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GOVERNMENT DEFICITS, CONSUMPTION AND INFLATION IN TURKEY

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I) INTRODUCTION

Our concern in this paper is to investigate two issues concerning the role of the government budget deficit in Turkey over the past two decades. We first consider the influence of the government budget on consumption. We then examine the interrelationships between the budget deficit, monetary growth and inflation using a development of the Cagan (1956) hyperinflation monetary model.

In our earlier paper (Gazioğlu, 1983) we examined the determinants of consumption in the Turkish economy using annual data for the post-war period. In the next section of this paper, we use the framework of that study to examine whether government deficits influence private consumption in Turkey. We do this by means of comparing the efficacy of alternative definitions of wealth in explaining consumption. We find that consumption is best explained in terms of a model in which government deficits do influence consumers expenditure. This confirms empirically an important channel of influence whereby government deficits effect the economy. We do not find support for the view that budget deficits do not influence private expenditure.

We then turn to consider the role of the fiscal deficit in the inflationary process: this arises because of the high propensity to monetarise the deficit because of inadequate development of financial markets in Turkey. To examine this issue, we develop an analytical model of the inflationary process. This model differs from that of Cagan

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(1956) in allowing for an endogenous money supply, determined by the budget position, and incorporating rational, rather than adaptive expectations concerning inflation. Our model shows that inflation is the joint outcome of both real and monetary, mutually interacting, influences. It also casts light on those factors that are likely to promote stability in the inflationary process. We use this as a framework for discussing those factors in the Turkish economy that are likely to be important in the stabilization of inflation. Our discussion emphasises the important role of the government budget in this.

2. PRIVATE CONSUMPTION AND THE FISCAL DEFICIT

In this section we investigate the influence of the budget deficit on fiscal demand via consumers expenditure. We first introduce a conventional model which tests the effect of the budget deficit on consumer behaviour. We then provide an alternative Stock Adjustment Model presented here briefly (see Gazioğlu (1984) for further analytical and empirical detail). We introduce three alternative ways of defining wealth which take account in varying ways of open economy and budget deficit aspects of the problem.

The conventional model of consumption which we consider has the form

$$C = F(Y, C_{-1}, DF, \pi_{-1}) \qquad (1)$$

where C is the level of private consumption, Y is income, C_{-1} is lagged consumption, DF is the government deficit and Π_{-1} lagged inflation.

We also use a consumption model which is based on the Generalised Stock Adjustment Model analysed in Gazioğlu (1984). This model incorporates both equilibrium and disequilibrium components.

We assume that the desired wealth income (k) ratio depends on inflation (π_t), and the rate of growth (dy_t), so that $k = f(\pi_t, dy_t)$

Let $(S/Y)^* = (\Delta_y + \pi_t)\, k_t$ represent the desired level of savings income ratio depending non-linearly on growth (dy), inflation (π_t) and wealth income (k_t) ratio. This equation describes the equilibrium component of the model. The disequilibrium component is $\gamma(k - (w/y)_t)$ incorporating a partial adjustment process of the actual wealth / income ratio, w/y, towards its desired level, k.

Therefore, the actual savings ratio to income is

$$(S/Y)_t = (\lambda y_t + \nu\pi_t)k + \gamma(k_t - (w/y)_t)$$

The linearised form of the model is the following:

$$c_t = a_0 + a_1 y - a_2 \pi_t + a_3 \lambda y + a_4 \sum^{t}(y_{-1} - c_{-1}) + a_5 (\sum^{t}\pi) \quad (2)$$

