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External Debt, Inflation, and the Public Sector: Toward Fiscal Policy for Sustainable Growth

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Which tradeoffs are involved in formulating an external debt strategy? Should expenditure be cut to improve the current account, or will this reduce future output growth, thus undermining the benefits of any debt reduction? Are there alternatives that allow satisfactory output growth without jeopardizing creditworthiness? How can the necessary surplus of savings over investment be brought about at levels of investment high enough to sustain output growth?

Should the government contribute to the internal adjustment by reducing its deficit? Macroeconomic targets for inflation and growth, and creditworthiness constraints on debt issue, impose restrictions on the extent to which deficits can be financed. Can the government cover the deficit within these targets and constraints? The absence of such consistency forebodes future policy change and so undermines the credibility of the adjustment program. The author uses empirical work on Turkey to illustrate the interactions between fiscal deficits and the macroeconomic variables upon which fiscal consistency hinges.

The rise in interest rates and the collapse in commodity prices that followed the U.S. recession in 1982–83 triggered the debt crisis that has since dominated macroeconomics in the developing countries. The focus has been on Latin America, but the debt crisis has also plagued other developing countries. For them, too, devising strategies to deal with their external debt and formulating internal policies to allow sustainable growth within the limits of creditworthiness and macroeconomic stability are at the forefront. These same issues are the subject of this article. Throughout I draw on Turkey's experience since 1978, contrasting its strategy of high debt and high growth with Latin America's equally high debt, much higher external transfers, and much lower growth.

A brief overview of external debt since 1980 sets the stage in the article's first section. The overview highlights the choices—and tradeoffs—in formulating a strategy for external debt. At issue is whether restrictive expenditure

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policies should be pursued to improve current account performance. Will such policies come at the cost of future output growth, thus undermining the benefits of any debt reduction that does take place? Are there alternatives that allow satisfactory output growth within the limits set by creditworthiness constraints? A real depreciation stimulates exports, which are essential for maintaining creditworthiness, but it also causes capital losses on external debt, so more need to be exported to meet the same debt service.

The sustainability of an external debt strategy, and its social costs and economic benefits, depend to a large extent on the internal policies that form the counterpart of any external adjustment undertaken. External adjustment requires a transfer to be made to foreigners (or adjustment to a lower transfer to be received from them); internal adjustment deals with the way the matching internal surplus of savings over investment is brought about. To this process, and the role the public sector can play in it, the article turns next. The central question here is how to bring about the necessary surplus of savings over investment at levels of investment high enough to sustain output growth.

An important part of any program of internal adjustment is the extent to which the public sector contributes directly toward the necessary improvement in the savings surplus. To this end, the fiscal deficit will typically need to be brought down. Any remaining deficit has to be financed, either by issue of domestic or foreign debt (or, equivalently, domestic or foreign asset sales) or by revenue from monetization. But macroeconomic targets for, say, inflation and output growth, in addition to the constraints on debt issue implied by continued creditworthiness and solvency, impose restrictions on each financing method. Hence the issue of fiscal consistency. Do these targets and constraints allow the government to raise sufficient revenue? The absence of such consistency forebodes future policy change and so undermines the credibility of the fiscal program envisaged. The final part of the article discusses the interactions between fiscal deficits and the macroeconomic variables upon which fiscal consistency hinges. The article draws on empirical work on Turkey to show the tradeoff between fiscal policy adjustment and sustainable inflation. I discuss the impact of financial sector reform, economic growth, and real exchange rate policies on this tradeoff; how it is affected by the interest rates on foreign and domestic debt; and when and how postponing adjustment adversely affects the terms at which this tradeoff takes place.

I. A Brief Overview of Debt, Output Growth, and the Real Exchange Rate

By current standards, external debt in the Mediterranean region is high. Debt-output ratios in 1986 ranged from 24 percent in Algeria to more than 100 percent in Morocco to give an average of almost 50 percent, up sharply from 35 percent in 1981. The region's median value—almost 60 percent—is similar to that of Latin American countries and higher than the average for the

fifteen "high-debt" countries in the International Monetary Fund's *World Economic Outlook*.

These measures deserve perspective, however. Countries have accumulated extensive debt in the past, and borrower-lender cycles often stretch over many decades (see Kuznets 1965). Major borrowers have often needed that long to turn into lenders. The United Kingdom and the United States also borrowed in corresponding periods of their economic history (Kuznets 1965; Cole 1960). The United Kingdom financed much of its development in the eighteenth century by borrowing from cash-rich Holland. It turned into a lender in the next century and financed much of the economic expansion in Argentina, then a dynamic power, and in the United States. The American move west and the extension of Argentina's railroad system were financed by borrowing abroad. Not until after the First World War did the United States reverse the tables and turn into a net lender.

An essential feature of the successful examples of external debt accumulation is that the borrowing fueled capital accumulation and thus output growth. The high output growth and accompanying productivity increases made it possible to turn from borrowing to lending as time progressed and investment needs declined. It is perhaps this missing feature that is most worrisome in today's debt crisis: in almost all debtor countries, output growth has fallen to a postwar low. The fifteen "high-debt" countries saw their output growth fall from more than 5 percent a year in the 1970s to a mere 1 percent in the 1980s. The Mediterranean is no exception: oil importers and oil exporters both saw their growth rates fall by almost 4 percentage points—even more if Turkey, the exception, is excluded. A closer look at Turkey's performance since its debt reschedulings in the late 1970s shows the importance of high output growth (table 1).

Turkey's ratio of gross debt to output rose from 28 percent in 1980 to 56 percent in 1986, close to the average for the fifteen high-debt countries. And it is surprising that the ratio did not rise more rapidly in Turkey than in the high-debt countries. Turkey ran a much lower noninterest current account surplus, as a percentage of gross national product (GNP), than the group of high-debt countries did on average after their respective debt crises: –0.25 percent of GNP for Turkey during 1980–86, compared with 2.6 percent for the high-debt countries during 1982–86. Explaining this apparent inconsistency is Turkey's much higher growth rate after 1982. Turkey's debt-output ratio followed that of the high-debt countries not so much because of large surpluses but because of high output growth. Turkey's growth rate exceeded that in the high-debt countries by 4 to 5 percentage points in almost every year between 1980 and 1986 (figure 1). Faster growth reduces debt-output ratios over time, or at least slows their rate of increase. Working against this process are the interest payments on past debt. Higher real interest rates increase debt-output ratios by accelerating the growth of debt-service costs. For any given net transfer (of principal plus interest payments), the debt-output ratio increases (falls) if real

Table 1. *Measures of the Debt Burden, Turkey and Fifteen "High Debt" Countries*

Measure	*1980*	*1981*	*1982*	*1983*	*1984*	*1985*	*1986*
Turkey (billions of dollars)							
Debt	16.3	16.9	17.6	18.2	20.8	25.5	32.5
Medium- and long-term	13.8	14.7	15.9	16.0	17.6	20.8	25.6
Short-term	2.5	2.2	1.8	2.3	3.2	4.8	6.9
Debt-burden indicators (percent)							
Debt/GNP	28.0	28.6	32.8	35.6	41.5	47.9	55.9
Debt/exports	284.1	198.3	175.0	192.9	180.5	194.52	60.5
Current account surplus/GNP	−5.04	−2.83	−1.55	−3.57	−2.81	−1.90	−2.63
Noninterest current account surplus/GNP	−3.87	−0.81	1.17	−0.36	0.36	1.39	1.04
Countries with recent debt-servicing problems (percent)							
Debt/GDP	33.6	38.5	45.5	50.0	51.1	52.2	54.8
Debt/exports	151.2	185.8	241.5	254.3	247.2	263.9	302.4
Current account surplus/GDP	−3.6	−5.9	−5.5	−2.0	−0.9	−0.5	−1.8
Noninterest current account surplus/GDP	−0.5	−1.7	−0.5	2.8	4.1	4.2	2.5

Note: For comparability the debt figures reported here for Turkey refer to gross debt. The rest of the paper uses net debt (see footnote 1 in the text). The debt-export ratio refers to year-end debt and to exports of goods and services during the year. The countries with recent debt-servicing problems are those that incurred external payment arrears in 1985 or rescheduled their debt during the period from end-1983 to end-1986 (see International Monetary Fund, various years).

