

CONTENTS

	Page
Abstracts	1
I. Introduction	2
II. Devaluations and Budget Deficits in the Turkish Economy	3
III. The Impact of Devaluations on Growth in the Turkish Economy	4
IV. Devaluations, Turkish Foreign trade and the Marshall-Lerner Condition	6
V. Turkish Economy and the Monetary Approach to the Balance of Payments	7
VI. Model	10
A- Model Definition	10
B- The Relationship Between Devaluation and Budget Deficit	11
C- The Relationship Between Devaluation and Growth Rate	12
D- The Relationship Between Devaluation and Foreign Trade Deficit	14
E- The Relationship Between Money Supply and Current Account Balance	15
VII. Conclusion	16
- References	17

I- INTRODUCTION

A country's trade deficit grows large, questions arise as to how large it can get, how long it can persist, and what forces might either stabilize it or cause it to shrink. Turkish trade deficit and the country's economic position should be sustainable which requires some preliminary analytical and empirical groundwork. "Sustainable" means a stable state or a stable path where trade balance generates no economic forces of its own to change its trajectory. A sustainable trade balance is one in which the feedback relationships between the external balance and exchange rates and interest rates are relatively weak in comparison to other macroeconomic forces. Therefore, the economic growth, export levels and their elasticities play an important role for the economic performances of the countries. In addition, devaluations, monetary and fiscal policies also have some impacts on Turkish foreign trade.

Being a small country case, Turkish trade deficit structurally became a major concern for the availability of the foreign currency in the country. In the last decade, Turkish economy had been affected by various domestic and international crises. The effect of these developments in Turkish economy is a decrease in production but better balance of payments due to the devaluations and a decline in the imports. It has been argued that the trade deficits and balance of payments have a major impact on economic growth. Therefore it is needed to have a sustainable trade deficit to continue with positive growth rates.

The causes of driving the budget deficits in the Turkish economy are going to be examined in the second section. In this part, whether devaluations play an important role on budget deficits is examined.

The third part of the study is about the crisis which Turkish economy faced in 1994 and 2001. The impact of the devaluations on economic growth will be analyzed. In the fourth section, Turkish economy's deficits' sensibility to devaluation and also its dynamics to grow will be analyzed according to the Marshall-Lerner condition.

The fifth section is on the role of monetary approach to the balance of payments. The monetary approach can be illustrated through Polak model linking the balance of payments to developments in the money market. By applying this model, IMF aims to tight the demand in the countries, which have balance of payments problems. The annual money supply growth (M2) effect is tested against balance of payments. After the sectional definitions, the econometric model is analyzed at the sixth section. The last part is the conclusions.

The study examines the results of devaluations on budget, trade and GNP growth. In addition, money supply growth rates are regressed on imports and GNP growth. The positive results show that the sustainable trade deficit is needed for growth in Turkish economy. In the regressions, annual sets of observations are taken from 1984 to 2001.

II- DEVALUATIONS AND BUDGET DEFICITS IN THE TURKISH ECONOMY

The post-1988 period of Turkish economy exhibited a drastic deterioration on its fiscal balances. Budget deficits and Public Sector Borrowing Requirement of the economy that can be shown by PSBR and its ratio to GDP (PSBR/GDP), supplied an increasing appearance continuously. PSBR/GDP ratios averaged 4.5 percent during 1981-1988, but rose 10.2 percent in 1991, and averaged 9.4 percent over 1990-1999. At the end of the 2000-year this ratio reached to 15.1.

The necessity of sustaining these fiscal imbalances by attracting speculative short-term funds requires very high real rates of interest, since the desire of the hot money's entry into the country causes the devaluation risk. In addition, this situation results the appreciation of the national currency and leads the foreign trade deficits to increase. Furthermore, the growth dynamics of the economy surge the dependency to the import demand. In the second stage, devaluations take place to decrease the trade deficits. Therefore, the impact of devaluations on the budget deficits need to be analyzed.

