

6 Military expenditures and fiscal constraints in Pakistan

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Introduction

Toward the end of 1988, Pakistan's deteriorating resource situation caused a financial crisis, remnants of which still exist today. In 1988 the government's budget deficit reached 8.5 percent of Gross Domestic Product (GDP), inflation accelerated, the current-account deficit doubled to 4.3 percent of Gross National Product (GNP), the external debt-service ratio reached 28 percent of export earnings, and foreign exchange reserves fell in half to \$438 million, equal to less than three weeks of imports (World Bank, 1991, p. ii).

These developments eroded the government's ability to affect the country's development. In fact, the encouragement of private-sector activity, particularly investment, is the only viable option open to the authorities. It follows that for policy purposes the most important issue involves restructuring government expenditures and their financing in a manner that would provide the maximum inducement to private sector capital formation, especially in manufacturing. Operationally, this means finding an optimal balance among the government's three most important budgetary items: military expenditures, public consumption, and infrastructure development. More importantly, since there is abundant evidence that the government's deficits have crowded out a certain amount of private investment (Kemal, 1989; Burney and Yasmeen, 1989; Khan and Iqbal, 1991), the authorities must achieve this balance within the context of a reduced level of expenditures and/or tax increases.

Military expenditures are an obvious candidate for expenditure reductions. At around seven percent of GNP in 1992, Pakistan's military burden is one of the heaviest in the world, and is more than twice that of India. But debt-service has

Report Documentation Page				Form Approved OMB No. 0704-0188	
Public reporting burden for the collection of information is estimated to average 1 hour per response, including the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Washington Headquarters Services, Directorate for Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington VA 22202-4302. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to a penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number.					
1. REPORT DATE 1988		2. REPORT TYPE		3. DATES COVERED 00-00-1988 to 00-00-1988	
4. TITLE AND SUBTITLE Military Expenditures and Fiscal Constraints in Pakistan				5a. CONTRACT NUMBER	
				5b. GRANT NUMBER	
				5c. PROGRAM ELEMENT NUMBER	
6. AUTHOR(S)				5d. PROJECT NUMBER	
				5e. TASK NUMBER	
				5f. WORK UNIT NUMBER	
7. PERFORMING ORGANIZATION NAME(S) AND ADDRESS(ES) Naval Postgraduate School, Monterey ,CA				8. PERFORMING ORGANIZATION REPORT NUMBER	
9. SPONSORING/MONITORING AGENCY NAME(S) AND ADDRESS(ES)				10. SPONSOR/MONITOR'S ACRONYM(S)	
				11. SPONSOR/MONITOR'S REPORT NUMBER(S)	
12. DISTRIBUTION/AVAILABILITY STATEMENT Approved for public release; distribution unlimited					
13. SUPPLEMENTARY NOTES					
14. ABSTRACT					
15. SUBJECT TERMS					
16. SECURITY CLASSIFICATION OF:			17. LIMITATION OF ABSTRACT Same as Report (SAR)	18. NUMBER OF PAGES 13	19a. NAME OF RESPONSIBLE PERSON
a. REPORT unclassified	b. ABSTRACT unclassified	c. THIS PAGE unclassified			

overtaken military expenditures as the single largest item of government spending. In 1971 this item was three percent of GNP; by 1993/94 it had risen to 8.2 percent. During fiscal 1994/95 debt-service will account for 8.2 percent or 35 percent of total budget spending (Blum, 1994, p. 2), compared with 26.4 percent for the military sector (Rashid, 1994, p. 61). Apparently the government recognizes the burden that military expenditures place on the economy for the 1994/95 budget since the military expenditures item will increase only 8.6 percent even though in the previous year India increased military expenditures by 20 percent (Bokhari, 1994, p. 5).

Against this background the purpose of this chapter is to examine Pakistan's macroeconomic prospects for the remainder of the 1990s. In particular, and assuming it politically possible, we are interested in examining the scope for stimulating economic growth and expansion through restrained allocations to the military sector¹.

Whereas a comparative perspective provides some insights as to the workings of military expenditures and the macroeconomy, a full understanding can come only by looking at these relationships over time. In this regard, several studies have examined the manner in which Pakistani military expenditures have interacted with various macroeconomic aggregates. These studies can be broken down into four types: (1) *causation analysis*² where an attempt is made to assess whether military expenditures initiate economic change or, in contrast, are affected by changes in the macroeconomy, e.g., do increases in military expenditures cause follow-on changes in the economy, or instead, do economic changes result in movements in military funding? (2) *linkage identification* where the strengths of the identified causal patterns are estimated, that is, how much does a rupee of military expenditures alter GDP over time? (3) *budgetary priority analysis* where expenditure priorities and budgetary tradeoffs are identified, and (4) *modeling* where, drawing on 1, 2 and 3, military expenditures are examined in the context of alternative fiscal packages, for example, how does varying the existing size of the budgetary deficit affect the manner in which military expenditures affect the macroeconomy? The present study falls in this category.

A simulation of Pakistan's macroeconomy, 1974-1991

Drawing on previous causal and econometric tests, a 33-equation policy model was developed (see the appendix, preceding the "notes" section)³. The main concern was identifying the main links between military expenditures and economic activity. These links are assumed to be both direct (as with Keynesian demand creation) and indirect (through possible deficit-induced crowding-out of

private activity and/or diversion of private savings to the public sector. Here is a brief summary discussion of the more important of the 33 equations.

(1) *Gross domestic product* is affected mainly by expansion in the private (PK), and public (GK) stocks of capital, employment (EMP), and military expenditures (MILX). The link between GDP and non-military expenditures was not statistically significant.

(2) *Employment* increases with an expanded population (POP) and with increments to the stock of public infrastructure (IGT).

(3) *Military expenditures* expand in line with the general size of the economy (GDP), but allocations to the military compete with infrastructure (IGT) for funding. In addition, expanded levels of foreign borrowing (BORFP) in the previous year constrain allocations to the military. The same is also true for increased levels of indebtedness to international institutions (PDII).

(4) *Non-military public expenditures* also expanded in line with GDP. Allocations to this category were reduced by short run increases (ΔMILX_{-1}) in the military budget.

(5) *Gross national savings*⁴ expand with the general growth of the economy but these funds are preempted (crowded out) by the current fiscal deficit (GDEF), as well as by the deficit in the previous year (GDEF₋₁).

(9) *Public borrowing in domestic markets* was largely a function of the fiscal deficit. The authorities' ability to borrow internationally reduced some of the pressures on the domestic capital markets.

(10) *Public borrowing in foreign capital markets* was also largely a function of the fiscal deficit. But again, increases in military expenditures reduced, *ceteris paribus*, the amount of funding from this source.