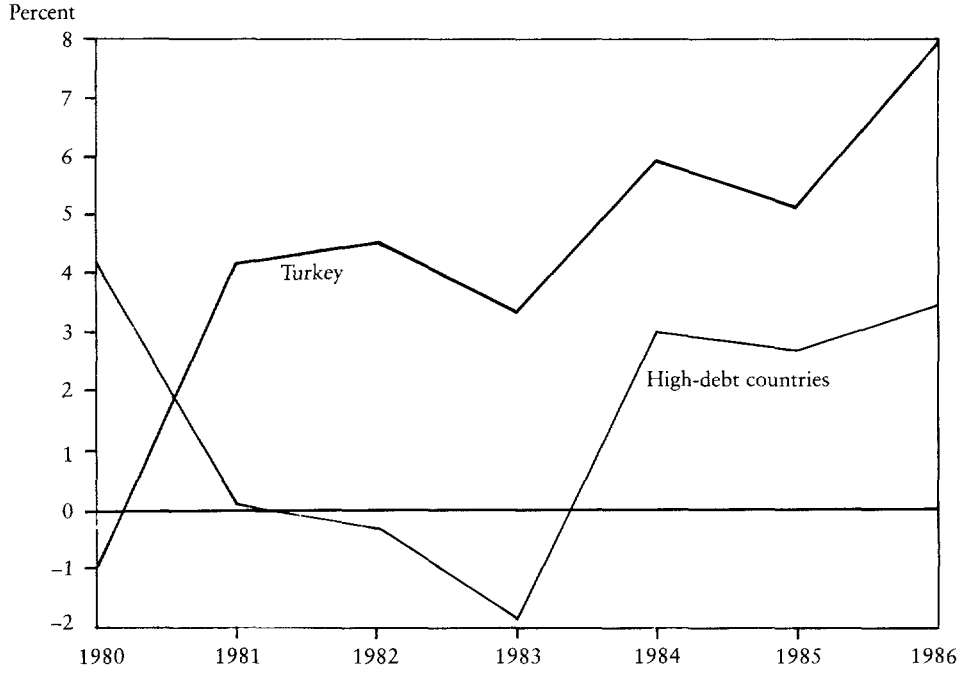
Sources: Undersecretariat of Treasury and Foreign Trade, Central Bank, Turkey; International Monetary Fund (various years).

interest rates exceed (fall short) of the economy's real growth rate. In this, the world environment has turned distinctly unfavorable. Real interest rates, negative by any measure in the 1970s, have shot up in the 1980s. Even for a fast grower like Turkey, real interest rates on external debt now outstrip the economy's real growth rate (figure 2).

Another striking difference between Turkey and most high-debt countries is in the ratio of debt to exports. For most debtor countries, that ratio rose in line with the debt-output ratio. But Turkey, alone among the debtor countries, saw its debt-export ratio fall by a third between 1980 and 1986, with little rise afterward. Export growth caused the turnaround. Turkey's ratio of exports (of goods and nonfactor services) to GNP hovered between 5 and 7 percent between 1967 and 1980. With the reform measures, exports jumped to 11 percent of GNP in 1980 and increased further until they reached 20.7 percent of GNP in 1985. They fell back to 18 percent in 1986 because of developments in the Middle East, but more than recovered in 1987—having grown by an estimated 30 percent in real terms over the 1980–87 period. So, while Turkey's debt-output ratio has steadily deteriorated, its debt-export ratio has sustained the substantial improvements in 1980 and 1981.

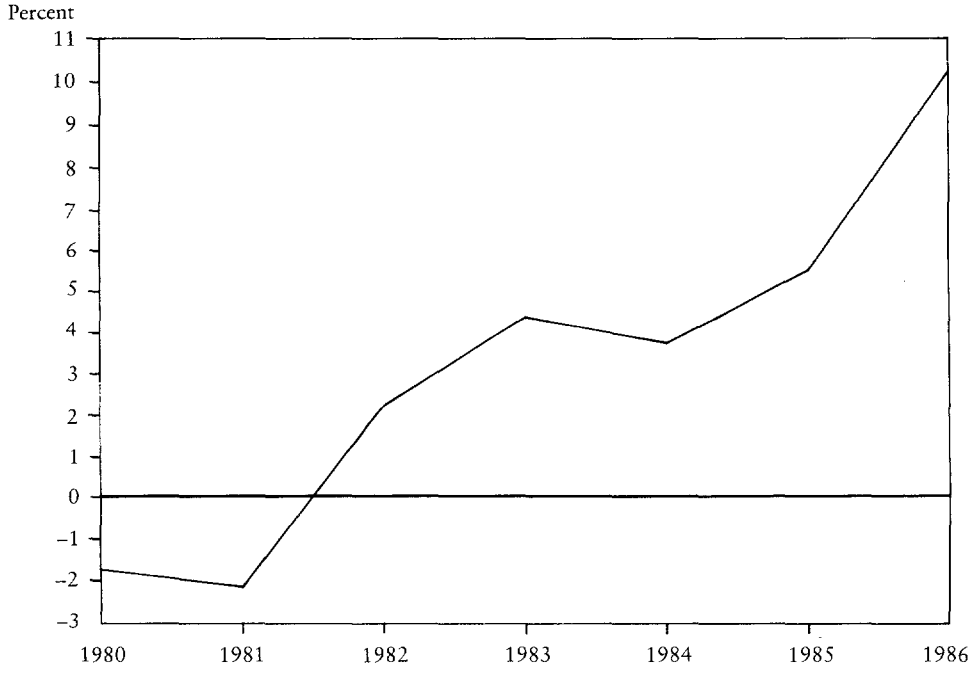
A major contributing factor to Turkey's successful export drive was the real

Figure 1. *Real Output Growth, Turkey and High-Debt Countries*



Source: Anand and others (forthcoming).

Figure 2. *Real Interest Rate on Foreign Debt, Turkey*



Note: Corrected for changes in exchange rates among Turkey and its trading partners.
Source: Anand and others (forthcoming).

depreciation that started in 1980. Without that depreciation, exports would have increased by only a few percentage points of GNP, as the analysis here suggests.

