

PRIVATIZATION OF PUBLIC ENTERPRISES IN PAKISTAN: MACROECONOMIC IMPACTS ON PRIVATE INDUSTRIAL INVESTMENT

INTRODUCTION

A global trend that rapidly gained adherents among authorities in Pakistan during the 1980s was privatization of public enterprises. The privatization movement came to a climax with the assertion of power by the Sharif government in late 1990. In part, privatization was seen by that government as an essential ingredient in a comprehensive package of pro market economic reforms.

The government's program to extricate itself from running industries is well advanced. By late 1992 it had sold 55 of 115 targeted industrial units, and two of the big five banks, and had begun to open up utilities to the private sector. In addition most exchange controls had been lifted as well as most barriers to foreign investment. The government had also liberalized imports, started to cut tariffs, and deregulated interest rates and loans⁽¹⁾.

Accompanying these measures were ambitious plans to improve infrastructure with new highways, power plants, and telecommunications networks and improved railways and ports⁽²⁾. In fact the idea of this infrastructure led development model was clearly to complement the liberalization of the economy through lowering the costs of production and thus increasing the returns on private investment.

Historically, infrastructure investment has played a rather passive role in stimulating follow-on private investment in Pakistan⁽³⁾. There is also

⁽¹⁾ NICOLL A., "Challenging Perspective", *Financial Times* (September 18, 1992), Section III, p. 1.

⁽²⁾ *Ibid.*, p. 1.

⁽³⁾ See LOONEY R.E., "Infrastructure and Private Sector Investment: The Case of Pakistan's Transportation and Communications Sector, 1972-1990", *Rivista Internazionale di Scienze Economiche e Commerciali*, vol. XXXIX, no. 9 (September 1992), pp. 771-792; LOONEY R.E., "Infrastructural Constraints on Transport and Communications: The Case of Pakistan", *International Journal of Transport Economics*, vol. XIX, no. 3 (October 1992), pp.287-306; and LOONEY R.E., "Infrastructu-



evidence⁽⁴⁾ that the potentially productive role that could be played by public investment has in large part been offset by public sector crowding out of private investment. The net effect has been for public investment to play only a marginal role in stimulating capital formation in industry. Specifically, the main mechanism diminishing the government's effectiveness has been the impact of public investment over time on the government deficit. This deficit, in turn, has been funded by increased domestic borrowing which subsequently forces the private sector out of the country's capital markets. Until public sector finances are under control, private investment can not be expected to play a leading role in the country's needed industrial revitalization.

On the surface, the government's program of privatization would appear to directly deal with this problem. If, as would seem likely, the government has had to increase its domestic borrowing to finance capital expansion in its public enterprises, privatization would eliminate pressure on the domestic capital markets. *Ceteris paribus* additional funds would be available to the private sector to take advantage of the opportunities provided by the government's expansion of infrastructure.

The purpose of the analysis below is to examine whether the privatization of public sector manufacturing would reduce the potential for crowding out of private investment in manufacturing. Have increased deficits and expanded government domestic borrowing facilitated past government investment in manufacturing? If not, what are the main areas of public expenditure responsible for the crowding out of private capital formation in manufacturing? Is reduced spending in these areas part of the government's current economic strategy?

BUDGETARY PATTERNS

A deteriorating economic situation forced the Pakistani Government in 1988 to enter agreements with the International Monetary Fund (IMF), The World Bank, the Asian Development Bank and several bilateral donors to implement a medium-term adjustment and structural reform program aimed at restoring resource balances to sustainable levels while at the same time improving the efficiency of the economy.

ral Constraints on Energy Development: The Case of Pakistan", *The Journal of Energy and Development* vol., XVI, no. 2 (Spring 1991), pp. 267-286.

(⁴) KHAN A.H. and IQBAL Z., "Fiscal Deficits and Private Sector Activities in Pakistan", *Economia Internazionale* vol. XLIV, no. 2-3 (May-August 1991), pp. 182-190.



To date, progress has been slow with the government unable to undertake a major tax reform. Complicating the problem is the fact that the country's chronically low level of domestic savings has resulted in an on-going deterioration of the nation's capital stock-both physical and human. The uncertain outlook for aid flows is exacerbating these problems.

The recent suspension of both US and IMF aid funds is a major limitation on public spending. Even if inflows from these sources resume soon, the overall thrust of government policy will be austere for some time, both because commitments from the Arab Emirates States and other donors will be lower than in previous years and because a resumption of IMF funds will require stricter adherence to the Fund's Structural Adjustment Program. The result is a deceleration in growth and associated tax revenues.

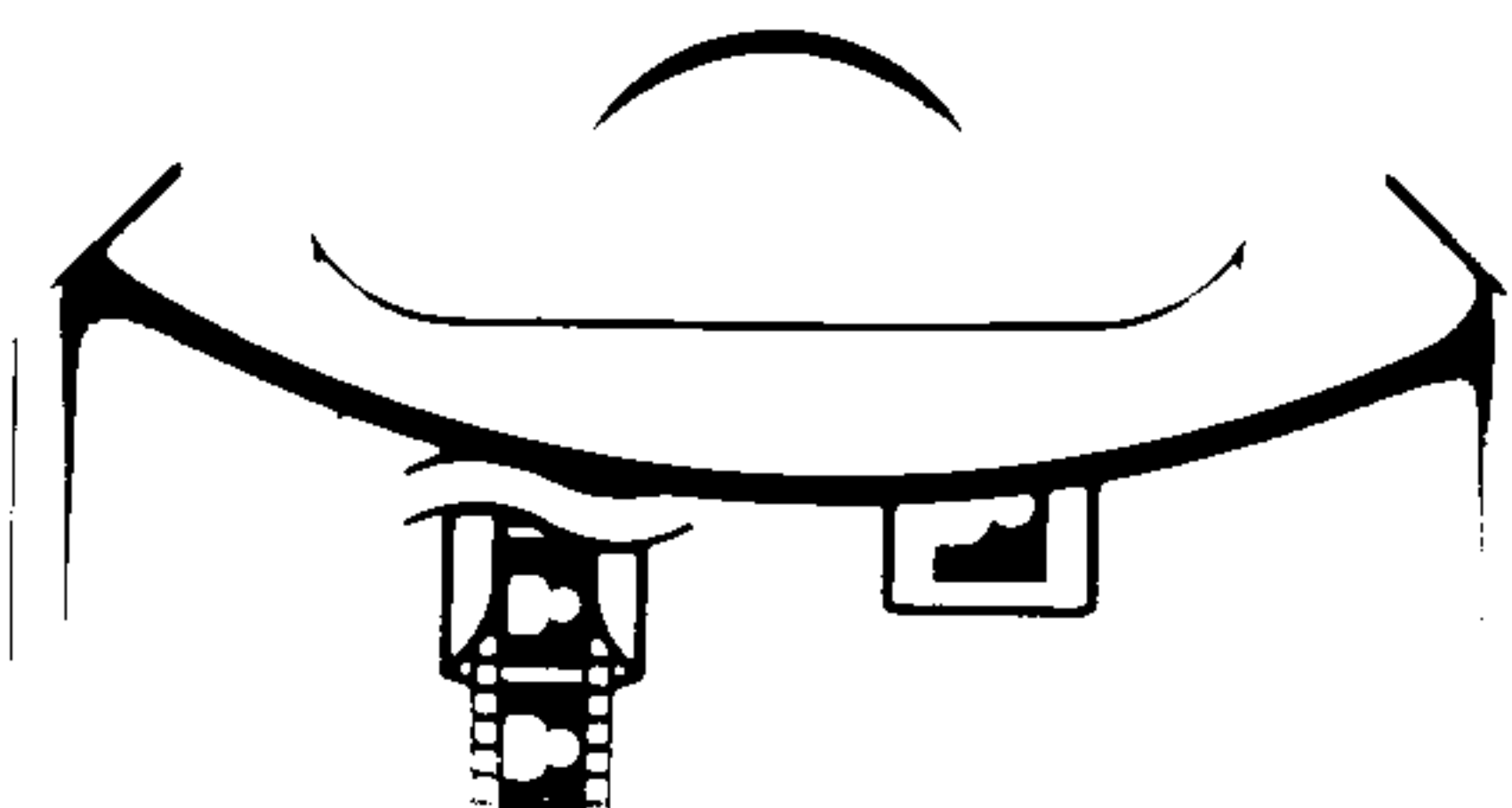
Pakistan's fiscal problems stem from two basic constraints: a narrow tax base and the heavy commitment of expenditure to two current items: defense, which consumes about a third of the budget, and debt servicing, both of which have proven to be irreducible and have in fact continued to increase even after the initiation in 1988 of the Government's austerity programs. The debt service burden continues to increase reaching 42 percent of current expenditure in the 1990/91 budget. The ADP has regularly to be revised downwards in the light both of reduced flows of foreign aid, on which it depends heavily, and of local resources⁽⁵⁾.