The detail of the derivation of the model is in Gazioglu (1983). The model is in logarithmic terms. The wealth was defined (in Gazioglu (1983)) as accumulated savings, thus

$$W = \sum^{t}(y_{-1} - C_{-1}) \quad (2a)$$

Since the proxy of income in Gazioglu (1983) was GDP, using the national income identity, we may rewrite (2c) as

$$W_t = \sum_{i=1}^{n} (I_{t-i} + G_{t-i} + X_{t-i} - M_{t-i})$$

Thus W_t represents cumulated investment, government spending and current account surpluses. A more appropriate definition from the perspective of the private sector, would allow for taxes, defining wealth as

$$W_t = \sum_{i=1}^{n} (I_{t-i} + G_{t-i} - T_{t-i} + X_{t-i} - M_{t-i}) \quad (2b)$$

$$= W_t - \sum_{i=1}^{n} T_{t-i}$$

This definition of wealth is the cumulated sum of investment, the budget deficit and the current account surplus.

There is the possibility that the private sector may regard the budget deficit as having a rather different effect on wealth than investment and current surpluses, tending to discount budget deficits in their assessment of wealth. One argument for this is that advanced by Barro (1974) that the private sector discounts the future tax revenues required to finance the interest payments on additional government debt. Since, however, in countries like Turkey, government

deficits are typically monetised, this argument is not relevant. Instead, the private sector may discount the effect of government deficits on wealth because of their inflationary consequences, in contrast to investment and balance of payments surpluses. To investigate this, we also consider an alternative definition of wealth given by:

$$W = \sum_{i=1}^{t} (B_{1,i} - N_{1,i} - M_{1,i}) \qquad (2c)$$

$$W_1 = \sum_{i=1}^{t} G_{1,i}$$

$$\hat{W}_1 = \sum_{i=1}^{t} (G_{1,i} - T_{1,i})$$

By comparing the relative influences of W and $\hat{W}$, we may assess whether or not consumer behaviour is affected by the budget deficit position. By examining the relative effect of all three measures, we may assess the degree of misspecification resulting from the use of W in our earlier consumption study (Gazioglu (1983, 1984)).

Rather than include the W and $\hat{W}$ variables themselves, we allow for a somewhat greater degree of generality by including W and the two correction factors $LCUGR = \sum_{i=1}^{t} T_{1,i}$ and

$LCUGD = \sum_{i=0}^{t} (G_{1,i} - T_{1,i})$ in the regressions. This allows for the possibility that these variations might take a coefficient different from minus that on W, as would be implied by the restriction of including $\hat{W}$ and $\bar{W}$ directly in the regressions.

We now turn to present our empirical results for the models presented in the previous section. All data is taken from **International Financial Statistics.** The results of the conventional consumption behaviour with the budget deficit included are presented in Table 1. This is estimated using data for the period 1963 1980. The odd-numbered equations represent equations estimated by Ordinary Least Squares (OLS), while even numbered equations represent the esti-

TABLE 1 Estimates of the consumption function

Equation No.	Income Y	Lagged Dependent Variable	Lagged Inflation Π	First difference of Income DY	Deficit DEFP	Lagged Deficit DEFP	Constant	ρ	$\bar{R}^2$	$R^2(\Delta)$	DW	$\hat{\rho}$	SER
1.1	0.744 (6.393)	.0.041 (.245)	−.782 (2.31)		.0.88 (2.326)		106.9 (1.064)		0.988		2.39	236.67	94.3
1.2	0.724 (6.287)	0.0001 (.001)	−.809 (2.334)		0.966 (2.630)			0.310 (1.346)		0.985	2.28	large	90.6
1.3	0.797 (3.953)	0.297 (.403)	−.996 (1.340)		0.910 (2.258)	0.266 (0.327)	89.297 (.760)		0.985		2.23	335	98.0
1.4	.72 (3.872)	.006 (.0213)	.794 (1.168)		.963 (2.38)	0.192 (0.25)	86.63 (.901)	.312 (1.358)		0.984	2.193	large	91.0
1.5	0.716 (26.67)		.745 (2.563)		.896 (2.467)				0.985		2.420	3-0	90.1
1.6	.724 (34.84)		.809 (2.97)		.966 (2.959)			.310 (1.346)		0.987	2.188	large	80.9