The counterpart of this real depreciation, however, has been a substantial capital loss on Turkey's external debt—a loss in the sense that more Turkish goods needed to be exported to meet the same debt service. The real depreciation was a major contributing factor to the increase in the debt-output ratio, accounting for more than half the increase between 1980 and 1986. The empirical results here also show, however, that for Turkey the debt-export ratio will fall after a real devaluation: exports increase enough in volume to offset the decrease in their price (Anand and others, forthcoming). Turkey's debt-export ratio would clearly have been much less favorable without the depreciation. A real devaluation causes a capital loss on foreign debt and thus a reduction in national wealth. Higher exports cannot undo this, but increased export orientation eases access to foreign capital markets. It is doubtful that Turkey would have had the access to external markets it did enjoy without the successful export performance generated by the reform program. The real depreciation of the exchange rate was essential to that program.

II. Toward an External Debt Strategy

The foregoing survey suggests that three factors are important in the analysis of external adjustment: the noninterest current account of the balance of payments, the interplay between real interest rates and real output growth, and the capital loss that a real devaluation of the exchange rate causes on the stock of external debt. A simple accounting identity brings these factors out clearly. Define the debt-output ratio b^* as:

$$b^* = \frac{B^*}{P^*} \cdot \frac{e}{y}; \; e = E \cdot \frac{P^*}{P} \tag{1}$$

where e is the real exchange rate, B^* the dollar value of foreign debt, P^* an export-weighted price index of the country's trading partners (in dollars), y real output, E the nominal exchange rate of the local currency against the dollar, and P the local price index. Increases in the debt-output ratio can be traced to three factors:

$$\dot{b}^* = -\text{NICA} + (r^* - n)b^* + \hat{e}b^* \tag{2}$$

where NICA is the ratio of the noninterest current account surplus to output, r^* the average real interest rate on foreign debt, n the real growth rate of output, and a dot ($\cdot$) indicates changes and a hat ($\wedge$) percentage changes.

The first term, NICA, equals the noninterest current account deficit of the balance of payments. The most fundamental measure of a country's external (im)balance, it equals the difference between total expenditure (net of interest

payments on foreign debt) and nationally generated income. Its counterpart is the net resource transfer from foreigners: that is, the increase in debt minus interest payments. If the noninterest current account is zero, the increase in debt equals interest payments, and the debt grows at the rate of interest. As long as there is a surplus in the noninterest current account, foreign borrowing is less than interest payments to foreigners. Put another way, the growth in foreign borrowing is less than the rate of interest, and there is a net resource transfer to the rest of the world. The opposite happens when there is a deficit in the noninterest current account: debt grows faster than the rate of interest. If debt consistently grows faster than the rate of interest, the country eventually will be insolvent.

The second term, $(r^* - n)b^*$, measures the interplay between real interest rates and real output growth, referred to here as the debt-dynamics term. If the noninterest current account is zero, the numerator of the debt-output ratio (equation 1) grows at the rate of interest, and the denominator obviously grows at the (real) growth rate of the economy. So, if the real interest rate exceeds the real growth rate of the economy, the debt-output ratio rises; if it falls short of it, the ratio declines. If real interest rates exceed the real growth rate by a substantial margin, the debt-dynamics term contributes significantly to increases in the debt-output ratio, limiting the room for noninterest current account deficits.

The third term, $\hat{e}b^*$, measures the capital loss on a country's external debt (in terms of export goods needed to service the debt) when the exchange rate depreciates in real terms.

The debt-output ratio measures the debt in home goods: if their relative value falls, as it does after a real depreciation, the debt-output ratio necessarily rises. Against that must be set the fact that a real devaluation boosts exports, an important determinant of creditworthiness.

I turn to a discussion of the role of these three factors in different external debt strategies. Such strategies effectively consist of two choices, one between two ways of restraining the ratio of external debt to output, the other about exchange rate policy and its supporting macroeconomic policies.

Two ways of restraining the ratio of external debt to output are:

- To effect a net resource transfer to creditors by running large enough surpluses in the noninterest current account; and
- To pursue high output growth, slowing the extent to which external debt feeds on itself through escalating debt-service costs.

Since 1981 and 1982, most Latin American and Eastern European debtors have pursued option 1, revealing its problems. The only reliable and practical way of running a surplus in the noninterest current account is to cut spending substantially. The cuts, however, may reduce output in two ways. In the short-run, recessionary effects will be felt; capacity and output will also fall in the longer run if spending cuts reduce investment. These output losses may mean

that gains from improvements in the noninterest current account are at least partly offset by a widening spread of real interest rates over real output growth rates. What the numerator of the debt-output ratio gains is at least partly lost because of a slowdown in the rate of increase in the denominator, the fate of most high-debt countries. Turkey, by contrast, took another route to its external adjustment, avoiding the destabilizing spiral that trapped most other high-debt countries.

Option 2 relies on high output growth to slow the dynamic process of having debt feed on itself through escalating debt-service costs as a share of output. The main requirement of such a strategy of low trade surplus and high output growth is channeling the extra expenditure that the lower trade surplus allows into productive, trade-oriented capital accumulation. And even if this requirement is met—through increased public sector investment, incentives for private investment, or both—the strategy could fail because of a clash with the export drive that, as I argue here, should also be part of the external debt strategy. Higher investment invariably increases the aggregate demand for home goods and thus puts upward pressure on the real exchange rate. That could crowd exports out and jeopardize creditworthiness by diverting production from traded goods. The way to avoid this is to create room for exports by restraining public and private consumption. Such restraint would also alleviate pressure on imports and the trade balance that could result without it. These issues concern internal adjustment problems, which I treat in section IV.

The pros and cons of the two options show that they are mutually exclusive in practice. Running high surpluses in the noninterest current account typically leads to falling investment, slower growth, and an increase in the debt-dynamics term as the growth rate falls below the real interest rate on external debt. Conversely, higher growth from rising investment expenditure almost certainly requires continuing net resource transfers from abroad.

The second choice concerns the depreciation of the real exchange rate, which raises the debt-output ratio but lowers the debt-export ratio. Should a country opt for a real depreciation (and export orientation) and simply accept the associated losses on its external debt? Or is there an alternative, avoiding a real exchange rate depreciation?

Consider first, a real appreciation, which lowers the ratio of external debt to output by lowering the price of foreign goods (in which the foreign debt is expressed) relative to that of home goods (which make up GNP). A steady real appreciation implies a steady increase in the relative price of home goods, which without policy changes would induce their excess supply. The only way to avoid this is to raise the one component of demand for home goods likely to be the least price-sensitive and under the control of policymakers: government expenditure. The strategy would see government expenditure rise and exports fall with time. In addition, domestic consumers would increasingly shift from more expensive home goods to foreign goods, eroding the trade balance and eventually forcing the strategy's abandonment. The anticipation of such events

is behind the exchange rate crises in many Latin American countries over the past few years.

Turkey followed the opposite strategy by basing its concerted export drive on a commitment to an exchange rate that would maintain or steadily improve its external competitiveness—a strategy that requires real depreciation of the exchange rate. Empirical evidence widely supports the view that such a strategy is essential to maintain creditworthiness, for commercial credit ratings invariably put much emphasis on an economy's export orientation. The conclusion should be clear: an exchange-rate-based export orientation is an essential component of an external debt strategy, the associated capital losses on external debt notwithstanding.

