FOREIGN CAPITAL INFLOW AND DEBT PROBLEM OF PAKISTAN

BY

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ABSTRACT

At the time of independence, in 1947 the state of economy of Pakistan was very poor. During the past four decades, as a result of conscious efforts from different governments, a sustained growth of gross national product (GNP) of more than 5 percent per annum in real terms has been achieved. During this time the economy has also gone through basic structural transformation with a significant rise of the share of industrial output in gross domestic product (GDP).

During the Second Five Year Plan (1960-65) a record level of investment (as percent of GNP) was achieved with the help of foreign capital. The success of the Second Five Year Plan encouraged the Planners in Pakistan to push further forward a strategy of high growth rate with the help of foreign capital. The long term objective, in a frame work of "two gap model", was to terminate the dependence on foreign capital over a period of twenty years (i.e. 1965 to 1985). However, this objective could not be achieved. Instead Pakistan has been facing a problem of persistent current account deficit despite a dramatic increase in the private transfers from abroad in the 1970's and 1980's. As a result of external deficit for a very long period, Pakistan accumulated a massive foreign debt; the pace of which particularly accelerated in the aftermath of two oil price shocks. However, there is no clear evidence of a coherent fiscal and/or monetary policy which could restore the

external balance. The measures taken by various governments have been mostly of administrative kind and a few ad-hoc export promotion schemes. The only important development in second half of 1980s was the introduction of a flexible exchange rate.

Failure of the structural approach to balance of payments (as advocated by "two gap" models) coupled with a fall in grants and grants like foreign capital from developed countries to the developing countries have shifted the argument in favour of macroeconomic policies. Now imports and exports gap is most often seen as a consequence of ill conceived economic policies rather than a simple structural problem.

Macroeconomic policies are basically guided by the traditional "expenditure changing" and expenditure switching" policies. These tend to pay more emphasis on demand side of economy and ignore changes in financial assets, physical capital and the aggregate prices. Monetarists, on the other hand, have associated a central role with money to play in balance of payments adjustment.

Keeping in view the difficulties associated with building a macroeconomic model for a developing country like Pakistan, we have built an open economy model where aggregate demand, prices, financial and capital assets, balance of payments, and foreign debt have all been combined.

The simulation results of our model clearly demonstrate that exports and imports do respond to an appropriate policy instrument. Adjustment is particularly found to be strong with government consumption cuts. The exchange rate depreciation, however, has not been found to be an adequate policy measurer to improve balance of payments deficit. Any nominal exchange rate depreciation is ultimately transformed in to an equal domestic price rise and as a result the initial gains in terms of improvement in balance of payments are completely off set by the subsequent price rise. It is only the real exchange rate depreciation which could possibly bring a permanent "expenditure switching".

In an event of a shortfall of foreign resources, introduction of a cut in investment has not been found to be an appropriate solution because of its consequences for exports and home product inflation. But, if it is considered difficult to cut government consumption then desirable adjustment results could be achieved with a smaller cut in government investment rather than private investment, though in case of Pakistan reality is the other way round.