While there is no doubt that a large proportion of private household savings are being channeled to the public sector, there is strong evidence⁽⁶⁾ that the public sector is "crowding out" private sector investment in manufacturing, i.e., that Government spending is displacing private sector investment in these activities. In a similar fashion Government has been able to attract large amounts of private savings through the National Savings Schemes. These schemes offer high rates of return as compared to more conventional savings instruments offered by the commercial banks⁽⁷⁾. It would thus seem natural to assume that these schemes are a drain on the deposits of the commercial banks in Pakistan, thus constraining their ability to extend credit to private firms.

⁽⁵⁾ *Pakistan, Afghanistan Country Profile 1990-91* (London: Economist Intelligence Unit 1990), p. 40.

⁽⁶⁾ See for example KEMAL A.R. "Fiscal Imbalances as an Obstacle to Privatization Effort", *The Pakistan Development Review*, vol. 28, no. 4, Part II (Winter 1989), pp. 1009-1019.

⁽⁷⁾ HAMID J. *et al.*, *Financing Public Sector Development Expenditure in Selected Countries: Pakistan* (Manila: Asian Development Bank, June 1988), p. 4.



This capital transfer may be quite large, and could have been effected either directly through the sale of government financial instruments and/or indirectly through the advances of the banking sector to finance the budgetary deficits. Kemal's analysis suggests that because of limited availability of external resources for financing the budgetary deficits, bank financing has played a large role⁽⁸⁾:

not only has the public sector been instrumental in preempting large amounts of private savings but it has also relied rather heavily on bank financing. Given the government's preference to contain the money supply for price stability, this has had serious implications for credit availability to the private sector.

Specifically, he notes⁽⁹⁾ that money supply and credit are controlled by the State Bank through a credit plan rather than by resorting to changes in bank rate, reserve requirements or open market operations. Credit expansion is controlled by setting targets for its expansion by each financial institution and implementing it through administrative controls. Since the main consideration of the government has been to contain the expansion of money supply within safe limits, the increase in credit to finance the budgetary deficit implies a reduction in the availability of credit to the private sector.

If in fact crowding out has occurred, it is unlikely to be the result of government budgetary deficits per se, but rather a result of the expansion of certain expenditure categories. In this regard, the federal budget has two main parts: the ordinary budget covering current expenditures, and the development budget or annual development plan (ADP) which covers capital investment and development programs. A portion of federal income is passed on as statutory and discretionary grants to the provinces, which have their own budgets and also raise some of their own resources⁽¹⁰⁾.

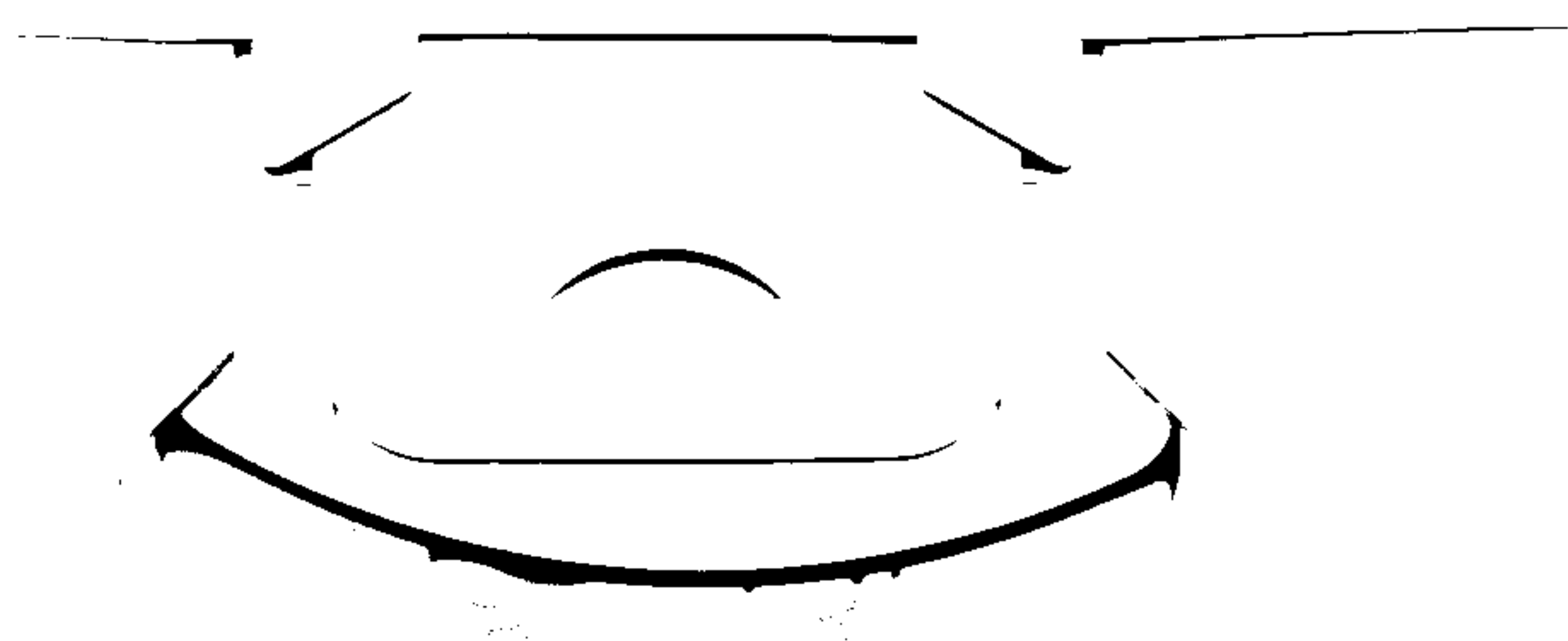
The country's constitution specifies areas of exclusive federal responsibility and areas of concurrent federal responsibility with residual powers left to the provinces⁽¹¹⁾. Areas of exclusive federal responsibility include defense, external affairs, foreign aid, banking and currency, air, sea and transport, national highways and strategic roads, communications, and

⁽⁸⁾ KEMAL A.R., "Fiscal Imbalances as an Obstacle to Privatization Effort", *The Pakistan Development Review*, vol. 28, no. 4, Part II (Winter 1989), p. 1014.

⁽⁹⁾ *Ibid.*, pp. 1014-1015.

⁽¹⁰⁾ *Pakistan, Afghanistan Country Profile, 1990-91* (London: Economist Intelligence Unit, 1990), p. 39.

