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## Interaction of Monetary and Fiscal Policy in Case of Turkey

Zahoor Hussain Javed and Ahmet Sahinoz

Department of Economics, University of Hacettepe, Beytepe Campus, Ankara, Turkey

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**Abstract:** This study chalks out the emerging field of interaction of monetary and fiscal policy and the instruments which play vital role to shape it. It also shows empirical relationship between monetary and fiscal policy over period 1993-2002. Present analysis suggested that, the treasury and national authorities have conflicting incentives, targets and objectives, depending upon relative size of internal and external disturbances. Present results imply that if monetary authority wants to increase social welfare, then it may be necessary to endow the monetary authority with appropriate enforcement devices with respect to the fiscal policy's targets and preferences. Hence, present conclusion supports the idea that the setting of internal balance by fiscal authorities to be disciplined and in some instances possibly over ruled by monetary authority. In sum, actions of the Turkish monetary policy appear to have substantially been influenced by fiscal authorities and decisions of government of that time.

**Key words:** Monetary policy, fiscal policy, interaction of policies, Turkey

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### INTRODUCTION

There is extensive literature regarding the effects of interaction of monetary and fiscal policy on macroeconomic performance in the version of theoretical and empirical. The history of empirical tests of the effects one that began with the Friedman-Meiselman study for the commission on monetary and credit<sup>[1]</sup>. In subsequent study Anderson and Jordan<sup>[2]</sup> suggested that when changes in full-employment government expenditure, receipts and changes in money stock are regressed on change in GNP, the monetary policy variables are statistically significant; here as the fiscal policy variables are not. With in the Anderson and Jordan<sup>[2]</sup> frame work Friedman and Benjamin<sup>[3]</sup> obtained significant fiscal variables by changing the time period from the Anderson and Jordan<sup>[2]</sup> period 1953: 1-1959: 1V to 1959:1V-1976:11. Friedman and Benjamin<sup>[3]</sup> also showed additional improvement can be extending the four-quarter distributed fiscal lag to eight quarter. Oudiz and Sach<sup>[4]</sup> argued that gain from interaction depend on the size of spillovers and these in turn depend critically on the degree of integration in market. Buti *et al.*<sup>[5]</sup> point out that if the government, under cooperation policies only pursues cyclical stabilization, then, biases disappear and there are positive gains from interaction of the policies. Rogoof and Keanth<sup>[6]</sup> showed in the game of interaction that results depend on the size of economic distortions in a model. Beetsma and Bovenberg<sup>[7]</sup> analyze the case when both

monetary and fiscal authorities have conflicts to their policy targets and nominal wages are predetermined then there are no positive gains from coordination of policies. Chari and Kehoe<sup>[8]</sup> argued that the desirability of imposing fiscal constraint crucially depends on the ability of the single monetary authority to commit to its future policies.

It is concluded that interaction of monetary and fiscal policy leads to an outcome superior to the noncooperative solution. Several explanations has been offered for the lack of interaction of monetary and fiscal policies in real life despite this general conclusion. Frankel<sup>[9]</sup> pointed out the disagreement among empirical results of macroeconomic models as an important obstacle in front of achieving coordination.

### Modeling strategies for Turkish economy

**Bird's eye view of Turkish economy:** It is important to understand the socio-economic context in which monetary and fiscal policy are conducted in Turkey and to understand their vital role in the area of economy. Before dealing with the interaction of monetary and fiscal policy, we consider it necessary to review some features of Turkish Economy. Turkey is by any standard a big country and has dynamic population of 67 million. She enjoys a unique geographical location on world's map and is situated at the crossroads between Europe, the Middle East and Asia, thereby and has an advantage from the standpoint of trade, tourism and investment flow.