III- THE IMPACT OF DEVALUATIONS ON GROWTH IN THE TURKISH ECONOMY

Turkey experienced large and growing fiscal and external imbalances following the capital account liberalization in 1989, until the first quarter of 1994, and during that period the real exchange rate appreciation was no less than 20 %. Against this background of rising and very high Public Sector Borrowing Requirement (PSBR), about 10 and 12 % in 1992 and 1993 respectively, there were remarkable policy mistakes committed on the monetary front. Towards lowering the very high levels of domestic public debt stock through cutting interest rates on treasury bills, there was a shift towards deficit financing through monetization beginning in the last months of 1993. Several auctions of short-term maturity treasury bills were canceled one after another and the Treasury started to rely on cash advances from the Central Bank instead. Still, the announced government budget for 1994 did not contain any measures towards tightening. While these caused increasing levels of anxiety in the financial sector, Turkey's credit rating was downgraded by some major international agencies. The commercial banks that had engaged in heavy offshore borrowing in 1992-93 and held mainly TL denominated assets, hastened the process of acquiring foreign currency to close their open foreign currency positions and there was some capital flight.⁽¹⁾

The Central Bank, aiming to defend the currency and to contain the loss of foreign currency reserves, started to heavily intervene in the interbank market and raised the overnight rate to record levels. Yet, the Central Bank still went on losing reserves-selling foreign currency to the commercial banks, and the commercial banks which were able to buy foreign currency from the Central Bank at relatively inexpensive rates started to lose their own reserves as residents started to withdraw their foreign excessive creation of domestic credit to the public sector in the form of cash advances to the Treasury by the Central Bank, and the decline in total foreign exchange reserves in the first quarter of 1994 finally had its impact on the parity: from about 15,000 TL/\$ in January 1994, the parity more than doubled to 35,000 TL/\$ by the first days of April 1994.⁽²⁾

⁽¹⁾ According to Boratav and Yeldan, the net reversal of both non-resident and resident flows in 1994 compared with the 1993, was -12,8 billion dollars. (Turkey, 1980-2000: Financial Liberalization, Macroeconomic (In)-Stability, and Patterns of Distribution, December 2001)

⁽²⁾ Celasun O. , The 1994 Currency Crisis in Turkey, World Bank Discussion Paper.

In 1993, just before the outbreak of the financial crisis, the export/import ratio dropped to 53 percent; the current account deficit widened and reached 6,4 billion US \$. While the foreign trade deficit was – 14,160 million US \$ at the end of 1993, after the large devaluation, the deficit was closed on the early months, but it was seen that at the end of 1994 the result had showed a negative value, - 4,216 million US \$.

The second crisis in Turkey took place after 1999. In December 1999, the Turkish government launched an exchange rate-based stabilization program with the support of IMF in order to bring down inflation and check what looked like an unsustainable process of public debt accumulation. The Program limited the monetary expansion to changes in the net foreign asset position of the Central Bank, and fixed the Bank's stock of net domestic assets at its December 1999 level. Within this mechanism the monetary policy is restricted to the direction of the foreign exchange flows.⁽³⁾

The fact that the expansion of the monetary base was ultimately linked to the foreign exchange inflows indicated that the Central Bank was committed to the strict rule of non-sterilization throughout the program. In this manner, it was expected that the liquidity available in the domestic economy would be managed by the interest signals in smoothly operating financial markets; rising domestic interest rates would invite foreign inflows allowing for monetary expansion. Excess liquidity, in turn would be signaled through lower rates of interest, letting foreign capital outflows to bounce once again the equilibrium level of liquidity in the domestic financial markets.

The strategy of “public sector deficit financing based on short-term foreign borrowing” led the banking system to be more vulnerable against the foreign exchange and interest risks. Increasingly unhinged risk-taking behavior, coupled with a remarkable build-up of the short positions in foreign currency in the banking sector, raised serious doubts about the sustainability of the short-term capital inflow-based public debt management policies. The ratio of the short-term foreign debt to The Central Bank's international reserves rose secularly throughout the program. It could be argued that the value of 60 percent for this ratio is

⁽³⁾ Akyüz Y., Boratav K., The Making of the Turkish Financial Crisis.

considered as a critical threshold. During the implementation of the disinflation program this ratio rose up to 112 percent in June 2000, and to 147 percent by December 2000.⁽⁴⁾

Thus, the implementation of the Program itself increased the financial fragility of the domestic asset market. The combined effect of the deficit financing policy with its liquidity creating mechanism allowing no-sterilization, had induced many commercial banks to shift their asset management policies towards bond financing activities.⁽⁵⁾

The public disclosure of a political dispute between the Prime Minister and the President of the Republic on February 19, 2001 badly hit the uneasy markets. The Central Bank was forced to sell a large portion of its foreign reserves in an attempt to support the national currency as the short-term interest rates rocketed to above 5,000 percent. Finally, the government could not endure the pressures of the markets any further, and declared the surrender of the pegged exchange rate system on February 22, thereby letting the exchange rates to free float. The direct effect of the crises in Turkish economy causes the growth rates to decline substantially. Although the devaluations are large, their impact on the growth is reverse.