III. Sustainable Borrowing

Assume that a borrowing country has considered the evidence and found the example of Latin America and Eastern Europe less than attractive. It then decides to take option 2—to pursue a strategy of high growth within the limits of solvency and creditworthiness. The formulation of such a strategy starts with a decision on what current account deficit is sustainable. It then calls for borrowing up to that limit and making internal adjustments to ensure that the additional borrowing goes for investment and output growth. In this section I discuss one approach to sustainable borrowing; in the next, the matching internal adjustment programs.

A country's room for external borrowing involves two considerations: solvency and creditworthiness. Solvency concerns ability to pay and is linked to the noninterest current account, to the real rates of interest and output growth, and the initial level of debt. To remain solvent, a country should not plan expenditures higher in discounted value terms than its current and (discounted) future income minus its initial debt.

In the steady state, which is relevant to concerns about sustainability, the current discounted value of income less expenditure is $(Y - C - I)/(r^* - n)$. Y is national income before foreign interest payments, C aggregate consumption, I investment expenditure, r^* the average real interest rate on foreign debt, and n the real growth rate of the economy. $Y - C - I$ equals NICA, the noninterest current account surplus. For this expression not to fall short of the initial debt, the following must hold:

$$\text{NICA} > (r^* - n)\, b^* \tag{3}$$

where NICA and B^* are expressed as shares of output indicated by lowercase letters. This expression implies that the noninterest current account surplus, to be sustainable, should on average at least equal the initial debt times the difference between the real interest cost of foreign debt and the real output growth rate.

Several important consequences follow from this relationship. First, a coun-

try with higher income, or a country with lower debt, can borrow more than a country with a higher debt-output ratio. Second, the more expensive a country's external debt, the higher the needed surplus on the noninterest current account to maintain solvency. Third, the higher a country's growth rate, the more leeway it has in borrowing without jeopardizing solvency. The obverse conclusion reflects the vicious circle so many debtor countries face: slow growth means less external borrowing, which in turn means slower growth, and so on.

For most countries, the constraints of solvency are not very restrictive. Turkey's ratio of net foreign debt to GNP was 51 percent in 1986. Even if the average real interest rate on its external debt remains as high as 8 percent, for a real output growth rate of 6 percent, solvency would require a surplus in the noninterest current account of only 1 percent of GNP. On the plausible assumption of an average real interest rate on foreign debt of 6 percent, this would imply a lower limit of zero on the noninterest current account. So, only a continuing deficit in the noninterest current account would eventually jeopardize solvency at today's interest rates and projected real output growth rates of 6 percent.

But solvency is not the only consideration, for the ability to repay does not imply a willingness to repay. Creditworthiness depends on the lender's assessment of a country's ability *and* willingness to repay—and often imposes tighter constraints than solvency alone. Repayment requires not only a high enough value of wealth to repay but also a surplus of traded goods production over traded goods consumption (net exports). Generating this surplus is likely to be much more burdensome for a country with most of its resources in nontraded goods sectors than in an outward-oriented country with many more of its resources in the traded goods sectors. And if it is more burdensome, the country might be more tempted not to repay, even if it is solvent. That is why debt-export ratios are important in assessing creditworthiness.

Assessing the precise limits that creditworthiness constraints impose is difficult for several reasons. First, while debt-export ratios are important, they are a biased estimate of the ratio of a country's debt to its output of tradable goods. Some domestically produced tradables are likely to be sold at home rather than exported. So, the true measure lies somewhere between the debt-output ratio (which also counts nontradables) and the debt-export ratio (which excludes tradable goods produced and sold at home). A recent study for Turkey (Anand and others, forthcoming) followed an approach that Cohen (1985, 1988) pioneered. This approach uses an average of the debt-output and the debt-export ratios weighted so that it is not affected by changes in the real exchange rate. It thus removes any incentive to overvalue or undervalue the exchange rate simply to improve creditworthiness indicators. The derivation of the debt-resource ratio is influenced by the price elasticity of export demand and output supply. The outcome for Turkey places a 60 percent weight on the debt-export ratio and a 40 percent weight on the debt-output ratio (Anand and others, forthcoming).

A second, more fundamental problem involves assessing whether the debt-resource ratio is too high (high values indicate low creditworthiness). An indicator is too high (creditworthiness too low) if the burden of servicing the debt at that value exceeds the likely penalty for not complying with repayment terms. The problem with this definition is that nobody really knows how high that penalty is. Cohen (1985, 1988) presents a very simple but forceful approach to this issue. The cost of default is not known, but if a country has not defaulted at the current value of its debt-resource ratio, that value is, by implication, not yet too high. Otherwise, the country would already have defaulted. A cautious borrowing policy, then, is one that prevents a rising debt-resource ratio.

One important caveat: it does not follow from this analysis that a borrowing policy to reduce debt-resource ratios rapidly is necessarily a good idea. True, lower debt-resource ratios indicate higher creditworthiness, but the transitional costs of reaching that lower ratio raise the cost of servicing the existing debt. Since creditworthiness involves comparing the cost of default with the cost of servicing the current debt, such a strategy, imposed on many high-debt countries, lowers rather than increases their current creditworthiness.

How much foreign borrowing is compatible with maintaining the debt-resource ratio at its current value and thus with maintaining the current level of creditworthiness?[1] Since the debt-resource ratio is a weighted average of the debt-output and debt-export ratios, the answer depends on the growth rates of the borrowing country and its trading partners. One determinant of a country's likely export growth is the growth rate of its trading partners. Another is the elasticity of demand for the borrowing country's exports with respect to income in the countries to which it exports.

Consider the example of Turkey. Empirical analysis suggests that the income elasticity of demand for Turkey's exports is high: 1.6 for its exports to countries that belong to the Organisation for Economic Co-operation and Development (OECD) and 4.0 for the oil-exporting countries in the Persian Gulf region, giving a weighted value of 2.0 (Anand and others, forthcoming). So if the output of Turkey's trading partners (weighted by their share in Turkey's exports) grows by 4 percent, Turkey's exports are likely to grow by 8 percent. Lower growth rates, whether at home or abroad, allow for less debt accumulation (table 2).

For zero growth at home and abroad, no further borrowing is possible (this is outside the range of the table). Raising the domestic output growth rate by 4 percentage points—from 3 to 7 percent—allows an extra current account deficit of 1.5 percent of GNP for each growth rate of foreign output. A boom abroad also increases the borrowing potential: if the growth of trading partners'

1. I assume here that a developing country should borrow up to its creditworthiness limit. In a world without uncertainty, this strategy will be optimal as long as the marginal productivity of capital exceeds the real interest rate payable on the foreign debt.

Table 2. *Sustainable Current Account Deficits, Turkey*
(percentage of GNP)

Turkey's output growth rate (percent)	*Output growth rate in Turkey's trading partners (percent)*[a]					
	0	*1*	*2*	*3*	*3.5*	*4*
3	1.12	1.21	1.29	1.38	1.42	1.46
4	1.49	1.58	1.66	1.75	1.79	1.83
5	1.87	1.95	2.04	2.12	2.17	2.21
6	2.24	2.33	2.41	2.50	2.54	2.58
7	2.61	2.70	2.78	2.87	2.91	2.95

Note: The table gives the maximum current account deficit, and thus increase in foreign debt, that will avoid a rising debt-resource ratio.

a. Weighted by their shares in Turkey's exports.

