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Macroeconomic Adjustment and Growth

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The Macroeconomics of Public Sector Deficits

The Case of Pakistan

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and
Peter Montiel

Pakistan's fiscal deficit remains high because of the government's inability to mobilize new resources or to cut current expenditures. Yet, unlike other developing countries with high fiscal deficits, Pakistan has experienced neither hyperinflation nor debt rescheduling. This can be attributed to high growth and to the availability of concessional external financing and domestic nonbank borrowing.

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Policy, Research, and External Affairs

WORKING PAPERS

Macroeconomic Adjustment and Growth

WPS 673

This paper — a product of the Macroeconomic Adjustment and Growth Division, Country Economics Department — is part of a PRE research project, The Macroeconomics of the Public Sector Deficit (RPO 675-31). Copies are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Raquel Luz, room N11-057, extension 34303 (63 pages, with charts and figures).

For almost 20 years, Pakistan's fiscal deficit — at about 7 percent of GNP — averaged nearly twice the level for Asian countries as a whole. Although other countries with high fiscal deficits — in Latin America, for instance — have typically experienced serious growth, inflation, and current account problems, Pakistan has not. In recent years the inflation rate has been 5 percent, economic growth has averaged 7 percent a year, and the current account has either been in surplus or registered manageable deficits.

Haque and Montiel examine the causes of Pakistan's fiscal deficits. As in many other countries, public enterprise investment spending (financed by external development funds) during the early to mid-1970s became a fixture of the economy, while sufficient revenues could not be generated through taxes or returns on public investments. Public sector wages and salaries, as well as higher defense spending in the late 1970s, added to the burden. But the most important contribution to the fiscal deficits came from public sector interest payments. To keep inflation in check and to tap remittance flows, Pakistan resorted to nonbank borrowing, but the rising stock of internal debt led to higher interest rates, exacerbating the fiscal deficit.

The authors also examine why, despite these deficits, the country's macroeconomic performance has been surprisingly good. The equilibrium deficit is estimated to have been quite high for Pakistan in recent years (about 5.5 percent of GNP), despite a low inflation rate, because of a very high underlying rate of growth of real output (about 6 percent a year). This allowed a fairly rapid expansion of debt without recourse to inflationary finance. Pakistan was also able to borrow both domestically and abroad at below-market rates, including recycled petrodollars from Middle East oil producers after 1973.

To gain additional insight into the role of fiscal deficit in Pakistan, Haque and Montiel analyze how alternative fiscal policies would have affected the country's economic performance during the 1980s. They find that:

- Reducing the deficit by cutting public expenditure could have had a favorable effect on the trade balance, but at a cost to economic growth and with few price payoffs.

- Increasing tax revenues could achieve a similar external adjustment while reducing the output cost, but price problems might arise.

- Altering the composition of deficit financing would have predictable results — shifting to more money financing would mean higher prices, lower interest rates, and higher growth.

The authors conclude that finding alternative modes of deficit financing will become more urgent. Not only will continued concessional financing depend on the vagaries of the world oil market, but the accumulation of domestic debt and the higher cost of borrowing at home will require lower primary deficits. But they warn that if Pakistan turns to money financing, its macroeconomic performance would likely begin to resemble that of other high-deficit developing countries.

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Introduction

As in many other developing economies, the fiscal deficit has been perceived as a continuing problem in Pakistan. The authorities have made repeated attempts, including the undertaking of several adjustment programs, to deal with fiscal imbalances over the past two decades, but have only achieved temporary successes. The deficit of the federal and provincial governments has averaged about 6 1/2 percent of GNP during the eighties, and was about 7 1/2 percent in the fiscal year 1987/88, the most recent year included in this study. As in many developing economies, the deficit remains high because of the political and administrative inability of the government to mobilize additional resources or to cut current expenditures. Weaknesses in the tax system have led to an inelastic tax structure and a heavy reliance on trade taxes for revenues. Moreover, with defense expenditures constituting about 25 percent of expenditures, interest payments another 15 percent, and administration (including social services) another 15 percent, the structure of expenditures is not amenable to large cuts. The burden of expenditure cuts, therefore, falls on development expenditure at the cost of much-needed infrastructure.

In spite of these similarities with conditions elsewhere, the macroeconomic consequences of fiscal deficits in Pakistan have apparently been quite dissimilar from those in other developing countries with fiscal deficits of comparable magnitude. Specifically, Pakistan has experienced neither hyperinflation nor debt rescheduling. As measured by the official figures, growth has remained quite strong through the last two decades, inflation has not been high, and the current account deficit has averaged

about 2 1/2 percent of GNP, remaining largely financeable and not posing debt servicing problems for the country.

For this reason, Pakistan presents an interesting contrast to some of the other countries in this study. This chapter will focus on the reasons why Pakistan's extremely high fiscal deficits have proven to be relatively benign--at least in comparison with the experience of, say, several Latin American countries. The chapter is divided into six parts: the first section presents a brief overview of macroeconomic developments in Pakistan over the last two decades. This is followed by a more detailed look at fiscal developments intended to address the question of why fiscal deficits have remained consistently high. The macroeconomic consequences of these deficits are examined in the next three sections, which in turn describe "equilibrium" deficit calculations, estimates of the effects of fiscal policy variables on structural macroeconomic relationships in Pakistan, and counterfactual simulations of alternative historical fiscal policies. chapter's main conclusions are presented in the last section.

I. Macroeconomic Developments in Pakistan--An Overview

As indicated above, the distinguishing feature of Pakistan's recent macroeconomic history is that, in spite of the presence of fiscal deficits that are very high by international standards, the country's macroeconomic performance has been relatively good. This is not to say, of course, that fiscal deficits of the magnitudes observed have not had harmful effects, or that performance could not have been improved with lower deficits, but rather that there is no evidence in Pakistan of the chronic acute macroeconomic crises--manifest in extended periods of negative per capita

income growth, hyperinflation, and inability to service external debt--that have characterized many other developing countries with comparable fiscal performance.

This can be readily documented by a brief overview of Pakistan's recent macroeconomic performance, focusing on a small number of key variables. Figure 1 describes the behavior of the overall deficit of the consolidate federal and provincial governments of Pakistan, expressed as a fraction of GNP. 1/ As this figure illustrates, the deficit has remained very high over the entire period spanning nearly two decades, with the average deficit amounting to about 7 percent of GNP over the entire 1972-88 period. Although some fiscal adjustment was achieved during 1978-81, when the extremely high deficits of the 1974-78 period were nearly cut in half, the fiscal deficit has been on a rising trend during most of the decade of the eighties. Over these years, Pakistan's fiscal deficit averaged nearly twice that of Asian countries as a group, according to the IMF's World Economic Outlook (1990).

In contrast to this fiscal performance, Figure 2 presents the inflation-output outcomes over the same period of time. The top panel of this figure demonstrates that, whether measured by the CPI, the WPI, or the GDP deflator, inflation performance in Pakistan appears to have been remarkably good. The peak inflation rate during this period came in

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1/ This is the broadest deficit measure available for Pakistan and will be used throughout the study. Because of the importance of workers' remittances in this country's economy GNP, rather than GDP, will be used as the scale variable.

Figure 1

Consolidated Deficit of the Federal & Provincial Governments

1972-73 to 1987-88

(percent of GNP)

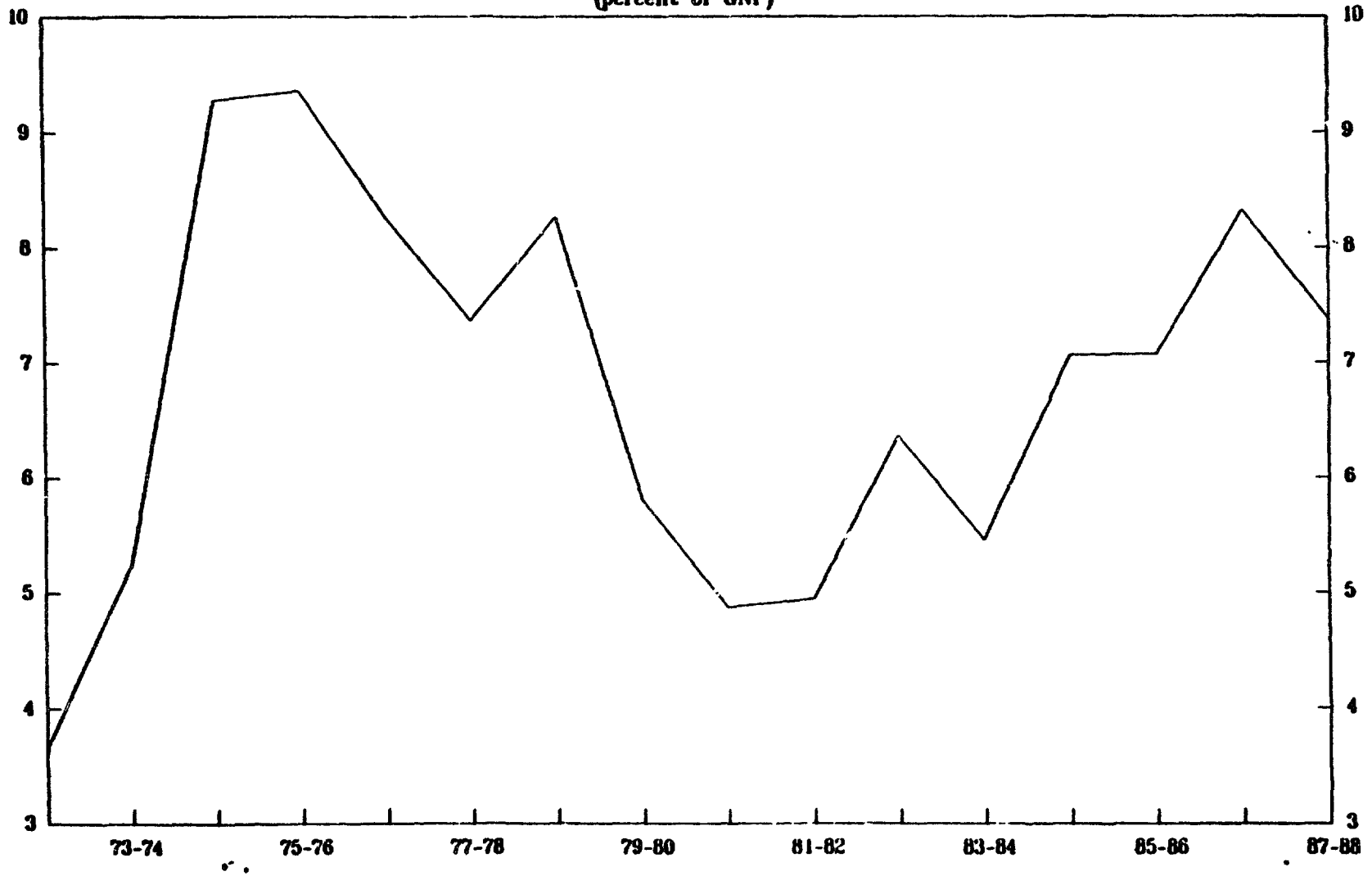


Figure 2a. Inflation, 1972-73 to 1987-88
(in percent)

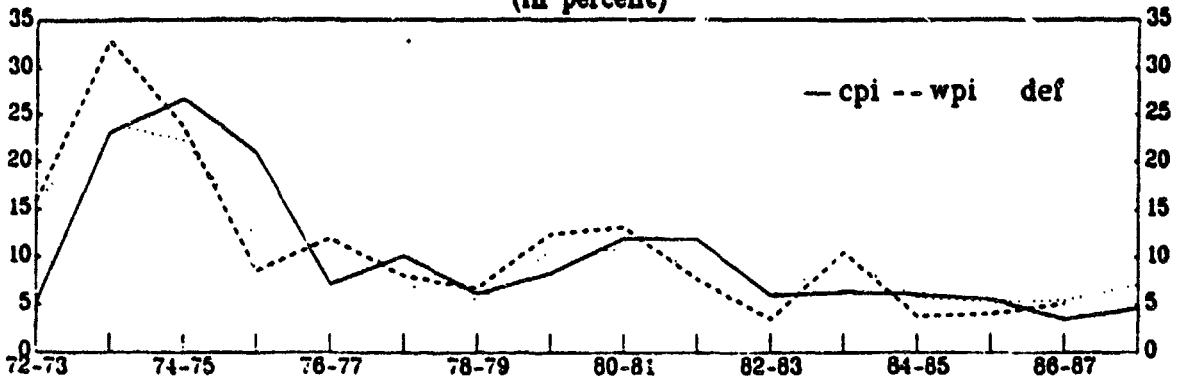


Figure 2b. Rate of Growth of GDP, 1972-73 to 1987-88
(in percent)

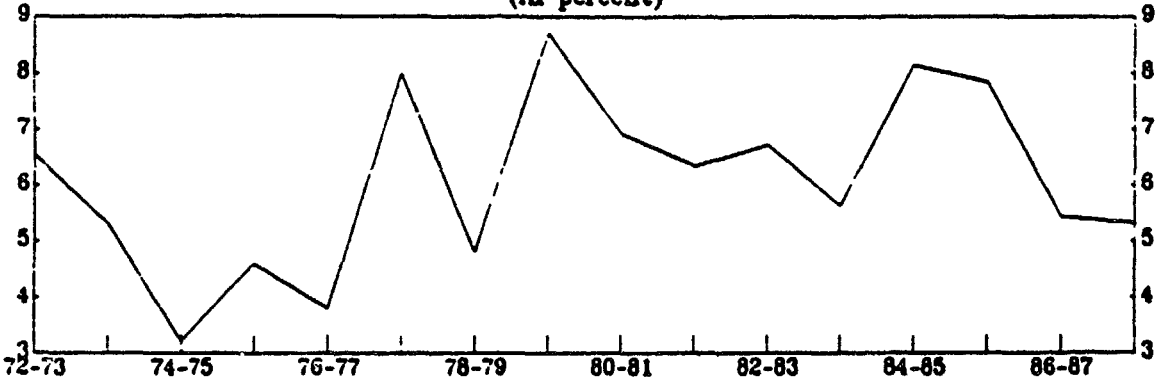
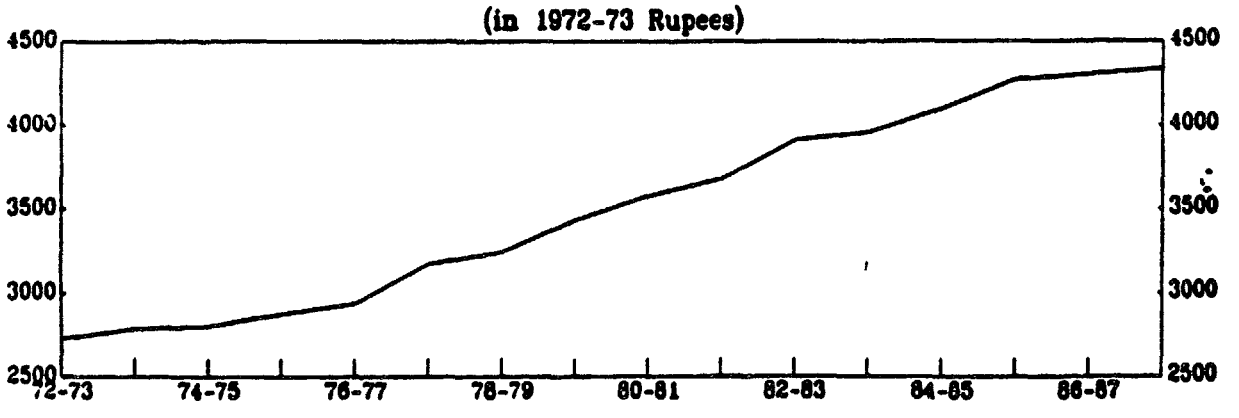


Figure 2c. Real GNP Per Capita, 1972-73 to 1987-88
(in 1972-73 Rupees)



1973-74, amounting to 33 percent (as measured by the GDP deflator), and after 1976 the inflation rate averaged less than 10 percent per year, converging in recent years to about 5 percent. At the same time, economic growth has been robust (Panel B), averaging more than 7 percent during the eighties, and never falling below 3 percent per year over the entire 1972-87 period. As a result, real GNP per capita has exhibited a continuously rising trend during this time (Panel C), with a cumulative increase of about 60 percent. 1/

Turning to the external sector, Panel A of Figure 3 depicts the current account/GNP ratio. After a peak deficit of over 8 percent of GNP in 1974-75, Pakistan achieved a substantial current account adjustment, registering a small surplus by 1982-83. While the country benefitted during this period from a substantial increase in external receipts in the form of worker's remittances (primarily from Pakistani workers employed in Middle Eastern oil-exporting countries), it is noteworthy that this boon contributed to current account adjustment, rather than to an import binge. Expressed as a proportion of exports of goods and non-factor services, Pakistan's external debt service ratio remained at the relatively low value (even by Asian standards) of about 17 1/2 percent up to about 1981-82 (see Panel B of Figure 3). Expressed in proportion to a more relevant measure--

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1/ To some extent the official price-output figures could be misleading. The quality of the output data is open to question, particularly in the presence of what is said to be a substantial underground economy. The consumer price index, on the other hand, encompasses a number of goods which have been subjected to price controls for some time. While this may be part of the story, however, data problems are unlikely to account for more than a very minor part of the discrepancy between the macroeconomic performance of Pakistan and that of, say, several large countries in Latin America.