mates of the previous equation corrected for autocorrelation. The student t-statistics are reported below the coefficients. The best set of equations are 1.5 – 1.6 where the lagged deficit and lagged dependent variables are dropped since they were insignificant. The coefficients on income are typically between 0.71 – 0.75. These results are similar to those obtained by Yağcı (1983). The negative and significant coefficients on the budget deficit indicate that current consumption is depressed by current government deficits. But we are sceptical of the significance of this result because of the obvious two-way causality between consumption and the deficit. Thus higher consumption is likely to lead to higher GDP and higher tax revenues, so that the government budget deficit falls. This simultaneity is likely to explain the negative coefficient on the deficit in these equations resulting from simultaneous equation bias.

Our alternative approach uses three different wealth variables. One of these measures, $\tilde{W}_t$, was used in Gazioğlu (1983) for the period 1952–1980. Because our data series for tax revenues and government expenditure and hence the government deficit were available only after 1963, the other measures, $\bar{W}_t$ and $\hat{W}_t$, could only be constructed from that period. Hence for consistency, we estimated all these sets of equations over the period 1963–1980. As we note in the following, the estimates for the shorter period are more stable relative to those obtained for the longer period in Gazioglu (1983).

First, we consider the estimates presented in Table 2, of the generalised stock adjustment model, using W_t as the definition of wealth as in Gazioğlu (1983). Of the equations, equation (2.5) is the best when the reported diagnostic statistics are considered. Compared to the results in Gazioğlu (1983) the variables representing lagged inflation and lagged price level introduced high autocorrelation into the system. In general, the wealth effect on consumption is estimated to be higher for 1963–1980 period than for the longer period. The measures of goodness of fit $\bar{R}^2$ or $\bar{R}^2(-1)$ increased showing that the model performs better over this shorter period.

Table 3 presents the results of including the cumulative budget deficit in the specification. This variable comes in with the opposite sign than predicted by the argument that consumption depends on $\bar{W}$, not W. Instead, this variable has a larger quantitative effect than does W itself. However, the coefficients on this variable are not sig-

Equation No.	Income LY	Change in Income ΔY	Wealth W	Government deficitLDEFP	Lagged Inflation LH_{-1}
2.1	0.549 (2.421)	0.559 (2.147)	0.277 (1.347)		0.520 (2.840)
2.2	0.464 (2.529)	0.603 (2.678)	0.349 (2.206)		0.574 (5.225)
2.3	0.448 (1.561)	0.796 (2.520)	0.367 (1.410)		
2.4	0.436 (1.511)	0.815 (2.564)	0.378 (1.450)		
2.5	0.7588 (8.586)	0.328 (2.705)	0.110 (.916)		0.597 (3.582)
2.6	0.741 (13.539)	0.286 (0.086)	0.122 (1.734)		0.655 (6.196)
2.7	.961 (10.05)	.280 (1.647)	—.0378 (.237)		
2.8	.941 (8.685)	.152 (.22)	—.0122 (.067)		

TABLE 2 1963–80

Lagged Price Level P_{-1}	Constant	ρ	R^2	$R^2(\Delta)$	DW	SER
0.0774 (1.00)	2.675 (1.966)		0.995		3.154	.205
0.098 (1.554)	3.205 (1.096)	−0.653 (3.450)		0.997	2.60	.0159
0.169 (1.873)			0.991		2.007	.0262
0.173 (1.914)	3.171 (1.822)	−0.029 (0.117)		0.991	1.969	.0262
	1.447 (2.480)		0.996		2.972	.0205
	1.573 (4.268)	−0.565 (2.731)		0.996	2.474	.0169
	.020 (.330)		.991		1.496	.0288
	.152 (.22)	.193 (.78)		.991	1.833	.0283