Over the period of under consideration, Turkey has had a turbulent political and economic history. The political situation in that period was highly volatile and culminated, consequently, experiencing six governmental changes over the period of 1995-2000 which not only made the country a unique case but also resulted the discoordination of monetary and fiscal policies, that is, to be unstable<sup>[10]</sup>. The Central Bank of Turkey is directly or indirectly run by the preferences and decisions of the government. By the reason, monetary and fiscal policies turned into opposite directions and cause the exchange rate unstability, national currency and balance of payments deteriorated by leaps and bounds. Therefore, the Government turned to the IMF for financial support and became regular and permanent customer of the IMF. Despite the deterioration of the financial balance, the rise in domestic debt stock due to the continuation of high level of real interest rate and exchange rate, the accelerating trend of inflation and economic contraction, the growth of economy is still strong and robust. Because, GDP of Turkish economy is still higher than OECD countries<sup>[11]</sup>. The earth quake of 1999 and in 2001, 9/11 attack on World Trade Centre in America, left negative effects on the stabilization of economy. In light of these features of the Turkish economy, it is reasonable to assume that the regression coefficient of interaction of monetary and fiscal policies process are time varying. Owing to these reasons, time varying parameter model is assumed to reflect political instability, poor coordination between monetary and fiscal policies and implementation of unsuccessful stabilization programmes.

**Short snapshot of the principle of effective market**

**classification:** Mundell's article does not present mathematical interpretation to the model of Effective Market Classification (EMC). It contains only a verbal description of behavioral relations and equilibrium; it does not provide an explicit expressions of lags, but the graphical interpretation of the model is dynamic<sup>[12]</sup>. The assumptions of the model are as follow: market expectations are not considered; domestic and foreign assets are perfect substitutes, that is, a risk premium is not considered; state budget deficits are not restricted by the amount of national debt and the balance of payments deficits are not restricted by the amount of the country's foreign debt; and the side of real economy is not developed in the model<sup>[13]</sup>.

According to our interpretation, an algebraic mechanism of the model in static form as follows:

The external balance in the model is represented by the overall balance of payments:

$$CAB+NFP = 0 \tag{1}$$

Where, CAB is the current account balance defined as net value of exports and imports, symbolically it is represented as,  $CAB = X_N - M_N$  current account deficit means an excess of the spending of residents over their income, while surplus means an excess of income over spending; NFP is net factor payments from abroad. The Turkey has many citizens working abroad and their remittances have played significant role in Turkish economy.

The internal balance is defined by following set of equation:

$$Y_N = I_N + C_N + G_N - M_N + X_N \tag{2}$$

Or

$$Y_N - I_N - C_N - G_N + M_N - X_N = 0 \tag{3}$$

$$Y_N - A_N - CAB = 0 \tag{4}$$

Where,  $Y_N$  is domestic output and  $A_N$  is domestic absorption, that is, combination of investment expenditures  $I_N$ , private consumption expenditures  $C_N$  and government expenditures  $G_N$ . Internal balance exists when aggregate demand, that is,  $AD = A_N - M_N$ , equal domestic product.

The formal notation of the functional relations that were used by R.A. Mundell can be written as follow:

$$\begin{aligned} MN &= f(A) \\ CAB &= g(INT - INTf) \\ A &= h(INT, DEFICIT) \end{aligned}$$

Where, INT is the domestic interest rate, INTf is the foreign interest rate, DEFICIT, that is, taxes minus government expenditures, is the balance of state budget. The volume of exports and imports are exogenous.

Building on the definition of Mudell model, we see the role of monetary and fiscal policy in the following graphical representation; in which, how the government can attain goals of internal balance and external balance through the exclusive use of monetary and fiscal policy where the internal balance (XX' curve) as depending on state budget, that is, fiscal policy and the external balance (MM' curve), the interest rate, that is, monetary policy. Finally, balance of payments equilibrium locus  $B = 0$ , which shows upward-sloping

In Fig. 1 if the economy lies at point A, for example, it would suffer balance of payments deficit and recession, then balance of payments deficit can be established either by fiscal expansion or by monetary

