) current account balance on a national income basis is defined by the following:

$$CA_t = Y_t - I_t - G_t - \theta C_t \tag{4}$$

where θ denotes domestic rate of time preference or consumption tilting trend in the current account. If θ = 1, world interest rate and domestic rate of time preference are equal and there is no consumption-tilting trend. If θ 〉 1, the country is tilting consumption toward the future. If θ 〈 1, the country is consuming more than its permanent cash flows, that is, it is tilting consumption toward the present.

Using (2) and (3), the optimal consumption-smoothing current account is given by:

$$CA_t^* = - \sum_{j=0}^{\infty} (1+r)^{-j} E_t \Delta Z_{t+j} \qquad (5)$$

Permanent shocks, which have no impact on expected changes in cash flows variable, will not affect the current account. Temporary adverse shocks to cash flows will influence the current account negatively as is seen from (5), and conversely in the opposite case.

The equation (5) should be estimated in order to identify the optimal consumption-smoothing current account. However, empirical estimation of equation (5) is problematic because it is necessary to know what information set agents use to form expectations of future cash flows. However, Campbell and Shiller (1987) and Gosh and Ostry (1995) suggest that the current account reflects all the information that is useful in forecasting future cash flows. Employing the methodology developed by Campbell and Shiller (1987) and Gosh and Ostry (1995), we have estimated a bivariate vector autoregression (VAR) of the following form:

$$\begin{bmatrix} \Delta Z_t \\ CA_t \end{bmatrix} = \begin{bmatrix} \psi_{11} & \psi_{12} \\ \psi_{21} & \psi_{22} \end{bmatrix} \begin{bmatrix} \Delta Z_{t-1} \\ CA_{t-1} \end{bmatrix} + \begin{bmatrix} \varepsilon_{1t} \\ \varepsilon_{2t} \end{bmatrix} \qquad (6)$$

The bivariate VAR expressed in (6) can be written in a more compact form.

$$x_t = \Psi x_{t-1} + \varepsilon_t \qquad (7)$$

where the k-step expectation is $E_t(x_{t+k}) = \Psi^k x_t$. The optimal current account is therefore given by:

$$CA_t^* = - [1 \;\; 0] [(1+r)^{-1}\psi] [I - (1+r)^{-1}\psi]^{-1} \begin{bmatrix} \Delta Z_t \\ CA_t \end{bmatrix} \qquad (8)$$

$$= [\phi \Delta Z_t \quad \phi \Delta CA_t] \begin{bmatrix} \Delta Z_t \\ CA_t \end{bmatrix}$$

The optimal current account expressed above can be compared to the actual current account to evaluate whether external imbalances of a country are excessive.

All the variables in a VAR need to be stationary. However, the consumption-tilting component of the current account is nonstationary if there is a divergence between world interest rate and the rate of time preference. Thus, the consumption-tilting component is removed from the series of the current account before estimating the VAR system.

Some alternative approaches relied on the concept of intertemporal solvency to test for the sustainability of external deficits. A large number of recent empirical studies have employed the modern time series techniques such as stationarity and cointegration to investigate intertemporal solvency condition (see, for example, Hakkio and Rush (1991) Husted (1992), Wu et al. (1996), Leachman and Francis (2000), Chortareas et al. (2004)). On the other hand, some other empirical studies used stationarity tests on current accounts to test the validity of intertemporal model of the current account implying that the series of current account should be stationary. Unit-root tests on current accounts were employed by some studies such as Otto (1992) and Wickens and Uctum (1993). While panel data unit-root tests were used by Wu (2000) to examine the stationarity of the current accounts, Chortareas et al. (2004) utilized non-linear stationarity tests for analyzing the sustainability of external imbalances.

There are some empirical studies investigating the external sustainability of Turkey. Kalyoncu (2005) explores the sustainability of current account of Turkey over the period $1987Q_1$-$2002Q_4$ by using an intertemporal borrowing constraint. He found a unique long-run relationship between real exports and imports by the use of cointegration methodology, indicating that the current account position of Turkey is sustainable over the period $1987Q_1$-$2002Q_4$. Binatlı and Sohrajbi (2008) found evidence for weak sustainability but reject strong sustainability of Turkey's current account position over the period 1992-2007 by employing the intertemporal solvency models of Hakkio and Rush (1991) and Husted (1992). They used Johansen (1988) and Gregory and Hansen (1996) cointegration tests to examine the long-run relationship between exports and imports in Turkey. On the other hand, the findings of Togan and Berument (2007) suggested that external position of Turkey was unsustainable in 2006 under some assumptions regarding the fundamental determinants of the Turkish current account.