Figure 3a. Ratio of Current Account to GNP, 1972-73 to 1987-88
(in percent)

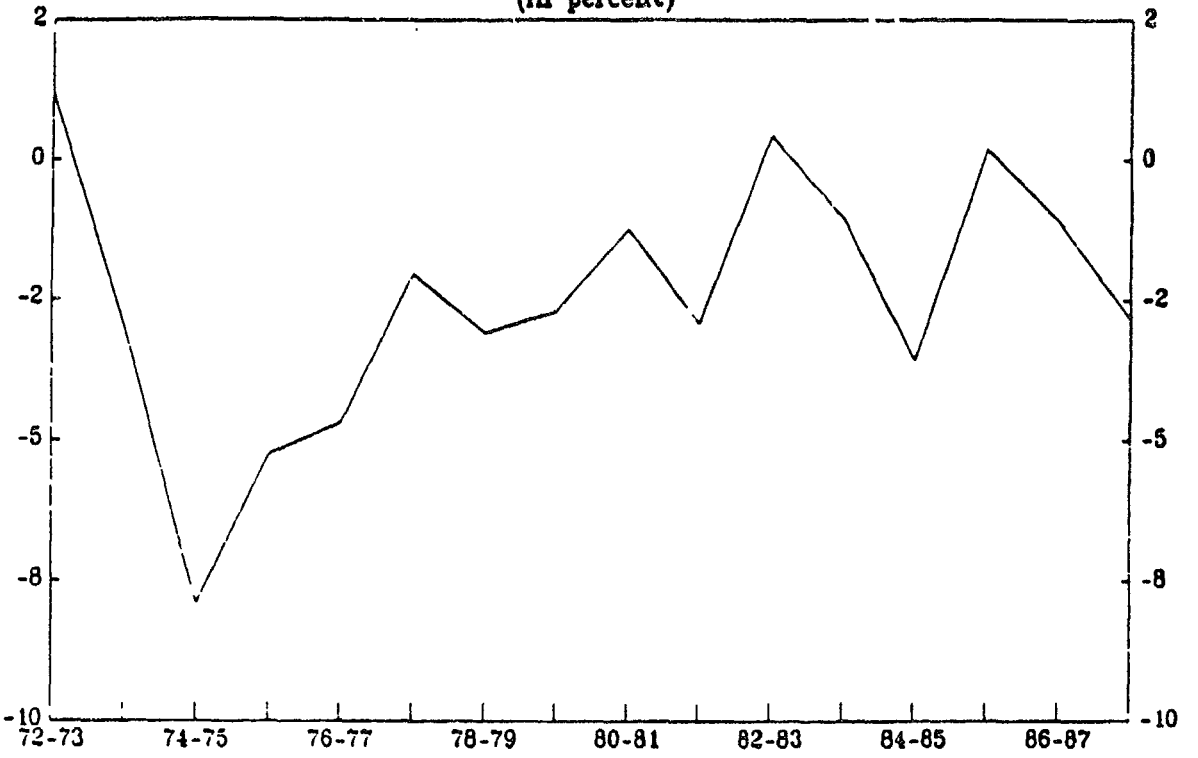
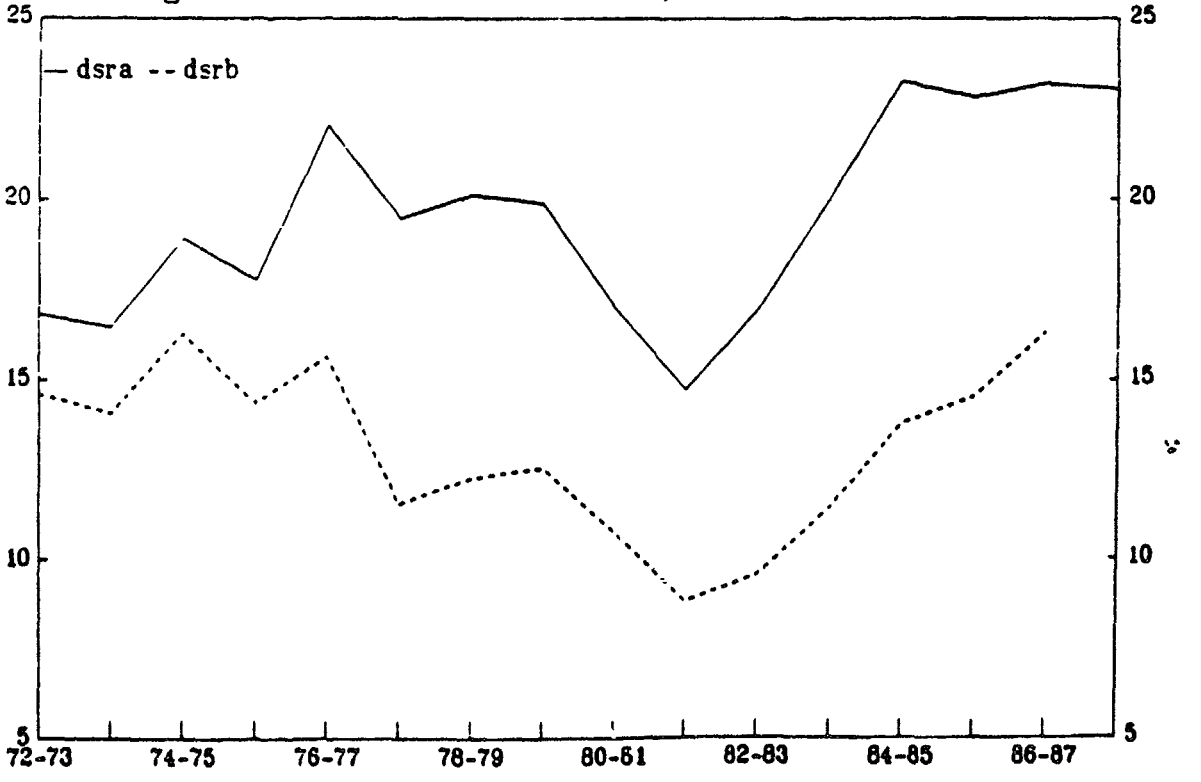


Figure 3b. Debt Service Ratio, 1972-73 to 1987-88



exports of goods and services (i.e., including remittances), the average debt service ratio for the same period is substantially lower (about 12 percent). This reflects not only the previously mentioned current account adjustment, but also Pakistan's access to external funds at concessional rates.

After 1981-82, however, Pakistan's debt service ratio increased sharply, with the higher measure stabilizing at about 23 percent of exports of goods and nonfactor services after 1983-84. As shall be shown below, this reflects a shift in the composition of external financing toward increased borrowing at market rates.

A final notable feature of Pakistan's macroeconomic performance over the past two decades concerns the rather unusual behavior of national saving and investment. These variables, expressed in proportion to GNP, are plotted in Panel A of Figure 4. In spite of a substantial increase in saving and investment rates over the 1974-76 period, levels of saving and investment in Pakistan have been rather low, not only by developing-country standards, but also in view of the country's high growth rate. The implication is, of course, that measured incremental capital-output ratios (ICOR's) have been remarkably low (Panel B of Figure 4).

II. Fiscal Policy in Pakistan

The origin of fiscal deficits in Pakistan is in many ways not dissimilar to that in other developing countries. In brief, an upsurge of externally financed development spending during the early to mid seventies, primarily in the form of investment by public enterprises, proved to be relatively permanent, and the public sector was unable to generate the

Figure 4a. National Saving and Investment, 1972-73 to 1987-88
(in percent of GNP)

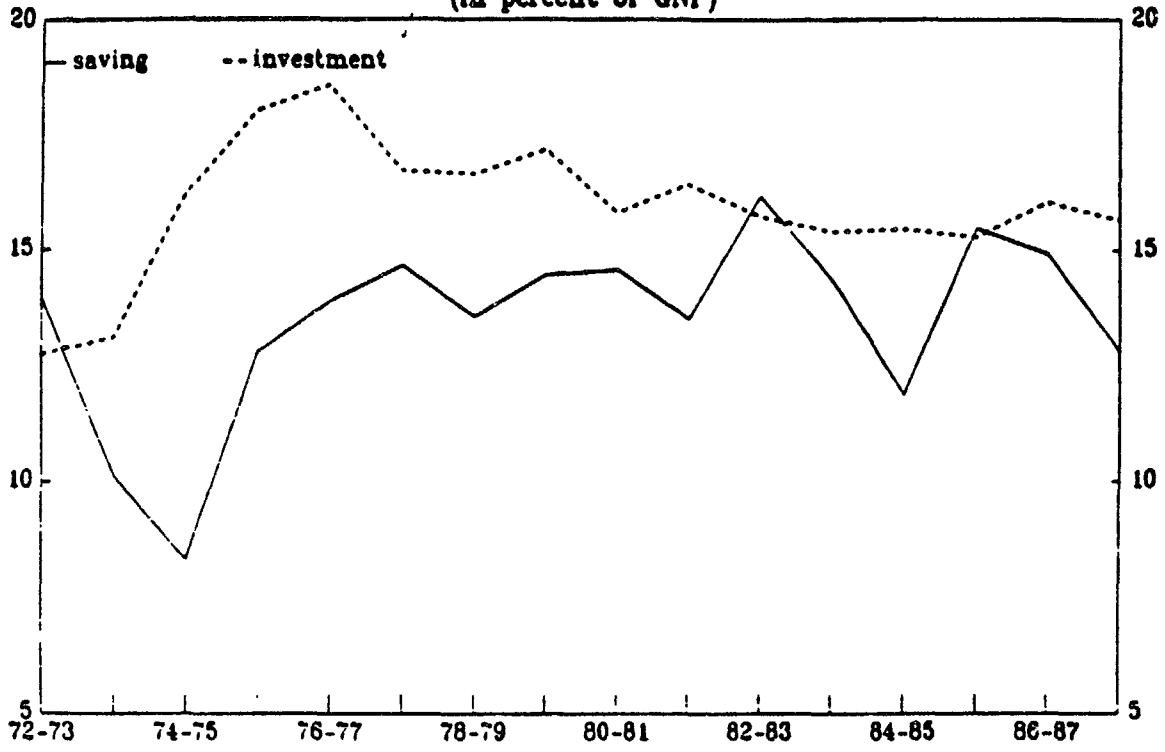
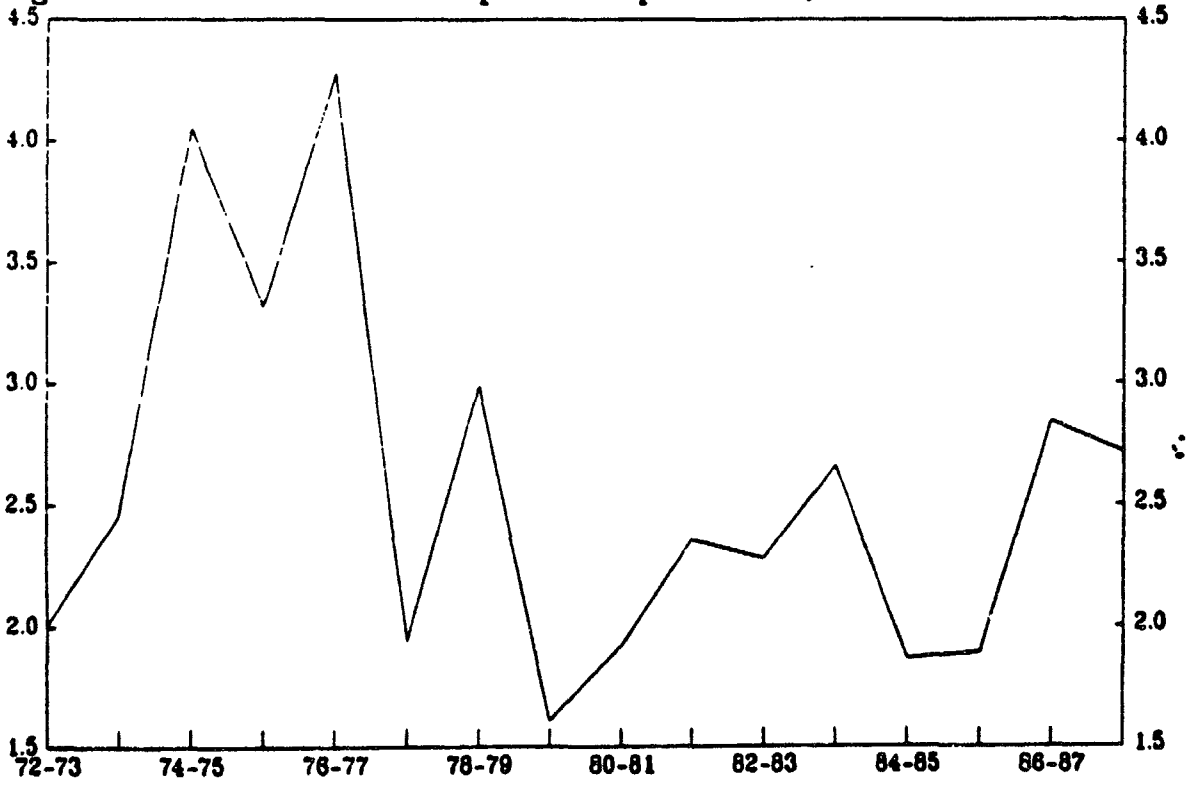


Figure 4b. Incremental Capital-Output Ratio, 1972-73 to 1987-88



revenues--either through taxation or from the direct return to the investments undertaken--to close the fiscal gap thereby created.

For the purposes of this section, it is useful to split the description of fiscal policy in Pakistan into two subperiods, encompassing the period of democratic rule under the Bhutto government (1972-73 to 1976-77) and the subsequent martial law government (1977-78 to 1987-88). The Bhutto government took power after the 1971 war with India and separation of Bangladesh. It saw its mandate as the rapid economic and social development of the former West Pakistan and was given a strong impetus in this direction by the combination of military defeat and plentiful external financing at concessional terms, primarily from Middle Eastern oil producers which at that time were reaping the windfalls of the first oil price shock.