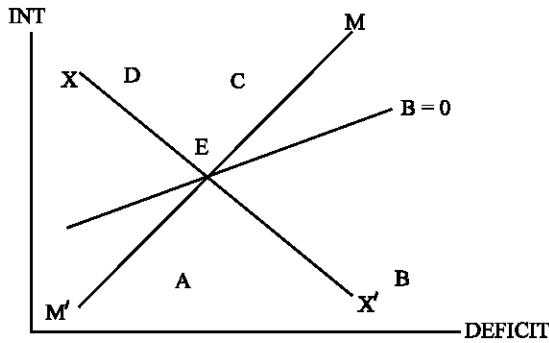


Fig. 1: Interaction of monetary and fiscal policies  
 XX = Function of internal balance  
 MM = Function of external balance

expansion, but if the tool of monetary policy is used to maintain the internal balance, the result would a large amount of deficit and thus consequently, payments deficit can be solved by expansionary fiscal policy, while, recession can be brought to equilibrium level by contractionary monetary policy. If the economy take place at point B, it would face balance of payments deficit and expansion. It is observed that, in this case, the equilibrium level of economy at point E, can be attained by fiscal and monetary expansion. Consequent, by alternating mechanism of monetary and fiscal policies (points C, D, A), it is possible to arrive at the point of overall economic balance. Clearly, the desired point in terms of the governments's goal is point E, where the both external and internal balances are obtained and an appropriate combination of mortary and fiscal policies is sufficient. So thus with help of above mechanism the economy can be brought at required level of equilibrium.

A simplified conclusion can be drawn from Mundells EMC model-equilibrium level of economic policy that can be established by an overall balance in the area of economy provided that: If economic growth in small open economies is dependent upon a high degree of monetary and fiscal policies coordination between central bank and governments. With respective to relative efficiency of the two tools, fiscal authority simply aims at stabilizing the internal balance, while monetary authority wants to maintain the external balance<sup>[14]</sup>.

**Use of the principal of effective market classification in the Turkish economy:** Having the factors determining equilibrium level of the internal balance and the external balance, we examined conditions and issues of Turkish economy and investigate how Mundell's EMC behaves in economic activities. Firstly, The definition of external balance in Mundell's model, that is, balance of payments allows unlimited foreign indebtedness if the current

account deficits were to be financed by foreign loans. Such a development is not sustainable for a closed small economy. The definition of external balance in terms of current account is not suitable for a transaction economy either, because the "chronic" inflow of foreign net factor payment is essential. By reason of these, in the case of Turkey, economy is analysed on the basis of current account balance and foreign net factor payments. Secondly, the model reflect that the fact the managed floating system is used to set the exchange rate of Lira. Another analysis of Mundell using the IS-LM-BP modell<sup>[15]</sup> demonstrated that the efficiency of monetary policy was considerably influenced by the adoption of a different exchange rate system.

In this model, we expect that the sensitivity of external balance effects domestic interest rate at large scale, therefore the expected efficiency of monetary policy is considered robust. Net factor payments from abroad not only has effect on domestic interest rate, but it also has effect on flow of capital and has positive sign on exports. An increase in the domestic interest rate, generating incipient capital inflows and the appreciation of national currency raises the exports. The effect on exchange rate is negative. The increase in out put raises the demand for goods, which weakens the exchange rate, but the higher real interest rate makes domestic assets more attractive, which strengthens the exchange rate. But we know that foreign net factor payments depreciate the value of exchange rate.

Summarization of these changes indicate that, as result of the modified external balance definition to  $CAB+NFP = 0$  and of a freely floating exchange rate, the slope of the external balance "curve" will change from that of Mundell's original model<sup>[16]</sup>. The  $MM'$  curve of external balance is steeper than the  $XX'$  curve of internal balance.

**Empirical verification of the alternatives models in case of the Turkish economy:** For empirical analysis, we use two alternatives models to obtain with net factor payments from abroad inflow to a small open economy.