(11) *Private investment in large-scale manufacturing*, followed a lag adjustment pattern whereby investment in any one year was undertaken to bridge the gap between investors' optimal and actual capital stocks. In turn, the optimal level of private investment was influenced by military expenditures and ability to attract foreign funding (BORF). Once more, this category of private investment was crowded out by the fiscal deficit.

(13) *Private investment in non-manufacturing activities* expanded with the total size of the economy (GDP) and availability of savings (GNS). In contrast to investment in manufacturing, however, this type of investment was discouraged by expanded military expenditures.

(17) *Inflation* is largely a function of expanded credit to the public sector, together with movements in the international price level.

(18) *Government credit* from the monetary system was related to past deficits and to short run movements in military expenditures (ΔMILX_{-1}).

To test the model's general performance, the economy was simulated on historical data for 1974-1991. The results (table 6.1) suggest that compounded errors (accumulated errors from each individual relationship) are small. In particular the key variable GDP was predicted with a high degree of accuracy, the greatest error being 2.3 percent in 1991. Over the last ten years the simulation error averaged 1.2 percent.

Although typically volatile, private investment was also simulated with a high degree of accuracy. The average error for the 1981-1991 period was only 2.7 percent. For employment, the corresponding figure was 1.1 percent. Since military expenditures are also affected by a set of non-economic factors, the model depicted this variable's past values reasonably well, with an average error of 3.1 percent over the last ten years of the simulation run. In any case, since military expenditures will be treated exogenously (as a policy variable) in the simulations that follow, this error will disappear.

In summary, the model captures the performance of the Pakistani economy fairly well. Looked at in isolation, military expenditures have tended to positively influence GDP (see equation 1 in appendix). But to the extent that such expenditures are funded with increased levels of deficit financing, the subsequent crowding out of private investment may actually result not only in increased inflation, but, more importantly, in a net negative impact on the economy. The inability of non-military public expenditures to impact positively on the economy only compounds this dilemma. In any event, the concern of external creditors over the country's high military burden will in all likelihood increasingly constrain allocations to the military.

Macroeconomic effects of alternative fiscal policies, 1974-1991

A major question is whether fiscal deficits have been "too high" in the sense that macroeconomic performance may have been better had they not been that high. To assess this possibility, government expenditures were classified as either military and non-military (see "data sources" at the end of this chapter). Using the 33-equation model, we simulated economic environments over the period 1974-91, first by reducing military expenditures ten percent from their actual values (while holding non-military expenditures at their historical values), second by lowering non-military expenditures by ten percent from their historical values (while maintaining military expenditures at their historical values), and third by increasing government revenues by ten percent (with public expenditures set at their historical values).

Table 6.1
Macroeconomic simulation I: endogenous estimates, 1974-1991
(billions of 1985 rupees, except employment which is in millions)

Year	Gross Domestic Product			Private Investment			Military Expenditures			Employment		
	Actual	Sim-I	%Diff.	Actual	Sim-I	%Diff.	Actual	Sim-I	%Diff.	Actual	Sim-I	%Diff.
1974	246.0	247.6	0.6	15.8	17.5	10.2	16.8	17.3	3.0	19.8	20.5	3.5
1975	256.8	258.9	0.8	17.5	19.0	8.0	17.3	17.4	0.5	20.3	20.0	1.7
1976	268.8	264.5	1.6	19.3	20.1	4.0	16.7	17.5	4.3	21.1	21.3	1.2
1977	278.9	287.3	2.9	20.9	20.6	1.9	16.8	17.2	2.2	21.9	22.5	2.9
1978	301.4	309.3	2.6	21.7	22.2	2.2	17.5	18.9	7.4	22.7	23.2	2.1
1979	315.9	327.2	3.5	22.4	23.8	5.9	19.6	21.3	7.9	23.6	23.8	0.9
1980	343.4	344.1	0.2	26.4	25.6	3.1	21.4	23.1	7.2	24.2	23.6	2.1
1981	367.0	364.2	0.8	28.5	27.0	5.5	23.4	25.0	6.3	24.7	24.1	2.6
1982	391.0	388.7	0.6	28.1	28.9	2.6	27.3	26.8	1.8	25.3	24.8	2.1
1983	417.9	414.8	0.7	30.7	31.5	2.5	30.9	29.2	5.8	25.9	25.8	0.1
1984	438.7	442.5	0.9	32.8	33.8	2.9	32.1	32.1	0.2	26.4	26.5	0.4
1985	472.2	469.9	0.5	35.8	36.2	0.9	35.1	34.8	0.9	27.0	26.6	1.4
1986	498.1	494.0	0.8	38.7	39.8	2.8	37.6	36.5	3.1	27.0	27.7	2.3
1987	530.7	527.8	0.4	41.1	43.0	4.6	40.7	38.3	6.5	28.7	29.2	1.6
1988	570.9	565.9	0.9	43.8	47.3	7.5	41.1	40.7	1.0	29.0	29.3	1.2
1989	611.9	603.0	1.5	51.0	51.2	0.3	43.3	44.0	1.6	29.9	30.2	1.0
1990	630.9	642.4	1.8	56.0	56.4	0.6	45.0	46.0	2.1	30.8	31.0	0.5
1991	672.0	687.8	2.3	60.1	61.3	1.9	44.7	48.9	8.4	31.8	32.4	1.9

Note:

"Sim-I" estimated parameters; "%Diff." percentage difference between actual and simulated values.

The results (tables 6.2 to 6.4) provide some interesting insights to the country's policy dilemmas. For example, lowering military expenditures by ten percent each year (table 6.2):

- 1 Generally reduced the country's gross domestic product. Dividing the 1974-91 period into two nine-year groups, 1974-82 and 1983-91, GDP would have been lowered an average of 2.9 percent in the first period and 2.3 percent in the latter.
- 2 Private investment would have been significantly lower in an environment of reduced military expenditures. On average, private investment would have been reduced by 7.7 percent per year during the 1974-82 period and by 9 percent over the 1983-91 interval.
- 3 In general, gross national savings would have improved with lower allocations to the military. This improvement declined over time, averaging 3.0 percent during the 1974-82 period but only 1.8 for the years through 1991.
- 4 Finally, foreign debt would have been considerably lower, particularly because of the cumulative effect of reduced expenditures, i.e., while reductions were modest in the first period (2.2 percent) they accelerated to 9.4 percent over the 1983-1991 period.