To an extent that is difficult to quantify, spending during these years was influenced by factors such as flood relief and the attempt to provide a countercyclical offset to the negative output effects of the oil price shock (Pakistan is a net oil importer). However, in view of the circumstances described above, the bulk of the spending increase from 18 percent of GNP in 1972-73 to 24 percent in 1975-76 (Table 1) must be understood as the result of a conscious policy choice--i.e., as an explicit intention of fiscal policy. During these years, development expenditures--consisting of investment by the federal and provincial governments, capital transfers to local governments and state enterprises, as well as production subsidies--more than doubled their share of GNP. Public sector investment was devoted to the development of the chemical industry, as well as to cement, fertilizers, engineering, petroleum, steel, and vegetable ghee. This period

Table 1. Pakistan: Consolidated Accounts of the Federal and Provincial Governments, 1972-73 to 1987-88
(in percent of GNP)

	72-73	73-74	74-75	75-76	76-77	77-78	78-79	79-80	80-81	81-82	82-83	83-84	84-85	85-86	86-87	87-88
Total Expenditures	17.9	20.9	24.1	24.2	22.7	21.7	23.4	21.6	21.2	20.5	21.6	21.7	22.4	22.8	24.2	24.1
Current	13.4	14.7	15.5	15.0	13.0	13.6	14.6	13.0	12.6	12.8	14.3	15.6	16.1	16.1	17.3	17.4
Consumption	11.4	9.6	10.6	11.4	10.8	10.1	9.7	9.3	9.7	9.9	10.5	11.2	11.2	11.3	12.1	12.7
Total Interest	1.8	1.8	1.6	1.8	1.8	1.8	1.9	2.0	2.0	2.2	2.8	3.1	3.2	3.4	3.7	3.8
Foreign	1.1	0.9	0.9	0.8	0.9	0.9	1.0	0.9	0.8	0.8	1.1	1.1	1.1	1.1	1.2	1.1
Domestic	0.7	0.9	0.7	1.0	0.9	0.9	0.9	1.1	1.2	1.4	1.7	1.9	2.0	2.3	2.5	2.7
Other	0.2	3.3	3.3	1.8	0.4	1.6	3.0	1.7	1.0	0.7	1.0	1.4	1.8	1.4	1.5	0.9
Development	4.5	6.2	8.6	9.3	9.7	8.1	8.8	8.6	8.6	7.6	7.3	6.1	6.4	6.8	6.9	6.7
Investment	2.0	2.7	3.0	3.3	3.5	2.8	2.9	2.4	2.6	3.1	2.7	2.7	2.7	2.6	2.8	3.0
Other	2.4	3.5	5.6	5.9	6.2	5.4	5.9	6.3	6.0	4.6	4.6	3.4	3.7	4.1	4.1	3.7
Total Revenues	14.2	15.7	14.8	15.4	14.4	14.3	15.1	15.8	16.4	15.5	15.2	16.2	15.4	15.8	15.9	16.7
Tax Revenue	11.0	11.8	11.4	11.7	11.4	11.5	12.0	12.9	12.9	12.4	12.2	11.6	10.8	10.7	10.2	10.9
Direct Taxes	2.2	1.9	1.7	2.1	2.0	1.8	1.9	2.2	2.5	2.6	2.3	2.0	1.9	1.7	1.7	1.9
Indirect Taxes	8.8	9.9	9.7	9.6	9.4	9.7	10.1	10.7	10.4	9.8	9.9	9.6	8.9	9.0	8.5	9.0
Export Duties	1.6	2.1	0.9	0.6	0.1	0.2	0.1	0.2	0.2	0.1	0.1	0.1	0.1	0.2	0.0	0.2
Import Duties	2.3	2.6	3.4	3.3	3.9	4.2	4.7	4.8	4.5	4.2	4.5	4.6	4.4	4.1	4.1	4.2
Other	5.0	5.3	5.4	5.8	5.5	5.3	5.2	5.7	5.7	5.5	5.3	5.0	4.4	4.7	4.4	4.6
Nontax Revenue	3.2	3.7	3.3	3.3	2.7	2.6	2.7	2.4	2.7	2.6	2.5	4.0	4.1	4.6	5.2	5.1
Interest Receipts	0.8	0.8	0.7	0.9	1.3	1.0	0.9	1.0	1.0	0.9	1.0	0.9	1.0	0.9	1.4	1.2
Other	2.4	2.9	2.6	2.4	1.4	1.6	1.7	1.4	1.7	1.7	1.6	3.1	3.2	3.7	3.9	3.9
Surplus of Autonomous Bodies	0.0	0.1	0.2	0.4	0.3	0.3	0.5	0.6	0.7	0.5	0.6	0.6	0.5	0.5	0.4	0.7
Overall Deficit	3.7	5.2	9.3	8.8	8.3	7.4	8.3	5.8	4.8	4.9	6.4	5.5	7.1	7.1	8.3	7.4
Bank Financing	0.0	0.5	1.8	2.9	3.9	2.6	4.1	2.5	2.0	0.4	1.5	1.4	1.8	3.3	0.9	1.6
State Bank of Pakistan	-1.1	-0.6	3.1	0.9	3.7	3.0	3.5	1.2	-0.6	3.0	-1.3	4.5	0.8	0.6	0.9	1.3
Scheduled Banks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
External Financing	3.2	3.7	7.0	5.1	3.8	3.3	3.2	2.8	2.6	1.5	1.3	1.1	1.0	1.5	1.8	1.6
Domestic Nonbank	0.9	1.1	0.5	1.4	0.6	1.5	1.0	0.6	0.3	3.0	3.6	3.0	4.3	2.3	5.7	4.2
Memorandum Items:	4.60	6.96	12.00	10.59	9.84	9.28	9.82	7.52	6.20	6.19	7.97	6.91	8.73	8.64	9.81	8.70
Deficit/GDP (percent)																
Composition of Deficit Financing	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Bank Financing	0.00	0.09	0.20	0.33	0.47	0.36	0.49	0.43	0.40	0.08	0.23	0.25	0.25	0.47	0.11	0.21
SBP																
Scheduled Banks																
External Financing	0.87	0.70	0.75	0.57	0.46	0.44	0.39	0.47	0.53	0.31	0.20	0.20	0.14	0.21	0.21	0.22
Domestic Nonbank	0.23	0.20	0.05	0.15	0.08	0.20	0.12	0.10	0.07	0.61	0.57	0.55	0.61	0.33	0.68	0.57

also saw the nationalization of the seven major manufacturing and industrial groups, as well as of banking, insurance, shipping and educational institutions. Within the category of current expenditures, a rapid expansion took place in the scale of subsidies (classified as "other" current expenditure in Table 1). These increased by an average annual rate of 39 percent in the first half of the seventies. The principal subsidy over the period was on "atta" (whole wheat flour) which was distributed at ration depots, primarily in urban areas, at prices below those required to cover the cost of wheat imports. By the mid-seventies, therefore, the public sector had a significantly larger role in Pakistan than it had at the beginning of the decade.

Unfortunately, this expansion of the role of the public sector was not matched by an offsetting rise in revenues. In fact, though expenditures of the federal and provincial governments increased by more than 6 percent of GNP from 1972-73 to 1975-76, total revenues increased by only one percent of GNP during the same period, owing primarily to an increase in domestic indirect taxes (Table 1). 1/ The result, of course, was an increase in the fiscal deficit amounting to about 5 percent of GNP. Since foreign loans were plentiful and available at favorable terms, almost three quarters of the deficit financing during these years was external.

The martial law government which assumed office in July of 1977 initiated a short-term stabilization program supported by an IMF standby

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1/ Indirect taxes account for about 80 percent of total tax revenues in Pakistan, and foreign trade taxes represent about half of total indirect tax revenue. Administrative problems have hampered the collection of direct taxes, and the taxation of agricultural incomes has not been politically feasible.

program. This program attempted to address some of the structural problems embedded in the economy as well as to correct perceived financial imbalances, the most important of which was the fiscal deficit. An important goal of the new government was to deemphasize the role of the public sector in the economy. This change in regimes coincided with an external shock--the sharp curtailment of financial assistance from the United States because of Pakistan's nuclear program--and these developments ushered in a period of relative fiscal retrenchment. During the period 1976-77 to 1980-81, the fiscal deficit fell from over 8 percent of GNP to under 5 percent.

The fiscal improvement during this period took the form of both expenditure cuts and revenue increases. The spending reductions can safely be treated as exogenous policy measures, since they represented an avowed policy goal of the new government. Moreover, the bulk of the spending cuts (more than one percent of GNP) occurred in development spending, consistent with the government's explicit goal of curtailing public involvement in productive activities and leaving these to the private sector. While an effort was also made to reduce current expenditures, this attempt met with limited success, as spending of this type contracted by only about 1/2 of one percent of GNP over the course of this period. 1/

The total contribution of revenue increases to the fiscal adjustment (amounting to 2 percent of GNP) exceeded that of spending cuts over this period. However, though there was a serious effort to improve tax

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1/ The previous government, however, had already achieved a substantial reduction in public consumption during its last year in office.

administration, only about half of the revenue increase appears to have been the result of exogenous fiscal policy measures. To assess the extent to which discretionary revenue measures may have contributed to the fiscal adjustment, in Table 2 we report the results of very simple regressions that relate the three components of total tax revenue (direct taxes, taxes on international trade, and other indirect taxes) to their primary determinants (all in log form). In the case of direct taxes and other indirect taxes we took this to be the tax base, proxied by nominal GNP, while for trade taxes these determinants consisted of the tax base in the form of exports and imports, as well as the share of workers' remittances in GNP. 1/ The latter variable greatly improves the fit of the regression. We take it as a proxy for the composition of imports, on the hypothesis that an increase in remittances increases the share in total imports of dutiable imports such as consumer durables.

These simple regressions account for almost all of the variation in tax receipts. Taking their residuals as measures of discretionary tax changes, total discretionary tax measures account for about 5 1/2 percent of total tax receipts in 1979-80 and about 7 1/2 percent in 1980-81 and 1981-82 respectively. At their peak, these discretionary revenue increases amounted to slightly less than one percent of GNP. The remainder of the increase in tax revenues is accounted for by an increase in trade taxes, as both exports and imports rose rapidly during these years. A real exchange rate

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1/ Since the coefficient of log GNP in equation (2) is essentially unity, this equation in effect regresses the share of trade taxes in GNP on the share of exports and imports in GNP as well as on the share of remittances in GNP.

Table 2. Determinants of Tax Revenues 1/

	(1) Direct Taxes	(2) Trade Taxes	(3) Other Indirect Taxes
Constant	-3.72 (0.59)	-0.47 (0.62)	-1.93 (0.62)
GNP	0.98 (0.05)	0.93 (0.03)	0.92 (0.05)
Inflation Rate			-0.22 (0.66)
Imports/GNP		0.50 (0.14)	
Exports/GNP		0.21 (0.10)	
Remittances/GNP		0.14 (0.04)	
R^2	0.97	0.99	0.99

1/ All variables (except the inflation rate) are in log form. The data are annual, and the regressions are estimated for the period 1972-73 to 1987-88.

depreciation fueled by the depreciation of the US dollar against the currencies of Pakistan's trading partners in the late seventies gave a boost to exports, while a substantial increase in remittances as a consequence of the second oil shock gave rise to an import boom at the end of the seventies.

Improvements in the fiscal stance, however, did not prove to be permanent. After 1981-82, the fiscal deficit began to increase once again, reaching 8 1/2 percent of GNP by 1986-87, a level comparable to those of the mid-seventies. While there were a number of changes in the composition of revenues during this period--slippage in the collection of direct taxes and of domestic indirect taxes tended to be offset by increasing nontax revenues (primarily in the form of profits on the distribution of oil products) 1/--the share of public sector revenue in GNP showed no trend. Instead, the increase in the deficit arose from the expenditure side.

This was so in spite of a continued contraction in the share of development expenditures in GNP. This type of spending, which had peaked at 9 3/4 percent of GNP in 1976-77, had fallen to 8 1/2 percent by 1980-81 and was 6 3/4 percent by 1987-88. The increase in spending instead took the form of higher public consumption (in the form of public sector wages and salaries and defense spending) as well as of larger interest payments. Defense spending, which had amounted to 21 percent of total public expenditures in 1978-79, had increased its share to 27 percent by 1984-85. 2/

1/ These show up as "other nontax revenues" in Table 1.
2/ See Kemal (1987).

By far the most rapidly-increasing category of spending during the eighties, however, has been total public sector interest payments. This reflects a conscious change in the composition of deficit financing after 1980-81. In an effort to keep inflation in check and to tap directly what was perceived to be a plentiful supply of private saving originating with remittance inflows, the government of Pakistan limited its borrowing from the domestic banking system after 1980-81 and domestic nonbank borrowing became the residual source of finance. When the international debt crisis curtailed the availability of external funds in 1981-82, such funds were also replaced by domestic nonbank borrowing. Thus the combination of an aversion to inflationary finance, reduced availability of external funds, and increased public consumption, resulted in a substantial increase in domestic nonbank borrowing. As shall be shown later, the rising stock of internal debt could be absorbed domestically only by offering higher interest rates, and the combination of higher debt stock and increasing interest rates caused interest payments to mount over time. Total public sector interest payments, which had amounted to 2 percent of GNP in 1980-81, had almost doubled as a percent of GNP by 1987-88, thereby accounting for about two-thirds of the increase in the deficit to GNP ratio over this time. For any given year, therefore, this component of the deficit increase reflected past financing decisions, rather than current policy.

In sum, the upsurge in fiscal deficits in Pakistan during the eighties was the result of two policy choices:

a. An increase in public consumption in the face of a political inability to raise commensurate revenues.

b. A change in the financing mix from domestic bank and external financing to domestic nonbank borrowing. This was partly dictated by reduced availability of external funds, but was largely the outcome of a policy choice to curtail bank financing.

III. Deficits and Inflation in Pakistan

As indicated previously, Pakistan has operated for the better part of two decades with fiscal deficits that are quite large by international standards in relation to GDP. In other developing countries, fiscal deficits of smaller magnitude have been blamed for a number of adverse macroeconomic developments, chief among them being a high rate of inflation. By contrast, as indicated earlier, Pakistan has performed relatively well in a macroeconomic sense, with a high average rate of economic growth, low inflation, and a relative absence of major external imbalances. The key questions that arise in connection with fiscal policy in Pakistan are thus the following: What macroeconomic effects have sustained high fiscal deficits exerted on the Pakistani economy? And more specifically, why have high deficits not been associated with inflation of Latin American proportions in Pakistan?

These two questions will be addressed in reverse order in this section and the one that follows. The link (or lack thereof) between deficits and inflation in Pakistan is explored in this section, which is divided into two parts: first, we explore the theoretical links between deficits and inflation. Second, we apply this discussion to the case of Pakistan. The more general discussion of the macroeconomic effects of fiscal deficits in Pakistan is postponed to the following section.

1. Deficits and Inflation

In popular discussions, the link between deficits and inflation in developing countries is quite direct. In the absence of secondary securities markets, open-market operations are not an important monetary policy tool in such countries. Since government borrowing from the central bank expands the supply of base money, the rate of growth of the money supply is taken to depend primarily on the size of the fiscal deficit. With the rate of inflation in turn being determined by the rate of growth of the money supply, the link between deficits and inflation follows.

In reality, however, matters are much more complicated than this, for a number of reasons. First, the link between money growth and inflation is not as tight as the foregoing suggests. Not only does the real demand for money increase with output growth, providing a non-inflationary source of seignorage, but velocity is subject to secular, cyclical, and other movements, weakening the link between money growth and inflation during any given short period. Thus, this link can be expected to hold only as a long-run regularity.

Second, while secondary securities markets are indeed absent in many developing countries, primary markets in which the nonfinancial public sector can borrow directly from the private sector exist in most countries--including Pakistan. Moreover, the public sector also has recourse to external financing. Thus, the link between fiscal deficits and growth of base money through central bank financing is itself an imperfect one. 1/

1/ Nonetheless, as will be explained below, there are indeed limits to (domestic and external) debt issuance as a source of deficit financing.

Third, a proper assessment of the effects of deficits on money growth requires the consolidation of the central bank with the nonfinancial public sector. Central bank financing of government spending on imports does not create base money, for example, while both external financing of domestic government spending and central bank lending to commercial banks do. Thus, accounting for the growth of base money requires considering the behavior of the nonfinancial public sector and that of the central bank together. The conventional fiscal deficit by itself may therefore be a poor indicator of the inflationary pressures created by the growth of base money.

Finally, the exchange-rate regime must be taken into account in assessing the link between fiscal deficits and the growth of base money. Under fixed exchange rates, a fiscal deficit-induced expansion of base money may be offset by a private capital outflow which draws down foreign exchange reserves. In this case, what is intended as money financing becomes in effect external financing of the deficit.

All of this being said, there is nevertheless a valid long-run relationship between fiscal deficits and inflation. This relationship emerges from the public sector's solvency constraint. This is easiest to show formally. 1/ Let b denote the public sector's (including the central bank) real stock of debt to the domestic private sector, K_G the public sector's capital stock, F_G public external debt, d the real primary fiscal deficit, and m the real stock of base money, all measured as ratios to GNP. Also, let r_B denote the real interest rate on domestic borrowing, r_K the net real (pecuniary) rate of return on public investment, r_F the real interest

1/ The discussion that follows draws heavily on Buiter (1986).

rate paid on foreign debt, r^* the real interest rate prevailing in international capital markets (external interest rate plus rate of depreciation less domestic inflation), n the rate of growth of real GNP, and s the nominal exchange rate. The public sector's budget constraint can then be written:

$$(1)\quad \dot{b} + s\dot{f}_G + \dot{m} - \dot{k}_G = d - (r_k - n)K_G + (r_B - n)\, b + (r_F + \hat{s} - n)\, sf_G - (\pi + n)\, m,$$

where π is the rate of inflation. 1/ This can be transformed into:

$$(2)\quad \dot{b} + s\dot{f}_G - \dot{k}_G = \bar{d} + (r^* - n)(b + sf_G - k_G) - [\dot{m} + (\pi + n)m]$$

where $\bar{d} = d + (r_B - r^*)b + (r_F + \hat{s} - r^*)sf_G + (r^* - r_K)\, k_G$ is the "adjusted" primary deficit--i.e., the primary deficit plus the excess interest paid on domestic debt and foreign debt over that prevailing in international capital markets plus the shortfall in the return on the public capital stock relative to the external interest rate.