CHAPTER 1

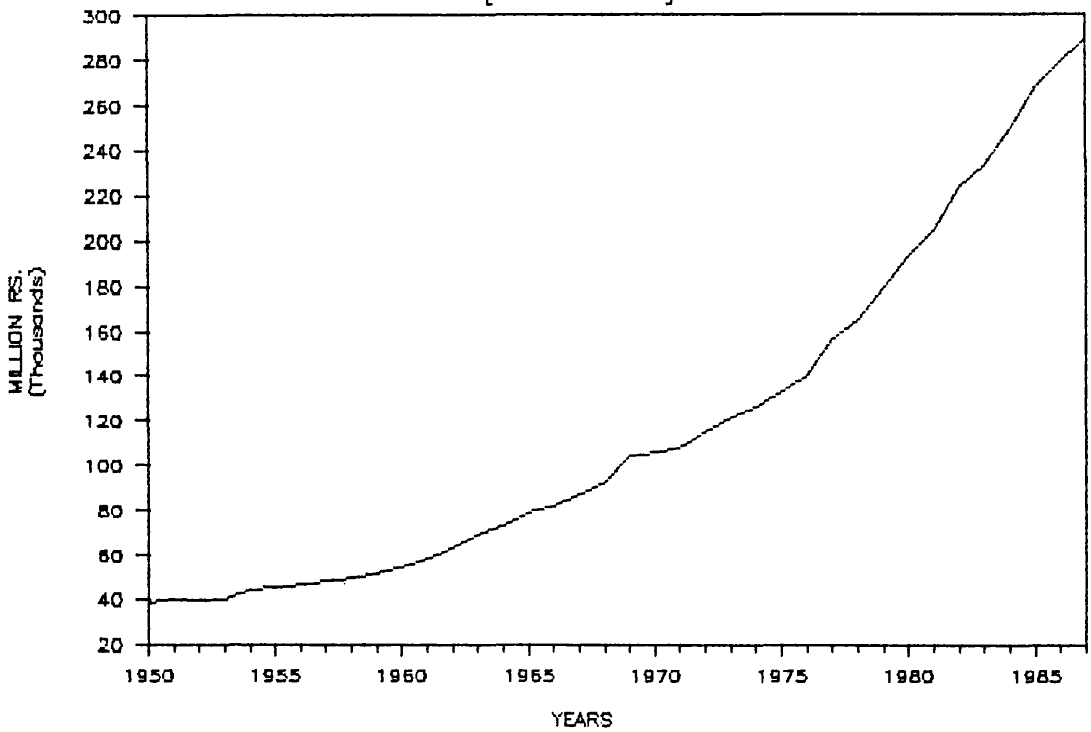
AN OVERVIEW OF THE ECONOMIC GROWTH STRATEGIES OF PAKISTAN

1.1 Introduction

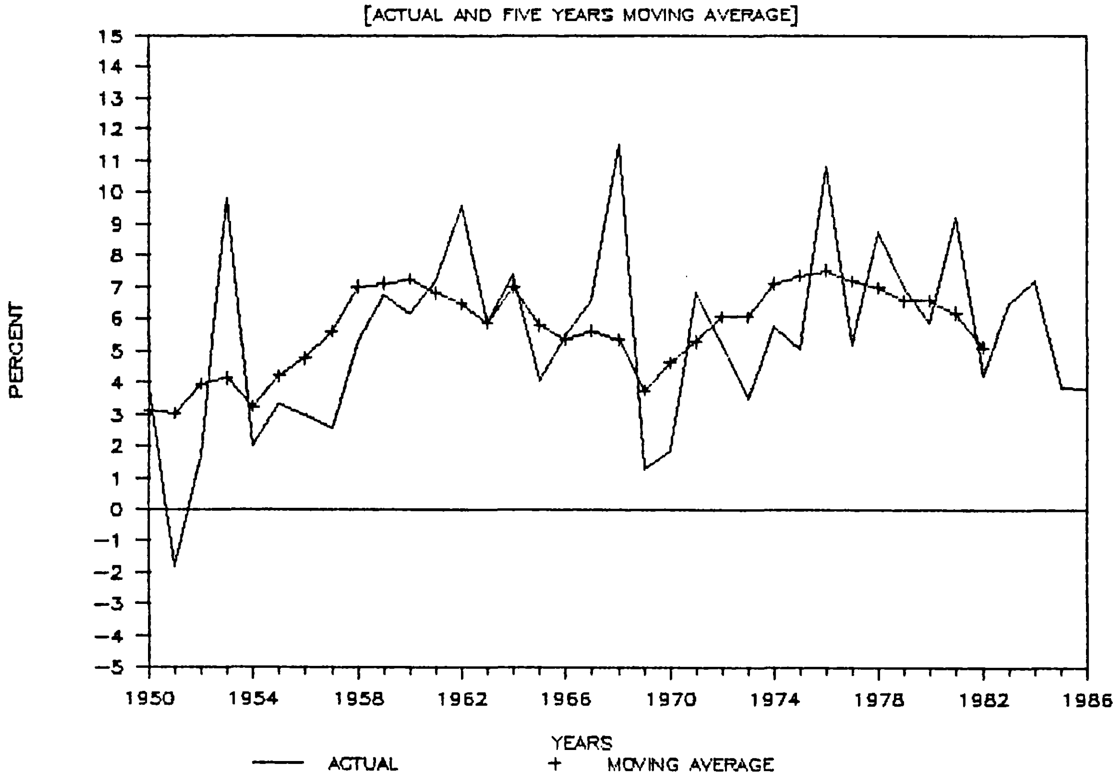
Pakistan emerged as an independent state on 14th August, 1947. At the time of independence state of the economy was very poor(1). Per capita gross national product (GNP) was only RS.222 (1949-50 prices) and level of savings and investment was below 5 percent of the GNP. More than fifty percent of the GNP was coming from agricultural sector. The manufacturing sector was confined to small scale cottage industry and its contribution to the GNP was about 8 percent. According to census, conducted in 1952, 75 percent of labour force was employed in the agricultural sector and 22 percent in the manufacturing sector.

During the past four decades different governments have pursued various economic policies and the economy has gone through basic economic transformation. Figure 1.1 indicates the long range pattern of economy in terms of GNP (1975-76 prices). The trend growth rate of GNP during 1959 to 1987 has been more than 5 percent per annum. The yearly growth rate of GNP is shown in Figure 1.2. (Figure 1.2, besides the annual actual values of growth rates, also shows the growth rates smoothed by a five years moving average). Most obvious, perhaps, is the significant dislocation caused by

F—1.1 GROSS NATIONAL PRODUCT
[1975-76 PRICES]



F—1.2 GROWTH OF GROSS NATIONAL PRODUCT
[ACTUAL AND FIVE YEARS MOVING AVERAGE]



the political events and war during 1970-72. The prewar peak of growth rate (11.4 percent) is unprecedented and doubts must exist concerning the accuracy of estimates. Similarly the growth rate for the year 1977-78 is very high (2). During this period the economy has also gone through significant internal structural change. The share of industry value added has increased and that of the agricultural sector has fallen in gross domestic product (GDP). Table 1.1 provides the changing pattern of sectoral shares in GDP for the years indicated.

Table 1.1

Share of Gross Domestic Product

	1949	1965	1975	1985	1987
GDP	100	100	100	100	100
Agr.	53	37	33	26	24
Industry	8	15	16	19	20
Other	39	48	51	55	56

Source: Economic Survey of Pakistan 1987-88

Economic growth of Pakistan is quite impressive and among the low income countries Pakistan is listed in "three top growth performers (i.e.Sri Lanka, China and Pakistan)" {see for example Yousuf and Peters (1985, p9) and Stern (1989, p4}. In the following section we will briefly review the economic growth strategies adopted by Pakistan over the past four decades.

1.2 Strategies of Economic Growth

Literature in the field of economic growth and development is voluminous and enormous. Our objective is not to provide a full review of theories developed in this field (3). We will only look at the important developments on the subject and see how these theories have influenced the economic policies in Pakistan which made foreign capital to assume an important position in the efforts towards economic development of Pakistan.

It was Harrod (1939, 1949) who made first important contribution to aggregate growth theory. The extension of Keynesian short run employment theory into long run growth theory in the form of Harrod-Domar equation '$g = s/k$' (where 'g' is growth rate, 's' is savings rate and 'k' is the capital output ratio) is the natural point of departure in the history of economic growth. The Harrod-Domar analysis gives emphasis on savings and capital output ratio as determinants of growth rate. Logic and idea behind the equation are so powerful that these are still the first aspects that are examined in any proposed or actual growth path. It implies that growth process could be accelerated by increasing savings or minimizing the capital output ratio. Historically development economics which is mainly concerned with growth theories in the context of developing countries, was emerging as a new subject at the time when Harrod and

Domar were dynamising Keynesian percepts in order to avoid secular stagnation. (see Arndt (1978,p33).

In the context of developing countries Nurkse's (1953) work (*"Problems of Capital Formation in the Underdeveloped Countries"*) is a starting and probably the most influential line of thoughts in the field of development economics. According to his thesis capital formation is a necessary (though not sufficient) condition for economic growth. More or less same view was confirmed by other economists. Kuznets (1966) provided a statistical creditability to the view that economic growth is associated with a steady growth of capital. The discussion of economic growth has also been much influenced by the articles of Rosenstein Rodan and Hirschman. Rosenstein Rodan (1943) who put forward the idea of a "big push" with an element of "balance growth" seems to be a combination of Keynesian notion of effective demand and Simithian idea of the size of market. His basic thesis is that small investment in isolation could not be economically feasible because of inadequate demand for output. But if many investments, principally in the industrial sector, took place simultaneously they could all be profitable because the increase in income could be sufficient to provide large enough market for all the outputs. This appears to be an implicit closed economy model because no role is given to international market. Hirschman's (1958) analysis, in contrast to Rosenstein Rodan's "balance approach", argues for a large investment from government (particularly in basic infrastructure) to create "imbalance" so that an entrepreneurial decision making class could emerge with the process of "backward linkages" to fill shortages in other sectors.

Lewis (1954 and 1955) raised a number of crucial issues in a clear and systematic way. Many of these have been central to subsequent discussion of development of an underdeveloped economy. These include:

(i) the determinants of savings and its influence on economic growth;

(ii) the appropriate choice of capital intensity in investment and

(iii) the interrelationship between income and growth in the process of change.

In analyzing the process of growth Lewis has made classical assumptions of unlimited supply of labour at fixed wages, the accumulation of capital only in the advanced industrial sector and savings only out of profits. In his model, process of economic growth may be seen simply as an absorption of labour by the advanced sector with the savings rate for the whole economy increasing over time as the profits rise along the increasing share of the advanced sector. According to Lewis, theory of economic growth is an understanding of process by which savings as percentage of GNP increase from five percent to twelve percent (4) For Rostow (1960) a ten percent savings and investment is a precondition for "take off" (5).

1.2.1 Foreign capital and economic growth

Extending the line of argument of Harrod-Domar model to the developing countries, receiving aid from U.S.A, Fei and Paaw (1965) developed a macro model with emphasis on the role of foreign capital in the development of underdeveloped countries.