IV- DEVALUATIONS, TURKISH FOREIGN TRADE AND THE MARSHALL-LERNER CONDITION

The Marshall-Lerner condition states that, all else equal, a real depreciation improves the current account if export and import volumes are sufficiently elastic with respect to the real exchange rate.

This condition can be shown like that:

$$e_x + e_m > 1$$

and it explains, if the current account is initially zero, a real currency depreciation causes a current account surplus if the sum of the relative price elasticities of export and import demand exceeds 1.

⁽⁴⁾Boratav K., Yeldan E., Turkey 1980-2000 Financial Liberalization, Macroeconomic (In)-Stability, and Patterns of Distribution, December 2001.

⁽⁵⁾Ertuğrul A., Yeldan E., On the Structural Weaknesses of the Post-1999 Turkish Dis-Inflation Program.

It is expected that the Turkish export and import elasticities of different items does not satisfy the Marshall-Lerner condition. Therefore, Turkey does not generate required amount of foreign currency and this leads to the foreign trade deficits. This structural fact concludes that the devaluations do not cause the trade deficits to balance.

V-) TURKISH ECONOMY AND THE MONETARY APPROACH TO THE BALANCE OF PAYMENTS

The close link between a country's balance of payments and its money supply suggests that fluctuations in central bank reserves can be thought of as the result of changes in the money market. This method of analyzing the balance of payments is called the monetary approach to the balance of payments. The monetary approach was developed in the 1950's by the International Monetary Fund's research department under Jacques Polak, Harry Johnson and Robert Mundell⁽⁶⁾.

This approach can be illustrated through a simple model linking the balance of payments to developments in the money market. To begin, the money market's equilibrium that means real money supply equals real money demand, that is, when

$$M_s / P = L (R, Y) \quad (i)$$

Now let F^* denote the central bank's foreign assets (measured in domestic currency) and A its domestic assets (domestic credit). If δ is the money multiplier that defines the relation between total central bank assets ($F^* + A$) and the money supply, then

$$M_s = \delta (F^* + A) \quad (ii)$$

The change in central bank foreign assets over any time period, ΔF^* , equals the balance of payments. By combining (i) and (ii), we can express the central bank's foreign assets as

$$F^* = (1/\delta) P.L (R, Y) - A$$

If we assume that δ is a constant, the balance of payments surplus is

$$\Delta F^* = (1/\delta) \Delta [P.L (R, Y)] - \Delta A \quad (iii)$$

⁽⁶⁾ Krugman P., Obstfeld M., International Economics, 1997, p.527-528

The last equation summarizes the monetary approach. The first term on its right-hand side reflects changes in nominal money demand and tells us that, all else equal, an increase in money demand will bring about a balance of payments surplus and an accompanying increase in the money supply that maintains money market equilibrium. The second term in the balance of payments equation reflects supply factors in the money market. An increase in domestic credit raises money supply relative to money demand, all else equal; so the balance of payments must go into deficit to reduce the money supply and restore money market equilibrium.

An important contribution of the monetary approach is to stress that in many situations, balance of payments problems result directly from imbalances in the money market, and a policy solution that relies on monetary policy is therefore most appropriate. According to this approach, a large balance of payments deficit may be the result of excessive domestic credit creation.

This approach is an important tool for International Monetary Fund (IMF) while observing the countries, which have trade imbalances. By applying this model, IMF aims to tight the demand in such countries. The central banks of these countries are forced by IMF to restrict domestic assets (credit) and so it is seen that while their imports start to decrease, also a similar results occurs on the growth rate of these economies.