The initial net worth of the public sector is given by $(k_G - b - sf_G)$, and the public sector will be solvent if the present value (using the growth-corrected interest rate $r^* - n$) of its anticipated future debt service is at least equal to its net debt, i.e.:

$$(3)\quad PV\ (\dot{m} + (\pi + n)\, m - \bar{d}) \geq b + sf_G - k_G$$

1/ A dot (•) over a variable denotes a time derivative, whereas a hat (^) denotes a proportional rate of change.

The resources available to the public sector to service debt consist of future seignorage revenue, given by $\dot{m} + (\pi + n)m$, and future "adjusted" primary surpluses, given by $-\dot{d}$. Notice that, other things equal, an increase in the present value of the stream of future deficits requires an increase in the present value of the inflation tax πm. It is in this present-value sense that higher fiscal deficits are related to higher inflation.

Notice also that a number of factors influence the present value of the inflation tax associated with a given path of the primary deficit. The following observations are germane:

a. The relevant value of the primary deficit is the "adjusted" deficit--i.e., that which takes account of differences between the interest rate on domestic borrowing, the marginal product of public capital, and the actual interest paid on external borrowing, on the one hand, and the marginal cost of external funds, on the other. Access to domestic or external funds at favorable rates, or particularly productive public capital, reduces the present value of the inflation tax associated with a given unadjusted deficit.

b. The amount of seignorage required to finance a given path of the adjusted deficit is smaller the smaller the initial net stock of debt.

c. Given the amount of seignorage required, the requisite inflation tax is smaller the larger the rates of growth of output and the greater the secular growth in the money-income ratio.

2. Application to Pakistan

The foregoing discussion can be applied to the Pakistani experience. During the eighties, the consolidated deficit of the federal and provincial governments has averaged about 6 1/2 percent of GNP (see Table 1). Since the 1980 stock of base money amounted to about 12 percent of GNP, financing of this deficit solely through the issuance of base money would have implied an inflation rate in excess of 54 percent per year during the eighties, even before allowing for erosion of the monetary base through increased velocity. After allowing for such erosion, reliance on the inflation tax to finance a deficit of this magnitude would imply inflation rates of Latin American proportions. The actual growth of base money and domestic prices (measured by the GDP deflator) in Pakistan are depicted in Figure 5. Evidently, both base money growth and the domestic inflation rate have fallen substantially short of what the simple analysis would predict. The observations of the previous subsection can be used to explain why.

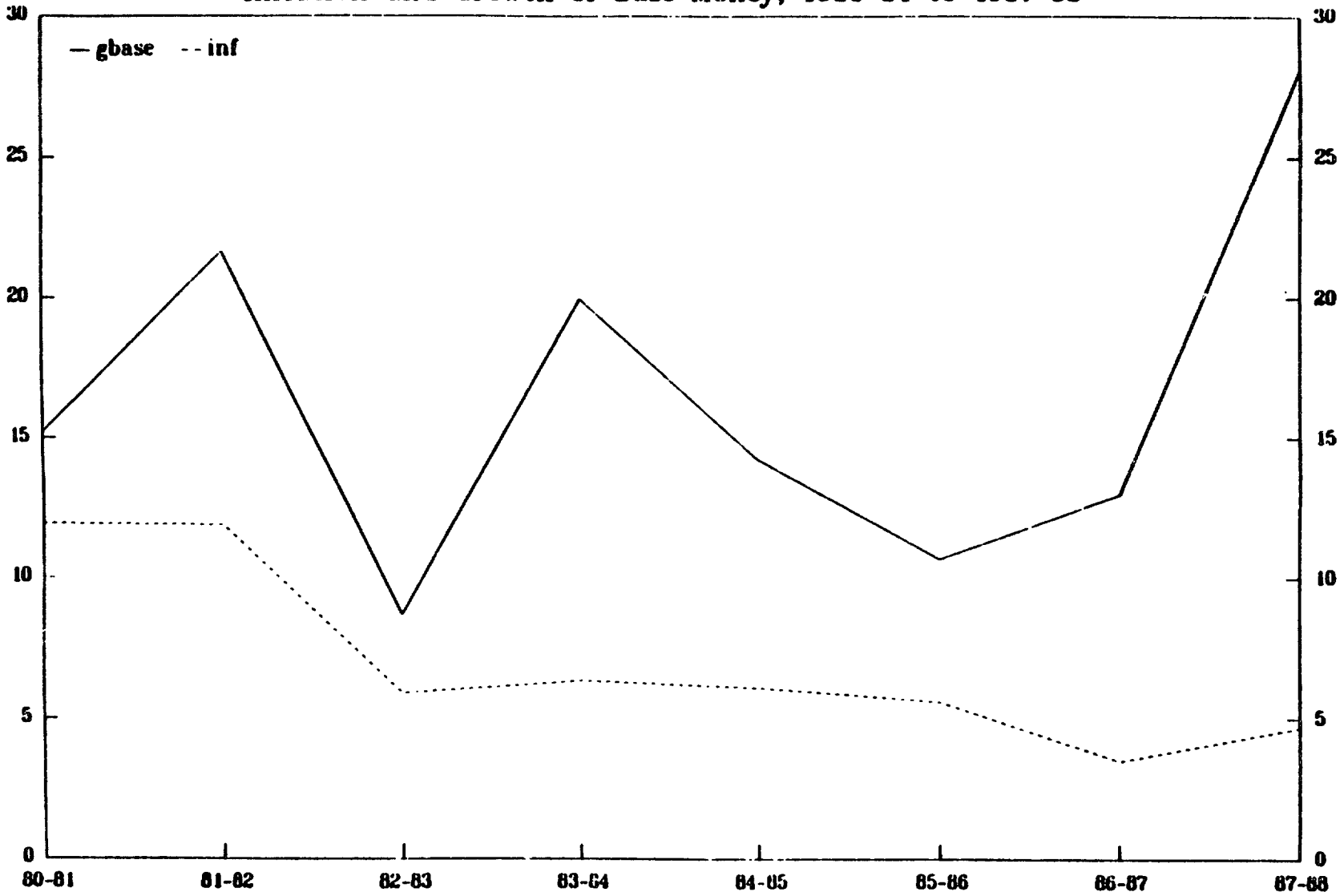
Rearranging equation (2) permits us to write:

$$(4) \quad \dot{b} + s\dot{f}_G + \dot{m} = \bar{d} - [(\pi + n)(b + sf_G + m) - \hat{s}sf_G],$$

where $\bar{d} = d + (r_B + \pi)b + (r_F + \pi)sf_G + \dot{k}_G$ is the conventional deficit/GNP ratio. The expression on the right-hand side of (4) is the inflation and growth-adjusted deficit ratio--i.e., the actual deficit minus the portion that can be financed without altering the proportion of total debt to GNP. When the value of this expression is zero, the conventional deficit can be

Figure 5

Inflation and Growth of Base Money, 1980-81 to 1987-88



accommodated without requiring macroeconomic adjustments--including in the rate of inflation--because the requisite amount of financing will presumably be forthcoming. In other words, $[(\pi + n)(\iota + sf_G + m) - \hat{s}sf_G]$ is the deficit ratio that is consistent with macroeconomic equilibrium with inflation rate π and real growth rate n. Panel A of Figure 6 depicts the actual (DEF) and "equilibrium" (denoted EQDEF) deficit ratios for Pakistan in the years 1980-87, using smoothed values of the growth rate n, and the rate of inflation π, and setting the rate of exchange rate depreciation equal to π to calculate EQDEF. As this figure shows, the equilibrium deficit was indeed at a relatively high value for Pakistan during this period (about 5 1/2 percent of GNP on the average) in spite of an inflation rate (for the GDP deflator) averaging a little over 7 percent. This is primarily attributable to a very high rate of growth of real output (about 6 percent per year), which permits a fairly rapid expansion of both interest-bearing and non-interest-bearing debt without recourse to inflationary finance.

The actual deficit/GNP ratio fell below this equilibrium value for the first two years of this period (Panel A of Figure 6). For the remainder of the period, the deficit averaged about 7 percent of GNP. Thus the "excess deficit"--i.e., that portion of the deficit not compatible with macroeconomic equilibrium at the average inflation and growth rates of the 1980-81 to 1987-88 period--amounted to about 1 1/2 percent of GNP. It is not surprising, therefore, that, as indicated in Panel B of Figure 6, the ratio of the liabilities of the consolidated public sector of Pakistan (consisting of base money, domestic debt, and external debt) to GNP was fairly stable

Figure 6a

Actual & Equilibrium Deficits for Pakistan, 1980-81 to 1987-88

(percent of GNP)

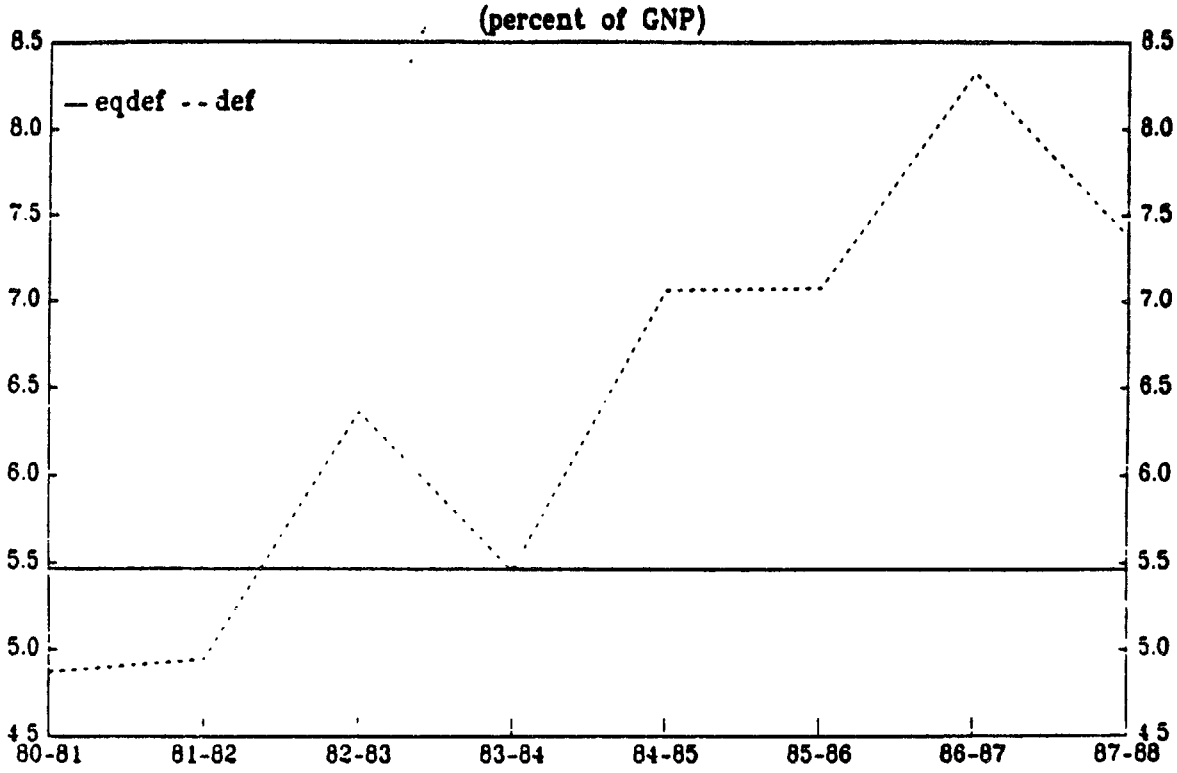
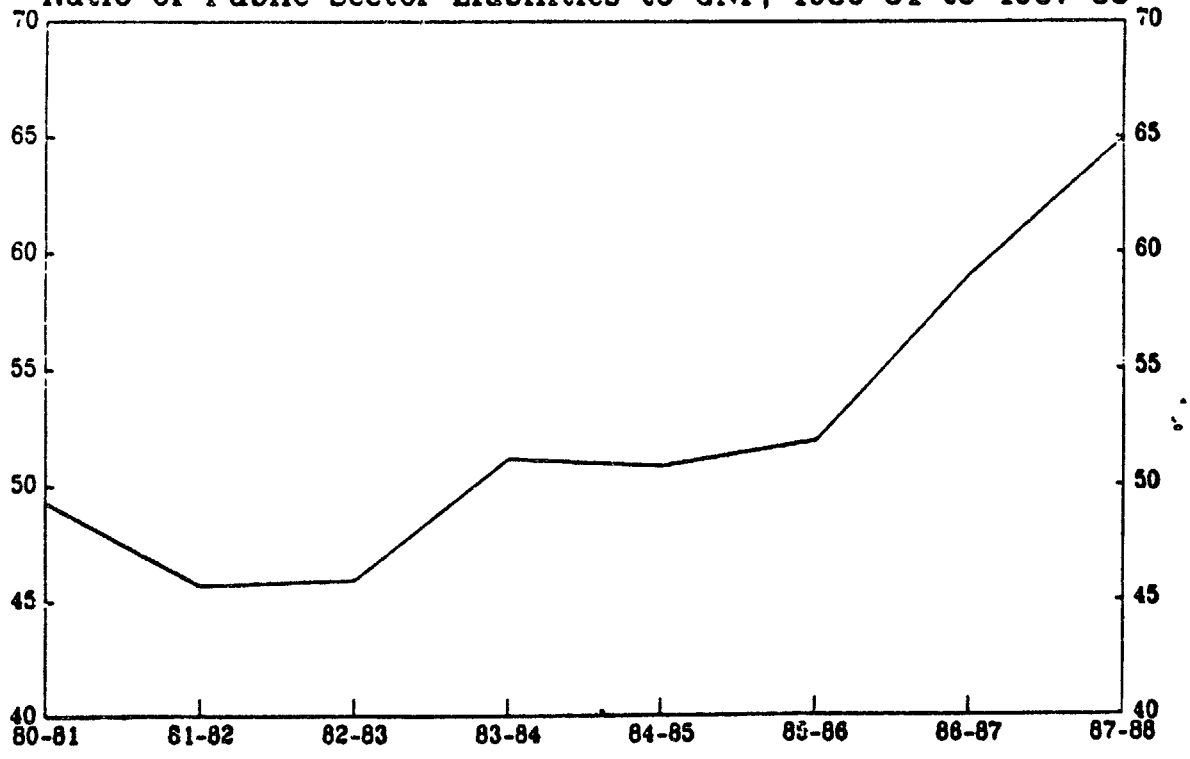


Figure 6b

Ratio of Public Sector Liabilities to GNP, 1980-81 to 1987-88



for the first half of the eighties, in spite of a fiscal deficit amounting to almost 6 percent of GNP. Only in the last two years covered did this ratio begin to increase rapidly.

The analysis of the previous sections also suggests an important reason why the actual deficit was able to remain as close as it did to its equilibrium value over the time period in question. Although its stocks of domestic and external debt were not negligible at the beginning of the eighties, the government of Pakistan was able to borrow both domestically and externally at rates below the marginal cost of funds in the international private capital market. Figure 7a shows that the nominal interest rate on domestic debt and on external debt both remained substantially below LIBOR for most of the past decade. As a result, Pakistan's fiscal deficit attained much lower levels than would have been recorded had all debt (domestic and foreign) been serviced at the marginal cost of funds abroad, given by the covered-interest parity condition (LIBOR plus the expected rate of exchange-rate depreciation). This is demonstrated in Panel B of Figure 7, which reproduces Figure 6 except for the inclusion of ADJDEF, the deficit ratio adjusted for the additional debt servicing costs that would have been implied by financing at external private capital market rates. Notice that the adjusted deficit lies everywhere substantially above the already-high equilibrium value.