According to Fei and Paaw model, a required level of investment 'I/Y'(investment as ratio of GNP) is a function of capital output ratio (k), target rate of growth of GNP (h) and population growth rate (r) i.e.

$$I/Y = k\,(h + r) \qquad [1.1]$$

Substituting this into

$$I = S + A \qquad [1.2]$$

(where 'S' and 'A' stand for domestic savings and foreign capital inflow respectively) gives growth rate

$$h = (s-rk)/k + a/k \qquad [1.3]$$

('s' and 'a' are for 'S' and 'A' as fraction of 'Y' (GNP) (6). From this Fei and Paaw derived the conclusion that domestic per capita income will increase only if population pressure is so low that 's/k' is greater than population growth rate 'r'. If the 's/k' is less than 'r' the per capita GNP will fall unless foreign savings are available to make '(s+a)/k greater than 'r'. In view of non availability of foreign capital for indefinite period, Fei and Paaw introduced the concept of Per Capita Marginal Savings (PCMS)- a function 'u' which takes incremental per capita savings as constant fraction of incremental per capita income. On the basis of this new function 'u' they identified following different cases:-

(i) There are favourable cases where no foreign capital is required because 'k(h+r)' is less than the initial savings rate ('s') and investment target of 'I/Y' can be achieved from these savings.

(ii) There are cases where in the initial stage 'k(h+r)' is greater than 's' but less than long run capital growth rate ('u'). In this case the gap of domestic savings and investment is filled by the foreign capital and terminates by a finite date. According to Fei, Pakistan was in this category.

(iii) There are unfavourable cases where 'k(h+r)' exceeds the long run growth of the capital. The gap between domestic savings and investment would continue unless GNP growth rate 'h' or population growth rate 'r' is reduced by a significant margin.

1.2.1.1 Dual Gap Hypothesis

Fei and Paaw model, discussed above, makes no distinction in domestic and foreign savings. In other words domestic savings are perfect substitutes of foreign savings. Several articles have appeared in which the assumption of complete substitution between domestic and foreign resources has been dropped and saving-investment gap and imports-exports gap have been combined. Perhaps the most comprehensive of these theories is *" Foreign Assistance and Economic Development"* put forward by Chenery and Strout (1966) . Chenery and Bruno in 1962 started criticizing what they called *"the formal growth theories "* which failed *"to clarify the relation among several instruments of development policy"* (7). They emphasized: (i) the separate role of foreign resource (excess of imports over exports); (ii) the present and future composition of demand; and (iii) the ability to plan and implement development activities. According to Chenery and Bruno (1962) these considerations are not much important for developed countries, but are most often the principal limits to growth of developing countries (8).

The two gaps are associated with demand and supply of foreign exchange where import demand may exceed exports plus net foreign transfers. An important point of departure is the role of foreign capital which it can play in terms of *"contribution to mobilization and allocation of all productive resources"* (9).

Initially in 1962 a case study was done by Chenery and Bruno for Israel which was subsequently developed into a full Chenery-Strout (1966) Model. The full Chenery-Strout model consists three distinct phases. Phase I and II make up investment limited growth. Phase I terminates when investment reaches a level to sustain the target growth rate of GNP (r). In order to achieve this target the rate of investment growth has to be maintained above 'r' with the help of foreign capital inflow. In Phase II GNP and investment rise at a constant rate with continuous inflow of foreign capital, the level of which is determined by the marginal propensity to save, the target growth rate and capital output ratio. Phase III which is a "trade limited growth" phase reflects country's inability to change its productive structure in a manner to meet the changing pattern of internal and external demand. The central problem in Phase III is two fold. On the one hand the economy starts to develop an inelastic demand for imports to sustain the production in the economy and on the other hand, because of the institutional and organizational factors, exports cannot finance the required level of imports. Now it is the imports-exports gap which dominates and puts a limit on growth. Key elements of the two gap hypothesis can be presented algebraically as following:-

$$Y_t = Y_0(1+r)^t \qquad [1.4]$$

$$I_t = kr\ Y_t \qquad [1.5]$$

$$S_t = S_o + s\ (Y_t - Y_0) \qquad [1.6]$$

$$M_t = M_0 + m(Y - Y_0) \qquad [1.7]$$

$$X_t = X_0 + (1 + x)^t \qquad [1.8]$$

where

Y = GNP
I = desired level of investment
S = Domestic savings
M = total imports
X = total exports
r = target rate of growth of GNP
k = capital out put ratio
m = marginal propensity to import and
x = exogenously determined rate of growth of exports

By definition imports-exports gap 'F_t'is

$$F_t = M_t - X_t \qquad [1.9]$$

Putting [1.7] and [1.8] in [1.9]

$$F_t = M_o + m(Y_t - Y_o) - X_o + (1 + x)^t \qquad [1.10]$$

shows that in order to eliminate the trade gap either the export growth rate 'x' must exceed the target growth rate of GNP 'r' or the marginal import ratio 'm' must be substantially below the initial average import ratio. This condition establishes the trade criterion for progress towards self sustaining growth. An important feature of Phase III, different from Fei and Paaw model, is level of domestic savings which are now enough to meet investment requirements but these could not be fully transformed into foreign exchange to fill the exports-imports gap.

In the dual gap hypothesis following assumptions must hold simultaneously for a country to be in foreign exchange bottleneck:-

(i) There must be no further possibilities of import substitution.

(ii) Export earnings must be completely inelastic.

(iii) The import content of current production must be unalterable.

If any of these assumption is relaxed the country cannot be in a foreign exchange bottleneck.

The whole model and approach came under fire for its stringent assumptions of fixed and inelastic coefficients with regard to import and exports (see for example Lal (1972 and 1988), Cline (1984) Stern (1989)). In particular if it is assumed that there is an excess of demand for foreign exchange, then one could counter argue that the relative price of foreign exchange can change (and will change if permitted to do so) exports potential and import demand will respond to price changes. The two-gap approach has also been heavily criticized because of its failure to take into account the debt servicing which is most often the prime cause of excess of demand over supply of foreign exchange. These are certainly important questions which must be properly addressed. We understand that an appropriate answer to these fundamental questions lies in dropping the unrealistic assumptions of "two-gap" model and then examining the issue in a consistent macroeconomic framework.

1.2.2 Impact of Foreign Capital

Almost all foreign aid theories and models agree that foreign capital plays a critical role in achieving the objectives of sustained economic growth and some target rate of increase in the output per capita of a recipient country.

The theories and models (discussed above) have provided an analytical framework to determine the amount and timing for foreign capital inflow. The central and crucial question is however, that whether foreign capital has been effective and beneficial in terms of achieving its objective.

The opinion with regard to role of foreign capital in the economic development of underdeveloped countries differs significantly {see Riddell (1987) for a comprehensive survey of opinion about impact of foreign capital both from marxist and capitalist economists}. The argument in favour of foreign capital, as potential source of growth, is based on standard result that investment is profitable as long as the rate of return exceeds the rate of interest {see Thirlwall (1983, pp296-297) for mathematical proof}. While for the critics from the left, foreign capital plays imperialistic role {e.g.Hayter (1971), Santos (1972)} the criticism from less left and right position is in terms of its negative impact on domestic savings (or increase in private and/or government consumption) {see for example Bauer (1981), Griffin (1970) Griffin and Enos (1970), Weisskopf (1972) Mosley (1980 and 1986) and Mosley et al. (1987)}.