TABLE 3

Equation No.	Constant	LYP	LDY	W	LCUGD	PP	P	DW	R or R Δ	F	P	SER
3.1	−0.404 (0.379)	1.05 (6.786)	.006 (.003)	0.336 (1.103)	0.982 (1.562)	0.107 (1.959)	0.155 (4.421)	2.839	.993	199.72		.0268
3.2	−0.825 (1.359)	1.112 (12.527)	0.079 (.697)	0.259 (1.515)	0.895 (1.355)	0.122 (2.918)	0.162 (7.494)	2.664	.975		−.355 (1.635)	.0236
3.3	−0.656 (1.548)	1.089 (6.272)	−0.018 (.091)	0.108 (.338)	0.698 (1.008)		−0.111 (3.630)	2.173	.990	186.0		.0304
3.4	−0.746 (.789)	1.100 (7.98)	0.109 (.583)	0.128 (0.495)	0.759 (1.373)		−0.117 (4.639)	1.950	.990		−.376 (1.625)	.0288
3.5	−1.695 (0.980)	1.223 (4.846)	0.122 (.411)	−0.510 (1.276)	0.707 (0.859)	−0.046 (.652)		1.503	0.976	82.58		.0455
3.6	−0.339 (.170)	0.991 (3.451)	−0.086 (.354)	−0.194 (.447)	−0.029 (.300)	−0.033 (.503)		2.01	.979		.58 (2.855)	.0420
3.7	−1.777 (1.057)	1.230 (5.009)	0.161 (.569)	−0.518 (1.329)	−0.847 (1.067)			1.484	.975	108.8		.0441
3.8	0.257 (.133)	1.257 (.133)	0.945 (3.405)	−0.114 (.277)	0.065 (.069)			2.027	.979		.639 (3.329)	.040

nificant, so that too much should not be made of this. These results suggest that budget deficits are **not** discounted in the assessment of wealth for consumption purposes.

Table 4 examines the consequences of incorporating government tax revenues in the equation. This variable enters with a negative sign as suggested by the argument that $\hat{W}$ is the relevant wealth variable. Moreover, it raises the coefficient (and its significance) on W, suggesting an improvement in specification from the inclusion of $\hat{W}$. There is also some indication that the lagged price level in equations 4.1 – 4.4 is responsible for the insignificance of the wealth term: eliminating the lagged price level as in equations 4.5 – 4.8 makes the coefficient on wealth much larger and significant.

These results suggest that the most appropriate definition of wealth is the conventional one of cumulated private sector savings, as given by $\hat{W}$, though the fact that the coefficient on taxes is typically less than that on W (in absolute magnitude) provides some evidence of a degree of discounting of tax changes. However, there is no evidence from these results that budget deficits do not matter for the determination of consumption.

3) INFLATION AND SUSTAINABLE GOVERNMENT DEFICITS

In this section, we examine the question of the stability of the inflationary process, taking explicit account of the two-way interaction between the government budget deficit and the economy. The model that we use is a somewhat simplified version of that analysed in Gazioğlu and Currie (1984).