As shown in Figure 6, fiscal deficits after 1983 have begun to substantially exceed the equilibrium values calculated for 1980-87. Deficits of such magnitude can be expected to exert significant effects on financial markets. However, even these higher recent deficits have not been

Figure 7a

Interest Rates on Domestic and External Debt, 1980-81 to 1987-88

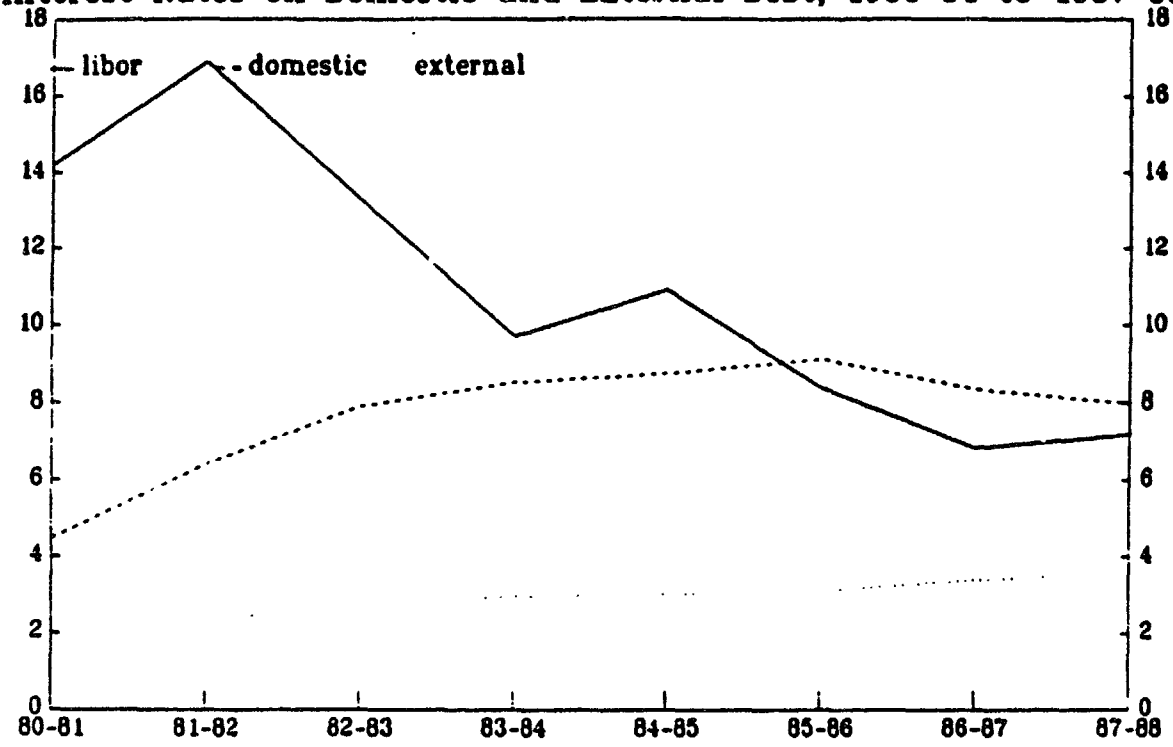
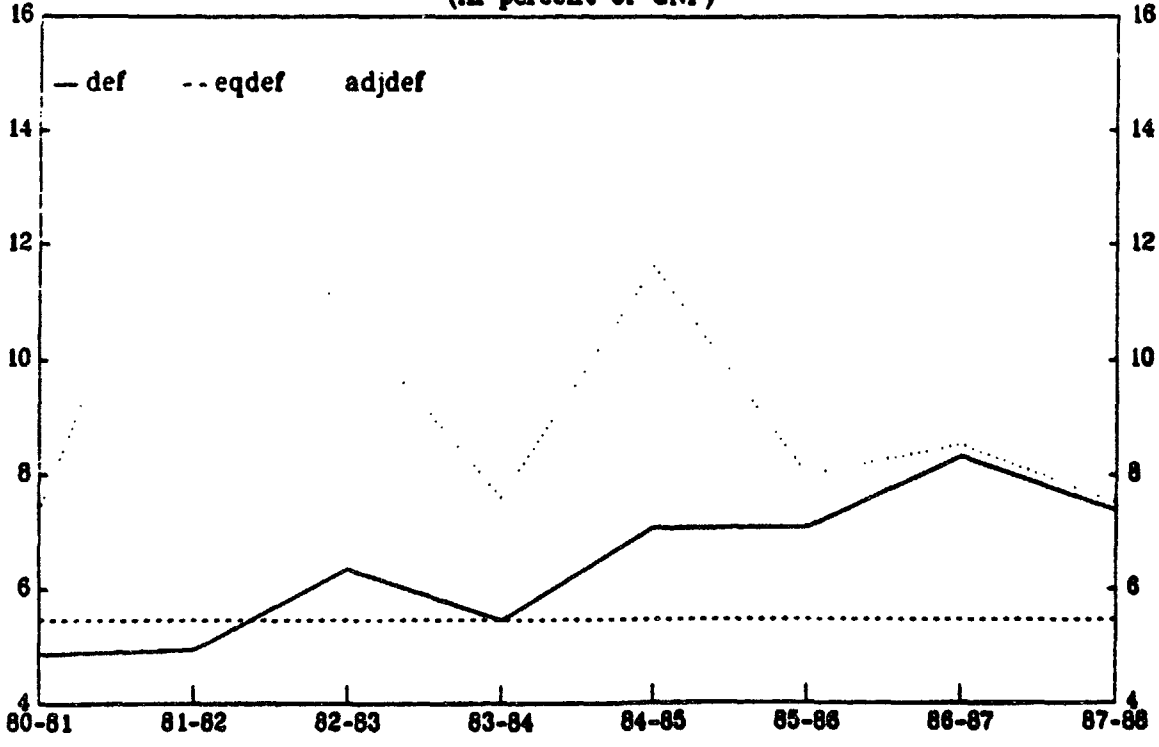


Figure 7b

Actual, Equilibrium and Adjusted Deficits, 1980-81 to 1987-88

(in percent of GNP)



associated with an inflationary upsurge. An explanation for this is suggested in Panel A of Figure 8, which shows how recent deficits have been financed. The height of each curve in Figure 8a measures the amount of financing from specific sources. The lowest curve measures the flow of external financing, the second curve adds to this domestic financing, while the third, which represents the total deficit, adds money financing. As is evident from this figure, recent years have witnessed a rapid increase in domestic borrowing (the gap between the lowest curve and the next higher one). As a result, while the ratios of base money and external debt to GNP have remained roughly stable, that of domestic debt to GDP has risen noticeably (Figure 8b). The macroeconomic effects of this financing policy are investigated in the next section.

In summary, why has the simple story linking fiscal deficits to inflation failed to hold in Pakistan? Three reasons can be given:

a. Reserve money represented only about a fifth of the government of Pakistan's total interest-bearing and non-interest-bearing debt at the beginning of the eighties. This stock of interest-bearing debt could be expanded to finance fiscal deficits in proportion to the growth of the economy without jeopardizing the public sector's solvency, thus severely weakening the link between deficits and the expansion of base money.

b. The economy grew very rapidly indeed during the eighties, so that this source of financing in fact was consistent with extremely large (by international standards) equilibrium deficits.

c. Nonetheless, the deficits actually observed in Pakistan would have exceeded these equilibrium levels except for the fact that the government

Figure 8a. Composition of Deficit Financing, 1980-81 to 1987-88
(in percent of GNP)

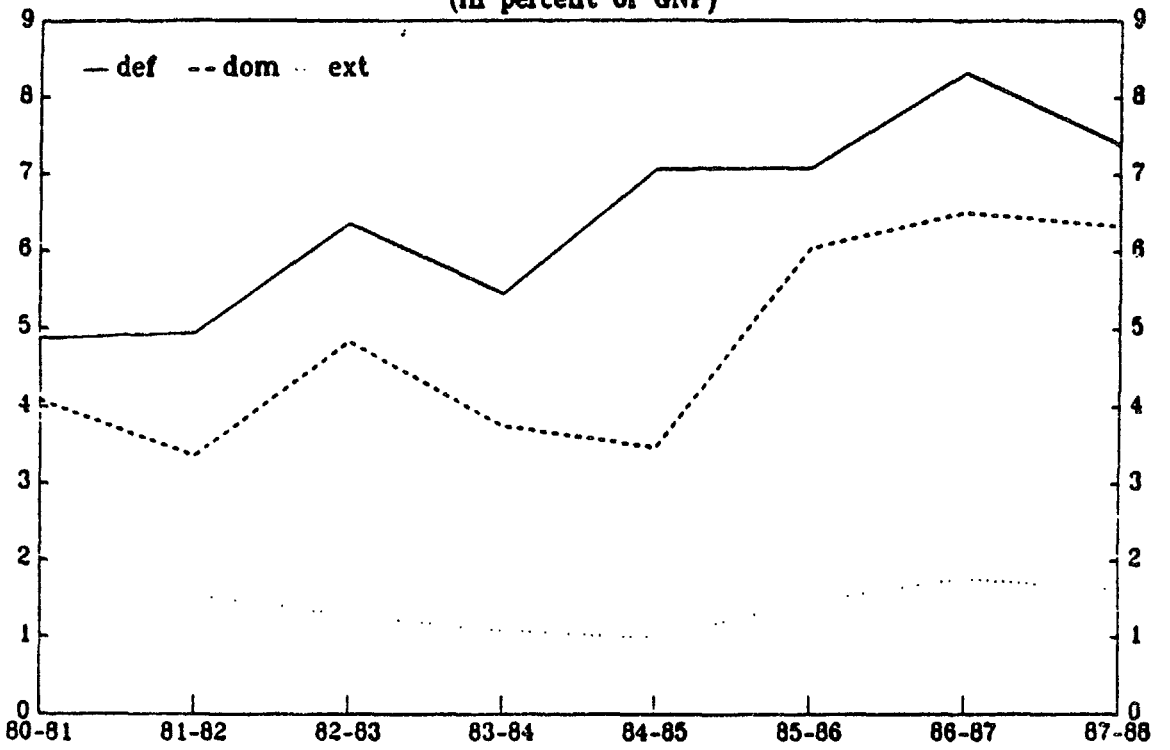
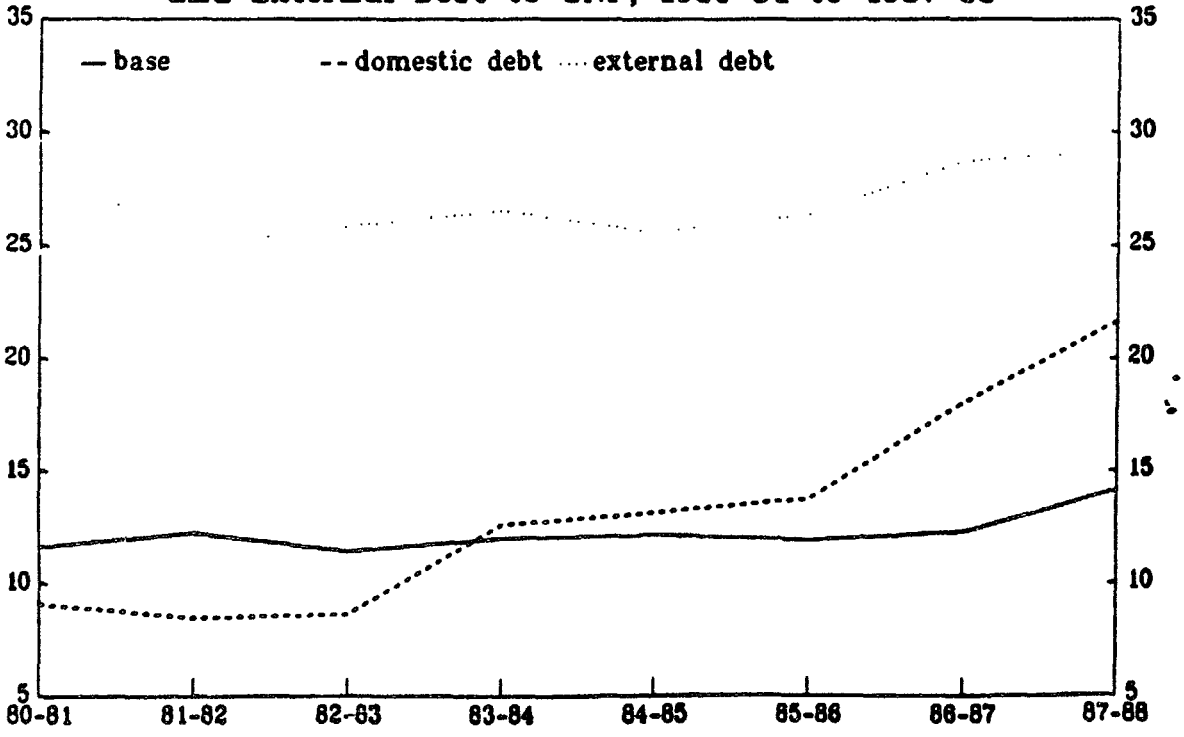


Figure 8b. Ratios of Base Money, Domestic Debt and External Debt to GNP, 1980-81 to 1987-88



was able to borrow, both domestically and externally, at rates much lower than the marginal rates prevailing in private international capital markets. Thus, imperfect private capital mobility and access to funds at below-market rates from official creditors made important contributions to holding down the rate of inflation in Pakistan.

IV. The effects of Fiscal Policy on Economic Behavior

This section examines the effects of fiscal policy on the behavior of economic agents in Pakistan. Recent research has shown that both the investment and consumption decisions of economic agents may be directly affected by policy variables such as government consumption and investment. Such decisions also are known to respond to financial variables that are themselves affected by the mode of government financing.

In what follows we shall first examine the behavior of consumption and investment in Pakistan, and then present some estimates of private consumption and investment functions, as well as of an aggregate production function. Asset demand functions are presented in subsection 5. These equations are then combined in Section V with an output growth equation to produce a simulation model that is used to produce counterfactual simulations that can be employed to assess the effects of fiscal policy.

1. Consumption and Investment in Pakistan

As shown in Section I, total investment as a ratio of GNP has averaged about 15 percent. Figure 9a shows the separate behavior of the ratio of public and private investment to GNP over the period 1964-65 to 1986-87. Apart from the strong investment drive initiated by the Bhutto government

Figure 9a

Private and Public Investment, 1964-65 to 1987-88

(in percent of GNP)

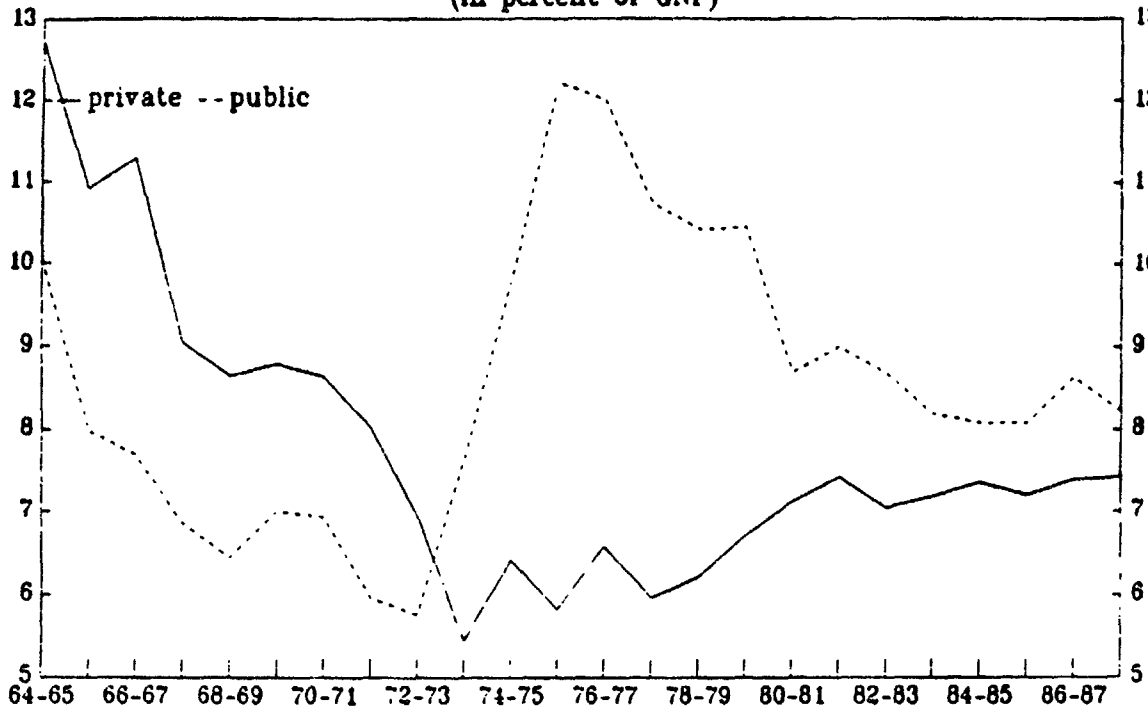
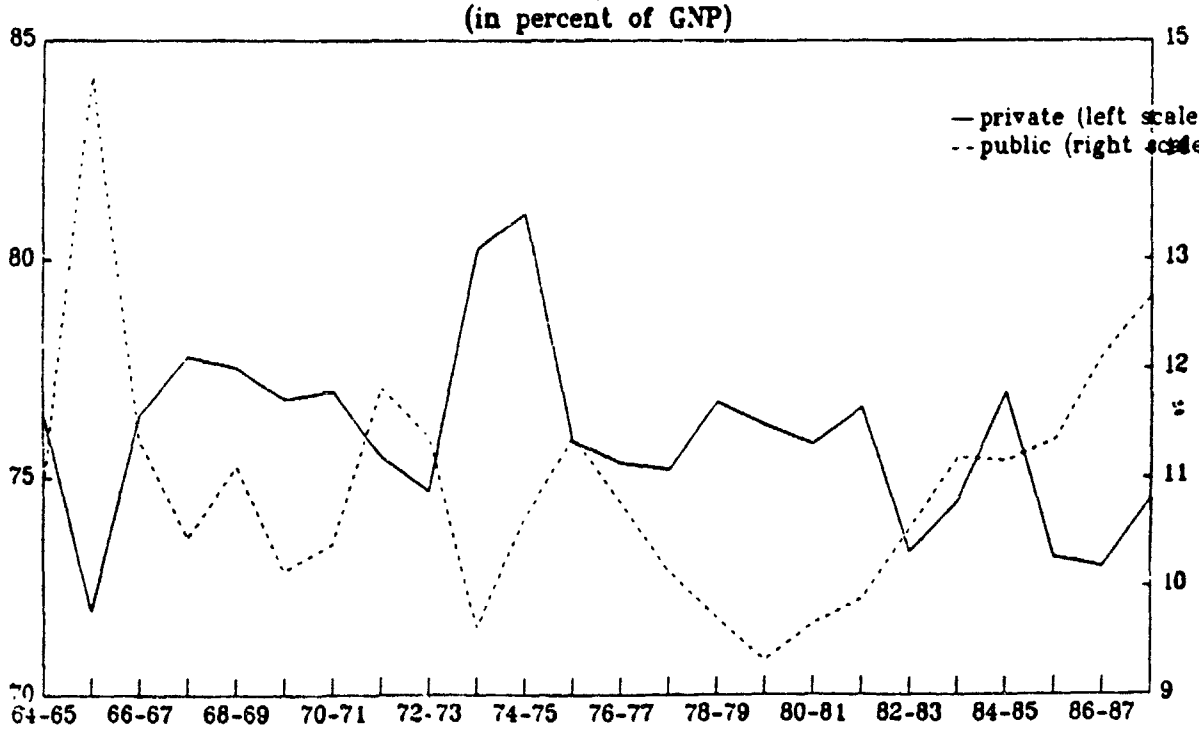


Figure 9b

Private & Public Consumption, 1964-65 to 1987-88

(in percent of GNP)



in 1973, the two forms of investment tend to be positively correlated. Since that time the private investment rate has not returned to the high levels that it had attained at the beginning of the period. Moreover, since 1972-73 public investment has represented the bulk of total investment. Whether the high level of public investment has served to catalyze private investment by means of infrastructural development or whether private investment has been crowded out is an issue that will be examined econometrically below.