The rationale of this negative impact of foreign capital on domestic savings stems from conventional text book question of whether countries require foreign capital because they need foreign exchange to acquire capital goods from abroad or whether foreign capital should be considered more broadly as supplement to resources employed by the economy for consumption (C), investment (I), and government services (G) which make the total absorption (A) as following:-

$$A = C + I + G = Y + M - X \qquad [1.11]$$

where 'Y', 'M' and 'X' stand for domestic output, imports and exports. From [1.11] above it is evident that an increase in capital imports may not constitute a net supplement to domestic investment, but may also be used in part to increase the consumption level and will therefore not help to achieve the objective of economic growth. However, all these attacks have been equally countered by others (see Papaneck (1972, 1973), Levy (1987)). Papaneck (1973) in his major study *"Aid, Foreign Private investment, Savings and Growth in Less Developed Countries"* related domestic growth to three types of foreign capital inflow: (i) aid (a); (ii) private investment (f) and (iii) other foreign flows(o). With domestic savings ratio (sd) as additional explanatory variable, for eighty-five countries he found strong positive influence of foreign capital on GDP growth rate (y). Following is his estimated equation :

$$\underset{}{y} = 1.5 + \underset{(6.0)}{0.2\, sd} + \underset{(5.8)}{0.39\, a} + \underset{(2.5)}{0.17\, f} + \underset{(2.1)}{0.19\, o} \qquad [1.12]$$

Levy (1987) in a cross country empirical study observed that only that part of foreign transfers add to consumption which are in fact meant for consumption. Similarly Pack and Pack (1990) in a case study for Indonesia found no evidence that aid has caused any increase in government consumption. The key argument of Papaneck (1972), which was subsequently accepted by Mosley et al. (1987), was about the simultaneous causation (i.e. aid may go to those countries with the weakest growth performance). Mosley et al., therefore, made another attempt in 1987 by employing standard simultaneous equation techniques of econometrics (two and three stage least square). Their ultimate result, however, could not comprehensively establish the negative impact of foreign capital on growth or savings {see Stern (1989, p635)}. The analysis of Riddell (1987), based on historical evidence of particular countries, is direct and has found that foreign capital is often beneficial.

1.2.3 Concluding remarks

In the 1950's and 1960's the flow of foreign capital to developing countries occupied the central position in the literature of economic development and in the politics of relation between rich and poor countries. The Pearson (1969) report on aid was, particularly, a major event at that time. The quantity of aid from developed countries to developing countries, however, has remained small in total as against the UN criteria of 0.7 percent of developed countries GNP (emphasized in the Brandt report). At the moment the conditions of any major transfer of resource from rich countries to poor countries in terms of non repayable grants and soft loans and credits are very slim. Compared with 1950s and 1960s, the 1970s witnessed a significant change in the composition of capital inflow to developing countries. In the mid 1960's grants and grant like flow plus foreign direct investment occupied for more than half (58 percent in 1966) of the net flow of the financial resources of developing countries (10). The commercial lending along with official lending grew very rapidly during last decade and as a result the total external debt of developing countries also started to rise sharply.

In view of these new developments the argument with regard to excess of demand over supply for foreign exchange has changed and assumed new dimension. It is now seen as a macroeconomic imbalance where excess of imports over exports is considered to be the consequence of ill conceived economic policies. For example *"Large budget deficits, overvalued exchange rate, and measures that discourage domestic savings all bias an economy toward relying on foreign capital"* (11). The balance of argument has now strongly shifted towards stabilization policies and structural adjustment which attempt to correct the balance of payments deficit and excess demand by changing the real exchange rate, liberalizing trade and tightening fiscal policy {see for example Balssa (1981) and Killick (1982 and 1985)}. These are particularly associated with the IMF and its task is to help to resolve short run balance of payments problem. The World Bank with its longer term perspective has been increasingly involved in structural adjustment policies. Most often these two agencies co-ordinate their programmes and move together.{see Khan et al. (1986) for a synthesis of IMF and World Bank approaches}.

1.3 Economic Growth Strategies of Pakistan

In order to solve its basic economic problems, economic policies in pakistan have been often prepared under an influence of popular ideas and economic growth theories of that time.

After independence in 1947 the first three years were primarily devoted to rehabilitation and overcoming the basic distortions of the economy caused by the partition. A six year Development programme was hurriedly prepared for 1951-1957. This was subsequently replaced by the First Five Year Plan (1955-1960). The first decade (1950-1960) of economic policy making in Pakistan was characterized by heavy emphasis on the establishment of import substituting industry (ISI) in the consumer goods sector while machinery was mostly imported from abroad {see Power (1963)}. The basic strategy was *"to restrain the growth of agricultural incomes and facilitate investment in industry by private entrepreneur"*(12) The Third Five Year Plan (1965-70) of Planning Commission Government of Pakistan states that *"there was a considerable transfer of income from agricultural to the industrial sector as terms of trade were deliberately turned against agriculture through such policies as licensing of scarce foreign exchange earned primarily by agriculture to the industrial sector, compulsory government procurement of food grains at low prices to subsidize the cost of living of the urban industrial workers, generous tax concessions to industry and lack of similar incentives for commercial agricultural investment"*(13). By these means up to the first half of of the sixties, on the average 3600 million rupees annually were being transferred from agriculture to urban industrial sector(14). This according to one study was about 15 percent of the gross agricultural output(15).

The ISI policy initially appeared to be quite successful which resulted in expansion of the industry by 43 percent till 1955. The successful import substitution, strict control on imports, Korean Boom and the low propensity to import (which is quite usual with the low level of GNP in any economy) led to a surplus in balance of payments of about $338.7 million (1117.7 million rupees) between 1950 to

1955. The average annual investment during this period was slightly above 5 percent of GNP of which 82 percent was financed by domestic resources and only 18 percent was from foreign resources. The rate of domestic savings also went up to 8 percent of GNP as compared to 5 percent at the beginning.

The policy in terms of expansion of industrial sector was to some extent successful. But the squeeze of the agricultural sector resulted in a significant fall in its production. The rate of growth of agricultural output was barely half the rate of growth of population. The supply of foreign exchange was also affected because of low increase in agricultural production. This was a quite logical reaction of agricultural sector to its continual exploitation *"The strategy of indirect transfers [of resources from agricultural to industrial sector] had reached a dead end"*(16)

1.3.1 Foreign capital and domestic investment

During 1960-1965 two major shifts in economic policy could be clearly identified. Firstly, the policy of transfers of resources from agricultural sector was now precisely channeled to those groups of the community whose marginal savings rates were thought to be relatively higher. Haq (1963), the Chief Economist of Planning Commission Government of Pakistan, forcefully presented the idea that *"there exist a functional justification for inequality of income if it raises production for all and not consumption for a few..... The road to eventual equalities may invariably be through initial inequalities."* (17).The combination of policies of transfers of resources from agricultural sector to entrepreneurial class of modern industrial sector appear quite close to Lewis model where savings are assumed to be only from profits earned by the advanced industrial sector. According to Papaneck (1967, chapter 2) this was a typical Schumpeterian entrepreneurship creation in Pakistan.