Paul Krugman states that, there are many realistic cases in which a balance of payments analysis based on the monetary approach is roundabout and possibly misleading as a guide to policy. For example, if a temporary fall in foreign demand for domestic products occurs, this change will cause a fall in the current account and in the balance of payments. Therefore, Krugman offers that these effects can be counteracted by a temporarily expansionary fiscal policy. Because output and thus money demand fall, the monetary approach also predicts that a balance of payments deficit will result from a fall in export demand. Krugman thinks that it would be wrong, however, for policy makers to conclude that because the balance of payments deficit is associated with a fall in money demand, a contraction of domestic credit is the best response. Such a policy application for improving the balance of payments, might rise the unemployment.

If we return to the beginning of the monetary approach, according to the first equation (i),

$$M_s / P = L (R, Y)$$

IMF encourages the countries, which have trade imbalances to increase their output by increasing their exports. Here the episode, which provides this stage is devaluation. By making devaluation, the export and the total output of such a country due to Marshall-Lerner condition, will increase. At this stage, IMF accepts that the real interest rates are constant and an increase on the level of income brings an upward movement on the level of the money supply, which is on the foreign currency basis. Due to Turkish economy's structure, however, Marshall-Lerner conditions cannot be satisfied. This fact leads to the conclusion that total export income cannot be reached at desired level.

At the second stage, devaluation decreases the level of real money supply on the foreign currency basis. Therefore domestic demand lessens. Krugman argues that an expansionary fiscal policy increases domestic credit demand. In Turkish case domestic credit level is limited due to the IMF conditionality on commercial banks' credit ceilings. It is also known that Turkish domestic currency is not convertible in real terms and low rating of Turkish economy is another problem to raise the loan from international sources. Therefore Krugman's argument is not valid for Turkey, especially during the crisis periods.

IMF's target of achieving excess of the non-interest income is another factor to decrease the effectiveness of the expansionary fiscal policy.

Turkish economy's lender of last resort is IMF during the crisis periods. This fact puts an obstacle on the Central Bank's policy of decline on real interest rate since the Bank has a limited quantity of foreign currency to act as a market maker at interbank market. As a result, the policies should work together to increase the Turkish economy's rating. This causes to have the sustainability of Turkish trade deficit which is achieved at an accepted devaluation margin.

VI- MODEL

A-) MODEL DEFINITION

It is assumed that the series in the study are stationary and depend on the time series. Otherwise, the conventional hypothesis-testing procedure that contains t and F tests is based on the regression models cannot be applied. Therefore, Dickey-Fuller and Augmented Dickey-Fuller tests' results are used to test if the series are item root or not, while observing the all time series are stationary or not, by using graphical method. The results of these tests can be seen at Table I.

Table I

Variable	Ljung-Box Test (LB)	Augmented Dickey-Fuller Test
Budget Deficit	24.54	11.9469
Growth Rate	13.63	-3.1542
Devaluation	41.91	-1.83
Import	102.22	-2.3427
Current Account Balance	18.16	-5.8959
Money Supply (M 1)	35	1.0552
Money Supply (M 2)	35.72	2.3915
Export	105.65	-2.6913
Foreign Trade Deficit	108.42	-2.2759
Mac Kinon critical values		%1 -4.67 %5 -3.73 %10 -3.30

At Table I , LB and ADF tests imply that budget deficit and current account balance are stationary and the mentioned values become stationary at I (0), the other at I (-1). (Here I(-1) shows the previous period and I(0) shows the current period)

Denoting the regression equation's reality by using the time series which depend on two-variable, it is possible to make a cointegration test. According to Engle-Granger test, if the error terms which found by applying OLS are stationary, the related series are accepted as cointegrated and have a long-run relationship with each other. Otherwise, it can be argued that there is no relationship between the series in the long- run.