⁽¹¹⁾ HAMID, *op. cit.*, pp. 21-22.



fuels (oil and gas). The concurrent list includes functions such as maintenance of law and order, labor legislation and population planning. Residual areas of responsibility which are with the provinces include education, health, agricultural support services, maintenance of the irrigation system, provincial and rural roads and internal law and order.

Under a constitutional provision the Federal Government and the provinces may entrust responsibilities to each other with mutual consent. Several functions of the Provincial Government in various sectors have been federalized under this constitutional provision. These include university education, medical colleges, agricultural universities, urban transport, preventive health programs, flood control and canal rehabilitation.

Tax collections have historically represented a low proportion of Gross Domestic Product (GDP) and continue to do so: total tax revenues were 13.3 percent of GDP in 1980/81 and had increased only to 14.2 percent in 1988/89. The overall level of government revenue in Pakistan is lower than those in other comparable Asian countries by 2 to 3 percentage points. This reflects the weakness in the tax structure as well as the lower tax effort by the provisional governments⁽¹²⁾.

In terms of its composition, however, there are several important differences with the country's neighbors⁽¹³⁾:

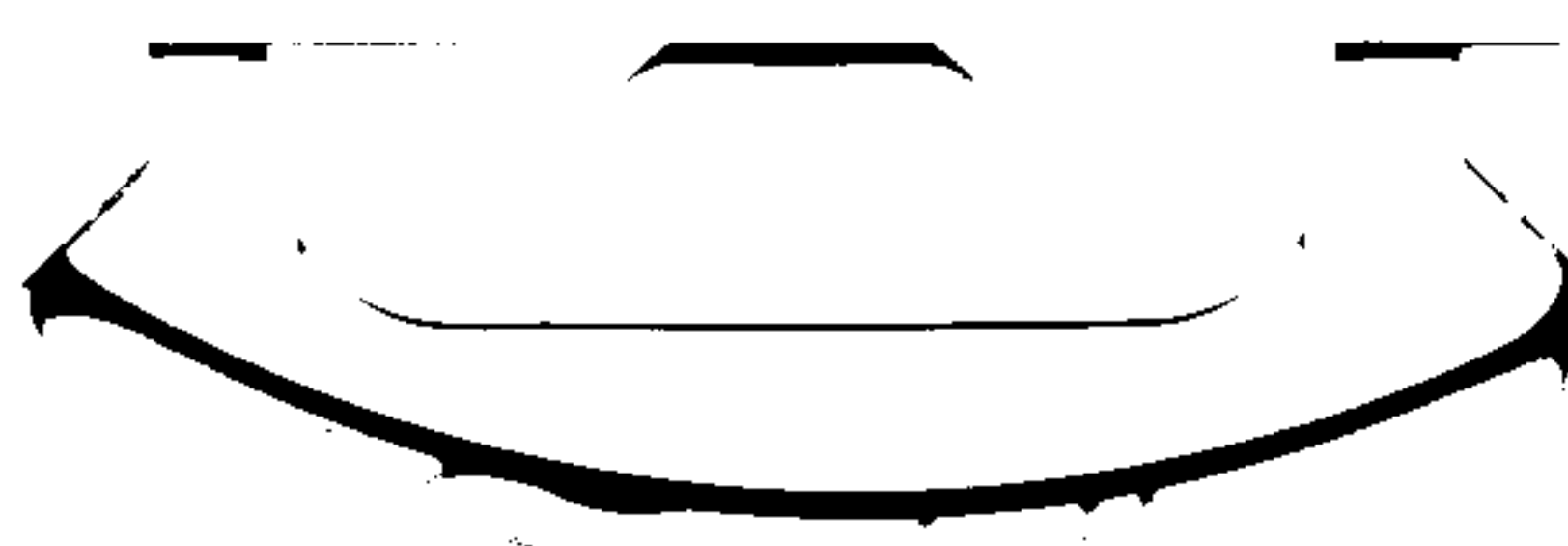
1. The level of federal tax collected is the highest among comparable Asian countries, but this reflects more the commandeering of most sources of tax revenue by the Federal Government than the efficiency of the Federal tax system. Collections on income tax and corporate tax are low (both because of the loopholes in the existing tax structure and because of the exclusion of agricultural income).
2. Domestic taxation on goods and services is low. On the other hand, taxes on international trade are among the highest in the world.

Overall Pakistan's taxation system is geared towards raising Federal taxes in an administratively convenient manner (and transferring some of it under a revenue sharing formula to the provinces). However the structure of taxation exhibits serious flaws and is not optimal either in raising revenue or increasing economic efficiency.

In recent years attempts have been made at tax reform. The 1987/88 budget initially provided for substantial increases in taxes and adminis-

⁽¹²⁾ HAMID, op. cit., p. 20.

⁽¹³⁾ *Ibid.* See also the comparative data on revenues and expenditures in The World Bank, *World Development Report*, 1991 (New York: Oxford University Press, 1991).



tered prices in order to reduce the size of the resources gap. Widespread protests forced the government to withdraw most of the increases, and a revised budget was issued in which cuts were made in both current and development expenditure. The 1988/89 budget, produced by a caretaker government, made only limited changes to tax and expenditure levels, and therefore included a substantial fiscal deficit put initially at 69.5 billion rupees. The budget tried to introduce significant measures to reduce tax evasion by the business and trading classes, but these were modified in the light of stiff opposition. The 1989/90 and 1990/91 budgets introduced by the Government were cautious on both the fiscal and expenditure sides⁽¹⁴⁾.

The federal budget for 1991/92 continued the pattern of the past. It proposes a 10.1 percent increase in expenditure over the 1990/91 revised estimates, with defense and debt servicing again dominating expenditure. The debt interest payment of 80.8 billion rupees was 27 percent higher than the 1990/91 budget, and defense increased by 11.6 percent. These two items alone will absorb 78 percent of the projected 153.4 billion of federal revenue and will account for 82 percent of current spending and 59 percent of total outlay⁽¹⁵⁾.