The second major shift was the emphasis accorded to high level investment supported by external resources. *"A big push concentrated in a period of ten to fifteen years"* was now considered to *"do the trick"* of attaining self sustained growth (18). As a result of this new strategy a major share of total investment was now financed by the foreign capital. The share of foreign capital in domestic investment, which was only 13.6 percent during 1954-55 reached to 40 percent in the year 1964-65 (19). The total investment also increased to 21.5 percent of GNP which is the highest rate achieved in Pakistan. The Second Five Year Plan (1960-65) is one of the most successful plan during which most of the economic objectives were achieved. Foreign capital played a major role in this success by filling the foreign exchange and saving investment gaps. {see Griffin (1965), Nurul Islam

(1972), Brecher and Abbas (1972) Baqai and Brecher (1973), and Awan (1978)}.

Success of the Second Five Year plan encouraged planners to push forward this strategy further into a long term perspective in an analytical framework of the two-gap model.The *"Optimal Pattern of Growth and Aid- The Case of Pakistan"* by Chenery and MacEwan (published in 1966) was at the root of first Perspective Plan (1965-85). The explicit aims of the Perspective included (i) quadrupling of the GNP during twenty years and (ii) elimination of dependence on foreign aid (20). A basic framework and key assumptions of the model are summarized in Table 1.2.

The objective of the Perspective Plan was to eliminate dependence on foreign capital. However, this overoptimistic assessment of the plan was not supported by independent studies {see Rahman (1967) and Kemal (1975)}. The objective of elimination of dependence on foreign capital could not be achieved though some success has been made by reducing it in relative terms. The foreign capital is now financing about 30 percent of the total investment which was above 50 percent till 1975. Table 1.3 provides yearly details of investment (with segregation for government and private investment) and foreign capital inflow in terms of percentage of GNP and the share of domestic investment financed by foreign capital.

Table 1.2

Basic Frame Work and Key Assumptions of Pakistan's Long-Term Growth (1965-85)

	1965	1970	1975	1980	1985	compound growth rate(%)
(A) As % of GNP						
(1)Gross Investment	18.4	20.2	21.4	22.1	22.9	8.5
(2)Gross Domestic Savings	10.3	13.6	16.9	20.2	21.8	11.4
(3)External Resources	8.1	6.6	4.5	1.9	1.1	-3.0
(4)Exports	6.7	7.6	8.1	8.5	7.5	7.9
(5)Imports	15.3	14.2	12.6	10.4	8.6	4.2
(B) Key Assumptions						
(1)GNP growth rate(%)	5.2	6.5	7.3	7.5	7.5	
(2)Marginal savings(%)	22	22	25	28	25	
(3)Capital-output Ratio	2.8	2.9	2.9	2.9	3	
(4)Marginal propensity to import		12	9	6	4	

Source The Third Five Year Plan 1965-70 Table 1

During 1950 to 1955 foreign capital financed only about 18 percent of the total investment. From Second Five Year Plan (1960-65) onward foreign capital has always been a significant component of investment financing. The reliance on foreign capital was accorded so high priority that according to Griffin (1965, p621) "*the entire social and economic system and the planning exercise which is its manifestation, is supported and sustained by foreign*

Table 1.3

Foreign Capital Inflow and Investment(21)

YEAR	PERCENT OF GNP: INVESTMENT: TOTAL	PRIVATE	GOVT	FOREIGN CAPITAL	FOREIGN CAPITAL AS % OF TOTAL INVESTMENT
1959	10.54	3.08	7.46	3.87	36.72
1960	13.10	8.51	4.59	8.77	66.95
1961	14.47	6.52	7.95	7.50	51.83
1962	17.29	6.02	11.27	11.21	64.84
1963	20.42	11.95	8.48	10.86	53.18
1964	21.52	11.32	10.20	12.28	57.06
1965	17.65	9.45	8.21	8.76	49.63
1966	16.59	8.13	8.47	8.66	52.20
1967	15.06	8.03	7.03	9.28	61.62
1968	13.72	7.15	6.57	6.82	49.71
1969	14.31	6.82	7.50	6.38	44.58
1970	13.89	6.28	7.61	6.61	47.59
1971	12.44	6.33	6.11	4.39	35.29
1972	11.25	5.72	5.54	5.69	50.58
1973	11.96	4.48	7.49	6.20	51.84
1974	14.44	4.89	9.54	9.45	65.44
1975	18.04	5.83	12.21	9.34	51.77
1976	17.95	4.95	13.00	7.38	41.11
1977	16.19	4.59	11.60	5.37	33.17
1978	15.82	3.98	11.83	5.44	34.39
1979	16.36	4.58	11.79	6.59	40.28
1980	14.32	3.91	10.41	4.07	28.42
1981	14.17	3.00	11.17	5.52	38.96
1982	14.07	4.29	9.78	6.26	44.49
1983	13.78	4.83	8.95	4.22	30.62
1984	13.80	5.14	8.66	4.00	28.99
1985	13.75	5.12	8.63	4.50	32.73
1986	14.56	5.93	8.63	4.58	31.46
1987	14.20	6.05	8.15	4.42	31.13

Source: Economic Survey of pakistan 1987-88

assistance". It is quite interesting to note that for the Third Five Year Plan, which included the long term strategy to eliminate dependence on foreign capital, the request for external assistance was 300 percent more than that obtained during 1955 to 1960.(22).

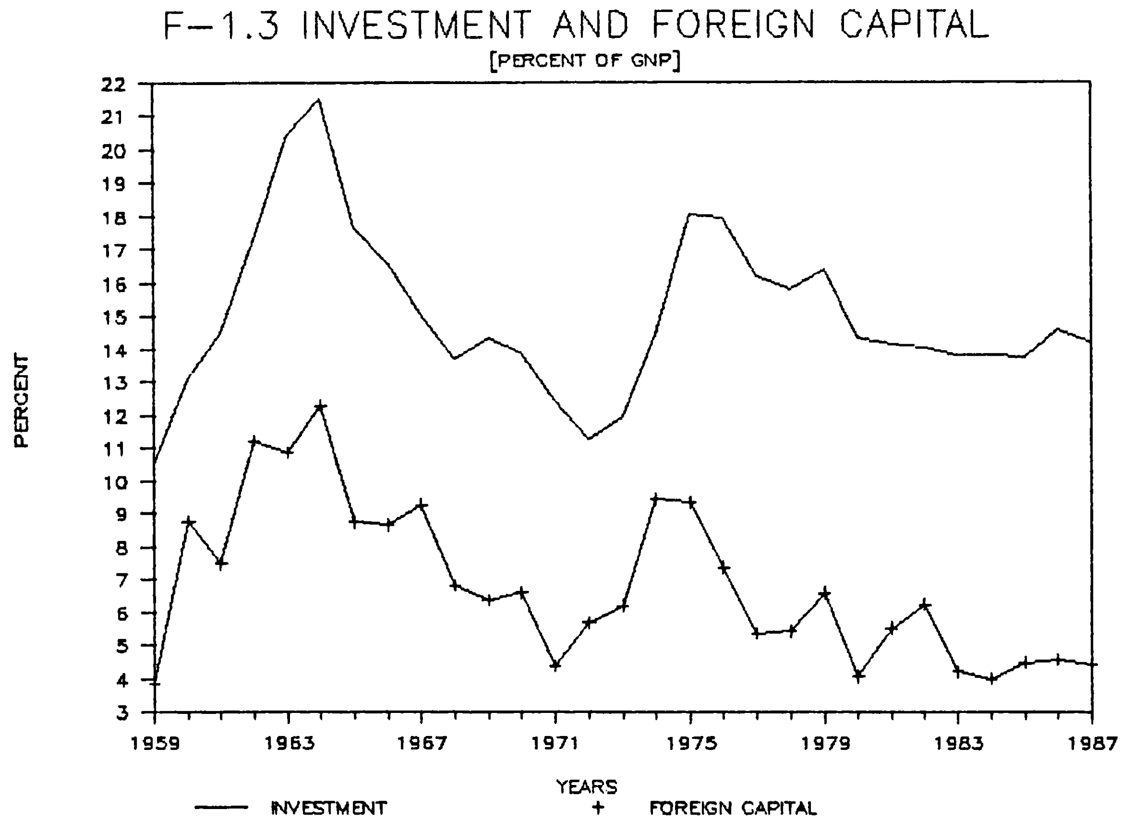
In general there appears association between foreign capital inflow and investment in Pakistan. Figure 1.3 shows the movements in the ratio of foreign capital and investment as percent of GNP. The precise regression coefficient and R-Square are as following:

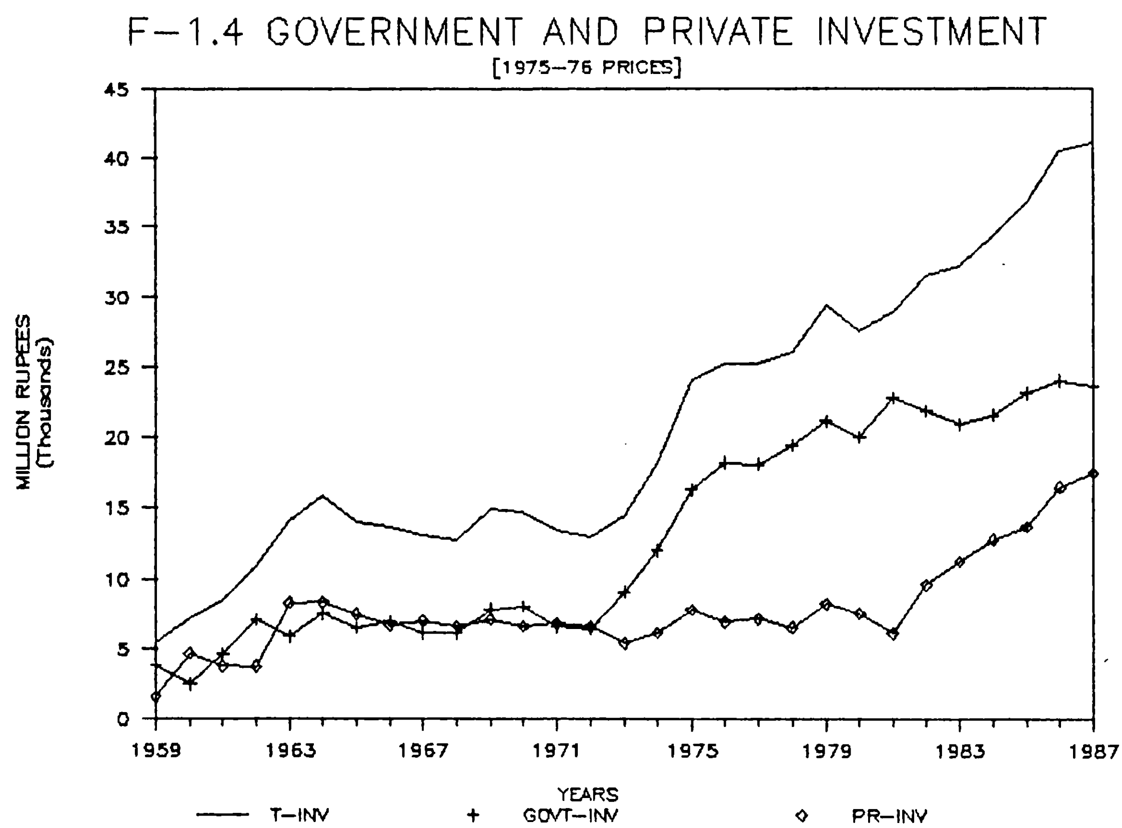
$$IY = \underset{(5.6)}{9.8} + \underset{(5.3)}{0.75}\ FKY \qquad [1.12]$$