Figure 9b shows how private and public consumption have moved as a ratio of GNP from 1963-64 to 1986-87. The first significant point to note is that Pakistan has exhibited a fairly high average propensity to consume: the ratio of total consumption to GNP has averaged about 85% per annum over the period. Ex ante, the high fiscal deficit may be suspected to have played a role in producing this result. However, the data also suggests an underlying relationship between public and private consumption. As public consumption increases, private consumption appears to decline. Such compensating behavior would appear to lend credence in the case of Pakistan to the Ricardian view that there is a tendency for aggregate consumption to maintain its level, regardless of the level of public consumption. 1/

2. Consumption

The estimation of the consumption function was conducted with annual data for the period 1963 to 1987 derived from various issues of the Pakistan Economic Survey. We assume that consumption can be explained by permanent income, disposable income, and possibly several fiscal variables (public

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1/ See David and Scadding (1974).

consumption, the fiscal deficit, and/or permanent public sector saving). Disposable income (y^d) is defined as GNP minus total tax revenue, while public sector saving (PBS) is defined as government revenues minus current expenditures, which include interest payments on government debt. Preliminary investigations revealed that the disposable income process could be represented by an ARMA(1,1) specification. Consequently permanent income, y^p, was generated as the predicted value of the following estimated equation:

$$(5) \quad y_t^p = -2730.86 + 1.07\, y_{t-1}^d - .26[MA(1)]$$

$$R^2 = .99 \qquad dw = 1.87$$

Before proceeding to estimation of the consumption function, unit root tests were conducted on the aggregate variables that were to be included in the consumption function. All such variables are in logs and are converted to per-capita levels. Table 3 presents the results of the unit root tests for consumption, disposable income, general government consumption, the public-sector deficit, permanent income, and the permanent public sector deficit. Test results for the Durbin-Watson, Dickey-Fuller, and the Augmented Dickey-Fuller tests, as well as the critical values for tests, are presented in the table. The null hypothesis that a unit root is present was rejected only in the case of the public sector deficit (by the Augmented Dickey-Fuller test). Since the presence of unit roots in almost all the variables suggests that conventional estimation approaches may yield

misleading results, an alternative approach, which resulted in an error-correction specification, was used.

The cointegrating regression, which captures long-run equilibrium relationships between consumption and some of its determinants, was based on the permanent income approach, incorporating both the income variables mentioned previously and intertemporal relative price variables such as the rate of interest and the rate of inflation. Additional fiscal policy variables--as indicated above--were also included. Instrumental variables were used for estimation to contend with endogeneity issues. The instruments used included the lagged values of permanent income, the government deficit, government consumption and the rate of inflation. The estimated cointegrating equation is as follows:

$$(6) \quad c_t^p = \underset{(-0.41)}{-0.45} + \underset{(6.33)}{1.35}\, y_t^p \underset{(-2.86)}{-0.56}\, c_t^g \underset{(-2.83)}{-1.11}\, \pi_t$$

$$R^2 = .93 \qquad dw = 1.8$$

where c_t^p is private consumption, y_t^p is permanent income obtained using equation (5) above, and c_t^g is government expenditure, all measured in log of real per-capita terms, while π is the annual inflation rate measured by the consumer price index. The equation appears to fit well, explaining 93% of the variation in the log of per-capita private consumption and, as the Durbin-Watson statistic shows, the residuals are non-autocorrelated. The signs and magnitudes of coefficients are in keeping with economic theory. The coefficient of permanent income, for example, is not significantly

different from unity. Increases in government consumption do appear to lead to a reduction in private consumption, as do increases in the rate of inflation. However, we could not find significant roles for the other fiscal variables listed above, nor for the real interest rate.

Using the residuals from the cointegrating regression above as the error-correction term (denoted ec), an error-correction specification of the consumption function produced the following result: 1/

$$\Delta c_t^p = \underset{(1.40)}{.23} + \underset{(1.10)}{.19}\ \Delta y_t^p + \underset{(2.45)}{.58}\ \Delta y_t^d - \underset{(-3.27)}{.41}\ \Delta c_t^g - \underset{(-1.67)}{.22}\ ec_{t-1}$$

$$R^2 = .93 \qquad dw = 2.01$$

Instrumental variables included the error correction term, government consumption, lagged inflation, lagged disposable income, and lagged permanent income. Judging by the usual criteria the equation seems to fit well. The error correction term, ec_{t-1}, is significant at the 10% level, suggesting that private consumption does not adjust fully to its long-run desired level in the first period. Only a fifth of the total adjustment is completed in the first year. The negative and significant coefficient of Δc_t^g shows that, even in the short run, increases in government consumption are negatively related to private consumption. The coefficient of the change in disposable income is positive and statistically significant, suggesting that consumption behavior may be influenced by liquidity constraints.

1/ See Davidson et. al. (1978).

The evidence therefore suggests that fiscal policy may have affected private consumption in Pakistan primarily through direct substitutability between private and public consumption, through tax policy, and through indirect effects operating through macroeconomic variables such as the level of real income and the rate of inflation.

3. Investment

Our private investment equation was estimated using annual data for the period 1972-73 to 1987-88 from the Pakistan Economic Survey. Capital stock series for both the public and private sector, denoted k_t^g and k_t^p respectively, were constructed using an initial (1971-72) economy-wide capital-output ratio of two, an initial share of 30 percent for the public capital stock, and depreciation rates of 10 percent overall and 5 percent for the public capital stock. A rental cost of capital (denoted r_t^k) series was constructed by dividing the product of the real rate of interest and the investment deflator by the GDP deflator. We take private investment in Pakistan to be determined by the sizes of the private and public capital stocks, the level of real output and the rental rate on capital. 1/ Unit root tests were again conducted for the level variables and are presented in Table 4. The tests suggest that unit roots cannot be ruled out for most of the relevant variables. Consequently, the approach adopted in this case was similar to that for private consumption. The cointegrating regression was estimated as follows:

1/ We could find no evidence of a credit availability effect, in spite of the repressed financial conditions prevailing in the economy for most of the period.

Table 4. Tests for Unit Roots: Investment 1/

	Private Capital Stock	Government Capital Stock	Real Rate of Interest	Real Output
Tests for unit roots				
Durbin-Watson	0.026	0.099	0.51	0.15
Dickey-Fuller	5.31	-1.74	-1.51	-0.29
Augmented Dickey-Fuller	-1.41		-1.33	-0.65

1/ All variables are logs of real per capita values. Critical values for the CRDW and the Dickey-Fuller tests are:

Durbin-Watson	1.1
Dickey-Fuller	-2.61

$$(8)\quad K^P/Y = -0.07 - 1.26\, r^K + 2.09\, K^G/Y - 0.09\, DUM$$
$$\qquad (-0.25) \quad (-5.33) \qquad (3.78) \qquad (-2.79)$$
$$R^2 = 0.90 \qquad dw = 2.26$$

where DUM is a dummy variable for the immediate post-Bhutto 1977-81 period.

The estimates support the hypothesis that the government capital stock is positively correlated with private sector capital accumulation. The infrastructural buildup that results from government investment appears to facilitate private investment. At the same time an increased real rental cost of capital depresses private investment. The remaining variables did not prove to be statistically significant.

Once again, the residuals from the cointegrating regression were used for computing the tests for cointegration. For our cointegrating regression, the Cointegrating Residuals Durbin-Watson (CRDW) , the Dickey-Fuller, and the Augmented Dickey-Fuller statistics were estimated to be 1.8, -4.85, and -3.93 respectively. These values imply that the null hypothesis of unit roots in the residuals can be rejected and that equation (8) is a cointegrating form. Consequently, an error-correction specification is warranted in this case as well.

The results for the error-correction estimation were: 1/

$$\Delta(K^P/Y) = -0.02 - 0.27\, ec(-1) + 0.90\, \Delta(K^G/Y) - 0.11\, \Delta r^K - 0.03\, \Delta DUM$$
$$\qquad (-4.10)(-1.53) \qquad (1.94) \qquad (-0.71) \qquad (-2.20)$$
$$R^2 = 0.45 \qquad dw = 1.64$$

1/ Instruments used in the estimation induced the error correction term, the constant, lagged growth rate, the ratio of the government capital stock to GDP, and the time trend.

This equation obviously leaves much of the variation in the ratio of the capital stock to output unexplained, and some of the individual coefficients are not estimated very precisely. The coefficient of the error correction term ec_{-1} suggests that the private capital stock adjusts slowly to its long-run desired level. The positive and significant coefficient of $\Delta(K^g_t/y_t)$ indicates that, even in the short run, an increase in the government capital stock, or a positive level of government investment, induces an increase in private investment. Consistent with the theoretical hypothesis, the rental return on capital is negatively related to private investment.

Our examination of investment behavior, therefore, shows that fiscal policy has both direct and indirect effects on private investment in Pakistan. The direct effect would appear to operate by expanding domestic infrastructure through public investment. More indirect effects are traceable via the effects of fiscal policy interest rates.

4. Output

To complete the simulation model used in the next section, a specification of the determinants of real output growth is required. Production is assumed to follow a Cobb-Douglas technology with three inputs, consisting of the two capital stocks--government and private--and labor. Using population as a proxy for labor and assuming constant returns to scale, the production function was estimated in per capita form as follows:

$$(10) \quad y = \underset{(17.732)}{5.838} + \underset{(2.304)}{.076}\, k^g + \underset{(13.048)}{.268}\, k^p + \underset{(3.842)}{.82}\, MA(1)$$

$$R^2 = .9 \qquad dw = 1.87$$

As expected, the coefficients of both the public and the private capital stocks are significant and positive. The magnitudes of the coefficients are also reasonable, suggesting that the total share of capital in output is about 30%, leaving 70% of total output as the share of labor.

5. The Financial Sector

In order to model the domestic financial sector, it is assumed that the household sector's total financial assets (denoted A) consist of domestic currency (C), domestic deposits (D), government bonds (B^P), and foreign currency assets (F^P). Household financial wealth (W) therefore consists of the holdings of these four assets, minus household debt to the banking system (L_P^{CB}):

(11) $W = A - L_P^{CB}$

where:

(12) $A = C + D + B^P + sF^P$

Since these assets are substitutes in individual portfolios, individual demand for each asset is a function of the asset's own rate of return as well as of the returns available on other assess. 1/ Domestic currency, which pays no interest, is demanded for transaction purposes. All other assets are assumed to be held for portfolio reasons. The total size of the portfolio to be allocated among these remaining assets thus consists of financial wealth net of currency, plus credit from the banking system. As is well known, in this framework only three asset demand equations need be

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1/ The framework used is a variation of the Tobin (1970) general-equilibrium approach.

estimated, since the adding-up constraint (12) above implies the properties of the remaining equation. The demand for currency was specified as a function of the nominal interest rate on deposits--the closest substitute for currency--and income (real GNP). Demand for domestic government bonds as a share of the allocatable portfolio was taken to be a function of the rate of return on those bonds as well as those on competing assets--the nominal rate of interest on domestic deposits and the return on foreign assets (i.e., the foreign market interest rate corrected for exchange-rate changes). The household asset demand system is completed with a currency substitution equation (in which the ratio of domestic deposits to foreign currency-denominated assets is taken to be a function of the three rates of return). This is equivalent to the alternative approach of estimating either the demand for domestic deposits or foreign currency assets, and determining the remaining demand as a residual. The approach adopted here was preferred, however, because of the interest in obtaining direct estimates on currency substitution comparable to those existing in a wide body of empirical literature.

The results of the estimations for the financial sector have been collected in Table 5. Both the nominal interest rate on deposits and income are significant and carry the expected signs in the currency demand equation. Moreover, as expected, the income elasticity is close to unity. The demand for government bonds is positively and significantly related to the interest rate on those bonds and negatively related to the deposit interest rate. Interestingly enough, deposit interest rates do not significantly affect the demand for these bonds and therefore were dropped

Table 5. Financial Asset Demand Functions 1/

	Log of the Ratio of Currency in Circulation to Wealth	Log of the Ratio of Domestic Public Debt to Wealth	Log of the Ratio of Domestic Deposits to Foreign Currency Holdings
Interest Rate on Deposits	-0.079 (-5.21)		0.271 (5.098)
Interest Rate on Public Sector Debt		0.058 (2.186)	
Interest Rate on Foreign Currency Assets 2/		-0.002 (-0.354)	
Log of the Ratio of Income (GNP) to Wealth	0.996 (3.875)		
Exchange Rate Appreciation			-0.008 (-2.95)
Dummy for 1970-1972			1.505 (4.67)
Lagged dependent variable		0.932 (5.787)	
MA (1)	0.97 (3.962)		
CONSTANT	-1.517 (-1.373)	-0.464 (-1.130)	1.635 (3.269)
R^2	0.81	0.91	0.64
d-w	1.85	2.34	2.27

1/ t-ratios in parentheses.
2/ Libor plus expected exchange rate depreciation.

from the equation. Strong evidence of partial adjustment behavior was found for this equation. In the currency substitution equation both the deposit rate and the expected change in the exchange rate are significant and of the right sign. However, the effect of the exchange rate change is surprisingly small. In the deposit equation a dummy variable for the period of the Bangladesh war was found to be significant and is therefore included.

To investigate the indirect effects of fiscal deficits on the real sector operating through the financial variables described above, the next section embeds the equations just estimated into a general equilibrium model.

V. Policy Simulations

The previous section identified several direct channels through which fiscal policy may have affected macroeconomic outcomes in Pakistan. These include the direct crowding out of private by public consumption, the effects of taxation on household resources, and the effects of increases in the public capital stock on economic growth, both directly and indirectly through a complementary relationship with private investment. The nature of these relationships suggests one set of reasons why fiscal deficits may not have greatly inhibited Pakistan's growth performance--public dissaving in the form of consumption may have been in part offset by private saving, thereby limiting the claims of the former on resources for investment. Simultaneously, public investment has itself been directly productive and may have tended to stimulate private investment.

These relationships, however, are only part of the picture. Not only are these direct channels of influence dynamic, so that their long-run

implications may differ from contemporaneous effects captured in regression coefficients, but indirect channels of influence must also be taken into account. These include, in particular, the possibility of "financial crowding out," as domestic borrowing to finance fiscal deficits may tend to raise domestic interest rates, thereby raising the rental cost of capital. To capture dynamic effects as well as these indirect interactions, in this section we analyze counterfactual scenarios under alternative fiscal policies, with a view to assessing how the Pakistani economy's performance would have been affected during the decade of the eighties by various forms of fiscal adjustment.