Reducing non-military government expenditures produced contrasting results (table 6.3):

- 1 In contrast to military expenditures, holding non-military expenditures to 90 percent of their historical values would have provided a mild stimulus to GDP. GDP would have averaged around 1.2 percent higher during the 1974-82 period, and 3.0 higher percent from 1983 through 1991.
- 2 While private investment would have declined, these reductions were modest, averaging only 1.1 percent during the 1974-82 period and 1.8 percent thereafter.
- 3 The most significant contrast involves the savings rate. Cutting non-military expenditures by ten percent would have increased the savings rate by 13.2 percent on average (versus 3.0 for military expenditures cuts)

Table 6.2
Macroeconomic simulation II: military expenditures ten percent less than historical values
(billions of 1985 rupees)

Year	Gross Domestic Product		Private Investment		Gross National Savings		Foreign Debt	
	Sim-I	%Diff.	Sim-I	%Diff.	Sim-I	%Diff.	Sim-I	%Diff.
1974	247.6	-2.9	17.5	18.1	21.1	22.7	85.6	85.6
1975	258.9	-2.3	19.0	18.1	26.4	26.0	77.2	77.1
1976	264.5	-3.0	20.1	19.4	29.6	30.0	89.8	89.4
1977	287.3	-2.3	20.6	19.1	27.3	28.4	84.3	83.4
1978	309.3	-3.2	22.2	21.0	33.6	35.6	84.8	83.2
1979	327.2	-3.6	23.8	22.0	41.8	43.7	89.6	87.3
1980	344.1	-3.6	25.6	23.0	46.3	47.4	91.6	89.9
1981	364.2	-3.4	27.0	23.9	49.1	50.5	84.2	81.6
1982	388.7	-1.7	28.9	24.6	51.8	52.4	98.1	92.6
1983	414.8	-0.9	31.5	27.4	60.8	61.7	97.1	90.3
1984	442.5	-2.2	33.8	31.1	67.7	70.3	101.2	93.2
1985	469.9	-2.1	36.2	32.6	65.7	66.2	103.2	94.2
1986	494.0	-1.6	39.8	35.9	68.8	68.6	105.4	95.8
1987	527.8	-0.9	43.0	38.9	74.2	74.6	112.7	102.4
1988	565.9	-2.1	47.3	44.7	81.2	83.7	115.7	105.0
1989	603.0	-2.7	51.2	48.2	84.8	86.7	123.8	112.8
1990	642.4	-3.8	56.4	52.5	89.2	90.2	130.1	118.9
1991	687.8	-4.0	61.3	58.0	98.7	102.5	129.4	117.8

Note:

"Sim-I" refers to the results from simulation I presented in table 6.1 that established a base-line simulation for the Pakistani economy; "Sim-II" refers to the results of the simulated ten percent cut in military expenditures; both simulations are based on the structural-equation model presented in the appendix; "%Diff." refers to the percentage difference between the two simulations.

Table 6.3

Macroeconomic simulation III: non-military expenditures ten percent less than historical values
(billions of 1985 rupees)

Year	Gross Domestic Product		Private Investment		Gross National Savings		Foreign Debt	
	Sim-I	Sim-III %Diff.	Sim-I	Sim-III %Diff.	Sim-I	Sim-III %Diff.	Sim-I	Sim-III %Diff.
1974	247.6	247.6	17.5	17.7	21.1	22.8	85.6	85.6
1975	258.9	259.6	19.0	18.9	26.4	28.5	77.2	77.2
1976	264.5	265.6	20.1	20.1	29.6	31.7	89.8	89.7
1977	287.3	288.9	20.6	20.6	27.3	33.7	84.3	84.2
1978	309.3	313.5	22.2	21.8	33.6	41.5	84.8	84.5
1979	327.2	332.8	23.8	23.3	41.8	48.7	89.6	89.1
1980	344.1	350.7	25.6	24.9	46.3	54.0	94.8	94.1
1981	364.2	372.7	27.0	26.1	49.1	55.1	98.1	96.6
1982	388.7	397.6	28.9	28.7	51.8	64.6	97.1	95.3
1983	414.8	426.9	31.5	30.3	60.8	73.8	98.1	96.6
1984	442.5	454.8	33.8	33.1	67.7	77.3	101.2	99.0
1985	469.9	483.3	36.2	35.7	84.5	22.2	103.2	100.7
1986	494.0	512.4	39.8	38.7	88.1	21.9	105.4	102.6
1987	527.8	548.3	43.0	42.0	91.5	18.9	112.7	109.6
1988	565.9	587.4	47.3	45.6	81.2	92.2	115.7	112.3
1989	603.0	623.4	51.2	50.2	84.8	89.8	123.8	120.0
1990	642.4	661.5	56.4	56.6	89.2	102.8	130.1	126.4
1991	687.8	707.5	61.3	62.1	98.7	123.0	129.4	125.9

Note:

"Sim-I" refers to the results from simulation I presented in table 6.1 that established a base-line simulation for the Pakistani economy; "Sim-III" refers to the results of the simulated ten percent cut in non-military expenditures; both simulations are based on the structural-equation model presented in the appendix; "%Diff." refers to the percentage difference between the two simulations.

Table 6.4

Macroeconomic simulation IV: government revenues ten percent more than historical values
(billions of 1985 rupees)

Year	Gross Domestic Product		Private Investment		Gross National Savings		Foreign Debt	
	Sim-I	Sim-IV %Diff.	Sim-I	Sim-IV %Diff.	Sim-I	Sim-IV %Diff.	Sim-I	Sim-IV %Diff.
1974	247.6	247.6	17.5	17.8	21.1	24.5	85.6	85.6
1975	258.9	260.5	19.0	18.8	26.4	30.2	77.2	77.2
1976	264.5	266.4	20.1	20.0	29.6	32.6	89.8	89.7
1977	287.3	290.0	20.6	21.4	27.3	32.9	84.3	84.1
1978	309.3	314.0	22.2	21.7	33.6	37.4	84.8	84.4
1979	327.2	331.9	23.8	23.4	41.8	43.4	89.6	89.0
1980	344.1	348.1	25.6	25.6	46.3	52.7	94.8	94.1
1981	364.2	370.4	27.0	27.0	49.1	60.3	98.1	97.1
1982	388.7	396.8	28.9	28.3	51.8	60.3	98.1	97.1
1983	414.8	422.5	31.5	30.8	60.8	65.3	97.1	95.9
1984	442.5	450.8	33.8	33.4	67.7	74.0	101.2	99.8
1985	469.9	480.0	36.2	35.7	84.5	22.2	103.2	101.7
1986	494.0	502.9	39.8	40.0	88.1	21.9	105.4	103.8
1987	527.8	537.4	43.0	43.6	91.5	18.9	112.7	111.1
1988	565.9	579.6	47.3	47.0	81.2	98.4	115.7	114.3
1989	603.0	617.9	51.2	50.9	84.8	100.0	123.8	122.3
1990	642.4	659.5	56.4	55.6	89.2	104.3	130.1	128.5
1991	687.8	707.1	61.3	59.9	98.7	103.1	129.4	127.5

Note:

"Sim-I" refers to the results from simulation I presented in table 6.1 that established a base-line simulation for the Pakistani economy; "Sim-IV" refers to the results of the simulated ten percent increase in government revenues; both simulations are based on the structural-equation model presented in the appendix; "%Diff." refers to the percentage difference between the two simulations.

during the first period and 15.9 percent (vs. 1.8 percent) for the interval through 1991.