**Model 1':** The model is based on internal and external balance as follow:

$$Y_N - A_N - CAB = 0$$

$$CAB + NFP = 0$$

The behaviour of the equations may be written as:

$$A_N = \alpha_0 + \alpha_1 DEFICIT + \alpha_2 INT + \alpha_3 M_1 + \alpha_4 REX + \alpha_5 GDP$$

$$CAB = \beta_0 + \beta_1 DEFICIT + \beta_2 INT + \beta_3 M_1 + \beta_4 REX + \beta_5 GDP$$

$$NFP = \eta_0 + \eta_1 M_1 + \eta_2 REX + \eta_3 U$$

$$REX = \epsilon_0 + \epsilon_1 INT$$

Where,  $\alpha_1, \alpha_2, \alpha_3, \beta_2, \beta_3, \eta_1, \eta_2, \epsilon_1 < 0$  and  $\alpha_4, \alpha_5, \beta_1, \beta_2, \beta_4, \beta_5, \eta_3, \eta_4 > 0$

And where INT is monthly real interest rate, that is, Central Bank offer rate, REX is a real exchange rate and GDP is real gross domestic product in Turkey.

The model 1 modified into model 2 for the following reason:

For the empirical estimation of the function of exports and imports separately and the net demand for domestic goods and services<sup>[16]</sup>.

**Model 2'**: We know that  $A_N = AD + M_N$ , where, AD is domestic demand for domestic goods and services. Symbolically, it can be written as,

$$AD = A_N - M_N$$

Thus the internal and external balance of the model is based on the following condition:

$$AD - A_N - M_N = 0 \text{ and } CAB + NFP = 0$$

The behaviour of the relevant equation may be written as:

$$\begin{aligned} AD &= \theta_0 + \theta_1 \text{ DEFICIT} + \theta_2 \text{ INT} + \theta_3 M_N + \theta_4 \text{ REX} + \theta_5 \text{ GDP} \\ X_N &= \Phi_0 + \Phi_1 \text{ REX} + \Phi_2 \text{ GDP} + \Phi_3 \text{ CAB} + \Phi_4 \text{ IM} \\ M_N &= \pi_0 + \pi_1 \text{ DEFICIT} + \pi_2 \text{ INT} + \pi_3 \text{ REX} + \pi_4 \text{ CA} \\ NFP &= \eta_0 + \eta_1 \text{ INT} + \eta_2 \text{ REX} + \eta_3 \text{ GDP} + \eta_4 \text{ U} \\ \text{REX} &= \epsilon_0 + \epsilon_1 \text{ INT} \end{aligned}$$

Where,  $\theta_1, \theta_2, \theta_3, \theta_4, \Phi_1, \Phi_2, \pi_1, \pi_3, \pi_4 < 0$  and  $\pi_0, \theta_3, \theta_5, \Phi_0, \Phi_2, \Phi_3, \Phi_4, \pi_2 > 0$

Table 1 displays the results of the ADF unit root tests for all variables. For Turkish economy, absorption, aggregate demand, net factor payments from abroad, nominal interest rate, investment, out put, real interest rate and inflation are stationary at level, integrated of order zero. External balance, net factor payments from abroad, GDP, imports, money supply, out put, real interest rate real exchange rate, tax, unemployment, inflation are stationary at first difference, i.e integrated of order one.

**Empirical estimation of models 1 and 2:** In a empirical analysis, we used secondary data from official sources; Institute of statical office of Turkey, the Central Bank of Turkey and Ministry of Planning and Development for the period from 1993 to 2000. For emperical estimation, we used quarterly time series with 40 observation, while the