B-) THE RELATIONSHIP BETWEEN DEVALUATION AND BUDGET DEFICIT

When we test the item-root test of error terms that found with OLS between devaluation and budget deficits for the period 1984-2001, the ADF Test statistic is -2.5428 and Mac Kinnon critical values for in order 1 %, 5 % and 10 % are -5.4301 , -4.4285 and -3.9618 .

$$D_{et} = -0.61644 e_{t-1}$$

$$(-2.5427)$$

$$r^2 = 0.316 \quad DW = 1.98$$

The absolute value of t-statistic is smaller than the absolute values of Mac Kinnon critical values. It is argued that e_t series is not stationary because of the item-root. There is not cointegration in the devaluation and budget deficit series; and t and F tests cannot be applied on the coefficients of the regression model. For the stationarity of e_t series, by taking the second differences, the ADF statistic test result is found as -5.4030 and Mac Kinnon critical values for 1 %, 5 % and 10 % are -4.73 , -3.7754 and -3.34 . Therefore e_t 's are stationarity. This concludes that, devaluation and budget deficits are cointegrated for I (-2) and Sagan's Error Correction Mechanism is applicable to the model.

$D2 \text{ Devaluation} = a_0 + a_1 D2 \text{ Budget Deficit} + a_2 e_{t-1} + v_t$. In this equation, when D2 shows the second differences, e_{t-1} symbolizes the coefficient terms of regression that found from the devaluation and budget deficit's original series.

Table II

Dependent Variable: D2DVR						
Explanatory Variable	Coefficients	Standard Error	t statistics	R ²	D-W	F
Constant	-0.0341588	0.2468	0.822	0.24	2.34	2.16
D2Budget Deficit	0.00000072	0.000000087	0.822			
e_{t-1}	-0.4197	0.28	-1.688			

Table II shows that, the change in devaluation is connected to the change in budget deficit and previous period's balancing error with regression equation. In this regression, while D2 devaluation catches up the effects of short-run error items of the budget deficit, the error correction item e_{t-1} does the same applications through the long-run equilibrium.

As a result, devaluation cannot correct the disequilibrium of the previous year. The important point at this stage is the low number of the observation, which causes the discussable t-statistics. Therefore, prudent comments about this result might exhibit a better approach.

C-) THE RELATIONSHIP BETWEEN DEVALUATION AND GROWTH RATE

When the stationarity test between devaluation and growth rate is done, ADF test shows that the devaluation series at first difference value I(-1) and growth rate series at I(0) is positive. The main requirement of cointegration is to be stationary at same degree. For this reason, it is impossible to apply the cointegration test. As a result, the cointegration of growth rate's effect on devaluation could not be achieved. Researching the relationship between two variables, VAR (Vector Autoregression) model is used. In this model, all variables tied its own lag values and the other variables cannot be separated as endogenous or exogenous. The important point in this model is to denote the lag length. When the required tests applied to data from the first degree of lag, the following results are shown at Tables III and IV.

Table III

Dependent Variable : DVR						
Explanatory variable	Coefficients	Standart Error	t statistics	R ²	D-W	F
Constant	1.47014	0.8324	1.76	0.77	1.47	23.64
GR (-1)	0.08091	0.02670	3.031			
DVR(-1)	0.7187	0.11527	6.235			

Table IV

Dependent Variable : GR						
Explanatory variable	Coefficients	Standart Error	t statistics	R ²	D-W	F
Constant	-0.4727	9.2576	0.02	0.15	1.83	1.237
GR (-1)	-0.33038	0.297	-1.112			
DVR (-1)	1.3875	1.28	1.08			

These tables show that F statistics is meaningful to take the devaluation as the dependent variable. The Marshall-Lerner condition and the results of monetary approach, however, suggest that devaluation leads the economy to grow. In our model, the econometric results do not have the parallel results with the theory. On the contrary, the causality principle tests give a reasonable explanation.

Since it is hard to comment the model's coefficient one by one, we estimate the Function of Response to the Impulse. One point increase in standard error variation on the previous year's devaluation increases the currency year's devaluation by 0.47 point. Similarly, one standard error variation increases the currency year's growth by 4.96 point. The variance decomposition tables, which are accounted from an estimated lag VAR model error terms at Table V, define the effect of each shock.

Table V (The Variance Decomposition of Devaluation and Growth Rate)

Years	Variance Decomposition for Devaluation		Variance Decomposition for Growth Rate	
	Devaluation	Growth Rate	Devaluation	Growth Rate
1	100	0.00	29.38	70.616
2	63.28	36.717	30.75	69.24
3	64.19	35.80	30.60	69.39
4	62.299	37.70	30.67	69.324

It can be seen that the effect of growth rate to the existence of devaluation is very low when the Table V is analyzed. The effect of growth rate on devaluation has a 36 percent value from the second year. On the other hand, on the existence of growth rate, devaluation has an 29.38 percent impact.