The data used in this study are comprised of quarterly observations and taken from electronic data delivery system of the Central Bank of Turkey. It includes quarterly data on private consumption, government consumption, investment, GDP and GNP for the period $1987Q_1$-$2008Q_2$. All variables are expressed in real per

capita terms by dividing the nominal variables by the wholesale price index and the level of total population. Moreover, the quarterly data were seasonally adjusted by applying the method of Tramo-Seats.

The preliminary step in our empirical analysis is concerned with investigating the integration properties of the series. The results of ADF tests, reported in Table 1, indicate that private consumption, C, and net cash flows, Z, are non-stationary variables but their first differences are stationary. The consumption-smoothing current account, CA, is calculated by the use of equation 4.

Table 1. Unit Root Tests

Variables	ADF	Critical Value: (1% Level)	Critical Value: (5% Level)
C_t	-0.227646	-3.509281	-2.895924
Z_t	0.025105	-4.075340	-3.466248
ΔC_t	-8.736381	-3.511262	-2.896779
ΔZ_t	-10.01916	-3.511262	-2.896779

The long-run relationship between net cash flows and consumption was examined by the methodology of cointegration. The results of the estimation are summarized in Table 2. The use of Johansen (1988) cointegration tests indicates the existence of long-run relationship between net cash flows and consumption. Moreover, the test results obtained by the application of Engle and Granger (1987) methodology confirm the existence of cointegration by using the standard ADF test.

Table 2. Cointegration Test Results (Johansen's Procedure)

Coefficient ($\hat{\theta}$)	Standard Error	Hypothesized No. of CE(s)	Trace Statistic	Critical Value[1]	Maximal Eigenvalue	Critical Value[1]
0.9574	0.0133	none	17.799	12.320	13.427	11.225
		At most 1	4.3725	4.1299	4.3725	4.1299

Note: [1] indicates critical value at 5% level.

An estimate of the consumption-tilting coefficient ϕ is obtained by employing the maximum likelihood cointegration procedure of Johansen (1988). Over the period $1987Q_1$-$2008Q_2$, the estimate of ϕ assumes a value of -0.957, implying consumption tilting towards the current period. That result reveals that Turkey was consuming more than its permanent net output in the most of the years over the period $1987Q_1$-$2008Q_2$.

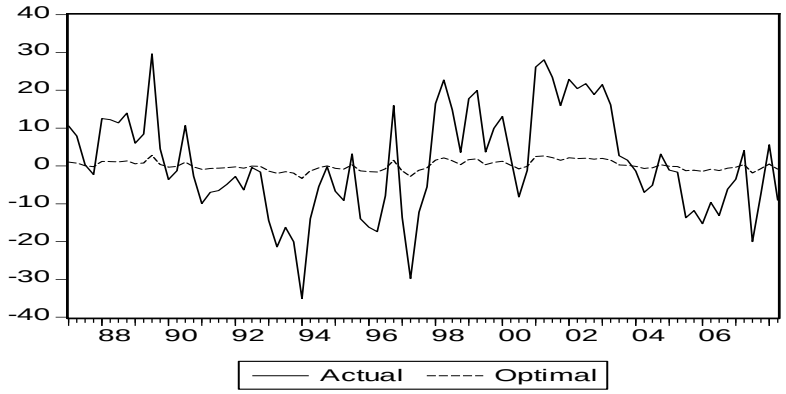
A summary of the VAR estimation is presented in Table 3. The lag length selected for the VAR system is based on Akaike Information Criterion (AIC), indicating that one lag is appropriate. Table 3 reports the estimated coefficients associated with variables (their respective standard errors in parantheses) in the VAR system and Granger causality tests.