Table 1: ADF unit root tests in case of Turkish economy

Variables	Level	First difference
Absorption	5.65	-0.94
Aggregate demand	5.14	-1.17
Current account balance	-2.33	-6.22 <sup>a</sup>
Budget deficit	0.05	-6.72 <sup>a</sup>
External balance	-2.19	-6.38 <sup>a</sup>
Net factor payments from abroad	-3.30 <sup>b</sup>	-7.74 <sup>a</sup>
GDP	-1.02	-6.52 <sup>a</sup>
Imports	-0.69	-7.93 <sup>a</sup>
Exports	1.65	-2.41
Investment	4.70 <sup>a</sup>	-0.21
Money supply (M1)	-1.96	-4.42 <sup>a</sup>
Output	-5.65 <sup>a</sup>	-8.14 <sup>a</sup>
Real interest rate	-4.13 <sup>a</sup>	-6.19 <sup>a</sup>
Real exchange rate	-1.80	-4.39 <sup>a</sup>
Tax	1.55	-4.96 <sup>a</sup>
Unemployment	-1.08	-3.71 <sup>a</sup>
Inflation	-3.01 <sup>b</sup>	-5.98 <sup>a</sup>

Critical values based on 40 observations for  $\tau$  statistic<sup>[17]</sup>

<sup>a</sup>denotes 1% (-3.58), <sup>b</sup>denotes 5% (-2.93), <sup>c</sup>denotes 10% (2.60)

data were available for monthly or quarterly periods. The series are tested by cointegration method. The results of the estimates the cointegration method were as follows (Regression coefficients are the top figures: their “t” statistic appear below each coefficient, enclosed by parentheses. R<sup>2</sup> is the dependent variable which is explained by variation in the independent variables. Lags are selected on the basis of minimum error, adjusted for degrees of freedom.

**Model 1(Cointegration)**

$$A_N = 1.1 - 0.89 \text{ DEFICIT} - 0.006 \text{ INT} + .41 M_1 - 0.01 \text{ REX} + 0.02 \text{ GDP}$$

(1.52) (-16.64) (-1.96) (7.7) (-1.5) (2.09)

R<sup>2</sup> = 0.97      D-W stat = 1.94      F-statistic = 768.31

$$CAB = -0.001 - 0.0002 \text{ DEFICIT} + 2.5 \text{ INT} + 0.002 M_1 + 2.63 \text{ REX} - 3.92 \text{ GDP}$$

(-1.91) (-1.91) (0.85) (3.9) (.03) (-4.02)

$$NFP = 0.49 + 0.003 M_1 - 0.004 \text{ REX} - .058 U$$

(4.83) (0.73) (-3.48) (-1.66)

$$\text{INT} = 46.7 - 0.47 \text{ REX}$$

(3.04) (-2.45)

There are five explanatory variables statistically insignificant at 95 % level: in the equation of absorption (A), the real exchange rate; in the equation of current account balance, deficit, the real interest rate and the real exchange rate, while in the equation of net factor payments from abroad (NFP), money supply. The significant level of the real interest rate is very low. All explanatory variables have same signs as the signs of theoretical analysis equations.

**Model 2**

$$AD = 1.45 - 0.94 \text{ DEFICIT} - .007 \text{ INT} + 0.4 \text{ M1} - 0.02 \text{ REX} + 0.02 \text{ GDP}$$

(2.03) (-17.5) (-2.55) (7.6) (-1.86) (1.68)

$R^2 = 0.97$      $D\text{-W stat} = 1.92$      $F\text{-statistic} = 768.7$

$$CAB = -0.0002 - 0.0002 \text{ DEFICIT} + 2.5 \text{ INT} + 0.0002 \text{ M1} + 2.63 \text{ REX} + 3.92 \text{ GDP}$$

(-1.91) (-3.17) (0.85) (3.90) (0.03) (-4.02)

$$X_N = 0.001 + 6.19 \text{ REX} + 2.3 \text{ GDP} + 0.19 \text{ IM}$$

(3.37) (1.39) (13.26) (6.0)

$$M_N = 0.003 - 8.48 \text{ DEFICIT} + 6.2 \text{ INT} + 8.21 \text{ REX} - 1.04 \text{ CAB} - 5.15 \text{ M1} +$$