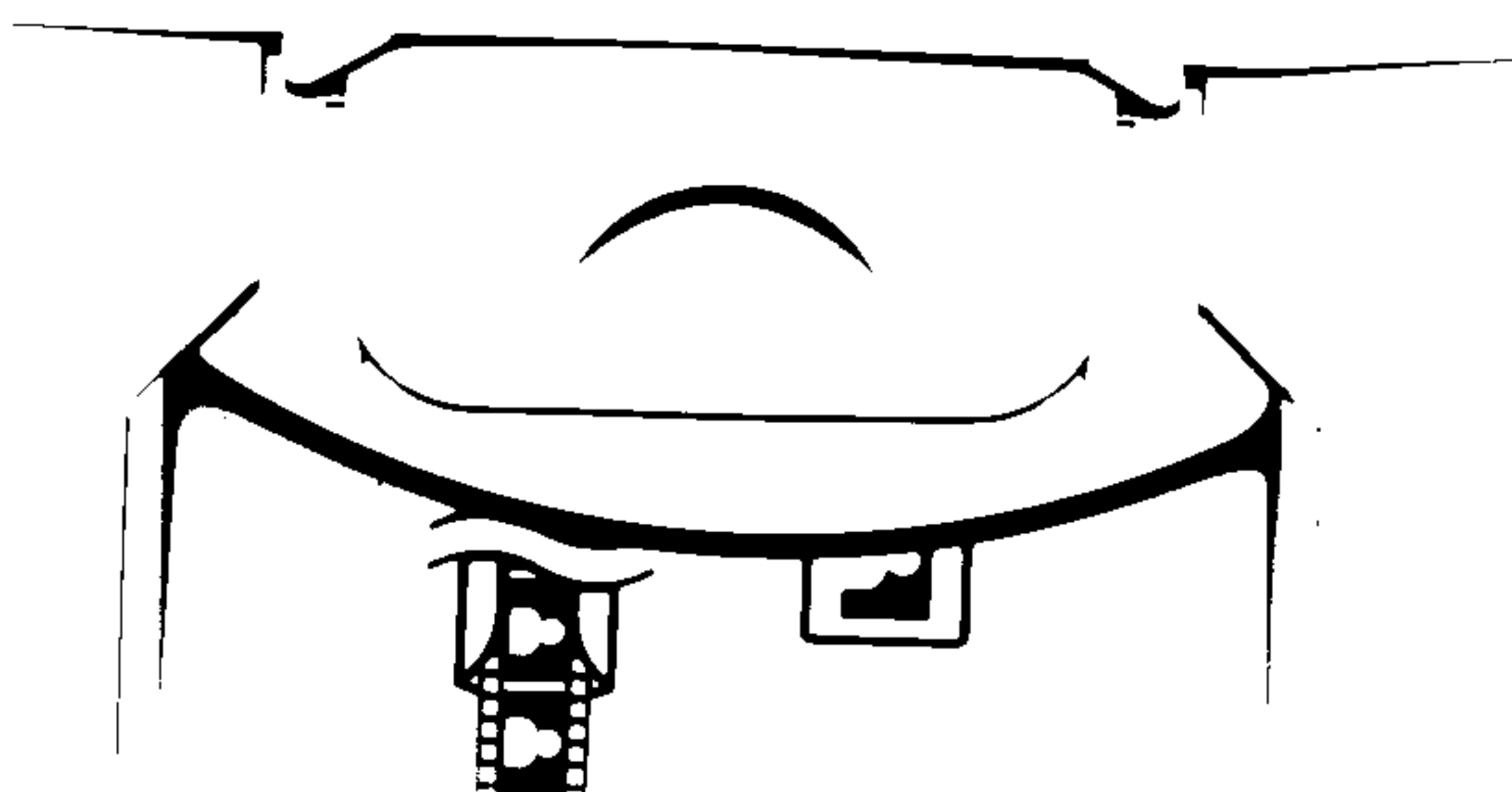
BUDGETARY PRIORITIES

Given these budgetary patterns and in light of the issues at hand, certain questions arise: Which expenditure allocations have top priority for expanded funding? Which will be cut when austerity measures prevail? Have fiscal deficits impacted only in the short run, or have longer term adjustments been associated with their expansion? Do public expenditures that compete for funding with the private sector have a different priority than those that do not? Which expenditure categories tend to effect future budgetary positions and which are largely determined by past budgetary patterns? Given that crowding out may occur what are the implications for the government's privatization program?

Unfortunately one method of analysis-insight through drawing on the experience of other developing countries is not of much use. On the surface at least Pakistan does not appear to be following very closely the international budgetary norm for low income countries: Its defense budget

⁽¹⁴⁾ *Pakistan, Afghanistan Country Profile 1990-91* (London: Economist Intelligence Unit, 1990), p. 40.

⁽¹⁵⁾ *Country Report: Pakistan, Afghanistan*, No. 2 (London: Economist Intelligence Unit, June 25, 1991), p. 18.



appears much less vulnerable than the case in other countries and its allocations to social sectors considerably lower than countries at similar levels of income. This might suggest that defense and social allocations are in direct competition for funds, with defense expanding at the expense of these programs.

However, part of the problem in drawing conclusions of this sort lies in the fact that for the most part, Pakistan has been able to avoid major cuts in programs – its austerity programs in recent years have simply reduced the rate of expenditure increases. In addition while it is still clear that when public policy demands exceed the available public resources, budgetary conflicts often occur between and among different policy areas⁽¹⁶⁾, there are still a number of conceptual difficulties involved identifying the precise nature of the trade-off.

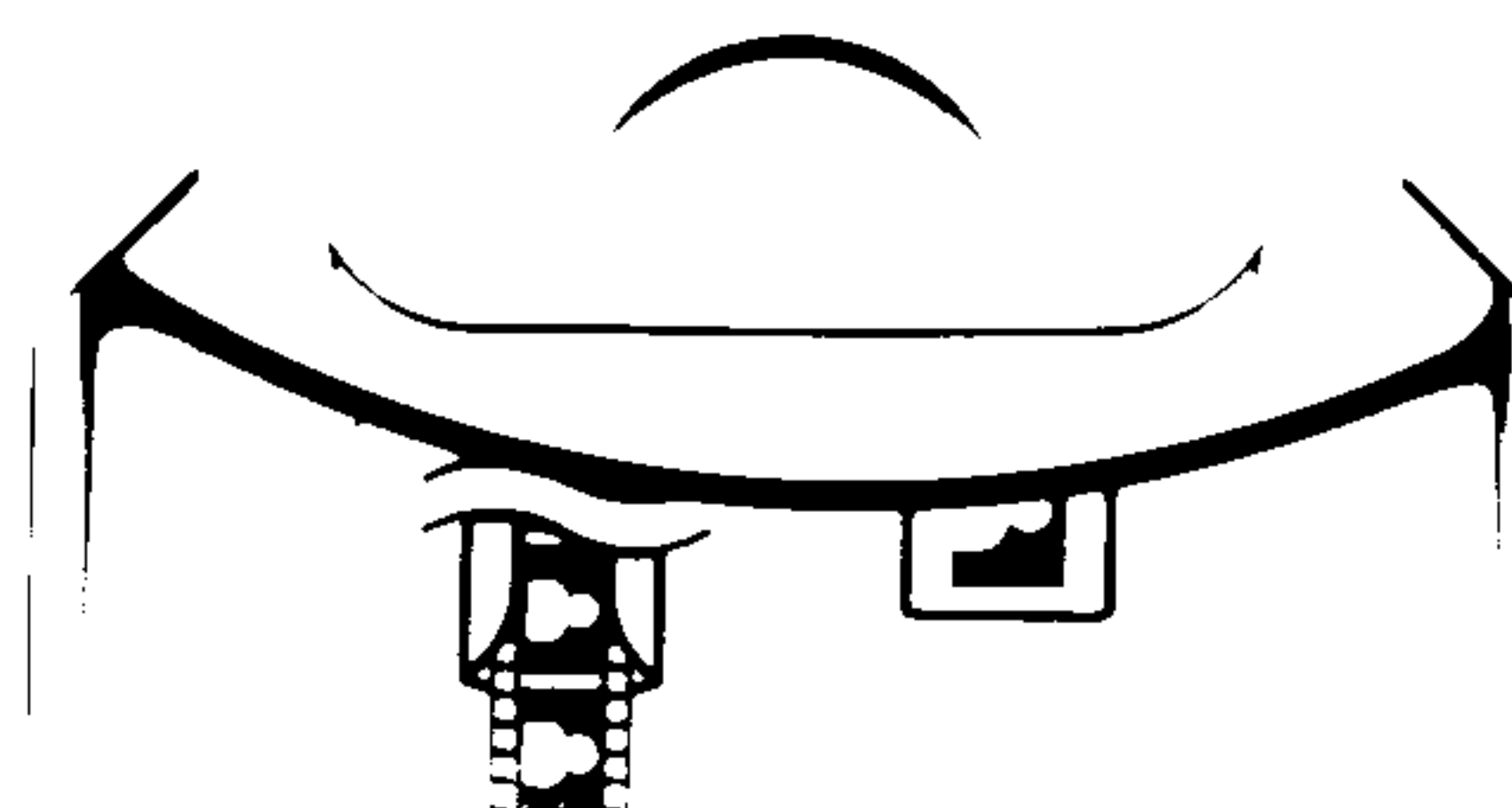
In fact, budgetary trade-off patterns themselves range on a continuum between two extremes. For example, in the case of public investment and manufacturing and general allocations to infrastructure, it may be that allocations to manufacturing come at the expense of infrastructural spending; that is, as manufacturing spending increases, spending on infrastructure may actually decrease, producing a negative trade-off. This pattern reflects a substitution effect⁽¹⁷⁾. A positive trade-off occurs if manufacturing spending increases stimulate real increases in infrastructural spending. Of course, it is always possible that public capital formation in manufacturing bears no relationship negative or positive to infrastructural spending, producing a pattern in the middle of the trade-off continuum-no tradeoff.