The model has the following equations

$$m = c\exp(-\alpha p^e) \quad (1)$$

$$b = b_0 - b_1(y - y^*) + b_2\dot{p} \quad (2)$$

$$b = \hat{m}^* + m(\dot{p} + \lambda) \quad (3)$$

$$\dot{p} = \delta(w - p) \quad (4)$$

$$\dot{w}^e = \delta(w - p) - \delta_2 y \quad (5)$$

where the following notation is used

m real money balances as a proportion of income

b budget deficit as proportion of income

TABLE : 4

Equation No.	Constant	LYP	LDY	CULW	LCUGR	PP
4.1	—3.111 (2.022)	1.552 (4.640)	—.252 (.881)	.345 (.770)	—.222 (1.004)	.045 (2.364)
4.2	—2.721 (1.877)	1.447 (4.423)	—.079 (.285)	.143 (.559)	—.128 (1.550)	.91 (1.550)
4.3	—3.575 (2.409)	1.668) (5.248)	—.340 (1.236)	.446 1.013)	—.308 (1.489)	
4.4	—3.609 (2.475)	1.670 (5.256)	—.284 (1.014)	.433 (.964)	—.304 (1.434)	
4.5	—4.726 (2.876)	1.977 (5.809)	—.493 (1.529)	.928 (2.049)	—.571 (2.885)	—.035 (.648)
4.6	—4.872 (2.994)	2.00 (5.954)	—.484 (1.495)	.959 (2.142)	—.565 (2.976)	.034 (.630)
4.7	—4.809 (2.987)	1.993 (6.031)	—.479 (1.529)	1.008 (2.378)	—.593 (3.129)	
4.8	—5.078 (3.301)	2.048 (6.439)	.465 (1.474)	1.076 (2.639)	—.625 (3.395)	

P	DW	$\bar{R}^2$ or R^2 (Δ)	F	P	SER
—.095 (1.061)	2.44	.9915	174.5		.0282
—.111 (2.801)	2.20	.9923		—.395 (1.720)	.0273
—.066 (2.24)	2.149	.9904	206.6		.0288
—.066 (2.274)	2.016	.986		—.155 (.627)	.0287
	1.943	.986	142.8		.0347
	1.931	0.979		—.053 (.215)	.0347
	1.923	.986	188.3		.0338
	1.903	.980		—.127 (.511)	.0011

y logarithm of real national income

y* logarithm of trend level of real national income

p logarithm of prices (so $\dot{p}$ denotes the rate of inflation and $\ddot{p}$ the change in inflation)

w forward looking average of future expected inflation based on wage contracts.

Equation (1) is a semi-logarithmic money demand function of the kind standard in the literature on money and inflation (see, for example, Cagan (1956)). Equation (2) represents the government budget as a proportion of income. This is assumed to depend negatively in the level of income (relative to trend) to allow for the tendency of tax revenues to fall and expenditures to rise as national income falls. It is also assumed to depend positively on inflation because of the tendency of real tax revenues to fall with inflation as a consequence of lags in the payment of taxes. Equation (3) is an identity, which divides up the money supply as a result of the budget deficit into three components: that part (m) causing real money balances (as a proportion of income) to rise, that part ($m\dot{p}$) maintaining real money balances (as a proportion of income) in the face of inflation; and that part (m_y) maintaining real money balances (as a proportion of income) in the face of real growth. Equations (4) and (5) represent a slightly modified version of Calvo's model of sluggish, but forward looking, price adjustment (which may be rationalised in terms of overlapping wage on price contracts: see Calvo (1983)). Equation (5) determines a forward looking "contract" rate of inflation w, while equation (4) states that actual inflation, $\dot{p}$, adjust sluggishly towards the contract rate of inflation, w. The model is closed by the assumption that expectations are formed rationally.

The model assumes that there is limited scope for financing the government deficit by bond issues, so that recourse is made to money finance. This assumption broadly accords with the Turkish experience, where the market for government non-monetary debt is underdeveloped, as well as with that of other countries. It also extends the basic Cagan (1956) model of inflation in two important respects: by explicitly recognising the role of the government budget in the inflationary process; and by allowing for the endogeneity of the government budget. This second feature rationalises the usual empirical finding that there is a two way casuality between money and

inflation, and not the uni-directional causation running from money to inflation as assumed in the Cagan (and many other) models on the inflationary process.