Source: Anand and others (forthcoming).

output rises from, say, 0 to 4 percent, the amount of feasible debt accumulation goes up by 0.3 percentage points of GNP.

IV. Internal Adjustment: Toward a Consistent Fiscal Policy

Once the feasible current account deficit has been decided, a matching program of internal adjustment needs to be set up. That program consists of a set of policies to bring about a public and private surplus of savings over investment that just matches the current account target. The challenge is to design this package such that total investment, private and public, will be high enough for output growth to achieve its target rate. The design involves two stages. The first is to decide how much the public sector should contribute to the required improvement in the surplus of aggregate savings over investment. Once this is clear, the difference between the targets for the fiscal deficit and the current account reveals the needed surplus in net private savings. The policy instruments with the most influence on private savings are interest rates and taxes.

In the long run, what determines the size of government are the views on the public sector's role in the economy and the distortionary costs of raising the revenue to finance the associated expenditure. But in the medium run, such considerations are of little help for the issues discussed here, so I suggest a more modest approach.

It starts from the assumption that the government has certain target values for such variables as inflation and output growth. In addition, there are the constraints imposed by the sustainability of the current account deficit. Similar considerations are at play in the analysis of domestic debt. Such considerations imply restrictions on the feasible public sector deficit. Consistency with other macroeconomic targets provides policymakers with an answer to the question, How large should the deficit be? Optimality of fiscal deficits is a more complicated target, satisfaction of which needs entirely unavailable data. Consistency with other stated macroeconomic targets, however, is much easier to assess,

and is in any case a sensible requirement. Absence of consistency is a clear signal that one policy or another will need to be changed in the future; the government surely does not want its hand forced by private speculators acting on such signals.

Consistency of Fiscal Policy

The analysis of consistency starts with the mundane observation that there are three sources of financing public spending beyond the regular tax system: the issue of domestic debt, the issue of foreign debt, and the revenue from monetization. The amount from each source depends on such other macroeconomic targets as those for inflation, output growth, and interest rates. The revenue from these three sources of financing can be combined in the calculation of a "financeable deficit," the deficit that requires no more financing than is compatible with sustainable external borrowing, existing targets for inflation and output growth, and a sustainable internal debt policy (this framework is presented in detail in van Wijnbergen and others 1988).

Underlying the framework suggested here to calculate the financeable deficit is a model describing private portfolio choice as a function of inflation, output, and interest rates. This framework gives the amount of currency, demand deposits, and time deposits that the private sector is willing to hold given output, inflation, and the level and structure of interest rates. It is coupled with a simple financial sector model incorporating reserve requirements and other bank regulatory policies to derive the demand for reserves by commercial banks. The demand for reserves is then added to the demand for currency already derived to get an estimate of the total demand for base money—given inflation, interest rates, and so on. All this is used to derive total revenue from monetization for different regulatory policies and different rates of output growth, interest, and inflation.

To the revenue from monetization must be added the revenue the government can expect from issuing external and internal debt, given its policies on external borrowing and debt management. The results of this exercise for Turkey are in tables 3 and 4. Underlying these tables are various targets and assumptions, the most important of which is a real output growth rate of 6 percent a year. A further assumption is the use of late 1987 values for reserve requirements and nominal interest rates on demand and time deposits. As to liquidity requirements, only the part on which no interest is paid is incorporated; the remainder is included in the definition of interest-bearing public sector debt held by the banking system.

Table 3 assesses potential revenues from the inflation tax and total seigniorage for various inflation rates. The inflation tax refers to the increases in nominal balances moneyholders need to accumulate just to keep the real value of money balances constant in periods of inflation. Total seigniorage includes in addition the real resources yielded by increased money demand as a result of real growth. Throughout, a unitary income elasticity is assumed. After giving

Table 3. *Money Demand, Inflation Tax, and Seigniorage at Various Inflation Rates, Turkey*
(percentage of GNP)

Inflation rate (percent)	*Currency*	*Demand deposits*	*Time deposits*	*Base money*	*Inflation tax revenue*	*Seigniorage net of inflation tax*	*Total revenue from monetization*
15	3.0	7.5	17.5	6.8	1.0	0.4	1.4
20	2.9	7.3	16.7	6.6	1.2	0.4	1.6
25	2.9	7.1	16.0	6.4	1.4	0.4	1.8
30	2.8	6.9	15.3	6.2	1.6	0.4	2.0
35	2.7	6.7	14.7	6.0	1.8	0.4	2.2
40	2.7	6.5	14.1	5.8	2.0	0.3	2.3
45	2.6	6.3	13.5	5.7	2.1	0.4	2.5
50	2.6	6.1	13.0	5.5	2.2	0.4	2.6
55	2.5	6.0	12.5	5.4	2.4	0.3	2.7
60	2.5	5.8	12.1	5.2	2.5	0.3	2.8

Source: van Wijnbergen and others (1988).

the demand for currency, demand deposits, and time deposits as a function of interest rates and so on for various inflation rates, the table calculates revenue from the inflation tax and seigniorage—and adds the two to arrive at total revenue from monetization.

Both components of base money are very sensitive to inflation.[2] As inflation rises from 15 percent to, say, 60 percent, the demand for currency falls from 3 percent of GNP to 2.5 percent, and the combined total of demand and time deposits falls from a predicted 25 percent of GNP to 18 percent. Not surprisingly, total demand for base money also falls: from 6.8 percent of GNP to 5.2 percent. The higher inflation clearly leads to higher revenue from the inflation tax: it goes from 1.0 percent of GNP to 2.5 percent. The total revenue from monetization also rises but at a slightly lower rate, because the other component, seigniorage net of inflation tax, actually declines as inflation rises. This effect is negligible, however.

Finally, to estimate the expected revenue from interest-bearing domestic debt, I assumed that its issue is kept down to a rate that would maintain the ratio of domestic debt to total GNP. The reason for not allowing a faster rate of issuing domestic debt is the high interest rate it currently carries. At 12 percent a year, well above the real growth rate of the economy, debt service would escalate in relation to GNP if more use were made of issuing debt to finance the debt (a subject explored at greater length in the next section). The public sector can expect slightly in excess of 3 percent of GNP from issuing internal and external debt if it is to meet the constraints of sustainability and creditworthiness.

Table 4 shows the financeable deficit—the sum of revenue that the government can expect from external borrowing (subject to the constraints outlined

2. Measuring asset-stock-to-GNP ratios and revenue from the inflation tax involves corrections for differences between beginning-of-period and average price levels.

Table 4. *Financeable Deficit at Various Inflation Rates, Turkey*
(percentage of GNP)

Inflation rate (percent)	*Financeable deficit*	*Required deficit reduction*
15	4.4	1.3
20	4.6	1.1
25	4.8	0.9
30	5.0	0.7
35	5.2	0.5
40	5.3	0.4
45	5.5	0.2
50	5.6	0.1
55	5.7	0.0
60	5.8	−0.1

Note: The financeable deficit is the sum of the revenue the government can expect from external borrowing, from monetization, and from the issue of interest-bearing domestic debt. The required deficit reduction is the difference between the financeable deficit and the actual 1986 deficit of 5.7 percent of GNP, net of capital losses on external debt. Capital losses on external public sector debt are excluded, not because they would not constitute a real increase in public sector liabilities but because they are unlikely to recur in the future. This is certainly the case with the cross-currency-fluctuations component; while nobody can accurately predict major exchange rate movements, there is a consensus that the dollar has "bottomed out." The assumption of no real depreciation for given cross-currency rates may be more contentious.