- 4 While foreign debt would have been reduced, the gains in this area would have been much less significant than those associated with military cutbacks (0.5 vs. 2.2 percent during the first nine-year period and 2.7 vs. 9.4 percent for the second period).

Another fiscal strategy would have been to seriously expand the government's revenue base and collection. Here (see table 6.4) a ten percent increase over the actual levels of revenues would have:

- 1 Gradually increased GDP from 1.1 percent during 1974-1982 period to 2.2 over the 1983-1991 interval.
- 2 On average, reduced private investment by less than one percent per annum.
- 3 Produced a dramatic increase in the country's savings rate with increases averaging 12.4 percent for the first period and 11.7 percent in the second.
- 4 Modestly reduced foreign debt, averaging 0.5 percent during 1974-1982 and 1.4 percent through 1991.

Generally, it is important to stress macroeconomic problems posed by fiscal deficits. But for policy purposes just as important an issue is the optimal means of reducing deficits, and clearly some areas of expenditure reduction are more productive than others in achieving this end. The critical question should be "what is the optimal mix of policies that will assure the economy can maintain high rates of non-inflationary, relatively debt-free growth during the remaining years of the twentieth century?" A new adjustment program is being put in place for this purpose. Clearly this is an opportune time to examine the current Pakistani program and to assess the alternatives open to the government.

Policy objectives and constraints, 1992-2000

Realistically, Pakistan's fiscal options are likely to be narrowly constrained by the International Monetary Fund. In November of 1993 the government negotiated an agreement with the IMF to borrow a total of Special Drawing Rights (SDR)

1,200 million (\$1,670 million) in a combination of concessionary and market rate loans if it implements reforms and reaches certain economic targets (MEED, 1993, p. 34).

The loans will be a combination of an enhanced structural adjustment facility (ESAF) that carries an interest rate of 0.5 percent, an extended fund facility (EFF) at market rates, and a public-sector adjustment loan (the \$350 million standby credit approved by the IMF in September 1993 is not included in the new agreement). As part of the agreement, the government pledges to take measures to meet the following economic targets (MEED, 1993, p. 34):

- 1 Reach an average GDP growth rate of 6.5 percent over the next three years, 1994-1996. GDP was expected to grow by 7.5 percent in 1994 depending on the size of the crucial cotton crop, compared with a record low of three percent GDP growth in 1993.
- 2 Bring inflation down to five percent. The government has forecast an inflation rate of eight percent for 1994 compared with more than ten percent in 1993.
- 3 Boost foreign exchange reserves. Reserves fell steadily in 1993 to reach \$222 late that year (compared with \$1,000 in January of 1993).
- 4 Reduce the burden of foreign and local debt. In late 1993 the state owed \$23,000 million to foreign lenders, of which \$4,500 million was short-run debt.
- 5 Continue the tariff, tax, and financial reforms, privatization and deregulation policies launched in the late 1980s.

To date, the government has complied with IMF pressure by increasing energy prices and introducing a controversial agricultural tax as a means of reducing the fiscal deficit (MEED, 1993, p. 34). Petroleum and utility prices have been adjusted substantially, together with the introduction of a mechanism to make domestic petroleum prices more responsive to changes in international prices. In addition, the authorities' fiscal program for 1993/94 envisages a reduction in military expenditures by about one percent of GDP, along with a containment of non-essential expenditures (IMF, 1994, p. 76-77). The authorities have tightened monetary policy through upward adjustments in the rates of return and reductions in the scope of concessional and mandatory credit schemes. The framework for concluding effective monetary policy has been strengthened through the provision

of increased autonomy to the central bank. Finally, the Pakistani rupee was devalued by ten percent at the outset of the 1993/94 fiscal year. This has been followed by a series of small exchange rate adjustments for a total real devaluation of 12 percent against the US dollar.

Recent government policy and creditor statements suggest that the country will be pursuing a comprehensive set of objectives throughout the remainder of the 1990s. These include:

- 1 A stable rate of GDP growth of between six and seven percent per annum — this is in line with the average rate of growth since 1976.
- 2 Employment growth of 2.8 to 3.1 percent — around the rate of growth of population and consistent with past rates of job creation.
- 3 Inflation of five percent or lower — somewhat below the historical range of seven to eight percent.
- 4 Foreign borrowing to expand at a rate slower than the general expansion in economic activity, i.e., around five percent or less.
- 5 Military expenditures to decline to around four to five percent of GDP, down from the six to seven percent range in the late 1980s and early 1990s.
- 6 Government deficits to fall to three to four percent of GDP, down from the six percent figure reached in the early 1990s.
- 7 A general expansion in the share of savings in GDP up toward the range of 18 to 20 percent, typical values for countries at Pakistan's stage of development.
- 8 An expanded share of private investment in GDP.

Simulating policy objectives and constraints, 1992-2000

The critical question is whether and to what extent these objectives are consistent and attainable. Of particular importance for the current study are the military expenditures levels that would aid in the attainment of these goals. Again, using

the structural-equation model presented in the appendix, several policy packages were examined for their ability to improve the country's economic fortunes.

Constraining military expenditures

Toward this end, simulation V is essentially a "do-nothing" approach in which, as a benchmark, the model was solved with only the world rate of inflation set at three percent per annum, population growth at three percent per annum as well, and exports at constant prices assumed to grow at an annual rate of 7.5 percent. Here we are assuming no major shifts in past public expenditure or revenue decisions. In this simulation, GDP and employment targets would be met, but the national savings rate would fall short of target, the fiscal deficit would expand rather than fall, the external gap would reach nearly eight percent of GDP, a figure probably unattainable in light of the likely reluctance of foreign creditors to finance deficits of this magnitude. Most unsatisfactory of the major indicators is the rate of inflation, reaching slightly over 20 percent by the end of the century.