The model used for the simulations embodies the behavioral equations estimated in Section IV. These include the permanent income equation (5), the consumption function (7), a private investment function derived from (9), the growth equation (10), and a set of financial sector equations consisting of identities (11) and (12) as well as the three asset demand functions reported in Table 5. The model is fleshed out with several additional identities. For brevity, these are reported in Table 6.

The workings of the model can be described as follows: public sector consumption, investment and tax revenues are taken to be policy-determined fiscal variables. 1/ Monetary policy variables consist of the supply of base money, borrowing by the public sector from the commercial banks, lending by the central bank to the commercial banks, and the required reserve ratio. In addition, we shall treat public external borrowing as an

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1/ This assumes, implicitly, that tax rates are adjusted to offset deviations in the tax base from baseline values.

exogenous variable. As can be seen from the public sector budget constraint in Table 6, this implies that domestic nonbank borrowing becomes the residual mode of financing for the public sector. This would seem to be the appropriate assumption to make for Pakistan during the decade of the eighties.

Two other policy variables deserve mention. Pakistan maintained a system of administered interest rates in the commercial banking system until July 1, 1985, when all deposit and new financing operations of the banks were placed on an Islamic noninterest basis. The new profit-loss system implied a move toward fairly flexible, market-related rates of remuneration for deposits and charges for bank loans. However, although for most of the period over which our asset demand functions were estimated bank interest rates were essentially a policy instrument, we have treated them as endogenous in the simulation exercises. Implicitly, we are assuming that the monetary authorities managed these interest rates so as to maintain financial market equilibrium. In fact, these rates do exhibit substantial year-to-year variation over the sample period.

Finally, Pakistan maintained a fixed exchange regime for most of the period under review. In 1982, this regime was abandoned in favor of a managed exchange rate, under which the authorities have undertaken frequent small devaluations of the rupee. While the exchange rate has been managed with an eye on the effective real exchange rate of the rupee (and a substantial real depreciation has been achieved since 1982), price stability has also been an objective of the authorities. For the purpose of the

Table 6. Identities for the Simulation Model 1/

1. Public sector budget constraint

$$\Delta H + \Delta B + S\Delta F_G + (\Delta L_G^{CB} - \Delta L_{CB}^G) = DEF$$

2. Public sector deficit

$$DEF = (C^G + I^G - T)P + i^B B_{-1} + i^F SF_{-1}^G + i^{CB}(L_G^{CB} - L_{CB}^G)$$

3. Public sector capital accumulation

$$K^G = I^G + (1 - \delta^G)\, K_{-1}^G$$

1/ Variables not previously identified are defined as follows:

F_G	-	foreign debt of the public sector
L_G^{CB}	-	commercial bank lending to the public sector
L_{CB}^G	-	Central bank lending to commercial banks
H	-	High-powered money
B	-	total public sector securities outstanding
DEF	-	public sector deficit
I^G	-	public investment
T	-	taxes
i^B	-	interest rate on public sector securities
i^F	-	interest rate on foreign debt
i^{CB}	-	commercial bank lending rate
rr	-	reserve ratio
Y^D	-	household disposable income
Z	-	foreign remittances
δ^P	-	rate of depreciation on private capital stock
δ^G	-	rate of depreciation on public capital stock
P^K	-	price of capital goods
TB	-	trade balance
α_0	-	fixed positive parameter

4. <u>High-powered money</u>

$$H = C + rrD$$

5. <u>Commercial banks' balance sheet</u>

$$L_P^{CB} = (1 - rr)D - L_G^{CB} - B^{CB} + L_{CB}^G$$

6. <u>Deposit interest rate</u>

$$i^D = (1/(1 - rr))i^{CB}$$

7. <u>Household disposable income</u>

$$Y^D = Y + Z - T + (i^B B_{-1}^P + i^* SF_{-1}^P + i^D D_{-1} - i^{CB} L_P^{CB})/P$$

8. <u>Household budget constraint</u>

$$\Delta W = (Y^D - C^P - I^P)P + (S - S_{-1})F_{-1}^P$$

9. <u>Private investment</u>

$$I^P = (K^P/Y)Y - (1 - \delta^P)K_{-1}^P$$

10. <u>Rental cost of capital</u>

$$r^K = (i^B - \Pi + \delta^P)P^K/P$$

11. <u>Relative price of capital</u>

$$P^K/P = \alpha_o$$

12. <u>Equilibrium condition for public-sector securities</u>

$$B = B^P + B^{CB}$$

13. <u>Trade balance</u>

$$TB = Y - C^P - C^G - I^P - I^G$$

simulations, therefore, we will treat the nominal exchange rate as a policy instrument.

The model is solved as follows: at the beginning of each period, real output is a predetermined variable, given as a function of the inherited private and public capital stocks. Beginning-of-period asset stocks are also predetermined, since they are given by last period's government financing decisions and private sector portfolio allocations. The domestic-currency value of the private sector's stock of foreign assets, however, is also affected by this period's official exchange rate. For these assets to be willingly held, the price level (which affects the demand for currency), the interest rate on public-sector securities, and the deposit interest rate, all adjust endogenously to achieve equilibrium levels. The interest rate on public sector securities, in turn, determines the rental rate on capital. 1/ This, together with public consumption and investment decisions, as well as other contemporaneous exogenous determinants of private disposable income, determine private consumption, investment, and saving, as well as the fiscal deficit and the trade balance. Public sector financing decisions will then determine this period's increments to the domestic components of the private sector's asset portfolio that are to be carried over to the next period. The total size of the portfolio depends on private saving and the amount of lending that banks are able to make available to the private sector after satisfying the public sector's financing needs. Any discrepancy between the increase in the private

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1/ The expected rate of inflation is treated as an exogenous variable in these simulations.

sector's portfolio and the total new liabilities issued by the public sector and the banks is accumulated by the private sector in the form of foreign assets. With private and public capital stocks determined from this period's net investment by the respective sectors, next period's output becomes determined and the model is ready to be solved again.

We have used this model to undertake three different simulation exercises. The first concerns an alternative way of financing historical fiscal deficits, while the remaining two consider separate deficit reduction scenarios.

In the first simulation, we examine the macroeconomic consequences of limiting the buildup of domestic debt by the public sector after 1982-83 by increasing use of money financing. Specifically, we reduce the flow of new domestic debt in each year during 1983-84 to 1987-88 by 10 percent, and assign the role of residual financing category to the issuance of base money. The results are presented in Charts 10a - 10f.

Chart 10a displays the variable which is shocked in this case, the stock of public sector domestic debt. Obviously, reducing the flow of debt by 10 percent each period keeps the stock of debt below its baseline value, but the percentage deviations from that value vary over time. Additional money financing would have implied larger price increases than historically observed (Chart 10e). On the other hand, since domestic interest rates would have been lower (Chart 10c), private investment would have increased (Chart 10f), and as a result, real GDP would have attained higher levels (Chart 10d). Though factor income would have been higher, lower domestic interest rates and higher prices would have squeezed private disposable

Reduction in Domestic Debt

Chart 10a
(percent deviations)

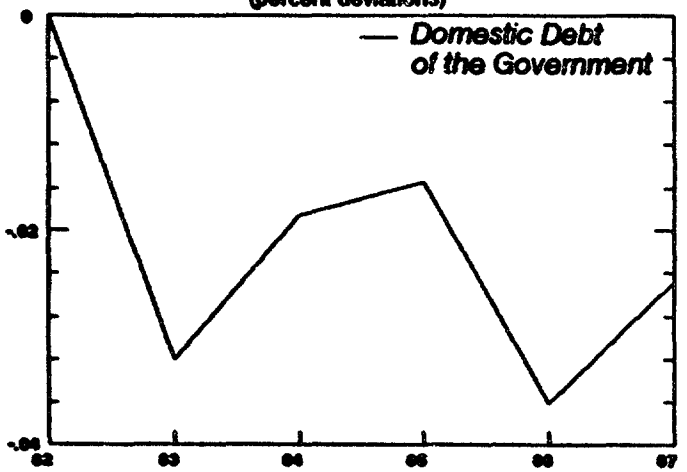


Chart 10b
(percent deviations)

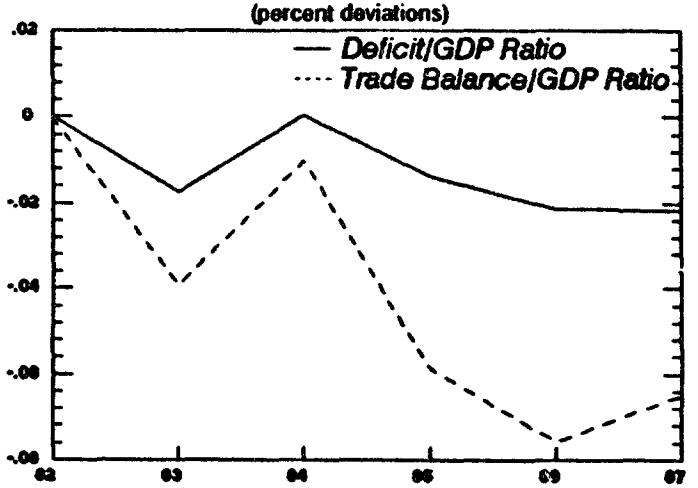


Chart 10c
(level deviations)

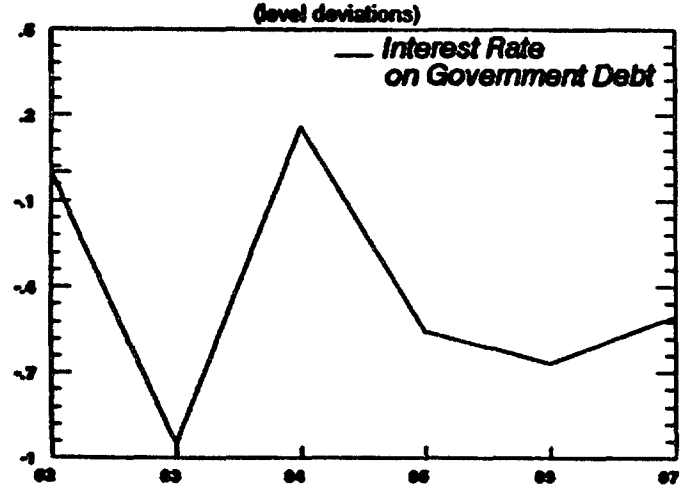
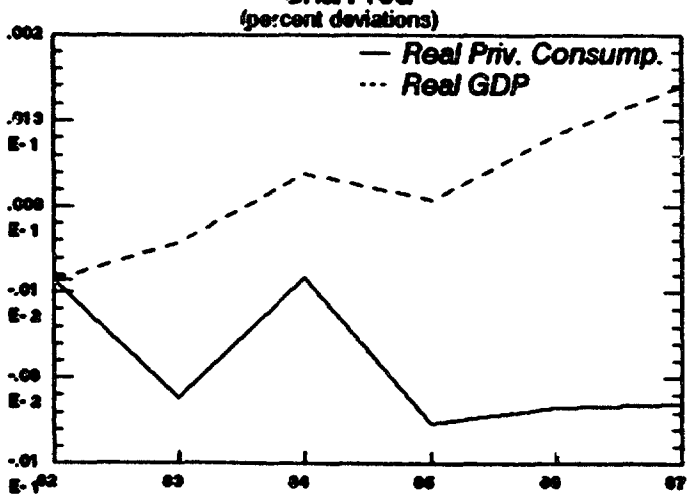


Chart 10d
(percent deviations)



Reduction in Domestic Debt (contd)

Chart 10e
(percent deviations)

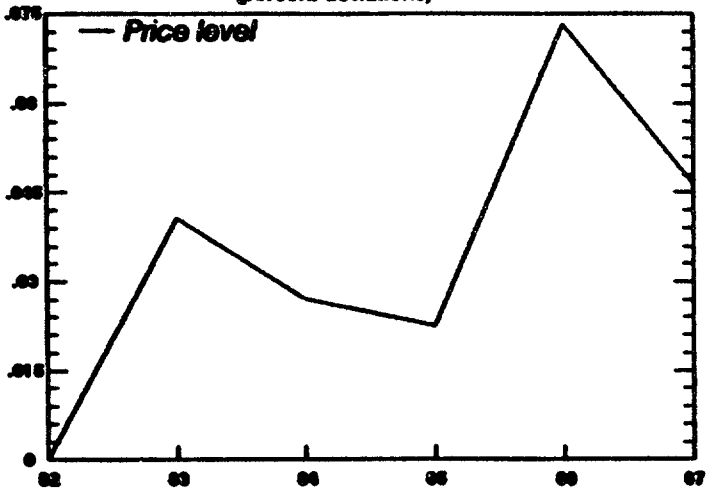
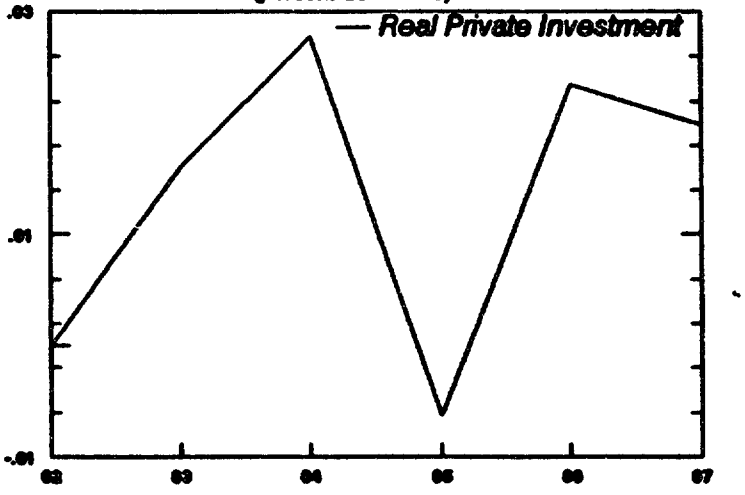


Chart 10f
(percent deviations)

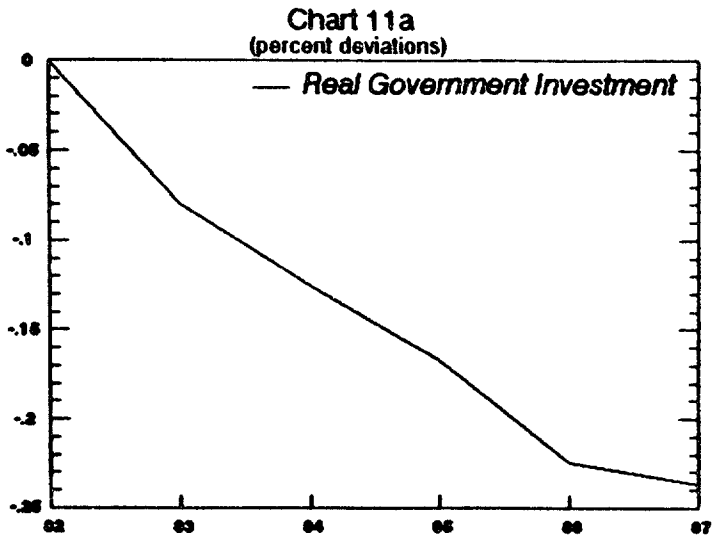


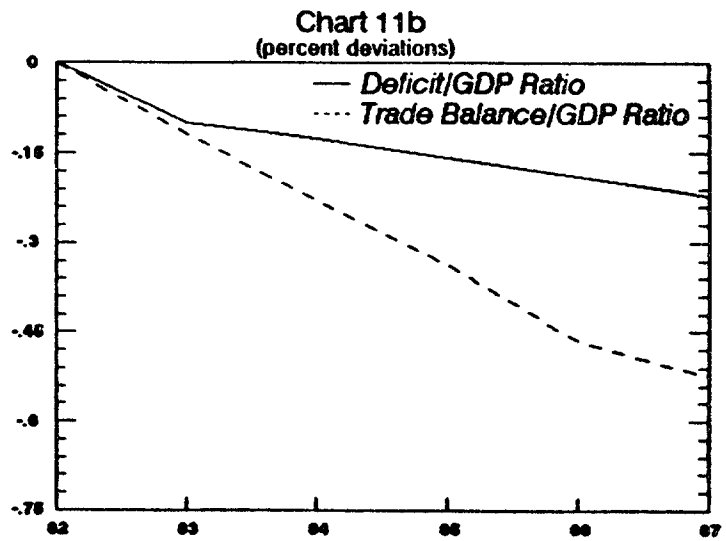
income, resulting in lower private consumption (Chart 10d). With higher output and lower private consumption, the trade deficit would have fallen, in spite of the increase in private investment (Chart 10b). In fact, lower debt and lower interest rates would have implied a lower value of the fiscal deficit/GDP ratio itself. In short, the mode of financing actually chosen seems to have operated as intended to contain the price level consequences of the deficit, but at the expense of somewhat lower investment--and therefore economic growth--than would otherwise have been observed.