Source: van Wijnbergen and others (1988).

earlier), from monetization for different inflation targets, and from the issue of interest-bearing domestic debt. A deficit in this range is sustainable and will compromise none of the macroeconomic targets. An inflation target of 50 percent, close to the rate in 1987, allows a deficit of 5.6 percent of GNP; a target of 20 percent allows a deficit of only 4.6 percent of GNP. Subtracting the financeable deficit from the actual deficit (for 1986) gives the deficit cut needed to achieve macroeconomic consistency.

The actual deficit in 1986 is compatible with a sustained inflation rate of 55 percent. A target rate for inflation of 20 percent implies a required deficit reduction of 1.1 percent of GNP. Note, however, that the tables assume constant nominal interest rates: the time deposit rate is fixed at 55 percent, implying a real rate of interest of 29 percent, clearly unsustainable. The real rates on bonds would have to rise to similar levels for the treasury to be able to issue them, with predictable consequences for debt-service costs. An alternative assumption would be to lower the nominal rate of interest in line with inflation to maintain real rates of interest. This would lead to lower demand for time deposits by comparison. But empirical analysis suggests that some of this shift (almost a third) would go into demand deposits, moderating the impact of lower time deposits on base money demand and hence on the basis for the inflation tax. The net effect at an inflation rate of 20 percent is a decrease in the financeable deficit and thus an increase in the required deficit reduction, from 1 percent of GNP to 1.2 percent.

Three comments are in order. First, a deficit reduction of 1.2 percentage points of GNP constitutes a large adjustment. It would, for example, require a 9.4 percent cut in public investment or a 13.7 percent cut in public consumption. Second, a larger cut would be needed if the real exchange rate, rather than remaining constant, depreciated over the five years under consideration (a subject taken up below). Third, preliminary estimates suggest that the fiscal deficit widened substantially in 1987, calling for a commensurately larger reduction in the deficit in subsequent years.

Fiscal Implications of Financial Sector Policies

The previous section showed that the revenue from monetization can be important in financing government spending. When it is, changes in financial regulation may have important fiscal consequences. Changes in reserve requirements, shifts out of domestic assets, changes in the interest rate structure on deposits, and the like all influence the reserve money that the private sector and the commercial banks will hold for any given inflation rate. So, when recommending reforms affecting any of these variables, the fiscal consequences should be taken into account.

Consider, for example, changes in reserve requirements, recently increased from 10 to 14 percent on all domestic currency deposits. This increase, by raising the required reserves for any given deposit interest rate structure and inflation rate, also increased the demand for base money and the revenue from monetization. Empirical analysis suggests that the increase in base money is likely to have yielded a one-time revenue gain of 1 percentage point of GNP. In addition, since the demand for base money will stay higher as long as these reserve requirements are kept at 14 percent instead of 10 percent, there are recurrent gains in the inflation tax—because the tax is now on a higher base. As a result, the increased reserve requirements ease the fiscal adjustment burden by 0.25 percent of GNP in each year they are kept at 14 percent. This easing would lower the sustainable inflation rate by more than 10 percentage points.

Many countries have different reserve requirements for deposits of different maturity. Turkey's requirement of 14 percent is not unusually high for demand deposits, but OECD countries have much lower reserve requirements for time deposits. What would be the fiscal implications of Turkey's lowering the reserve requirement for the time deposits to, say, 5 percent? Since reserves held against time deposits are a major component of base money, the equilibrium demand for base money would drop by no less than 1.5 percent of GNP in response to such a regulatory change—in a one-time revenue loss for the public sector. In addition, future revenue from monetization would be reduced, since the demand for base money would be lower for any given inflation rate. At an inflation rate of 40 percent, the loss in revenue from monetization from the cut in reserve requirements would be 0.4 percent of GNP each year. So, any such measure should be accompanied by fiscal measures to offset the substantial negative impact on the budget.

Similarly, increasing demand deposit rates also reduces the financeable deficit. An increase in the demand deposit rate to 50 percent would trigger a big shift out of cash balances equal to almost 1.3 percent of GNP. Since the reserve requirements on demand deposits are only 14 percent, this would lower the demand for base money by 86 percent of the shift. Econometric analysis also suggests that there would be an additional shift from nonfinancial assets to demand deposits of about the same size, but this would raise demand for base money by not more than 14 percent of the shift. The net impact on the demand for base money and thus on the revenue from monetization would thus be negative. By coincidence, the required fiscal adjustment is almost the same as that for cutting reserve requirements back to 10 percent (that is, a one-time loss of 1 percent of GNP and 0.25 percent per year thereafter).

Note, however, that pointing out the negative fiscal consequences of, say, cuts in reserve requirements does not mean that no such cuts should be undertaken: high reserve requirements carry efficiency costs that have not been incorporated in this analysis. But it does mean that reform packages incorporating such measures should also specify how they will deal with the fiscal consequences.

Fiscal Implications of Debt Management

Unlike Turkey, many high-debt countries financed payments on their external debt through issuing much more expensive domestic debt. What would the effects be if the Turkish government decided to reverse its policy of the 1980s and increased domestic debt instead of the foreign debt it issued from 1980–86, such that the debt-output ratio returned to its pre-1980 level (net of the increase due to effective exchange rate depreciation)? The external debt ratio, net of capital losses due to depreciation, increased over that period by 13.8 percent of GNP (Anand and others, forthcoming).

Consider, first, the results of a mechanical debt swap: a one-time sale of domestic debt to retire an equivalent amount of external debt. And consider only the budgetary consequences of changing one type of debt instrument for another, not the problems associated with effecting transfer of resources to foreigners. If domestic real interest rates were substantially higher than the average interest cost of foreign debt, the budgetary situation would deteriorate. In Turkey, real rates at home were around 6 percentage points above the average real cost of foreign debt toward the end of the period considered. So the increased interest burden under such a debt swap would raise the actual fiscal deficit by 0.8 percent of GNP in each subsequent year. The deficit reduction required for consistency with a 20 percent rate of inflation rises to 2.1 percent of GNP, up from 1.2 percent of GNP before. And if no fiscal adjustment were undertaken, the equilibrium inflation rate would jump to 85 percent a year, from 50 percent.

A straight asset swap was not, however, the form of choice for debt substi-

tution by most high-debt countries. To effect the implied transfer to foreigners, they had to find a way to increase, by a matching amount, either the government surplus or the surplus in net private savings. Typically, they gradually increased the issuing of domestic debt, absorbed through an increase in the surplus of net private savings. This higher surplus in turn required higher real interest rates, which were bad for the budget because the cost of internal debt rose beyond its already high level. Assume, for Turkey, that the debt would be substituted over five years. During those years the real interest cost of foreign debt is assumed to equal the real output growth rate, so the funding for the asset swap would need to come out of the noninterest current account. To achieve the target reduction of 13.8 percent of GNP over five years (2.7 percent per year) thus requires a substantial positive shift in the noninterest current account in each year.