(1.52) (-2.94) (0.03) (0.03) (-21.3) (-0.02)

$$0.94 X_N$$

(9.61)

$R^2 = 0.79$      $D\text{-W stat} = 1.38$      $F\text{-statistic} = 110.19$

$$NFP = 0.49 + 0.003 \text{ M1} - 0.004 \text{ REX} - 0.058 \text{ U}$$

(4.83) (0.73) (-3.48) (-1.66)

$$dREX = 77.93 - 0.1 \text{ INT}$$

(3.04) (-2.43)

$R^2 = 0.047$      $D\text{-W stat} = 0.16$      $F\text{-statistic} = 5.89$

There are five explanatory variables statistically insignificant at 95 % level in this model : in the equation of aggregate demand for domestic goods and services (AD), the real exchange rate and real gross domestic product, in the equation of current account balance, again the real exchange rate and the real interest rate and in the equation of exports ( $X_N$ ), the real exchange.

The slopes of reduced forms of the function of internal and external balance:

Here, we proceed to determine the slopes of internal and external balance under the light of models of effective market classification, in model 1 and model 2.

The reduced form of the function of the internal balance in model 1 is:

$$\text{DEFICIT} = \frac{[\alpha_2 + \beta_2] + [\alpha_4 + \beta_4] \epsilon + A}{-[\alpha_1 + \beta_1]}$$

$$= \frac{[-0.006 + 0] + [-0.01 + 0] \cdot -0.1 + A}{-[-0.89 + 0]}$$

$$= -0.008 \text{ INT} + A$$

The reduced form of the function of the external balance in model 1 is as follow:

$$\text{DEFICIT} = \frac{-[\beta_2] - [\beta_4 + \eta_2]}{\beta_1}$$

$$= \frac{-[2.5] - [2.63 - 0.004] \cdot -0.1}{-0.2}$$

$$= 1.118 \text{ INT} + B$$

The reduced form of the function of the internal balance is as under:

$$\text{DEFICIT} = \frac{[\theta_2] - [\theta_4]}{-\theta_1}$$

$$= \frac{[-0.007] - [-0.02] \cdot -0.1}{-0.94}$$

$$= -0.0095$$

$$\text{DEFICIT} = \frac{\pi_2 + [\Phi_1 + \pi_3 + \eta_2] \cdot \epsilon}{\pi_1}$$

$$= \frac{(0) + [(6.19 - 1.25 - 0.004)] \cdot -0.1}{-8.43}$$

$$= 0.058$$

The values of parameters of the slopes of internal and external balance curves in both models are not contradicted with our hypothesis about modified definition of external balance and of change in the exchange rate system, but in model 2, the slopes of external and internal balances have less absolute values, nevertheless, the slopes of external balance has large value than internal balance, which demonstrates that monetary policy is more effective than fiscal policy.

**Interaction of monetary and fiscal policy in Turkish economy for the period 1993-2002:** We discussed interaction of monetary and fiscal policies to see, how their coordination effect on interest rate, that is, tool of monetary policy and deficit, that is, tool of fiscal policy in Turkish economy in the period of 1993-2002 under the Mundell's principle of effective market classification. For this purpose we use the following model:

**Model 3**

$$\begin{aligned} \text{Int} &= a_0 + a_1 \text{EB} + a_2 \text{GDP} \\ \text{DEFICIT} &= b_0 + b_1 \text{EB} + b_2 \text{GDP} \end{aligned}$$

Where,  $a_1, a_2 < 0$  and  $b_1, b_2 > 0$  In addition, EB = CAB+NFP (external balance) and gross domestic product (internal balance) is GDP. Not surprisingly, it is clear, monetary and fiscal authorities do not change their policies, if choices and preferences of targeted variables move within specific range. Changes in policy are made only if values of selected variables have been dislocated from equilibrium position.

The range for internal balance is derived from the need of Turkish economy to attain the equilibrium level, while external balance is based on combination of current account balance and net factor payments from abroad. Taking these considerations into account, the original time series are modified by assigning zero values to the values in intervals concerned.