If a "do-nothing" or "continue-business-as-usual" approach will not meet the policy objectives, policy changes need to be examined. For most developing countries, one option would be to determine the extent to which economic performance might be improved through cutting military expenditures. As noted above, however, the consequences of this approach are not clear. On the one hand, military expenditures appear to provide a positive stimulus to the economy, but on the other hand the deficits associated with increased allocations to the military may be financed in a way that preempts funds that might flow into private investment. To assess the net magnitude of these effects, several alternative military budgets were examined. In these simulations military expenditures were assumed to expand at various constant rates (2.5, 5.0, and 7.5 percent) over the period to the year 2000. As a frame of reference, military expenditures averaged 7.2 percent over the 1981-91 and 1986-91 periods.

Figure 6.1 presents the simulations' results on Pakistan's GDP. It begins to decline after 1994, with the rate of decline largely a function of the expansion in military expenditures. With military expenditures endogenous (determined by the model's equations — simulation V) the deceleration in GDP growth is fairly gradual, leveling off at around 6.5 percent per annum by the end of the century. With military expenditures expanded at a rate of 7.5 percent per annum (providing there were no fiscal or inflationary constraints) it would be possible to stabilize the growth of GDP at slightly over 7 percent per annum. Increases in military expenditures at a constant 5.0 percent or 2.5 percent would (in the absence of any other policy changes) cause the economy to decelerate fairly rapidly, reaching

growth of about 5.8 percent and 4.6 percent, respectively, by the end of the century.

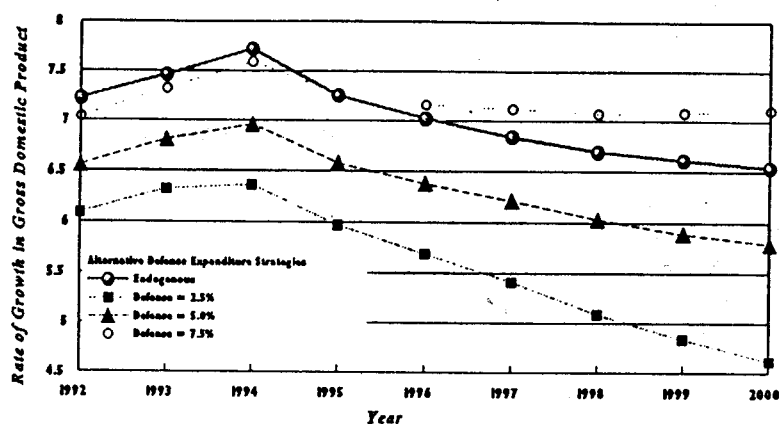


Figure 6.1 Pakistan: Alternative military expenditures — GDP scenarios

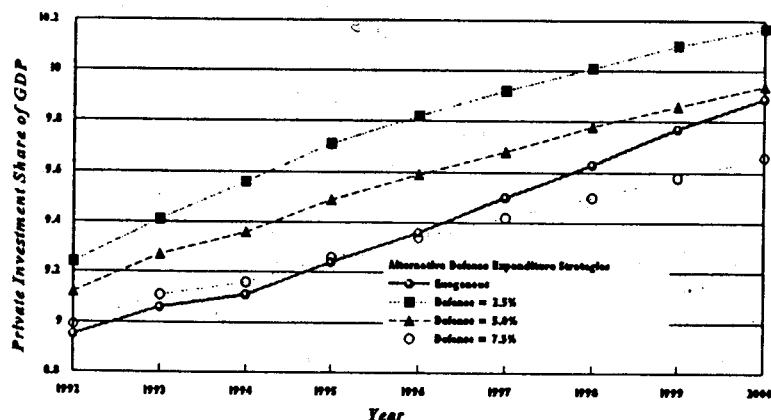


Figure 6.2 Pakistan: Alternative military expenditures — private investment scenarios

The impact of military expenditures on private investment reflected the anticipated pattern (figure 6.2). The share of national resources devoted to private investment increases with lower rates of expansion in military expenditures. Concerning the fiscal imbalance (figure 6.3), only the deficit associated with a 2.5 percent expansion in military expenditures is likely to fall within an acceptable range (around 4.8 percent of GDP).

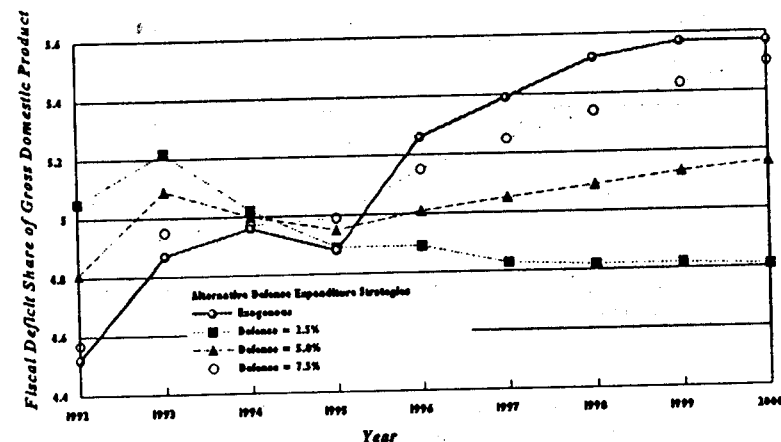


Figure 6.3 Pakistan: Alternative military expenditures — fiscal deficit scenarios

Without simultaneous reforms in tax structure or collection, significant reductions in the deficit as a share of GDP are unlikely under any of the proposed scenarios.

Finally, simply just constraining military expenditures even at low rates of growth (with no other complementary stabilization measures) would most likely not stave off increases in inflation. As noted above, inflationary pressures have been building for some time. Even at an average annual growth of only 2.5 percent for military expenditures (figure 6.4) it would be difficult for the country to reduce inflation below ten percent per year during the remainder of this century.

Simulating policy-reform packages with constrained military expenditures

These simulations suggest that although the rate of growth of GDP may increase with military expenditures, the adverse effects associated with this expansion negate any resort to a military-led growth model. The real question for policy -

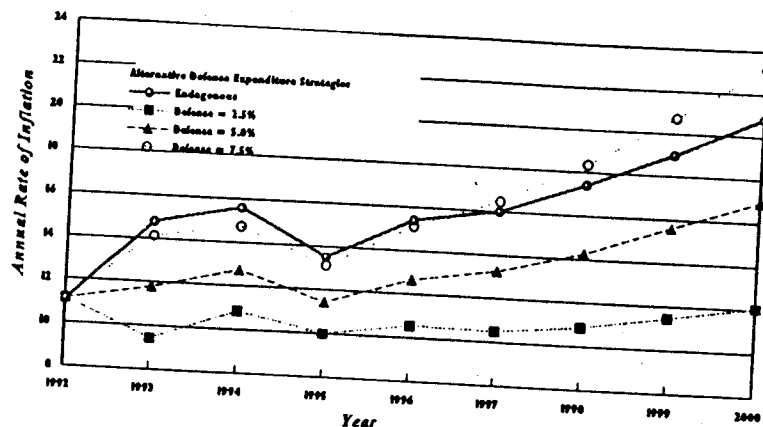


Figure 6.4 Pakistan: Alternative military expenditures — inflation scenarios

makers must center on ways of improving economic performance while constraining military expenditures to lower than the historical rates of expansion. Several policy packages are examined.