Anand and others (forthcoming) suggest that such a large increase would require an increase in domestic real interest rates of almost 7 percentage points, escalating not only the servicing costs of the new domestic debt, but also that of earlier debt being refinanced. This refinancing is important because most of Turkey's internal debt has a short maturity (in December 1986 three-quarters of its internal debt had a maturity of one year or less). The budgetary impact would be large: staying consistent with an inflation target of 20 percent, such a debt substitution would now require a reduction in the fiscal deficit of 3.6 percent of GNP, almost twice the adjustment for a straight asset swap. The financing gap would be so large that monetization could no longer cover it. Increasing domestic debt would be even less of a choice because of the high real interest rates. Nor would external debt be a source—because the very design of the scheme is to reduce external debt. A fiscal cutback would thus be unavoidable, and it would have to be substantial, raising the issue of whether output growth could be sustained.

Fiscal Consequences of Exchange Rate Policy

Turkey has followed an aggressive export promotion policy, in which the exchange rate has been a major instrument. Turkey's export-weighted real exchange rate has depreciated by an average 6 percent a year in real terms since 1980, the most important fact behind an extremely successful export drive—at the cost, however, of increasing capital losses on foreign debt. These losses pushed up Turkey's debt-output ratio, but the rapid export growth kept the debt-export ratio fairly stable.

The tradeoff is clear. Continued depreciation of the real exchange rate can help keep export growth faster than the growth of real output, but at the cost of an escalating debt burden as measured by the debt-output ratio. The tradeoff then depends on the target for external borrowing.

If Turkey's external borrowing is restricted to just the amount that would leave the debt-output ratio unaffected (a positive amount, since output is growing), the capital losses on foreign debt due to real depreciation of the exchange

rate severely restrict fiscal policy. For consistency with an inflation target of 20 percent, a required cut in the fiscal deficit of 1.2 percent of GNP under the prevailing real exchange rate jumps to 3.0 percent with a 5 percent real depreciation (table 5). If the real exchange rate depreciates by 10 percent on average over five years, the required deficit reduction rises to 4.9 percent of GNP. The main reason for this is the reduced room for external financing given that the depreciation increases the debt-output ratio.

If, instead, the target is to maintain a constant debt-export ratio, a real depreciation provides room for external borrowing since the resulting rise in export volume offsets the increase in the value of the debt. The current account deficit and external financing feasible under this scenario go from 2.5 percent of GNP with no real depreciation to 3.6 percent of GNP with a 5 percent real depreciation and 4.7 percent of GNP with a 10 percent real depreciation.

The two options are obviously extreme. A strict debt-output target is too restrictive a guide for external borrowing. Pursuing an exchange-rate based export promotion policy while ignoring its favorable impact on creditworthiness would unduly restrict external borrowing, possibly threatening the export boom that the real depreciation was intended to produce. A strict debt-export target also carries high risks. If the export boom falters, the economy is left with a high debt-output ratio and the possibility of a sudden cutoff of external funds.

V. Internal Adjustment: Public Policy and Private Savings and Investment

The analysis so far has focused on the revenue the government, given its macroeconomic targets, can expect from various sources of financing. Reducing the fiscal deficit to what is financeable with the macroeconomic targets makes sure that the fiscal policy is at least sustainable—and that fiscal crises, high inflation, or escalating interest payments will not jeopardize the achievement of those targets. But it does not guarantee that the targets can or will be achieved. That achievement depends on two major factors. First, will the

Table 5. *Real Exchange Rate Depreciation, Fiscal Adjustment, and Feasible External Borrowing, Turkey*
(percentage of GNP)

Real exchange rate depreciation (percent)	*Debt-output target*		*Debt-export target*	
	Feasible current account deficit	*Required deficit reduction*	*Feasible current account deficit*	*Required deficit reduction*
0	2.6	1.2	2.5	1.3
5	0.8	3.0	3.6	0.2
10	0.0	4.9	4.7	−0.9

Note: The required deficit reduction is in relation to the 1986 fiscal deficit of 5.7 percent of GNP; the inflation target assumed is 20 percent.
Source: van Wijnbergen and others (1988).

private sector generate a large enough surplus of private savings over private investment for the economy to achieve its external targets, given the fiscal deficit? Second, will this surplus be achieved at high enough levels of investment to meet output growth targets given the public investment program? The contribution of public policy to the process is the subject of this section.

The analysis here assumes that the country has opted for a growth-oriented strategy within the constraints that the sustainability of foreign borrowing imposes—that is, the country does not rely on high surpluses in the noninterest current account to keep the debt-output ratio in check. The key factor determining the strategy's success or failure is an internal adjustment program that relies enough on reduced consumption (rather than reduced investment) to generate the required internal surplus. If consumption does not fall, either the external targets will need to be sacrificed if investment is not reduced, or the growth of output if it is.

The central question thus is whether external restraint and the requirements for consistency in the fiscal deficit leave enough room for public and private investment and satisfactory output growth. Can the external balance and the growth of output be reconciled, or do they inherently conflict? The interaction between fiscal policy and private savings and investment decisions is crucial in this. Does the private sector run a surplus at high levels of savings and investment or at low levels? If the surplus is achieved by increasing savings for sustained investment levels, output growth can be maintained. But if the adjustment comes mostly through investment cutbacks for given private savings rates, the external adjustment suppresses output growth.

Fiscal policy and real interest rates do much in determining the outcome. A model formalizing the arguments here is presented in Anand and others (forthcoming) and much expanded in van Wijnbergen (1989). Fiscal policy generally influences the size of the private sector's net savings surplus, and the level of investment for achieving any given surplus, in one of three ways. The first occurs when large fiscal deficits boost real interest rates and crowd out private investment. The second is the direct impact of government investment on total investment. The third is having higher government investment designed to be complementary to and thus a boost to private investment.

- Fiscal policy can directly influence the net private savings surplus through real interest-rate-based crowding-out. The overall fiscal deficit is important for this channel. If the government maintains high real interest rates to create the room for higher fiscal deficits without a matching current account deterioration, output growth cannot be maintained. The high real interest rates presumably slow down at least private investment, thus slowing output growth.
- Other fiscal instruments can prevent such a slowdown in two ways. One is to deflect much of the restraining effect of high real interest rates toward consumption while shielding private investment. Investment incentives, tax measures, and credit policies all enter here. Another focuses on public invest-

ment, offsetting some of the fiscal deficit's crowding out of private investment by shifting the composition of government expenditure from consumption to investment.

• In addition to this direct substitution effect, there is a less direct channel for the composition of government expenditure to influence private investment. Public investment, especially in infrastructure, often stimulates rather than replaces private investment. Public investment in, say, roads makes investment more attractive for the private sector in places previously inaccessible. The complementarities of such investment are one reason that private investment in Turkey did not suffer much from continued high real interest rates.