The model has two potential equilibria depicted in Figure 1 by $\dot{p}_1^*$ (the low inflation equilibrium) and $\dot{p}_2^*$ (the high inflation equilibrium). In this model, as in most others of this genre including those incorporating adaptive, rather than rational expectations, the high inflation equilibrium is unstable. (However, Gazioglu and Currie (1984) present a more developed model in which the high inflation equilibrium may, in some circumstances, be stable. They use this model to analyse the possibility of, and factors determining, an inflationary process involving a transition from a low to a high inflation equilibrium). The equilibrium inflation rate, $\dot{p}_1^*$ is given as the lower solution to

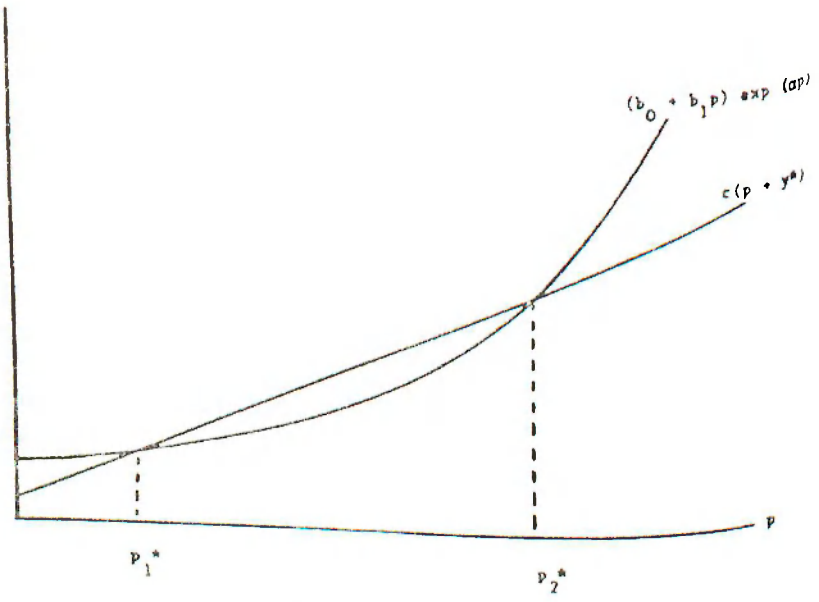

Figure 1 Long Run Equilibria

$$(b_0 + b_2\dot{p}_1^*) \exp(a\dot{p}^*) = c(\dot{p}_1^* + y^*) \tag{6}$$

From (6) it follows that

$$\frac{\partial \dot{p}_1^*}{\partial y^*} = -\gamma < 0$$

$$\frac{\partial \dot{p}_1^*}{\partial C} = -\gamma c^{-1}(p^* + y^*) < 0$$

$$\frac{\partial \dot{p}_1^*}{\partial b_2} = \gamma \dot{p}_1^* m^{*-1} > 0$$

$$\frac{\partial \dot{p}_1^*}{\partial b_0} = \gamma m^{*-1} > 0$$

$$\frac{\partial \dot{p}_1^*}{\partial \alpha} = \gamma a(\dot{p}_1^* + \dot{y})^* > 0$$

where $\gamma = (1 - \alpha c - b_2 m^{*-1})^{-1} > 0$ at the low inflation equilibrium and $\gamma = p^*_1 + \dot{y}^*$ and m^* denotes the equilibrium value of m. Thus the equilibrium rate of inflation is lowered by a rise in real rate of growth and by an increase in the propensity to hold money (as measured by c); and is raised by an increase in the underlying budget deficit (b_0), by a rise in the sensitivity of the budget to inflation (as measured by b_2), and by an increase in the inflation-expectation semi-elasticity of money demand (α). The important point to note is that inflation is the resultant of both real and monetary forces at work in the economy, and not simply the consequences of monetary factors alone.

To analyse the stability of the system, we may represent its dynamics around equilibrium in state space.

$$\begin{bmatrix} \ddot{p} \\ \dot{(w-p)} \end{bmatrix} = \begin{bmatrix} o & \delta \\ \delta\beta m^*(m^* + b_1)^{-1}(1-\alpha\Phi-b_2 m^{*-1}) & -\alpha\beta\delta^2 m^{*1} b_1)^{-1} \end{bmatrix} \begin{bmatrix} \dot{p} \\ w-p \end{bmatrix} \quad (7)$$