THE ISSUE OF CAUSATION

While a detailed mapping of Pakistani budgetary priorities may be impossible, it is still possible to infer some general rules through examining the timing of expenditures and deficits: do deficits affect public sector investment in manufacturing or as in the crowding out models do

⁽¹⁶⁾ For an analysis of the Iranian situation see LOONEY R.E. "The Role of Military Expenditures in Pre-Revolutionary Iran's Economic Decline", *Iranian Studies* (1988), pp. 52-74.

⁽¹⁷⁾ VENER J., "Budgetary Trade-offs Between Education and Defense in Latin America: A Research Note," *Journal of Developing Areas* (October 1983), p. 78. See also Peter HESS and Brendan MULLAN, "The Military Burden and Public Education Expenditures in Contemporary Developing Nations: Is There a Trade-Off", *Journal of Developing Areas* 22 (July 1988), pp. 497-514.



deficits increase as a result of an expanded program of government expenditures?

It follows that before drawing any definitive conclusions as to the impact of the public sector deficit, one must satisfactorily address the issue of causation. Fortunately, several statistical tests using regression analysis for this purpose are gaining wider acceptance. The original and most widely used causality test was developed by Granger⁽¹⁸⁾. According to this test, deficits (DEF) affect (say) growth of public sector investment in manufacturing (PIM) if this series can be predicted more accurately by past values of deficits than by past (investment) growth patterns. To be certain that causality runs from deficits to PIM, past values of the public deficit must also be more accurate than past values of public investment at predicting increases in the deficit.

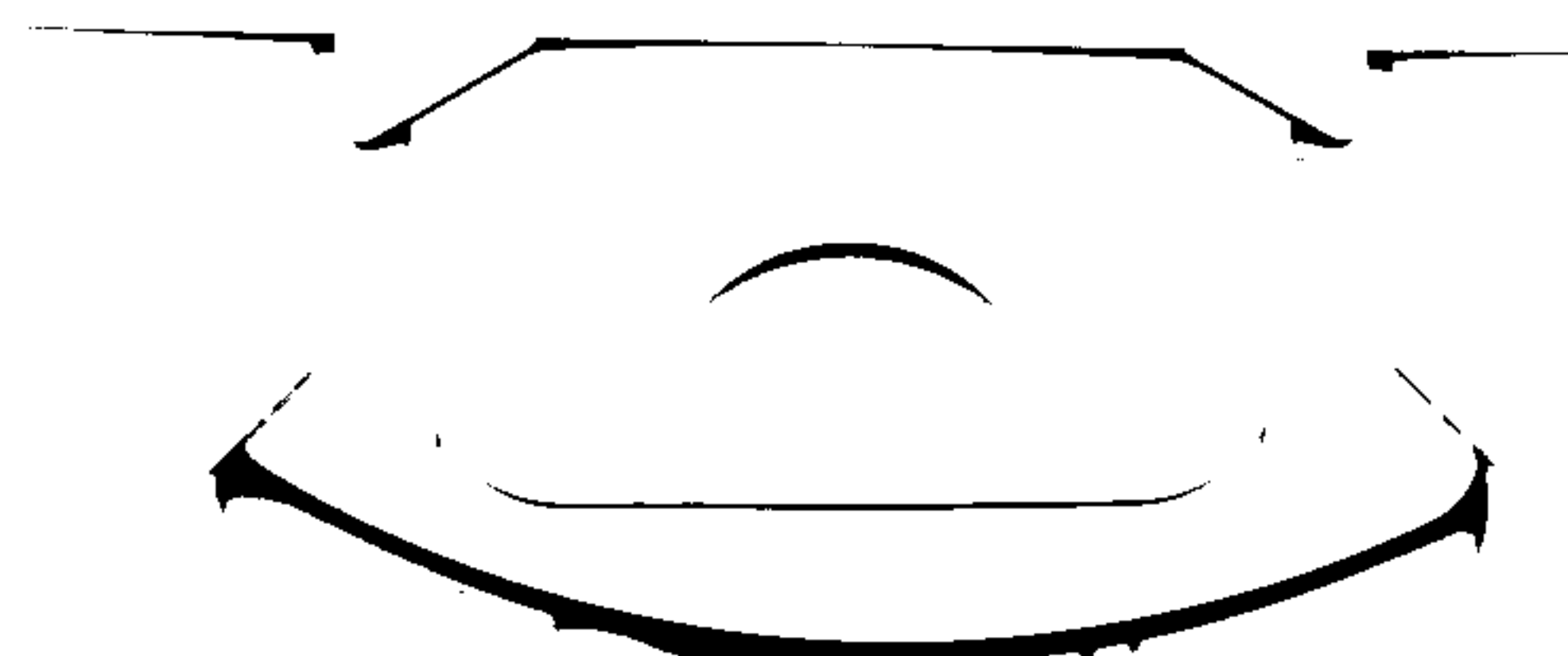
The Granger test detects causal directions in the following manner: first, unidirectional causality from DEF to PIM if the F-test rejects the null hypothesis that past values of DEF in equation (1) are insignificantly different from zero and if the F-test cannot reject the null hypothesis that past values of PIM in equation (2) are insignificantly different from zero. That is, PIM causes DEF but PIM does not cause DEF. Unidirectional causality runs from PIM to DEF if the reverse is true. Second, bi-directional causality runs between DEF and PIM if both F-test statistics reject the null hypotheses in equations (1) and (2). Finally, no causality exists between DEF and PIM if we can not reject both null hypotheses at the conventional significance level.

The results of Granger causality tests depend critically on the choice of lag length. If the chosen lag length is less than the true lag length, the omission of relevant lags can cause bias. If the chosen lag is greater than the true lag length, the inclusion of irrelevant lags causes estimates to be inefficient. While it is possible to choose lag lengths based on preliminary partial autocorrelation methods, there is no *a priori* reason to assume lag lengths equal for all types of deficits.

To overcome the difficulties noted above, Hsiao⁽¹⁹⁾ developed a systematic method for assigning lags. This method combines Granger Causality and Akaike's final prediction error (FPE), the (asymptotic) mean square prediction error, to determine the optimum lag for each variable. In a paper examining the problems encountered in choosing lag lengths,

⁽¹⁸⁾ GRANGER C.W.J., "Investigating Causal Relations by Econometric Models and Cross-Spectral Methods, *Econometrica* (1969), pp. 424-438.

⁽¹⁹⁾ HSIAO C., "Autoregressive Modeling and Money-Income Causality Detection," *Journal of Monetary Economics* (1981), pp. 85-106.



Thornton and Batten⁽²⁰⁾ found Hsiao's method to be superior to both arbitrary lag length selection and several other systematic procedures for determining lag length.

Depending on the value of the final prediction errors, four cases are possible: (a) *Government Deficits cause Public Investment* when the prediction error for public investment decreases when the government deficit is included in the investment equation. In addition, when public investment is added to the deficit equation, the final prediction error should increase; (b) *Public Investment causes Government Deficits* when the prediction error for public investment increases when government deficits are added to the regression equation for public investment, and is reduced when public investment is added to the regression equation for government deficits; (c) *Feedback* occurs when the final prediction error decreases when government deficits are added to the public investment equation, and the final prediction error decreases when public investment is added to the government deficit equation; and (d) *No Relationship* exists when the final prediction error increases both when government deficits are added to the public investment equation and when public investment is added to the deficit equation.