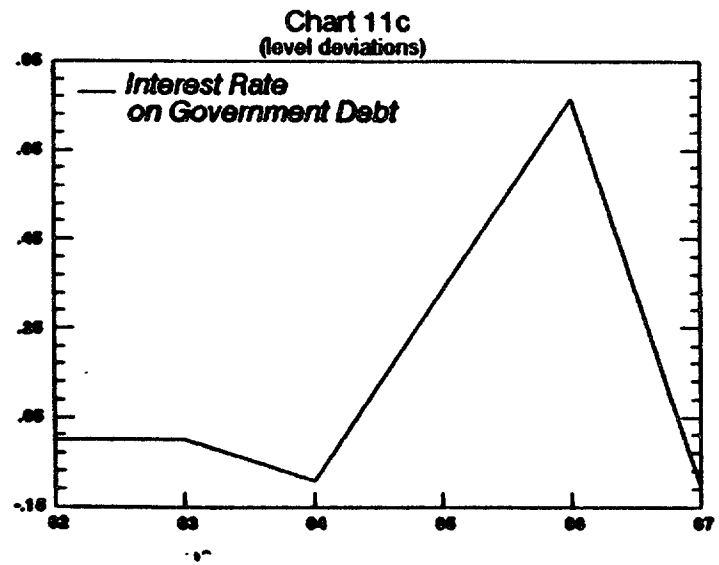
Our two remaining simulations were conducted over the same period, but consisted of a ten percent reduction in the fiscal deficit. Debt issuance was the residual mode of financing (as in the baseline) in these simulations. The two simulations differ from each other in how the deficit reduction is brought about. In the first, a reduction in public sector investment is contemplated, while in the second, tax revenue is increased.

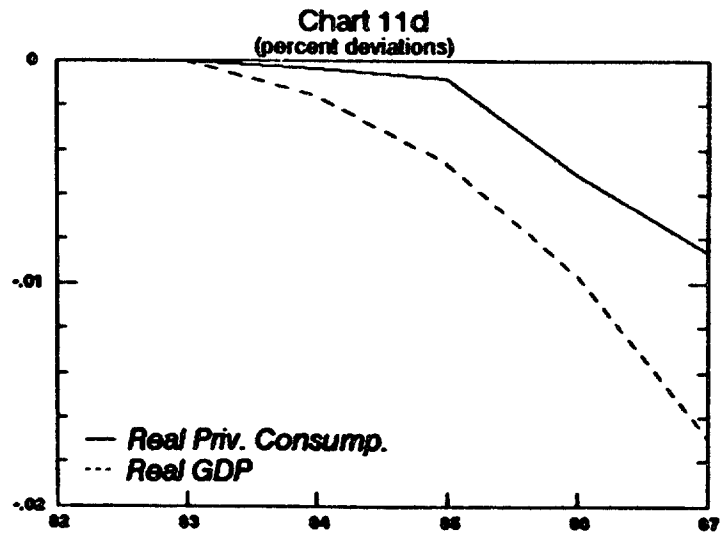
Chart 11a shows that reducing the deficit by 10 percent in each year would have required larger and larger reductions in public investment relative to the baseline. As is evident from Chart 11d, this would have implied progressively larger reductions in real output, both because of the lower public capital stock and because of the induced decrease in the private capital stock, since the smaller public capital stock would have depressed private investment (Chart 11f). Crowding-in through lower interest rates does not materialize in this case, because the lower public capital stock represents a negative supply shock, which raises prices (Chart 11e) and thus actually <u>increases</u> the domestic interest rate (Chart 11c). Reduced output and higher prices both depress private consumption (Chart

Reduction in Government Deficit through a Reduction in Government Investment Expenditure





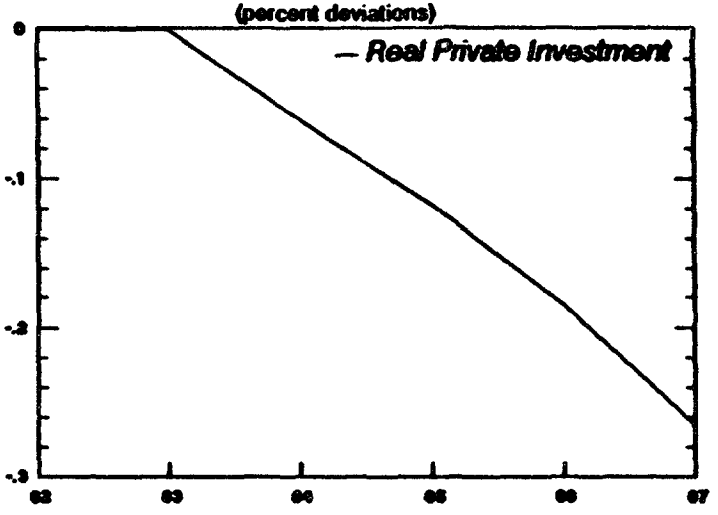




Reduction in Government Deficit through a Reduction in Government Investment Expenditure (contd.)

Chart 11e
(percent deviations)

Chart 11f
(percent deviations)



11d). However, the reductions in both public and private investment, together with that in private consumption, do succeed in improving the trade balance, (Chart 11b), in spite of the lower level of output.

Results are quite different when the deficit reduction is brought about by an increase in tax revenue. In this case, since government borrowing is reduced, domestic interest rates fall (at least initially--see Chart 12c), and this stimulates increased private investment (Chart 12F). Because of the increase in the private capital stock, real GDP is somewhat higher (Chart 12d). But higher taxes imply lower private consumption (Chart 12d). Interestingly, prices rise in this scenario (Chart 12e). The reason is that higher taxes reduce private disposable income, which causes private saving to fall. Private wealth is therefore smaller, but since money financing of the fiscal deficit is exogenous, the stock of currency increases markedly as a share of private portfolios. To absorb this much currency willingly into private portfolios requires an increase in the price level. This in turn reinforces the effect of the tax increase in reducing private disposable income and consumption. This decrease in private consumption again leads to an improvement in the trade balance. However, as domestic prices continue to rise, the interest rate reduction is eventually reversed, causing private investment to fall. While this magnifies the trade balance improvement, it cuts off the positive deviation in real GDP from its baseline value.

Overall, then, the macroeconomic effects of Pakistan's deficits after 1983-84 depend on the nature of the counterfactual fiscal policy. This applies both to how the deficit reduction would have been brought about and how deficit financing would have been altered. It appears that reducing the

Reduction in Government Deficit through an Increase in Taxes

Chart 12a
(percent deviations)

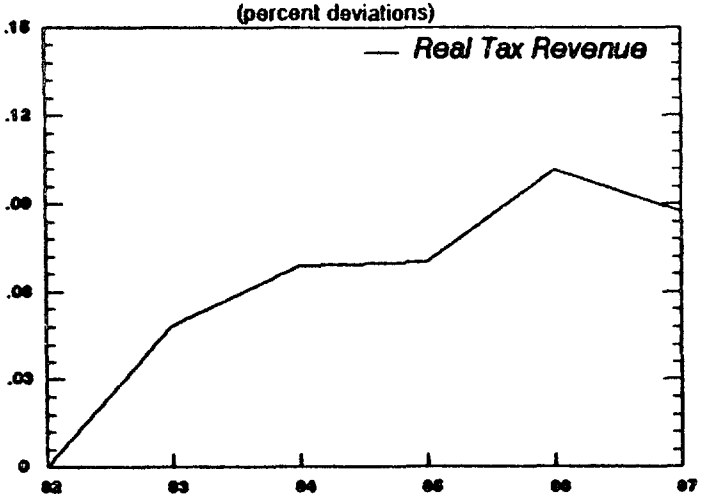


Chart 12b
(percent deviations)

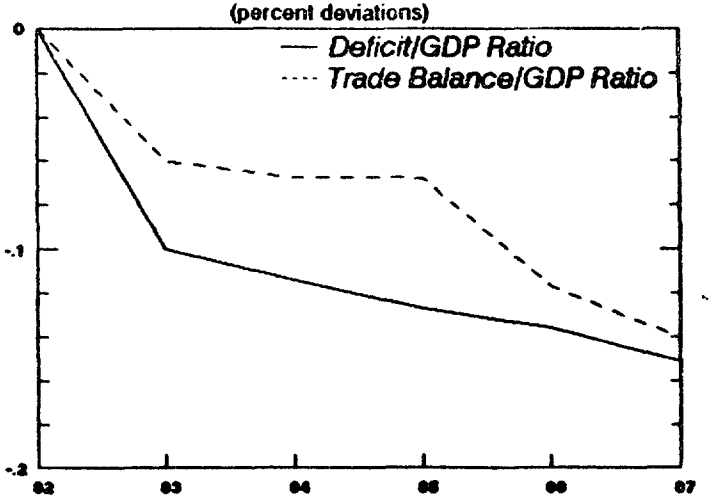


Chart 12c
(level deviations)

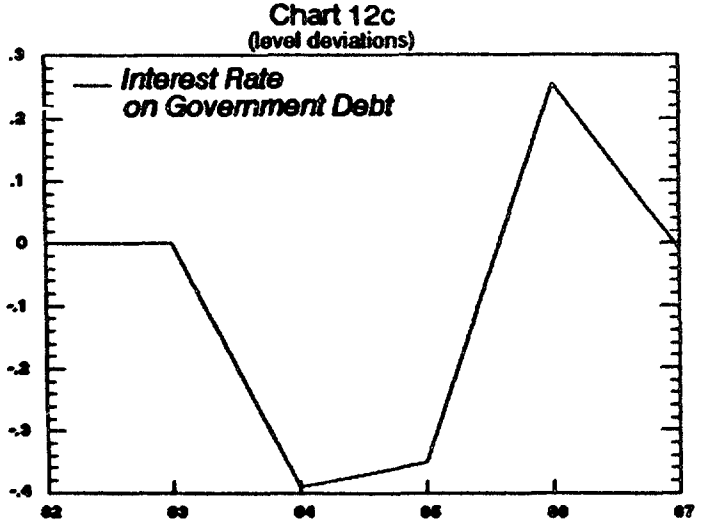
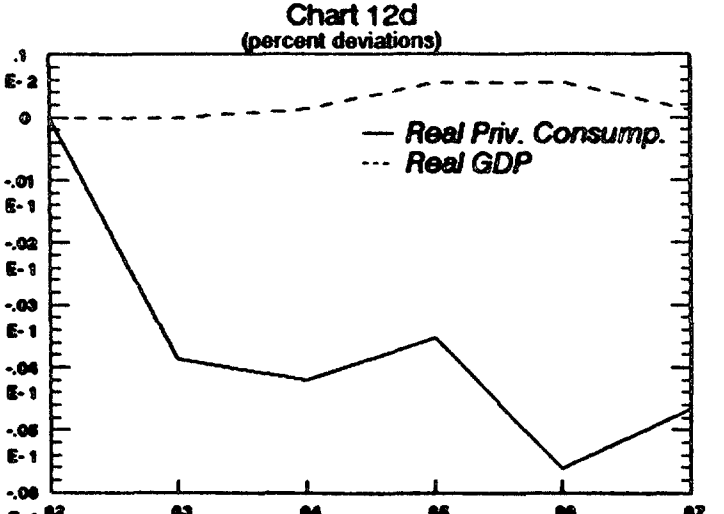


Chart 12d
(percent deviations)



Reduction in Government Deficit through an increase in taxes (contd.)

Chart 12e
(percent deviations)

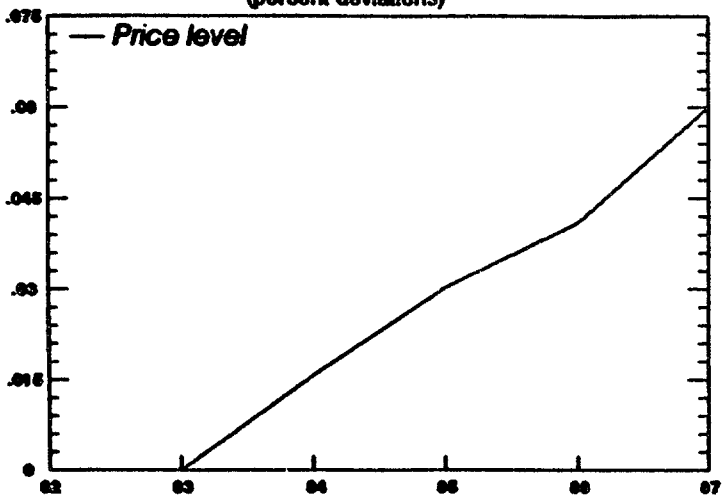
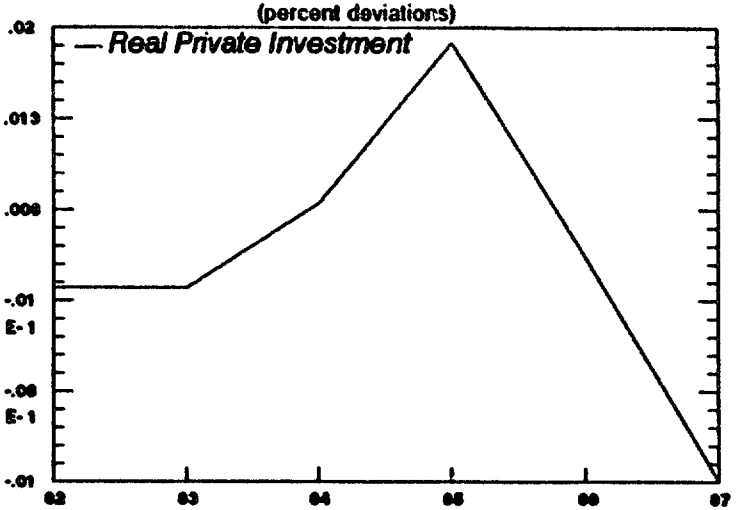


Chart 12f
(percent deviations)



deficit by cutting public investment, which has tended to be a favorite vehicle for deficit control in Pakistan, could have had favorable trade balance effects, but at a cost to economic growth and with little payoff in terms of price level objectives. The alternative favored by many observers --an increase in tax revenues--could achieve a similar external adjustment while reducing the output cost, but may also have problematic price level effects. In contrast, the effects of altering the composition of deficit financing appear quite conventional--shifting to more money financing would mean higher prices, lower interest rates, and higher growth.

VI. Summary and Conclusions

The underlying causes of Pakistan's high fiscal deficits are not dissimilar from those in other developing countries. These deficits reflect explicit policy choices, as well as political and administrative problems, and they were facilitated by the availability of external financing. Among the key policy decisions contributing to Pakistan's fiscal performance during the period 1972-73 to 1987-88 were the decisions by the Bhutto government in the early seventies to substantially enlarge the role of the public sector and by subsequent governments in the late seventies and early eighties to maintain high levels of both defense spending and consumer subsidies, as well as to rely heavily on nonbank domestic borrowing as a source of finance in the eighties. A key political problem has been the inability to levy significant taxes on agriculture during all of this period. Coupled with the administrative difficulties that would be posed by greater reliance on income taxation, this has prevented the emergence of a revenue base to finance the chosen expenditure levels. Nevertheless, the

ready availability of external finance at concessionary rates has permitted the resulting deficits to be financed without a fiscal explosion.

As has been emphasized throughout the chapter, however, a distinctive feature of the Pakistani experience has been the coexistence of very large fiscal deficits for long periods of time with an economic performance that has been relatively satisfactory and crisis-free with respect to growth, inflation, and the external accounts. To some extent, growth has itself accounted for this, since the associated expansion of the base for both conventional taxes and seignorage has made it possible to finance "equilibrium" deficits that are significantly larger than would have been possible to finance in a slow-growth economy.

Nevertheless, since the early eighties fiscal deficits in Pakistan have clearly exceeded such equilibrium values. These deficits have been financed by recourse to domestic nonbank borrowing, resulting in increasing ratios of domestic public debt to GNP and to rising interest rates on such debt. Our simulations have indicated that, while relying on this source of finance may have mitigated the inflationary consequences of the deficits, this has been done at the expense of some crowding out of private investment and has thus implied slower growth than would otherwise have been observed. Controlling the deficit over this period would have contributed to more favorable macroeconomic outcomes--at least with respect to growth and the external accounts--but not if the deficit reduction would have been brought about in a manner commonly relied upon both in Pakistan and elsewhere--i.e., through reducing public investment.

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