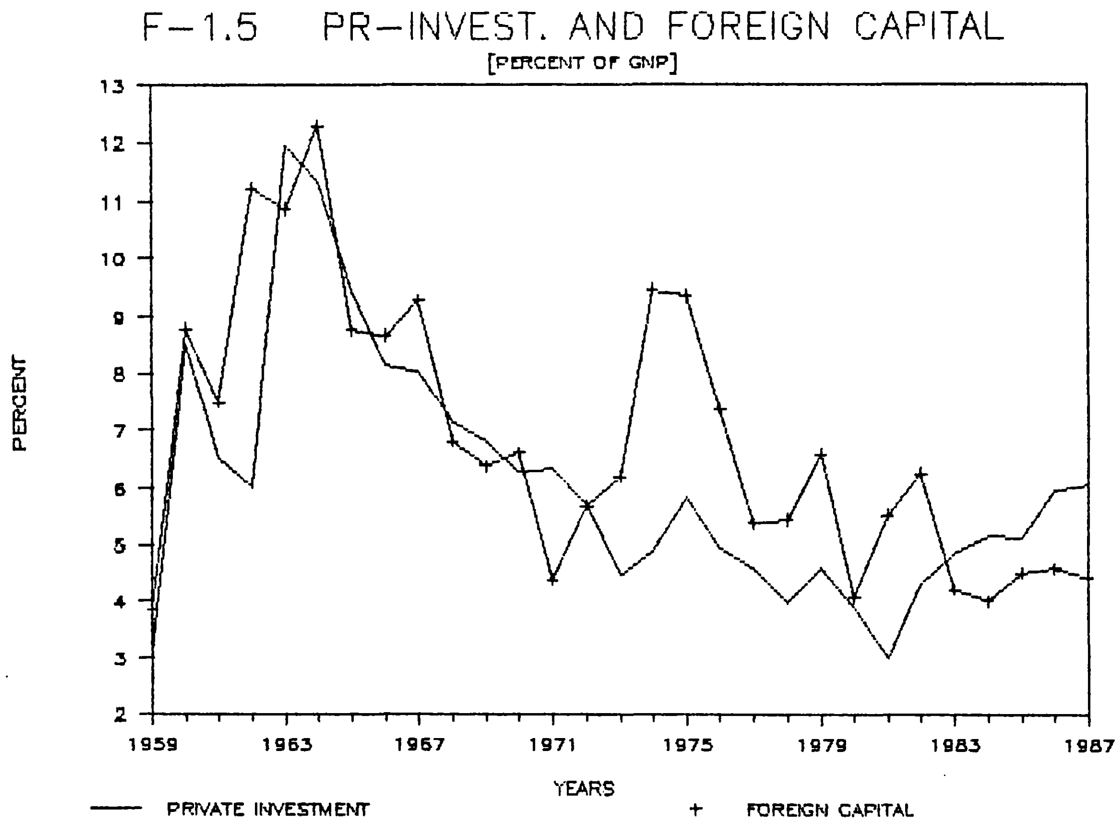
$$R\ Squr: 0.51$$

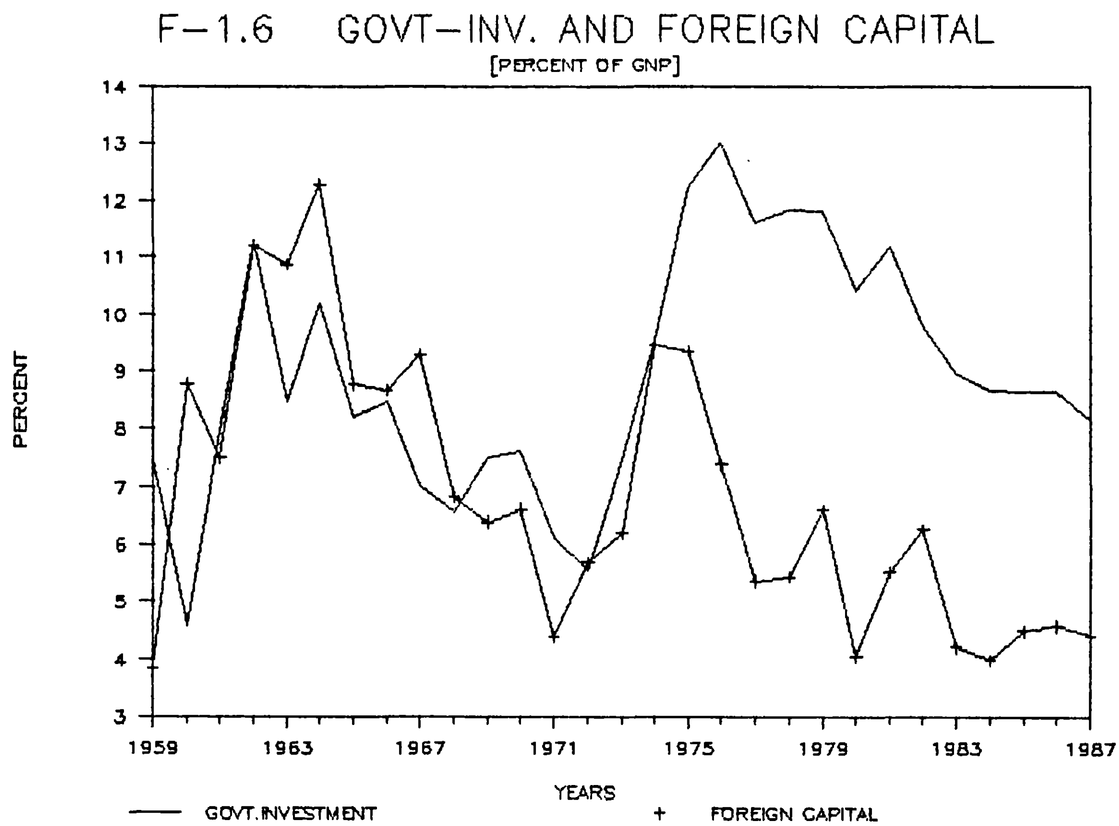
IY and FKY stand for investment and foreign capital as percent of GNP. Figures in parenthesis are for t-ratios.

An important feature of investment in Pakistan is a substantial large share of investment from the public sector. Figure 1.4 compares the public and private investment over past three decades. After a rapid expansion during seventies and first half of eighties the gap between private and public sector investment is now closing. Political factors have played an important role in distribution of investment between the public and private sectors. Nationalization of a number of industries and financial institutions in the early seventy's substantially increased the share of public sector investment (23). The relationship of foreign capital with public and private investment is quite interesting. Figures 1.5 and 1.6 compare the ratios of private and public investment to GNP with the ratio of foreign capital to GNP. A separate regression for the private and the public


F—1.3 INVESTMENT AND FOREIGN CAPITAL
[PERCENT OF GNP]
PERCENT
22
21
20
19
18
17
16
15
14
13
12
11
10
9
8
7
6
5
4
3
1959
1963
1967
1971
1975
1979
1983
1987
YEARS
INVESTMENT
+ FOREIGN CAPITAL


F—1.4 GOVERNMENT AND PRIVATE INVESTMENT
[1975—76 PRICES]
MILLION RUPEES
(Thousands)
45
40
35
30
25
20
15
10
5
0
1959
1963
1967
1971
1975
1979
1983
1987
YEARS
T—INV
+ GOVT—INV
◇ PR—INV


F-1.5 PR-INVEST. AND FOREIGN CAPITAL
[PERCENT OF GNP]
PERCENT
13
12
11
10
9
8
7
6
5
4
3
2
1959
1963
1967
1971
1975
1979
1983
1987
YEARS
PRIVATE INVESTMENT
+ FOREIGN CAPITAL


F-1.6 GOVT-INV. AND FOREIGN CAPITAL
[PERCENT OF GNP]
PERCENT
14
13
12
11
10
9
8
7
6
5
4
3
1959
1963
1967
1971
1975
1979
1983
1987
YEARS
GOVT.INVESTMENT
+ FOREIGN CAPITAL

investment shows that private investment is more associated with the foreign capital inflow. However, the public investment has not shown such relationship with foreign capital inflow. The estimated coefficients with respect to private and public investments are as follow :-

$$PIY = \underset{(1.1)}{1.7} + \underset{(5.2)}{0.65}\ FKY \qquad [1.13]$$

R Squr: 0.52

$$GIY = \underset{(3.8)}{8.2} + \underset{(0.06)}{0.0.01}\ FKY \qquad [1.14]$$

R Squr: 0.10

(PIY and GIY stand for private investment and government investment as percent of GNP). These results implicitly suggest that the brunt of a shock of fall in foreign resources is born by the private sector while the public sector investment stands protected.

1.4 Changing attitude

At the end of Second Five Year Plan (1960-65) it was recognized that foreign debt and debt service liability were increasing rapidly. (This issue will be discussed further in Chapter 3). The total foreign debt outstanding which was only 462 million rupees in 1959 climbed to 3146 million by the end of Second Five Year Plan (1960-65). Since then there has been no pause in this rising trend and the debt is increasing almost exponentially. Between 1959 and 1987 it has increased annually at compound rate of about 21 percent. The increase in debt liability also increased the debt service payments which has substantially reduced the net inflow of capital to Pakistan as given in Table 1.4.

Table 1.4
Net Foreign Capital Inflow as Percent of Gross Capital Inflow

Years	Net as percent of Gross capital inflow
1951-60	100
1960-65	91
1965-70	80
1970-78	68
1978-83	52
1983-88	32

Source: Economic Survey of Pakistan 1987-88

The accumulation of debt and the changed international environment with regard to availability of grants and grants like loans/credits forced planners to change their attitude towards foreign capital as easy option for financing domestic investment. The Second Perspective Plan (1988-2003) just like the First Perspective Plan (1965-85) envisages to reduce dependence on external resources to the level of 0.9 percent of GNP (24).The important departure in policy is the absence of dogmas and phrases of fifty's and sixty's. Instead, in line with IMF and World Bank the emphasis is now more on adjustment policies. World Bank during 1988 recommended, among other things, the following major areas of policy action (25):

(a) public resource mobilization, principally from a major tax effort....;

(b) reduction of the current fiscal deficit....; and

(c) introduction of a phased programme of trade liberalization consisting both of export promotion and import liberalization.