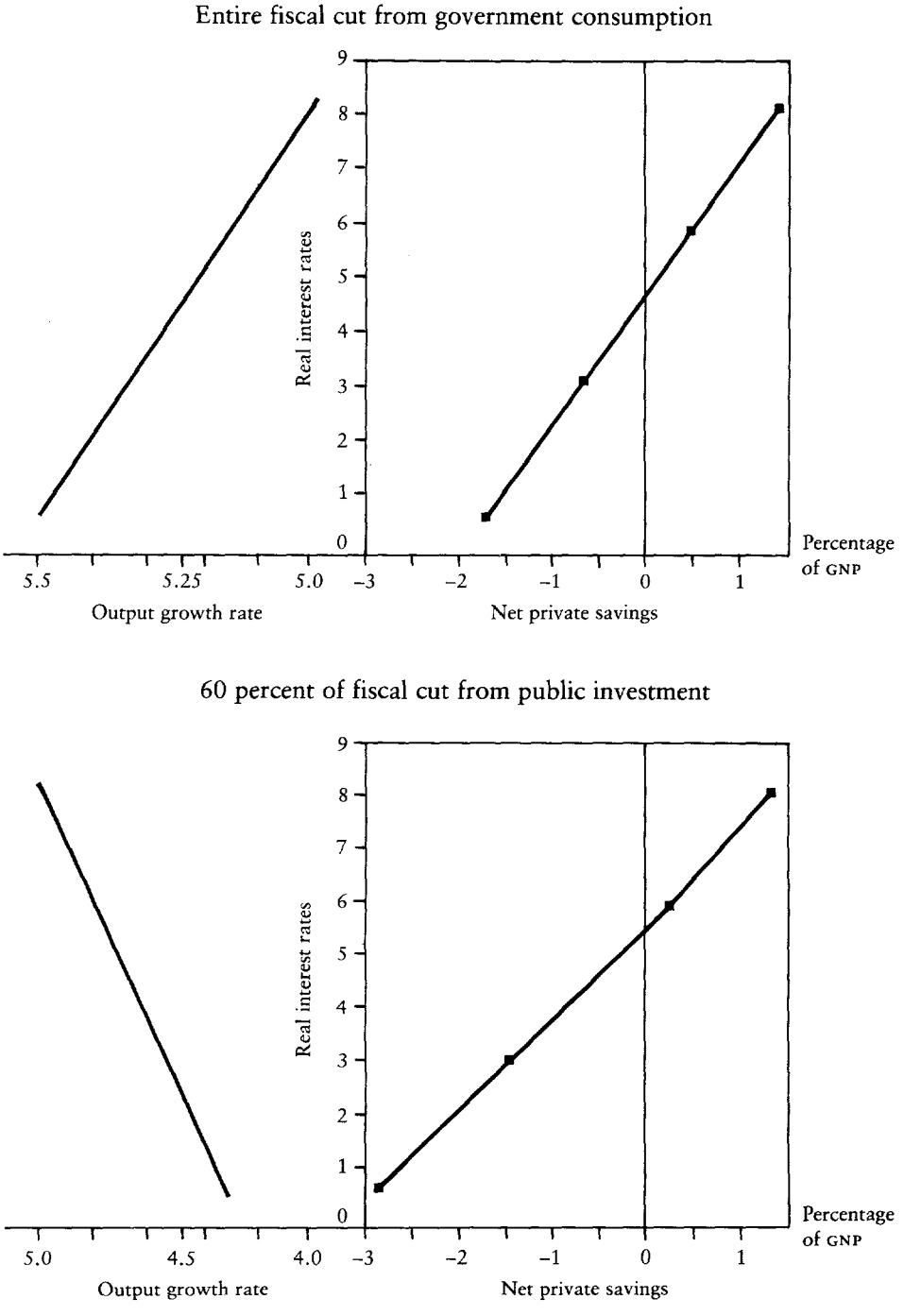
Turkey's current account remained satisfactory despite large fiscal deficits, but the price was higher and higher real rates of interest. Empirical analysis shows that these high rates restrained private consumption more than private investment. And heavy public investment more than picked up the slack, explaining why output growth did not slow down.

Simulation runs using an econometric model from Anand and others (forthcoming) varied interest rates and adjusted fiscal deficits to maintain the targets for external balance, using 1981–86 as the base. The runs assume that the fiscal cuts come entirely from government consumption, that public investment remains constant, and that as interest rates are lowered the spread between lending rates and deposit rates is kept constant. A 7 percentage point drop in interest rates cuts the private sector's surplus of savings over investment by about 3 percent of GNP (figure 3, upper right). A substantial part of the decline in net private savings comes from increased investment by the private sector in response to the lower real interest rates. Since public sector investment is fixed by assumption, output growth goes up by half a percentage point on average over the model's five years (figure 3, upper left).

The results are very different when the fiscal cutbacks are assumed, perhaps more realistically, to come from public investment as well as consumption. Cutting back all government expenditure proportionally implies that 60 percent of the cut comes from reductions in the public sector's investment program. Under this assumption, the lower interest rates stimulate private investment, but the cut in public investment more than offsets this increase in private investment. So output growth declines by an average 0.5 percentage points over the five years. Shifting from no cut in public sector investment to letting 60 percent of the fiscal adjustment come out of cutbacks in public investment therefore causes a full 1 percentage point drop in GNP growth for the five years.

There is a vicious circle in this policy experiment. Cutting public investment reduces output growth, which in turn reduces the private sector's savings surplus. So fiscal deficits and thus public investment need to be cut further to maintain external balance, and growth slows further. If expenditure cuts come solely from government consumption, a 5 percentage point cutback in real interest rates requires a cut in the fiscal deficit of 2.1 percent of GNP to maintain

Figure 3. *The Effects of Changes in the Fiscal Deficit on Interest Rates and Output Growth*



Source: Anand and others (forthcoming).

external balance. But with 60 percent of the cuts coming from public investment, the deficits need to be reduced by 2.8 percent of GNP, or 0.7 percentage points more.

The arguments here do not imply a blanket endorsement of ever-increasing public investment. They do highlight, however, the public sector's importance in Turkey's strong growth over the last few years. They show, moreover, that stabilization programs relying on reductions in public investment can have high and long-term negative output effects through the mechanisms demonstrated. These negative effects are added to those that may arise because of short-run macroeconomic problems.

VI. Summing Up

High real interest rates in a growth-oriented adjustment program may sound like a contradiction in terms. High growth requires high investment, and high real interest rates clearly slow investment down. But high real rates may be necessary to make sure that a large enough private savings surplus is generated to make fiscal deficits and the targets for external balance consistent. To make sure that most of the effect of the high real rates is shifted toward consumption rather than investment, a government can use investment incentives and tax measures to deflect the impact of high real interest rates away from investment.

Clearly, a larger cutback in the fiscal deficit reduces the need for high real interest rates, which is desirable because rates exceeding world interest rates are a price distortion like any other wedge between domestic and world prices. But cutting fiscal deficits also implies welfare costs. There often is room for reducing government consumption expenditure, but at some stage further cuts would damage the quality of government services. There often is room, too, for reducing public investment programs. But I have demonstrated here that public investment can do much to sustain growth, and cutting it excessively will jeopardize that goal.

Higher taxation is another way to cut the fiscal deficit, but it too carries costs. Higher taxes imply higher price distortions, consequent inefficiencies in resource allocation, and increased tax evasion, which limits the extent to which tax increases can be used to reduce deficits. The conclusion is that lower fiscal deficits for given interest rates and higher interest rates for given deficits both have welfare costs. A properly designed adjustment program should therefore include some of each to minimize the overall welfare costs.

This study suggests that the process of quantitative analysis is likely to require several iterations until all components are internally consistent. One of the main contributions of this type of analysis is the extent to which it makes explicit the interdependence of the major macroeconomic variables and provides some indication of their quantitative significance. But it also reveals the tradeoffs in the costs and benefits of the available approaches, and thus clarifies the choices policymakers need to face.

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