Table 3. VAR Estimates and Granger Causality Tests

Variables	**ΔZ_t**	**CA_t**
ΔZ_{t-1}	-0.07004	0.05715
	(0.1083)	(0.0593)
CA_{t-1}	-0.39611	0.67094
	(0.1504)	(0.0823)
	F	P
CA_t does not Granger cause ΔZ_t	6.93	0.01
ΔZ_t does not Granger cause CA_t	0.92	0.34

The actual current account and estimates of optimal current account are portrayed in Figure 8. As it can be observed from the figure, the forecast of the optimal current account is able to track behavior of actual current account closely. However, a close inspection of the figure reveals that the actual current account deficits were excessive relative to the optimal current account balances in the periods preceding the three major currency crises in 1994, 2000 and 2001. On the other hand, there were wide gaps between optimal and current account balances over the period $2004Q_1$-$2008Q_2$, indicating that external deficits of Turkey were excessive in that period.

Figure 8. Turkey: Actual and Optimal Current Account Balances, 1987-2008 (Millions of Turkish Lira)



It is obvious from the graph that there are some other periods when the current account deficits were persistently excessive. However, excessive current account deficits (relative to optimal) did not inevitably lead to a currency crisis. Since it may be difficult to explain this issue sufficiently by using only the intertemporal model, this paper employs some critical macroeconomic indicators of current account sustainability to examine the external position of the Turkish economy over the period $1987Q_1$-$2008Q_2$.

Table 4. Wald Test Results

Wald Test Statistic	Value	Degree of Freedom	Probability
Chi-square	164.3060	2	0.0000

Finally, this paper provides a formal test for assessing the hypothesis that the actual current account series will be identically equal to the optimal series. Table 4 presents the results of the Wald test of the model. As is seen from Table 4, the null hypothesis that actual and optimal current account series are identical is rejected statistically. This result indicates that the current account position of Turkey was unsustainable over the period $1987Q_1$-$2008Q_2$.

The empirical methodology used in this paper to test for the sustainability of external position of Turkey is different from the previous studies such as Kalyoncu (2005), Binatlı and Sohrajbi (2008), and Togan and Berument (2007). Moreover, the

time period covered by Kalyoncu (2005) did not include the data after 2002. However, Binatlı and Sohrajbi (2008) found evidence in favor of weak sustainability of external imbalances and rejected the strong sustainability of the current account in Turkey over the period 1992-2007, and Togan and Berument (2007) conclude that the Turkish current account is unsustainable as of 2006. Thus, the empirical results portrayed in this paper show some similarities and differences compared to previous empirical studies.

4. Summary and Conclusion

The data for Turkey reveal that the external deficits reached to high levels preceding the three major financial crises in Turkey's recent history. Although Turkey experienced serious problems of external deficits in its recent past, the current account deficit to GDP ratio never exceeded the 5 percent of GDP before the post-2004 period. Starting 2004, Turkey entered a period of large external deficits and over-valuation of the national currency. The expanding current account deficits were mostly financed by short-term international financial inflows, external borrowing of the firms (excluding financial institutions), and privatization revenues.

On the other hand, the financial crisis in advanced economies has started to influence Turkish economy negatively since the third quarter of 2008. Due to a sharp decline in international capital inflows, Turkey has lacked sufficient access to external financing. Since economic growth is mostly dependent on international capital inflows, Turkey has suffered significantly in the rates of economic growth. Furthermore, one of the most important factors contributing to the external fragility of Turkey is the growing external debt stocks of private firms. A significant real depreciation of the national currency may lead to difficulties of payment for these firms because they have US dollar denominated debts and Turkish Lira denominated revenues. It is clear that the private firms may have potential difficulties to roll over their debts because of global deleveraging and international financial problems.

The present paper explores the sustainability of external position of Turkey by using the intertemporal approach to current account as well as some important macroeconomic indicators. The selected macroeconomic indicators of external sustainability are the exchange rate policy, large trade deficits and structural competitiveness problems, level of external debt stock, economic growth, sufficiency of foreign exchange reserves, and low rates of savings. The methodology for testing the sustainability of the current account balances within the framework of intertemporal approach is based on the comparison of a predicted (or optimal)

current account with the actual one in order to evaluate the excessiveness of current account deficits.

The empirical evidence presented in this paper indicates that current account deficits of Turkey were unsustainable over the period $1987Q_1$-$2008Q_2$. The test results of external sustainability within the framework of intertemporal model reveal that the actual current account deficits were excessive relative to the optimal current account balances over the period $2004Q_1$-$2008Q_2$. Furthermore, an analysis of some important macroeconomic indicators of external sustainability confirms the conclusion that the external deficits of Turkey were unsustainable over the same period. The unsustainable macroeconomic policy measures resulted in dramatic widening of external deficits, real appreciation of the national currency, growing external debts, low savings, and economic growth performance dependent on international capital inflows.