Fiscal Program I. While holding military expenditures at a 2.5 percent rate of growth, the authorities might also constrain foreign borrowing. Given the country's current debt situation and the high proportion of the budget allocated to debt-service, reduced rates of external borrowing are probably a good objective in and of themselves. Credit from this source is set to grow at 5.0 percent per annum. This rate is considerably lower than the average of 22 percent over the 1986-91 period but in line with the average of 4.6 percent for the 1981-91 period as a whole.

Fiscal Program II. To strengthen the country's acute infrastructure bottlenecks, this policy package would shift more resources toward public investment in transport, energy, communications, and the like. Expanded expenditures in these areas would also help to offset the deflationary effects associated with the planned slowdown in military expenditures. As a starting point, infrastructure investment was set at an expansion of 7.5 percent per annum, up somewhat from the 6.1 percent average over the 1981-91 and 5.1 percent expansion during the 1986-91 period.

Fiscal Program III. This set of policies would add increased revenue collection to Fiscal Program II. Here, implementation of the agriculture tax and better tax

collection should be enough to sustain an increase in revenues of around 7.5 percent per annum. This rate is up some from the 6.8 percent revenue growth during 1981-91 and 5.5 percent for the 1986-91 period.

Fiscal Program IV. The final package of reforms simulated would modify program III by constraining non-military (and non-infrastructure) expenditures to a maximum rate of expansion of 7.5 percent per annum. As noted above one of the main causes of the country's current fiscal crisis has been an acceleration in non-military expenditures. These averaged 8.4 percent during 1981-91, accelerating to 9.4 for the 1986-91 period.

Main findings

Of particular interest is the manner in which these alternative policy-reform packages might improve economic performance relative to growth that is likely to occur simply through constraining the growth in military expenditures at 2.5 percent per annum.

Growth. GDP growth gradually improves as the fiscal programs are made more comprehensive (figure 6.5). That is, simply restraining foreign borrowing (Fiscal Program I) does not significantly improve the general rate of expansion of the economy. Nor is there much difference between the growth path obtained through carrying out program I and that of simply expanding military expenditures with foreign borrowing being determined through the model's relationships. Note, in addition, that while program IV yields the highest rate of growth throughout the

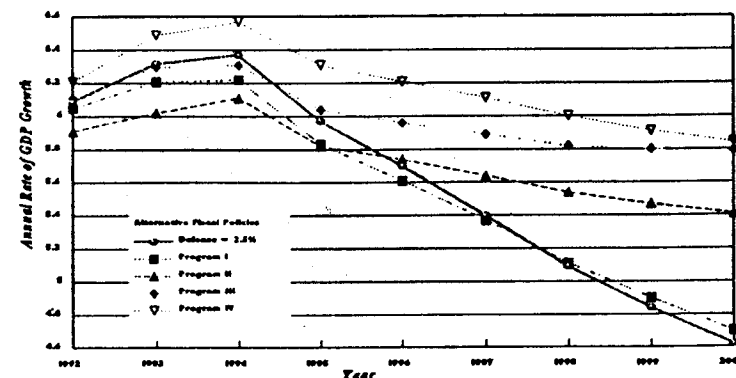


Figure 6.5 Pakistan: GDP growth under alternative fiscal programs

1990s, it converges with program III by the end of the century. Program II starts out the 1990s with relatively low rates of growth but after 1994/95, this program's performance improves significantly over that associated with program I.

Inflation. Inflationary pressures prove relatively hard to dampen.⁵ Constraining military expenditures to a 2.5 percent growth path, together with restricting foreign borrowing (program I) and increasing infrastructure investment (program II) while keeping the rate of inflation considerably below that of the purely endogenous forecast, were unable to put the economy on a declining inflation path. This leads to several important policy implications:

- 1 A clear ingredient of any anti-inflationary program must be tax reform. Even expanding government revenues at 7.5 percent per annum (program III) was not sufficient to reduce inflation below six percent per year.
- 2 In contrast, supplementing tax reform with constraints on non-military expenditures (program IV) quickly suppressed inflation. This policy package lowered inflation below five percent through much of the period under consideration.

Budget Deficit. The pattern of budget deficits was similar to those characterizing inflation. Without tax reform, the programs were not capable of significantly reducing the share of the fiscal deficit in GDP. Specifically, the simulations constraining military expenditures at 2.5 percent, program I, and program II, all stabilized the deficit at around 5.0 percent of GDP (with program II eventually reducing this ratio to 4.5 at the end of the century).

In contrast, fiscal performance improved dramatically with expanded revenues (program III) and constrained non-military expenditures (program IV). Specifically, by the year 2000 program III brought the fiscal deficit down to around 2.6 percent of GDP and program IV brought the deficit down further toward 2.0 percent.

Savings. As noted earlier, increasing the rate of national savings must be a key objective in any fiscal program. In this regard all reform packages produced some improvement. Again the results from the military expenditures expansion of 2.5 percent, program I, and program II simulations were fairly similar, with the national savings rate increasing from about 14.5 percent in 1992 to slightly over 17 percent by 2000.

Tax reforms contributed greatly to this objective, raising the savings rate to nearly 19 percent at the end of the period. Constraints on non-military expenditures expanded this rate by an additional two percent to slightly under 21 percent by 2000.

Private investment. Finally, increasing the share of national resources invested by the private sector is possible under all of the programs examined. Here improvements up to around 10.2 percent (from around 9.2 in 1992) are easily obtained. But as with the other macroeconomic aggregates, a significant improvement in private investment depends critically on the willingness of the government to reduce its deficit.

Conclusions

In summing up, the fiscal pattern that developed in Pakistan during the 1980s and extending to the 1990s is not sustainable. Over-expansion in expenditures, both for military and non-military purposes, together with sluggish revenues and excessive foreign borrowing, created a situation in which further growth will be increasingly constrained by debt-service, inflation, and shortages of domestic savings for private investors.