Analytical approach for estimation of coordination between monetary and fiscal policies (internal and external balance) is as follows:

Regression analysis (ordinary least squares method) is used to obtain estimation of model 3:

The influence of economic activity (internal and external balance) on the interest rate and balance of payments deficit:

$$\begin{aligned} \text{INT} &= 14.12 + 20.48 \text{EB} + 0.1 \text{GDP} \\ &(4.06) \quad (1.09) \quad (1.28) \end{aligned}$$

$$R^2 = 0.02 \quad \text{D.w stat} = 0.31 \quad \text{F-statistic} = 1.24$$

$$\begin{aligned} \text{DEFICIT} &= -0.2 - 2.07 \text{EB} + 0.04 \text{GDP} \\ &(-1.13) \quad (-2.1) \quad (11.28) \end{aligned}$$

$$R^2 = 0.55 \quad \text{D-W stat} = 1.34 \quad \text{F-statistic} = 70.87$$

In the above regression equations, two explanatory variables are statistically insignificant at 95 % level: in the equation of real interest rate, the external balance and the real gross domestic, while in the equation of deficit, both variable are statistically significant. The only fly in the ointment is, that the sign of first parameter in first equation is not in accordance with the formulated assumptions of the model. This is so because, it may be possible that deficit is financed by external debt.

**How to read the statistical results:** The time period (1993-2002) for Turkey indicates the period during which

the dependent variable (INT) and deficit (DEFICIT) are explained by the independent variables as monetary (EB) and fiscal (GDP). However, the interest rate equation suggest that neither monetary nor fiscal policy has any effect on the interest rate equation. Less than 3% of the variation is explained by the regression variables, while the F-statistic of estimate also is low. As in the case of equation of balance of payments of deficit is affected by both monetary and as well as fiscal policy. More than 55% of the variation is explained by regression variables shows roubtness.

**Which is stronger?:** The relative strength of monetary and fiscal influence during test period in the interest rate equation, the value of coefficient of the monetary variable is substantially than that for the fiscal variable. In each case the sign of monetary and fiscal policy is positive and the values are statistically insignificant. In the deficit equation, again the value of coefficient of the monetary variable is larger than that for the fiscal variable. But signs of monetary policy is negative but sign of fiscal policy is positive and the values are significant at 95 %. It is clearly, over the period of consideration monetary influences has had a stronger impact on economic activity than have fiscal influences in the deficit equation.

**Speed of adjustment:** The relative speed of adjustment of monetary or fiscal can be measured by observing which variable has the shorter time lag in influencing economic activity. In case of Turkey, the effects of the monetary influence substantially outweigh the effects of the fiscal influence in the contemporary period in the equation of deficit.

**CONCLUSION**

We wind up our discussion of accounting relations by looking at coordination between monetary and fiscal policy. The empirical estimation of external balance (CAB+NFP), which is based on nondebt financing and internal balance should be managed by monetary policy, through the interest rate, if the system of floating exchange is used freely. The reduction form of model 1 and 2, the results presented indicate that the value of slope of monetary policy is higher than the fiscal policy with differences in economic institutions and differences in the objectives of policy makers In model 3, the results presented here suggest that monetary and fiscal policies give no systematically response in the interest rate equation. However, in the deficit equation monetary policy and fiscal policy try to give positive response in the direction of dependent variables.

Our estimations results indicated that coordination of monetary and fiscal policies in the interest rate equation do not operate optimally over the period of this study, in accordance with the analyses of Tinbergen<sup>[18]</sup>, Mundell<sup>[19]</sup>, Sims<sup>[20]</sup>, Mundell and Tomesik<sup>[16]</sup>, Thomas<sup>[21]</sup>. But in the equation of deficit results indicated that monetary and fiscal policies move in same direction. Finally, the goal of internal and external balance can be obtained with persuasion of coordination policies.

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