REFERENCES

Adedeji, O.S. (2001), "The Size and Sustainability of the Nigerian Current Account Deficits." *IMF Working Paper* No.01/87.

Aristovnik, A. (2006), "Current Account Sustainability in Selected Transition Countries." *William Davidson Institute Working Paper* No.844, University of Michigan.

Asikoglu, Y., and M.Uctum (1992), "A Critical Evaluation of Exchange Rate Policy in Turkey." *World Development* 20(10): 1501-14.

Atkeson, A., and J.V. Rios Rull (1996), "The Balance of Payments and Borrowing Constraints: An Alternative View of the Mexican Crisis." *Federal Reserve Bank of Minneapolis Staff Report*: 212.

Bergin, P.R., and S.M. Sheffrin (2000), "Interest Rates, Exchange Rates, Present Value Models of The Current Account." *Economic Journal* 110: 535-58.

Binatlı, A.O., and N. Sohrajbi (2008), "Intertemporal Solvency of Turkey's Current Account", *Working Papers in Economics*, No. 08/05, Izmir University of Economics

Callen, T., and P. Cashin (1999), "Assessing External Sustainability in India." *IMF Working Paper* WP/99/181, Washington: International Monetary Fund.

Calvo, G.A. (2000), "Balance of Payments Crises in Emerging Markets: Large Capital Inflows and Sovereign Governments." In Paul Krugman, ed., *Currency Crises*, The University of Chicago Press.

Calvo, G.A., A. Izquierdo, and L.F. Mejia (2004), "On the Empirics of Sudden Stops: The Relevance of Balance-Sheet Effects." *NBER Working Paper* No.10520.

Campbell, J.Y., and R.Shiller (1987), "Cointegration and Tests of Present Value Models." *Journal of Political Economy* 93: 1962-88.

Cashin, P., and C.J. McDermott (1996), "Are Australia's Current Account Deficits Excessive?." *IMF Working Paper* No.96/85.

Chang, R., and A. Velasco (2000), "Exchange Rate Policy for Developing Countries." *American Economic Review*, 90(2).

Chortareas, E.G., G. Kapetanios, and M.Uçtum (2004), "An Investigation of Current Account Solvency in Latin America Using Non Linear Nonstaionary Tests", *Studies in Nonlinear Dynamics & Econometrics*, 8(1).

Corsetti, G., P. Pesenti, and, N. Roubini (1998), "Paper Tigers ? A Model of the Asian Crisis" *Paper presented at the NBER* – Bank of Portugal International Seminar in Macroeconomics, Lisbon, 14-15 June.

Engle, R.F., and C.W.G. Granger (1987), "Co-integration and Error Correction Representation, Estimation and Testing." *Econometrica* 55: 251-76.

Ertugrul, A., and F. Selcuk (2001), "A Brief History of The Turkish Economy, 1990-2000." *Russian and East European Finance and Trade* 10(37): 6-28.

Edwards, S. (2001), "Does the Current Account Matter ?." *NBER Working Paper* No. 8275.

Edwards, S. (2004), "Thirty Years of Current Account Imbalances, Current Account Reversals and Sudden Stops." *International Monetary Fund Staff Papers* 51(4): 1-49.

Edwards, S. (2005), "Is the U.S. Current Account Deficit Sustainable ? And If Not, How Costly Is Adjustment Likely to Be ?.", *Brookings Papers on Economic Activity* 0(1): 211-288.

Edwards, S. (2006), "The U.S. Current Account Deficit: Gradual Correction or Abrupt Adjustment ?." *Journal of Policy Modeling* 28: 629-643.

Frankel, J.A., and Cavallo, E.A. (2004), "Does Openness to Trade Make Countries More Vulnerable to Sudden Stops, or Less ? Using Gravity to Establish Causality." *NBER Working Paper* No.10957.

Frankel, J.A., and Rose, A.K. (1996), "Currency Crashes in Emerging Markets: An Empirical Treatment" *Journal of International Economics* 41(3-4): 351-366.

Granger, C.W.J. (1969), "Investigating Casual Relations by Econometric Models and Cross-Spectral Methods." *Econometrica* 37: 424-438.