But in light of the complex nature of military expenditures in both stimulating and suppressing growth, budgetary reductions by themselves are unlikely to improve the country's economic performance. Rapid reductions in military expenditures are likely to impair the situation even further. Modest efforts in tax reform are by far the most effective means at restoring fiscal stability (a similar conclusion is reached in Khan, 1989, p. 19-22). The optimal policy mix is one of tax reform together with military expenditures expansion constrained to about 2.5 percent. Unforeseen events aside, this package would enable the country to meet the goals established by itself and by its major creditors in restoring a rapid, self-sustaining growth in an environment characterized by a declining military burden.

Appendix: Simulation model for Pakistan, 1973-1991 (constant 1985 prices)

Structural Equations

(1) Gross domestic product (GDP)

$$\text{GDP} = -53.4 + 1.70 \text{ PK} + 1.59 \text{ GK} + 6.38 \text{ EMP}_1 + 3.21 \text{ MILX}$$

$$(-1.55) (9.42)^{***} (2.81)^{**} (5.25)^{***} (2.75)^{**}$$

$$r^2(\text{adj})=0.998; \text{SE}=5.94; \text{DW}=1.96; \text{F}=2280.7^{***}$$

(2) Employment (EMP)

$$\text{EMP} = 3.05 + 0.42 \text{EMP}_{-1} + 0.12 \text{POP} + 0.04 \text{IGT}_{-1}$$

(2.93)** (2.13)** (2.70)** (2.19)**
 $r^2(\text{adj})=0.994$; SE=0.28; DW=2.82; Durbins H=-3.33; F=907.8***

(3) Military expenditures (MILX)

$$\text{MILX} = -4.77 + 0.13 \text{GDP}_{-1} - 0.24 \text{IGTP}_{-1} - 0.23 \text{BORFP}_{-1} - 0.14 \text{PDII}$$

(-1.32) (6.49)*** (-3.08)*** (-2.44)** (-2.08)**
 $r^2(\text{adj})=0.990$; SE=1.11; DW=1.66; F=403.2***

(4) Non-military public expenditures (NILX)

$$\text{NILX} = -29.71 + 0.23 \text{GDP}_{-1} - 2.81 \Delta \text{MILX}_{-1}$$

(-7.01)*** (19.74)*** (-2.50)**
 $r^2(\text{adj})=0.964$; SE=5.38; DW=1.74; F=229.61***

(5) Gross national savings (GNS)

$$\text{GNS} = -30.12 + 0.18 \text{GDP}_{-1} - 0.73 \text{GDEF} - 0.71 \text{GDEF}_{-1}$$

(-5.08)*** (10.88)*** (-2.35)** (-2.41)**
 $r^2(\text{adj})=0.944$; SE=5.96; DW=2.21; F=96.15***

(6) Total public investment (IGT)

$$\text{IGT} = 6.81 + 0.47 \text{IGT}_{-1} + 1.04 \text{IGGT}$$

(3.31)*** (3.68)*** (3.39)***
 $r^2(\text{adj})=0.951$; SE=2.37; DW=2.61; Durbins H=-1.76; F=144.30

(7) General government investment (IGGT)

$$\text{IGGT} = 3.08 + 0.71 \text{IGGT}_{-1} + 0.23 \text{IPMT}$$

(2.77)** (5.47)*** (2.11)**
 $r^2(\text{adj})=0.951$; SE=1.02; DW=1.81; Durbins H=0.46; F=167.05

(8) Total public revenue (GRT)

$$\text{GRT} = -20.77 + 0.21 \text{GDP}_{-1} + 0.26 \Delta \text{GDP}_{-1}$$

(-9.27)*** (25.25)*** (2.35)**
 $r^2(\text{adj})=0.941$; SE=2.87; DW=1.85; F=906.67***

(9) Public domestic borrowing (BORD)

$$\text{BORD} = 12.99 + 0.73 \text{GDEF}_{-1} - 0.91 \text{BORF}$$

(4.00)*** (5.10)*** (-2.91)**
 $r^2(\text{adj})=0.610$; SE=5.27; DW=2.37; F=14.30***

(10) Public foreign borrowing (BORF)

$$\text{BORF} = 14.74 + 0.48 \text{GDEF} + 0.27 \text{GDEF}_{-1} - 0.59 \text{MILX}$$

(8.40)*** (4.13)*** (2.48)** (-6.02)***
 $r^2(\text{adj})=0.715$; SE=2.30; DW=1.91; F=15.19***

(11) Private investment in large-scale manufacturing (IPML)

$$\text{IPML} = -4.37 + 0.78 \text{IPML}_{-1} - 0.07 \text{BORD}_{-1} + 0.24 \text{MILX}_{-1} + 0.13 \text{BORF}$$

(-3.36)*** (5.96)*** (-2.63)** (3.75)*** (2.66)**
 $r^2(\text{adj})=0.990$; SE=0.59; DW=1.99; Durbins H=-0.54; F=413.6***

(12) Private investment in small-scale manufacturing (IPMS)

$$\text{IPMS} = 0.02 + 0.85 \text{IPMS}_{-1} - 0.006 \text{BORD} + 0.007 \text{NILX}$$

(0.43) (8.87)*** (-2.82)** (-4.26)***
 $r^2(\text{adj})=0.994$; SE=0.05; DW=2.12; Durbins H=-0.93; F=934.7***

(13) Private investment in non-manufacturing (IPNMT)

$$\text{IPNMT} = 2.39 + 0.07 \text{GDP} - 0.36 \text{MILX} + 0.08 \text{GNS}$$

(3.06)*** (7.54)*** (-3.31)*** (3.24)***
 $r^2(\text{adj})=0.987$; SE=0.81; DW=1.75; F=415.55***

(14) Total public external debt (PDF)

$$\text{PDF} = 14.27 + 0.43 \text{PDF}_{-1} + 1.05 \text{IGT} + 9.96 \Delta \text{BORF}_{-1}$$

(1.52) (2.84)** (4.13)*** (2.37)**
 $r^2(\text{adj})=0.874$; SE=6.43; DW=2.14; Durbins H=-0.78; F=40.20***

(15) Public external debt to international institutions (PDII)

$$\text{PDII} = -10.78 + 0.97 \text{PDII}_{-1} + 1.05 \text{IGGT}$$

(-3.47)*** (13.57)*** (3.13)***
 $r^2(\text{adj})=0.990$; SE=2.51; DW=2.28; F=869.97***

(16) Imports (ZN)

$$\text{ZN} = -24.78 + 0.35 \text{GDP}_{-1} - 2.37 \text{REALEX} + 0.96 \Delta \text{IGTP}$$

(-1.99)* (21.55)*** (-2.37)** (2.15)**
 $r^2(\text{adj})=0.983$; SE=5.98; DW=1.60; F=271.41***