OPERATIONAL PROCEDURES

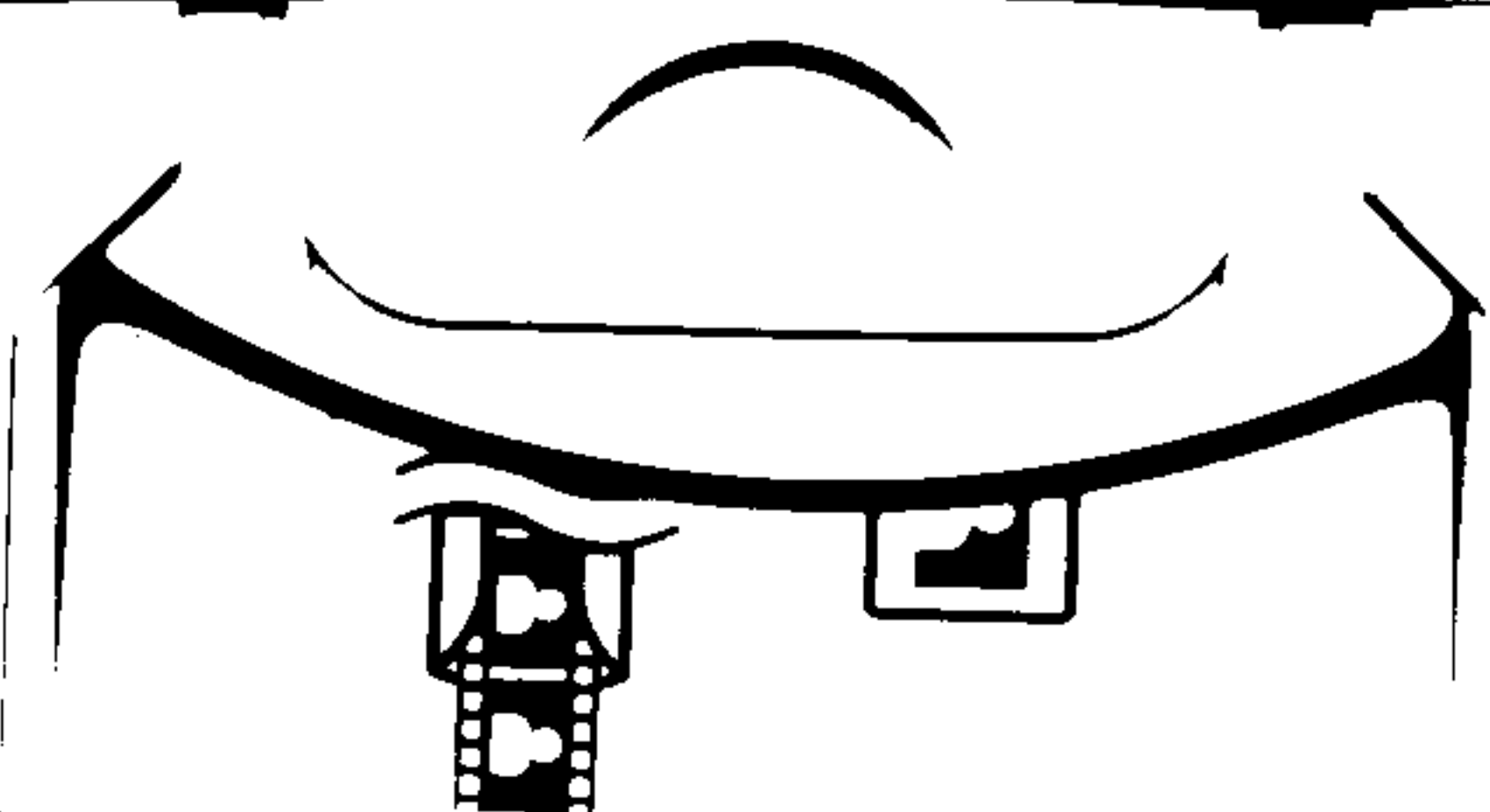
The data used to carry out the causation tests⁽²¹⁾ was derived from figures in: World Bank⁽²²⁾, Gross Domestic Product and the GDP price deflator is from various issues of the International Monetary Fund⁽²³⁾, All variables were deflated by the GDP deflator and are in constant 1985

⁽²⁰⁾ THORNTON D.L. and BATTEN D.S., "Lag-length Selection and Tests of Granger Causality Between Money and Income," *Journal of Money, Credit and Banking* (1985), pp. 164-78.

⁽²¹⁾ Causation tests were performed using a program written in RATS386 Version 4.0. Cf. DOAN T.A., *RATS Users Manual Version 4* (Evanston, Illinois: Estima, 1992).

⁽²²⁾ *Pakistan: Current Economic Situation and Prospects-Report No. 10223-PAK* (March 16, 1992). *Pakistan: Current Economic Situation and Prospects-Report No. 10223-Pak* (Washington: The World Bank, 1982). World Bank, *Pakistan: Current Economic Situation and Prospects-Report No. 9283-PAK* (March 22, 1991) *Pakistan: Current Economic Situation and Prospects-Report No. 9283-PAK* (March 22, 1991); World Bank: *Pakistan: Progress Under the Sixth Plan* (1984). *Pakistan: Progress Under the Sixth Plan* (1984).

⁽²³⁾ *International Financial Statistics Yearbook*.



prices. For best statistical results⁽²⁴⁾, the variables were transformed into their average annual growth rates.

Because the major objective of the present study is to examine implications for privatization, analysis was confined to government investment in various types of productive activities (presumably all of which could be privatized): manufacturing, semi-public organizations, and government enterprises. As a basis of comparison, general government investment was also included in the study.

To determine the robustness of our findings and whether the results were sensitive to the definition of key variables various measures of the deficit were examined. These included the actual or realized deficit, the expected deficit (the predicted value obtained by regressing each year's deficit on its value for the previous year), the unexpected deficit (the difference between each year's actual deficit and that anticipated based on past patterns) and finally deviations of the deficit from its longer run growth path (the actual deficit minus the exponential trend in the deficit). The same definitions were used in deriving series for public domestic borrowing.

Relationships were considered valid if they were statistically significant at the ninety-five percent level of confidence. That is, if ninety-five percent of the time we could conclude that they had not occurred by pure chance, we considered them statistically significant.

As noted above, there is no theoretical reason to believe that fiscal deficits and government investment have a set lag relationship that is they impact on one another over a fixed time period. To find the optimal adjustment period of impact, lag structures of up to six years were estimated. The lag structure with the highest level of statistical significance was the one chosen best depict the relationship under consideration (the optimal lag reported below).

RESULTS

Two sets of causality tests were performed. The first⁽²⁵⁾ (represented

⁽²⁴⁾ The reasons underlying involve the assumption of stationary conditions. See: C. HSIAO, "Autoregressive Modeling and Money-Income Causality Detection", *Journal of Monetary Economics* (1981), pp. 85-106 and W. Joerding, "Economic Growth and Defense Spending: Granger Causality", *Journal of Development Economics* (1986), pp. 35-40.

⁽²⁵⁾ Because of space limitations only Tables 3 and 4 appear here. The other detailed results are available from the author upon request.

by Table 1), examined the patterns linking public sector investment in various categories with the fiscal deficit. Since previous studies have suggested that it is not the deficits *per se*, but rather the method by which they are financed (domestic versus foreign) that determines whether crowding out occurs, the second set (represented by Table 2) takes the analysis a step further by examining the corresponding link between public sector investment and the pattern of public sector domestic borrowing. Put differently even though public investment in certain areas may lead to increased budgetary deficits, crowding out might not occur if the authorities are able to fund this expenditure through foreign borrowing.