With one non-predetermined variable, the stability condition is the system in (7) should have one root with positive real part and one with negative real part (see Blanchard and Kahn (1980)). The condition for this is that the determinant of the matrix in (7) should be negative, which is so if and only if

$$1 - \alpha c - b_2 m^{*-1} = 1 - \alpha(p^* + y^*) - b_2 m^{*-1} > 0 \quad (8)$$

An interesting feature of this model, in contrast to the classic model of inflation due to Cagan (1956), is that stability is not independent of the going inflation rate, becoming less likely as inflation rises. This is because $\dot{p}^*$ enters (8) directly, but also because m^* depends negatively on $\dot{p}^*$. It is also of interest that a fall in the underlying rate of growth, $\dot{y}^*$, makes stability less likely. Money demand behaviour is also important for stability, a low value of c implies a small value of m^*, **ceteris paribus**, reducing the chances of stability and a large value of α has the same effect. The characteristics of the tax system, as measured by b_2, also influences stability. Thus stability is influenced by both real and monetary factors.

With this analytical framework in mind, we now turn to apply it to the case of Turkey. Table 5 presents data on the money / income ratio for Turkey since 1963. In measuring this using money supply data relating to the end of the year in question, care must be exercised in aligning the stock and flow data. Column I measures the money / income ratio as the money stock at the end of the year divided by an average of nominal income in the same and subsequent year, thereby centering the income data on the end of the year. Column II averages the end and beginning of the year money stock figures, thereby centering the money stock figures on the middle of the year, and then divides by income during the year. Both series show a si-

TABLE 5 GDP Share of Money Supply

Years	I	II
1963	0.174	0.171
1964	0.192	0.183
1965	0.196	0.200
1966	0.206	0.199
1967	0.213	0.209
1968	0.221	0.251
1969	0.224	0.226
1970	0.213	0.226
1971	0.209	0.212
1972	0.203	0.209
1973	0.202	0.211
1974	0.195	0.197
1975	0.202	0.212
1976	0.201	0.206
1977	0.199	0.212
1978	0.168	0.197
1979	0.140	0.171
1980	0.134	0.136
1981	0.129	0.132

milar pattern, with minor differences in the detailed movements. After a period of a rising money/income ratio up to the late 1960's, the money/income ratio remained on a plateau through the middle 1970's. Thereafter it fell sharply with the onset of rapid inflation and reached a low point in 1981. The preceding analytical framework suggests that this would have been an important potential de-stabilising influence on the macroeconomy, threatening a shift into inflationary collapse.

This decline in the money/income ratio must be considered together with trends in the financial deficit. A proportion of GDP, rose sharply from a low point in 1974/75 reaching the unprecedented level of 5.7% in 1980. At that point somewhat over 20% of government spending was not covered by government revenues. It seems rather likely that a deficit of that size, relative to GDP, would have been unsustainable particularly with the rather low money/income ratios shown in Table 6. Fortunately the deficit was brought under control after 1980, as Table 6 shows. As Table 7 shows, these emerging defi-

TABLE 6 The Share of Government Expenditure, Government Revenues and Deficit in GDP

Year	(GEX/GDPx100	(GR/GDP)x100	(DEF/GDP)x10(	(DEF/GEX)x100
1963	18.2	14.1	4.11	22.6
1964	18.4	14.5	3.89	21.12
1965	18.9	15.0	3.98	20.94
1966	18.2	15.5	2.73	14.99
1967	18.5	16.6	1.89	10.26
1968	19.1	16.7	2.35	12.34
1969	20.3	17.4	2.99	14.69
1970	21.7	19.8	2.49	11.44
1971	23.7	20.6	3.45	14.57
1972	22.6	20.5	2.20	9.75
1973	21.79	20.0	1.86	8.54
1974	18.8	17.5	1.82	9.66
1975	21.8	21.0	1.34	6.19
1976	23.4	21.8	2.01	8.59
1977	26.7	21.7	6.13	22.99
1978	25.7	22.8	4.3	16.66
1979	27.9	20.1	5.72	22.39
1980	25.8	20.1	5.72	22.19
1981	23.0	20.3	1.72	7.6
1982	19.0	16.4	1.72	10.5

GEX: Government Expenditure
GR Government Revenue
DEF: Budget Deficit
GDP: Gross Domestic Product

Sources: IMF, International Financial Statistics and Republic of Turkey Ministry of Finance, 1984 Financial Report.