(17) GDP deflator (GDPDF)

$$\text{GDPDF} = 0.081 + 0.73 \text{GDPDF}_{-1} + 0.0016 \text{MSGC}_{-1} + 0.076 \text{UVZ}$$

(3.25)*** (13.24)*** (5.50)*** (2.50)**
 $r^2(\text{adj})=0.998$; SE=0.02; DW=2.07; Durbins H=-0.69; F=2753***

(18) Government credit from the monetary system (MSGCP)

$$\text{MSGCP} = 28.20 + 1.70 \text{ GDEF}_{-1} + 1.73 \text{ GDEF}_{-2} + 11.49 \Delta \text{MILXP}_{-1}$$

$$(3.26)^{***} \quad (2.50)^{**} \quad (2.39)^{**} \quad (3.81)^{***}$$

$$r^2(\text{adj})=0.842; \text{SE}=16.44; \text{DW}=1.96; \text{F}=24.96^{***}$$

Identities

- (19) Government expenditures (GE)
 $\text{GE} = \text{MILX} + \text{NILX}$
- (20) Government deficit (GDEF)
 $\text{GDEF} = \text{GE} - \text{GR}$
- (21) Change in GDP (ΔGDP)
 $\Delta \text{GDP} = \text{GDP} - \text{GDP}_{-1}$
- (22) Lagged change in military expenditures (ΔMILX_{-1})
 $\Delta \text{MILX}_{-1} = \text{MILX}_{-1} - \text{MILX}_{-2}$
- (23) Nominal public sector credit from the financial system (MSGC)
 $\text{MSGC} = \text{MSGCP} * \text{GDPDF}$
- (24) Real exchange rate (REALEX)
 $\text{REALEX} = \text{EXR} * \text{UVZ} / \text{GDPDF}$
- (24) Private investment in manufacturing (IPMT)
 $\text{IPMT} = \text{IPML} + \text{IPMS}$
- (25) Total private investment (IPT)
 $\text{IPT} = \text{IPMT} + \text{IPNMT}$
- (26) Private capital stock (PK)
 $\text{PK} = \text{IPT} + \text{IPT}_{-1} + \text{IPT}_{-2}$
- (27) Public capital stock (GK)
 $\text{GK} = \text{IGGT} + \text{IGGT}_{-1} + \text{IGGT}_{-2}$
- (28) External gap (EGAP)
 $\text{EGAP} = \text{EP} + \text{NFP} - \text{ZN}$

Exogenous

- (29) Population (POP)
- (30) Exchange rate (EXR)
- (31) Import price index (UVZ)
- (32) Exports (EP)
- (33) Net factor payments (NFP)

Notes: Two Stage least squares estimations. See: *SORITEC Integrated Econometric and Statistical Analysis Language*, Version 6.6 Reference

Manual (Springfield, Virginia: Sorites Group, Inc., 1993) for a description of the procedure. $r^2(\text{adj})$ = adjusted coefficient of determination; SE = Standard Error of Regression; DW = Durbin Watson Statistic; Durbin's H = Durbin's H Statistic; F = F Statistic; Δ = year-to-year difference; () t-statistic; * = significant at the 90% level; ** = significant at the 95% level; *** = significant at the 99% level.

Data sources

The data set used in constructing the policy simulation model were taken from the following sources.

The International Monetary Fund *International Financial Statistics Yearbook* (Washington, DC: International Monetary Fund, various issues). This source presents the main macroeconomic aggregates by fiscal year. The series goes back to 1955, but due to the separation of Bangladesh, estimates were confined to the years 1973-91 (the last year for which comparable data was available). The GDP deflator from this source was used to obtain constant price figures for the major macroeconomic aggregates.

The World Bank's *Annual Country Evaluation*. This data set provides more detail to the IMF figures. In particular, output is broken into the various sectors, agriculture, heavy manufacturing, etc. Also, investment is disaggregated into public and private, with each further subdivided. The main country evaluations used were: *Pakistan: Sixth Plan Progress and Future Prospects*, Report No. 6533-PAK (February 26, 1987); *Pakistan: Medium-Term Economic Policy Adjustments*, Report No. 7591-PAK (March 17, 1989); *Pakistan: Current Economic Situation and Prospects*, Report No. 9283-PAK (March 22, 1991); *Pakistan: Current Economic Situation and Prospects*, Report No. 10223-PAK (March 16, 1992); *Pakistan: Country Economic Memorandum FY93: Progress Under the Adjustment Program* Report No. 11590-PAK (March 23, 1993); *Islamic Republic of Pakistan: Social Action Program Project* Report No. 12588-PAK (March 8, 1994).

Government of Pakistan. Population and employment figures are from the Finance Division, Economic Adviser's Wing, *Economic Survey*. This is an annual publication with detailed figures on the country's demographics. The government has been quite aware of the limitations involved in measuring employment and unemployment. This data has been evaluated at length and a new set of definitions has been put into effect. These definitions are more in conformity to international standards as to what comprises "employment" and "unemployment." A complete description of these classifications is given in: "Comparative Statement Showing

Old and New Definitions of Labour Force Concepts" *Economic Survey 1992-93* (Islamabad: Government of Pakistan, Finance Division, Economic Adviser's Wing, 1993), p. 112.

Data on military expenditures were taken from *World Military Expenditures and Arms Transfers* (Washington, DC: US Arms Control and Disarmament Agency) annual; and Stockholm International Peace Research Institute, *SIPRI Yearbook* (New York: Oxford University Press), annual. Of the two series the SIPRI figures are more consistent over long time periods, hence they were selected for the analysis. The data from the US Arms Control and Disarmament Agency was used to divide government expenditures into its military and non-military components. Constant price figures were obtained by deflating each series by the IMF's GDP deflator.

Notes

This chapter is a revised version of a paper presented to the Peace Science Society section of the Allied Social Sciences Association annual meetings, January 5-7, 1996, in San Francisco, California.

1. Ideally, this policy would be complemented by some of the innovative reforms outlined in Ahmed (1994).
2. For an excellent review of causality concepts and the methods used to test for causal relationships see Zellner (1988) and Granger (1988). The reported tests are all of the Granger type.
3. A full description of the model, its estimation, and the underlying data base are available from the author upon request. Estimates over different time intervals suggested that the coefficients were stable enough for simulation purposes. Based on the Durbin-Watson statistic there does not appear to be a serious problem of autocorrelation.
4. It should be noted that gross *national* savings is used here. Due to the large component of worker remittances, gross *domestic* savings fluctuates erratically. These remittances are no doubt purely exogenous and as such tend to mask the relationship between government expenditures, the fiscal deficit, and the change in savings.

5. Numbers and figures for the inflation, budget deficit, savings, and private investment policy variables under various fiscal program packages are available from the author.

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