The analysis produced a number of interesting patterns:

1. Public sector investment in manufacturing (nearly all large scale) does not appear (Table 1) to place fiscal stress on the government's budgetary position. Instead increased deficits have tended to dampen further public sector capital formation in this area. This effect has been fairly strong and is consistent across the four measures of the deficit. In general the lag is relatively short after a one or two year increase in the deficit, the authorities begin to reduce capital formation in manufacturing.
2. A somewhat different pattern characterizes capital formation in the government's semi-public organizations. These include (in addition to manufacturing) such organizations as the Indus Basin authority, electricity and gas, agriculture and financial services. For this entire group, deficits again proceeded investment. However, for these firms increased deficits over a three or four period tended to stimulate a further expansion in capital formation. This stimulus was fairly weak when deficits were measured as actual or expected. It was much stronger when the deficit increased over its expected value or over its long run trend.
3. Public sector investment in Government enterprises (Railways, and the Post Offices and Telegraph and Telephone) follow another distinctive pattern. For these firms, increased investment tends to result in a subsequent expansion in the deficit. Unanticipated deficits tend to feed back to expand investment even further. However for the measures of fiscal imbalance the direction of causation is clearly from investment to deficits. Again this effect is much stronger for the deficit defined in terms of deviations than in absolute amounts.
4. For general government investment (including Federal, provincial, and local authorities) the pattern appears to be one of more interdependence

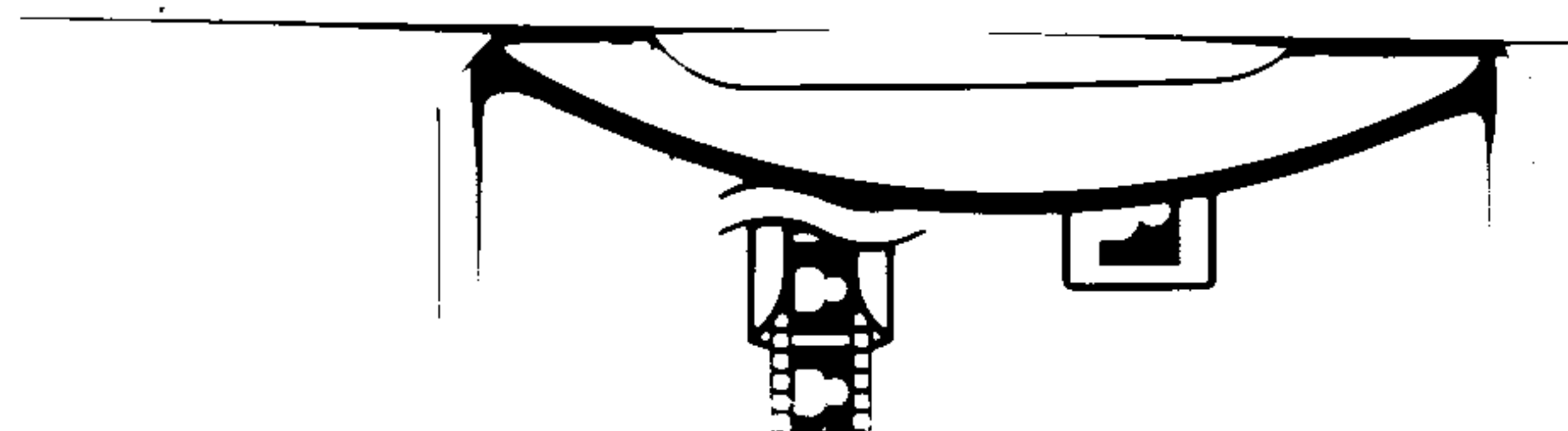


TABLE 1 — *Pakistan: Interaction of Public Sector Deficits and Public Sector Investment in Manufacturing: 1972-1991*

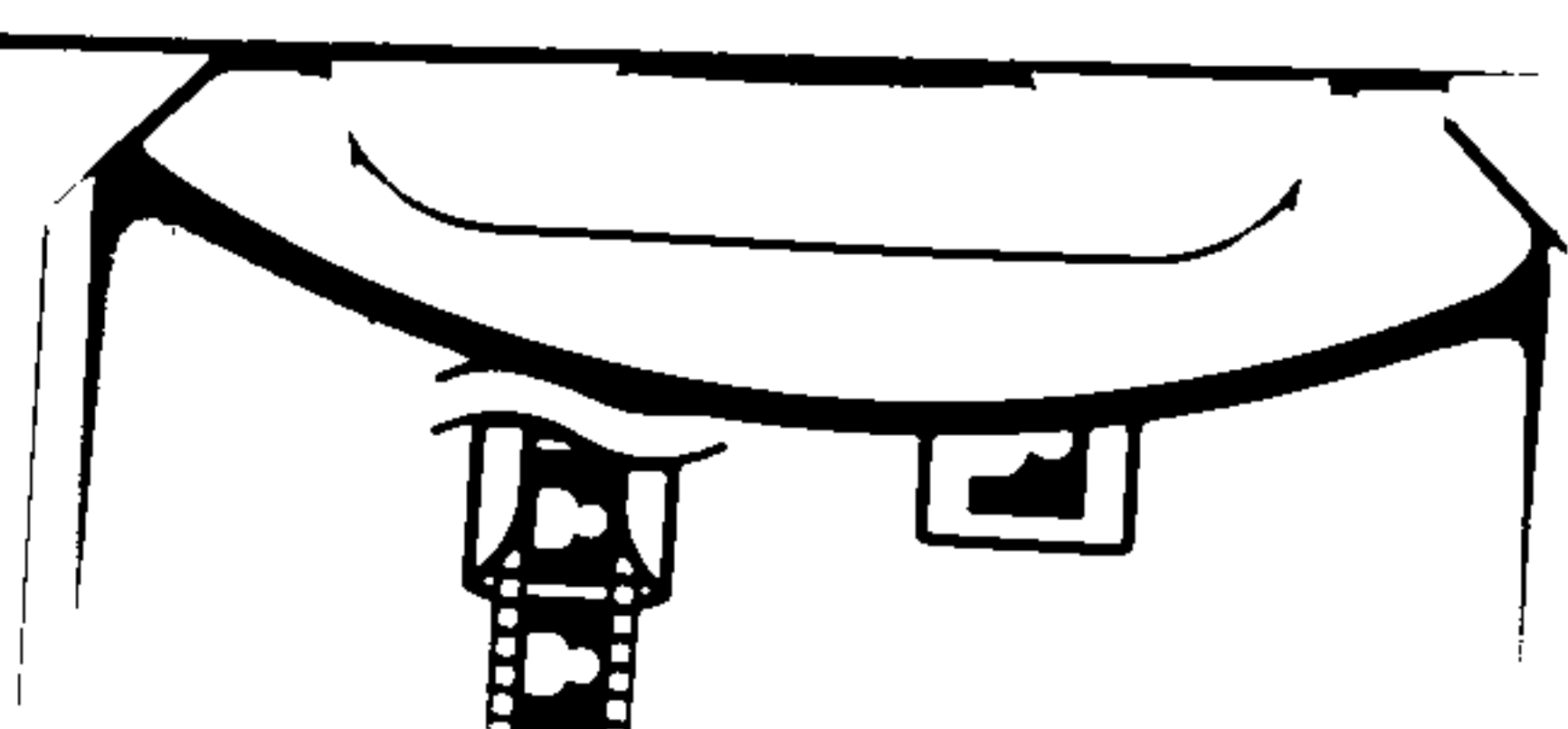
	Causation Patterns				Dominant Pattern
	A	B	C	D	
Public Sector Deficit (actual)					
Optimal Lag (years)	3	2	3	1	Deficit→ Invest(-m)
Final Prediction Error	(0.68E-1)	(0.45E-1)	(0.19)	(0.20)	
Durbin-Watson Statistic	2.08	2.19	1.97	2.02	
Ling-Box Q Statistic	4.49	8.76	4.04	6.88	
Public Sector Deficit (anticipated)					
Optimal Lag (years)	3	1	2	1	Deficit→ Invest(-m)
Final Prediction Error	(0.68E-1)	(0.42E-1)	(0.11)	(0.11)	
Durbin-Watson Statistic	2.08	2.08	2.10	2.12	
Ling-Box Q Statistic	4.49	8.49	2.44	3.16	
Public Sector Deficit (unanticipated)					
Optimal Lag (years)	3	2	1	3	Deficit→ Invest(-m)
Final Prediction Error	(0.68E-1)	(0.55E-1)	(0.17)	(0.17)	
Durbin-Watson Statistic	2.08	2.30	1.74	2.14	
Ling-Box Q Statistic	4.49	10.41	9.21	3.94	
Public Sector Deficit (actual-smoothed exponential trend)					
Optimal Lag (years)	3	2	2	2	Deficit→ Invest(-m)
Final Prediction Error	(0.68E-1)	(0.48E-1)	(0.14)	(0.16)	
Durbin-Watson Statistic	2.08	2.30	2.03	1.97	
Ling-Box Q Statistic	4.49	7.02	9.00	3.91	