Gosh, A.R., and Ostry, J.D. (1995), "The Current Account in Developing Countries: A Perspective From The Consumption-Smoothing Approach." *The World Bank Economic Review* 9: 305-33.

Hakkio, C. J. and M. Rush (1991), "Is the Budget Deficit Too Large?", *Economic Inquiry*, 429-445.

Husted, S. (1992), "The Emerging US Current Account Deficit in the 1980s: A Cointegration Analysis", Review of Economics and Statistics, 74, 159-166.

International Monetary Fund. 2007. "Turkey: Selected Issues Prepared By K.Fletcher, C. Keller, P. K. Brooks, D. Lombardo, A. Meier" *IMF Country Report* No.07/364 (Chapter II), Washington, D. C.

Johansen, S. 1988. "Statistical Analysis of Cointegration Vectors." *Journal of Economic Dynamics and Control* 12(2-3): 231-54.

Kalyoncu, H. (2005), "Sustainability of Current Account for Turkey: Intertemporal Solvency Approach", *Praque Economic Papers*, 1(14): 82-88.

Kamin, S.B., J.W. Schindler, and, S.L.Shawna (2001), "The Contribution of Domestic and External Factors to Emerging Market Devaluation Crisis: An Early Warning System Approach." *FBR International Finance Discussion Paper* No.711.

Leachman, L. L. and B. B. Francis (2000), "Multicointegration Analysis of the Sustainability of Foreign Debt", *Journal of Macroeconomics*, 22(2), 207-227.

Milesi-Ferretti, G.M., and A. Razin. (1996a), "Current Account Sustainability." *Princeton Studies in International Finance* No.81, International Finance Section, Princeton, New Jersey.

Milesi-Ferretti, G.M., and A. Razin. (1996b), "Current Account Sustainability – Selected East Asian and Latin American Experiences." *IMF Working Paper* No.96/110.

Obstfeld, M,. and K. Rogoff (1995), "The Intertemporal Approach To The Current Account." in *Handbook of International Economics*, 3, ed. by G. Grossman and K. Rogoff (Amsterdam: North Holland), 1731-99.

Obstfeld, M., and K. Rogoff (1996), Foundations of International Macroeconomics, (Cambridge, Massachusetts: MIT Press).

Onaran, O. (2006), "Speculation-Led Growth and Fragility in Turkey: Does EU Makes a Difference or (Can It Happen Again ?)" *Working Paper Series* No.93, Vienna University of Economics and B. A.

Ostry, J.D. (1997), "Current Account Imbalances in ASEAN Countries: Are They A Problem?." *IMF Working Paper* No.01/87.

Otto, G. (1992), "Testing a Present Value Model of the Current Account: Evidence from US and Canadian Time Series", *Journal of International Money and Finance*, 11, 414-430.

Pamukcu, T., and E. Yeldan (2005), "Macroeconomic Policy and Recent Economic Performance." *Unpublished Manuscript*.

Prasad, E., R. Rajan, and A. Subramanian (2006), "Foreign Capital and Economic Growth." *Unpublished*; Washington: IMF.

Radalet, S. and J. Sachs (2000), "The Onset of the East Asian Financial Crisis." In P. Krugman (ed.), *Currency Crises*, University of Chicago Press.

Rodrik, D., and A. Velasco (1999), "Short Term Capital Flows." *Proceedings of the Annual World Bank Conference on Development Economics* 59-90, Washington, D. C.: The World Bank.

Togan, S., and H. Berument (2007), "The Turkish Current Account, Real Exchange Rate and Sustainability: A Methodological Framework", *The Journal of International Trade and Diplomacy*, 1(1), 155-192.

Voyvoda, E., and E. Yeldan (2006), "Macroeconomics of Twin-Targeting in Turkey: A General Equilibrium Analysis." *Unpublished Manuscript*.

Wickens, M.R., and M. Uçtum (1993), "The Sustainability of Current Account Deficits: A Test of the US Intertemporal Budget Constraint", *Journal of Economic Dynamics and Control*, 17, 423-441.

Wu, J. L. (2000), "Mean Reversion of the Current Account: Evidence from Panel Data Unit-Root Test", *Economic Letters*, 66: 215-222.

Wu, J. L., S. Fountas, and S. L. Chen (1996), "Testing for the Sustainability of Current Account Deficit in Two Industrial Countries", *Economics Letters*, 66:215-222.