D-) THE RELATIONSHIP BETWEEN DEVALUATION AND FOREIGN TRADE DEFICIT

Devaluation at I (-1) and trade deficit at I(0) is stationary . Therefore it is difficult to make a cointegration analysis and VAR model is used in the analysis. If we define the lag length as 2, the model is expressed at Tables VI and VII.

Table VI

Dependent Variable: : Devaluation						
Explanatory Variable	Coefficients	Standart Error	t statistics	R ²	D-W	F
Constant	2.2221	1.976	1.12	0.65	1.67	5.190
<i>DVR(-1)</i>	1.0039	0.328	3.06			
<i>DVR(-2)</i>	-0.319	0.303	-1.05			
<i>X-M(-1)</i>	3.970E-06	2.664E-06	1.49			
<i>X-M(-2)</i>	-4.568E-06	2.753E-06	-1.66			

Table VII

Dependent Variable: Growth Rate						
Explanatory Variable	Coefficients	Standart Error	t statistics	R ²	D-W	F
Constant	116128.91	281899.44	0.41	0.87533	1.96	19.30
<i>DVR(-1)</i>	-3582.60	46800.88	-0.076			
<i>DVR(-2)</i>	-2018.58	43320.83	-0.047			
<i>X-M(-1)</i>	0.746	0.38	1.963			
<i>X-M(-2)</i>	0.18056	0.3926	0.45989			

Table VI shows that the coefficients of the other variables except DVR (-1) are meaningless. Multiple linear connection can be shown as the reason of this situation. It can be seen that the F statistics is meaningless when the Table VII is analyzed. Multiple linear connection can explain this result. Therefore, the most important element, which implies devaluation is its previous lag variable. This factor is estimated by OLS at Table VIII.

Table VIII

Dependent Variable: Devaluation						
Explanatory Variable	Coefficients	Standard Error	t statistics	R ²	D-W	F
Constant	1.90	1.0191	1.86	0.62	1.83	24.51
<i>DVR(-1)</i>	0.7093	0.143	4.95			

Table VIII explains that, 1 point increase in the previous year's devaluation increases the currency year's devaluation by 0.70 point.

E-) THE RELATIONSHIP BETWEEN MONEY SUPPLY (M₂) AND CURRENT ACCOUNT BALANCE

Table IX

Dependent Variable: M ₂ (Money Supply)						
Explanatory Variable	Coefficients	Standard Error	t statistics	R ²	D-W	F
Constant	1591629.5	6239205.9	0.255	098	2.238	271.3
ODG (-1)	- 20.71	199.13	- 0.103			
ODG (-2)	- 267.36	198.75	- 1.345			
PM ₂ (-1)	+ 1.804	0.3229	5.58			
PM (-2)	- 0.502	0.533	- 0.9429			

VAR model on M₂ and current account balance is applied, and M₂ is accepted as dependent variable. (Table IX). In this model, F statistics is meaningful. When t statistics on the coefficients of variables are analyzed it can be concluded that all variables, except M₂ (-1), are meaningless.

Due to this result, it can be stated that there is a multiple linear correlation in the model. This fact shows that the money supply of the previous year affects same item of the current year.

VII- CONCLUSION

Turkish trade deficit is one of the important element in evaluating the economic performance of the country. Although there are many factors influencing the trade structure, budget deficits, growth rate and money supply are the major concern. Devaluations are the most important balancing item to achieve the sustainable trade deficit.

The application of the model implies that there is no acceptable relationship between the budget and trade deficits. We can argue that devaluation and growth rates are tied together including the previous year's effect. In addition devaluation has a major impact on trade deficit. This shows that Turkish trade is strongly improved since devaluation is seen as a promoting factor for the exports. On the contrary, money supply and current account balance does not provide any correlation. This is due to the fact that Turkish currency is not convertible in real sense opposite to the Polak Model. The same argument is true for the money supply and trade balances.

The sustainable trade deficit is needed to continue with an accepted growth. Since Turkish economy's performance can be corrected with some degree through devaluations, its impact on growth and trade deficit is vital. This argument is approved by the Model results. In addition, the adaptation of the financial sector through interest rate and regulation effects is needed for further research.

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