Notes: Summary of results obtained from Granger Causality Tests. A Hsiao Procedure was incorporated to determine the optimal lag. All variables estimated in logarithmic form. Regression Patterns: A = public investment on public investment; B = public deficits on public investment; C = public deficits on public deficits; and D = public investment on public deficits. The dominant pattern is that with the lowest final prediction error. The signs (+, -) represent the direction of impact. In the case of feedback the two signs represent the lowest final prediction error of relationships B and D. Each of the variables was regressed with 1, 2, 3, and 4 year lags. Strength assessment (s = strong; m = moderate; w = weak) is based on the size of the standardized regression coefficient and t test of statistical significance.

TABLE 2 — *Pakistan: Interaction of Public Sector Domestic Borrowing and Public Sector Investment in Manufacturing: 1972-1991*

	Causation Patterns				Dominant Pattern
	A	B	C	D	
Public Sector Domestic Borrowing (actual)					
Optimal Lag (years)	3	3	3	1	Borrowing→ Invest(-m)
Final Prediction Error	(0.68E-1)	(0.45E-1)	(0.26)	(0.29)	
Durbin-Watson Statistic	2.08	2.70	2.16	2.23	
Ling-Box Q Statistic	4.49	8.15	4.80	5.27	
Public Sector Domestic Borrowing (anticipated)					
Optimal Lag (years)	3	2	3	1	Borrowing→ Invest(-m)
Final Prediction Error	(0.68E-1)	(0.47E-1)	(0.61E-1)	(0.66E-1)	
Durbin-Watson Statistic	2.08	2.86	2.07	2.17	
Ling-Box Q Statistic	4.49	12.32	3.47	4.77	
Public Sector Domestic Borrowing (unanticipated)					
Optimal Lag (years)	3	4	1	1	Borrowing→ Invest(-m)
Final Prediction Error	(0.68E-1)	(0.56E-1)	(0.26)	(0.29)	
Durbin-Watson Statistic	2.08	2.20	2.22	2.23	
Ling-Box Q Statistic	4.49	7.57	6.64	6.64	
Public Sector Domestic Borrowing (actual-smoothed exponential trend)					
Optimal Lag (years)	3	2	1	2	Borrowing→ Invest(-m)
Final Prediction Error	(0.68E-1)	(0.64E-1)	(0.14)	(0.16)	
Durbin-Watson Statistic	2.08	2.40	1.83	2.00	
Ling-Box Q Statistic	4.49	8.08	10.57	5.77	

Notes: Summary of results obtained from Granger Causality Tests. A Hsiao Procedure was incorporated to determine the optimal lag. Regression Patterns: A = public investment on public investment; B = public sector domestic borrowing on public investment; C = public sector domestic borrowing on public sector domestic borrowing; and D = public investment on public sector domestic borrowing. The Dominant pattern is that with the lowest final prediction error. The signs (+, -) represent the direction of impact. In the case of feedback the two signs represent the lowest final prediction error of relationships B and D. Each of the variables was regressed with 1, 2, 3, and 4 year lags. Strength assessment (s = strong; m = moderate; w = weak) is based on the size of the standardized regression coefficient and t test of statistical significance.



with the government's budgetary position. Still for all definitions of the deficit, investment precedes an expansion in the fiscal imbalance.

5. In general, this effect tends to be fairly strong and to occur after a fairly long interval (three or four years). On the other hand in cases where the deficit precedes increased investment the lag is only a year. Presumably a large share of this expenditure is directed towards basic infrastructure requiring funding over a fairly long period of time i.e. increased investment probably commits the government to an expenditure stream that is independent of any revenue considerations.

The patterns noted above suggest that crowding out is not likely associated with government investment in its manufacturing enterprises. That is investment in this area does not appear to expand the deficit, but instead responds to the government's fiscal position. This conclusion appears to be borne out by the patterns associated with domestic borrowing (Table 2). Here the government's expanded domestic borrowing apparently places pressure on the authorities to scale down expenditures. An area in which this occurs is capital formation in manufacturing. In general the same pattern holds for semi-public organizations as a whole. Other types of government investment may, however, be directly associated with crowding out:

1. Usually after a year increased investment in public enterprises expands the government's domestic borrowing efforts. Although this effect is fairly weak, it occurs for three out of the four measures of the deficit.
2. The expansion in general government investment also creates pressure for the government to tap domestic sources of funding. However, this investment usually occurs for three years before significant borrowing in the domestic markets occurs.

CONCLUSIONS

In his analysis of fiscal imbalances and privatization Kemal concluded that⁽²⁶⁾:

1. Even though trade policies and investment sanctioning policies are still restrictive, they have been considerably liberalized over the last ten years. The liberal policies along with lavish incentives to private investment has enhanced the private profitability and hence the demand for investment;

⁽²⁶⁾ KEMAL A.R., "Fiscal Imbalances as an Obstacle to Privatization Effort," *The Pakistan Development Review* (Winter 1989), vol. 28, no. 4, Part II, pp. 1017.



2. The divestiture policies have not met with success due to ambivalent attitude of the government.
3. The budgetary deficits have grown rather sharply necessitating huge resource transfers from the private to the public sector. The budgetary deficits have not only crowded out investment funds from the private sector, but have also pre-empted large amounts of bank credits.
4. The budgetary deficit has led to considerable slowing down of the increase in credit to the private sector;
5. The limited availability of credit to the private sector has constrained the growth of private investment; and
6. The increase in demand for credit due to enhanced profitability of private investment on the one hand and the limited availability of credit on the other has led to credit rationing. This leads to unmistakable but rather unfortunate conclusion that privatization instead of leading to higher level of investment and efficiency has become an instrument of corruption and patronage.

The findings presented here are roughly consistent with this picture. However they do vary in one important regard: there is no presumption here that government investment in manufacturing crowds out private investment. Instead there is a much greater likelihood that other forms of government investment may be responsible for the private sector's funding difficulties. In particular government investment in public enterprises and general government investment seem to be more responsible for the country's increasing fiscal imbalances.

The implications are clear: as long as the government's budgetary priorities remain unchanged, privatization of manufacturing or other semi-public organizations will not in itself reduce the size of the fiscal deficit. To do this other types of public expenditures must contract. This fact leads to a fundamental contradiction in the government's current economic package: the most productive way to reduce the effects of crowding out of private sector investment in manufacturing appears to be contracting general government investment in infrastructure an allocation which the government has been counting on as providing a stimulus to private sector investment in manufacturing.

Naval Postgraduate School, Monterey, California, USA

ROBERT E. LOONEY