TABLE 7. Government Fiscal Finance (1975 prices)

Million TL

Year	Deficit	Revenue	Expenditure
1963	101.00	346.32	447.43
1964	99.64	372.04	471.68
1965	104.83	395.86	500.69
1966	79.612	455.02	535.28
1967	58.36	510.64	569.0
1968	77.19	546.78	625.15
1969	103.05	598.61	701.39
1970	90.50	720.50	791.00
1971	135.45	818.72	943.19
1972	92.91	863.64	952.55
1973	83.58	886.27	961.19
1974	86.63	833.95	896.51
1975	71.00	1090.0	1129.3
1976	113.16	1228.5	1318.0
1977	156.42	1263.4	1550.1
1978	227.5	1214.3	1365.9
1979	348.52	1267.9	1556.1
1980	325.47	1142.9	1467.0

Source: IMF, International Financial Statistics

cits arose from a surge in real government spending from 1974, coupled with a stagnation in real tax revenues from 1976 onwards.

Two main factors lay behind the stagnation of taxation from 1976 onwards. The first was the relatively depressed state of the economy after the oil shock in 1974 and the balance of payments problems that emerged thereafter. The second factor has been the rise in inflation in the second part of the 1970s. A number of studies have demonstrated that tax revenues tend to fall behind prices in periods of rapid inflation, so that tax revenues fall in real terms (see, for example, Aghevli and Khan (1978)). This arises from lags in the payment of taxes and a failure to raise indirect taxes and the prices of state sector output quickly enough in line with general inflation. It is this feature of endogenous taxes reacting to inflation, in turn affecting the government budget and money creation, and thereby influencing inflation in turn, that helps to explain the two-way causation between money and inflation that is so frequently observed in periods of rapid inflation. (See, for example, Frenkel (1977) and Jacobs (1977)). In this regard, it is important to emphasise the need for taxes and public enterprise prices to be adjusted smoothly and frequently in response to general inflation. This is because the practice in the recent past in Turkey of making infrequent but very large adjustments can be very damaging, possibly triggering more rapid inflation than is necessary.

For the infrequent, very large, changes in prices raise general prices in large steps and unexpectedly, and lead to a large fall in demand than would otherwise occur with more rapid, frequent adjustment. And the fall in demand itself depresses net state revenues, acting to offset the reduction in the budget deficit and monetary expansion that the adjustment of prices is intended to effect. A similar point applies to the infrequent and large adjustment of indirect taxes.

These points emphasise the need to move towards a tax and pricing system that avoids undue delay in tax collection and avoids unnecessary fluctuations in real taxes and the relative prices of the output of state enterprises. This probably requires an indirect tax structure that is flexible and easy to administer; for a complicated system will deter frequent adjustment. Whether this is compatible with the Value-Added Tax being introduced in Turkey is a question of some importance, though such a tax has the advantage of automatic indexation to prices provided only that the revenues of the tax are collected without undue delay.

Finally, our analytical framework emphasises the importance of the underlying growth of productivity in the economy in the inflationary process. If the real rate of growth falls, as it did after the mid-1970's in Turkey, the size of sustainable fiscal deficit is reduced. In the absence of conscious fiscal adjustment, inflation will ensue. The general question of raising efficiency in industry is therefore central to the inflationary issue. This is particularly crucial in the state enterprises, where increased efficiency will cut state enterprises deficits. Since these deficits are funded by government typically through money creation, the need to raise efficiency through better management methods in this sector are crucial to overall economic performance.

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