One can clearly see the reflection of these recommendations in the objectives of 7th Five Year Plan (1988-93) which include: (26)

(a) to increase the tax/GDP ratio from 13.1 percent to 16.1 percent;

(b) to control the growth of government expenditure;

(c) to reduce dependence on external borrowing by creating surpluses in the balance of payments; and

(d) to convert the fiscal current account revenue deficits into surpluses.

1.5 Scope and plan of the study

The discussion of the preceding sections clearly suggests that it would be quite inappropriate to pursue further the policy of economic growth based on the conventional "two gap" model. In order to address the problem properly the relationships between broad economic aggregates have to be taken into account. We have, therefore, envisaged for our study to build a macroeconomic model for Pakistan where relationships between macroeconomic variables are defined and estimated rigorously. The plan of our study is as following.

Next chapter outlines how the balance of payments in Pakistan has changed over the past three decades and examines its main components. It also includes a broad review of balance of payment policies together with the review of policies pursued by Pakistan.

Chapter 3 is the natural extension of Chapter 2 and is exclusively devoted to the debt and debt service problems created by foreign borrowing. Other relevant issues associated with the debt problem are also discussed in this chapter.

Chapter 4, 5, and 6 constitute the major empirical work of this study.

In chapter 4 a macroeconomic model for Pakistan is defined and econometric equations are estimated. The model combines aggregate demand, prices, balance of payment and assets (financial, capital and foreign debt) accumulation. The model has a full dynamic structure which is quite useful to see the path of regaining an equilibrium state in response to changes in various factors. We believe that a model of this kind is a significant improvement over the conventional "two gap" model which heavily depends upon so many stringent assumptions. However,it is important to mention that developing a macroeconomic model for a developing country like Pakistan is not an easy task. We have, therefore, given a detailed account of difficulties and limitations before we entered into the model building processes and estimation of equations.

The model described in Chapter 4 has a dynamic structure and equations are estimated in log linear form. We, therefore, consider simulation as a powerful analytical tool for evaluating properties of the model. This not only helps to analyse the long run impact of an exogenous change but it also shows the path through which the final state is arrived and that is what we intend to do. Chapter 5 is fully devoted for simulation exercise where the impact of internal and external exogenous changes have been evaluated.

Chapter 6, which is the final part of our empirical work, particularly describes the simulation results of an external shock which reduces the availability of foreign exchange resources, and the policy responses in order to regain the pre-shock state of the economy. One could see a clear point of departure from a simple "two gap " model which does not handle policy options in the event of any such shock. It is rather interesting to note that according to Fei (1962) such a cut in foreign assistance might cause a " *sudden death*" of the economy. We, however, do not agree with such an extreme assessment. Instead, we intend to examine a negative impact of a shock on the private and public investment and the possible policy response to overcome the problem.

Notes

(1) Political events of 1970 led to separation of eastern wing of the country. As a result now Pakistan constitute the western wing. Rest of the discussion is only relevant to present day Pakistan unless otherwise mentioned.

(2) Both peaks have occurred, interestingly, in the years following the take over by a military government. These high growth rates could either be interpreted as a result of restoration of peace and order forcefully brought by the military or it could be a malicious attempt to show a bright economic picture to justify the change in government.

(3) See Stern (1989) which provides a good survey of theories of economic development.

(4) Lewis (1955) (p208).

(5) Rostow (1960) (p37).

(6) Derivation of the equation [1.3] is as following

$$I = S + A$$

substituting in equation [1.1] gives

$$(S + A)/Y = k\ (h + r) \quad \text{or}$$
$$(S/Y) + (A/Y) = k\ (h + r) \quad \text{or}$$
$$s + a = k\ (h + r) \quad \text{or}$$
$$h + r = s/k + a/k \quad \text{or}$$
$$h = (s-rk)/k + ak$$

(7) Chenery Bruno (1962, p309)

(8) ibid (pp309-311)

(9) Chenery (1966, p385)

(10) Nicholas 1981, p1)

(11) World Development Report (1985, p45)

(12) Griffin (1965, p610)

(13) The Third Five Year Plan Planning Commission Government Pakistan, 1965-70 (p7).

(14) Griffin (1965, p612)

(15) Griffin and Khan (1973, p44)

(16) Baqai (1973, p33)

(17) Haq (1963, p21)

(18) ibid (p22)

(19) The Third Five Year Plan, Planning Commission Government Pakistan 1965-70 (p8).

(20) ibid (p17)

(21) Flow of foreign capital has been further discussed in Chapters 2 and 3.

(22) As 20 (p9 and p19)

(23) For a comprehensive political interpretation of economic development of Pakistan see Noman (1988).

(24) 7th Five Year Plan 1988-93 and Perspective Plan 1988-2003 Planning Commission Government of Pakistan vol-I (p48)

(25) World Bank (1988, p110)

(26) As 24 (p52)

CHAPTER 2

THE BALANCE OF PAYMENTS AND THE BALANCE OF PAYMENTS POLICIES

Some of the aspects of balance of payments (BOP), in terms of flow of foreign capital inflow to Pakistan have already been touched in Chapter 1. Having discussed the "two gap" model, in Chapter 2 now we need to go into details of the BOP as a preparation for our full macro study. In particular, in this chapter we are going to study the various components of BOP accounts and BOP policies with special reference to Pakistan.

2.1 The Balance of Payments Accounts

Balance of payment may be defined as a systematic record of all transactions between the residents of one country and rest of the world over a specified period, usually a year. The way in which these accounts are compiled and presented differ from country to country. But according to standard practice a BOP sheet is always divided into two broad parts i.e current account transactions and capital account transactions. In this standard form Table 2.1 shows the BOP record for the years indicated. (For the period 1951-1987 the BOP accounts for Pakistan have been appended at the end of the chapter).

The current account, represented in rows A-C of Table 2.1,

Table 2.1

BALANCE OF PAYMENTS OF PAKISTAN

(MILLION RS)

ITEM/YEAR	1959 1960	1972 1973	1979 1980	1986 1987	1987 1988
(A)TRADE BALANCE	-1043	153	-23519	-29076	-32937
(1) Exports	763	8551	23410	63355	78445
(2) Imports	-1806	-8398	-46929	-92431	-111382
(B)INVISIBLE(NET)	-24	-73	13622	27074	17515
(1)Non Factor Service	0	-701	-2356	-4934	-7968
(2)Investment Income	0	-890	-2782	-11947	-14040
2.1-Income	0	178	515	1581	2387
2.2-Payments	0	-1068	-3297	-13529	-16427
(of which intr.is)	24	900	2891	6498	7529
(3)Private Transfer	0	1518	18761	43955	39523
(of which rem.are)	0	0	13830	39159	35767
(C)CURRENT ACC. BAL.	-1067	80	-9897	-2002	-15422
(D)PRIVATE CAPITAL(N)	19	147	1723	5501	4107
(1)Direct Investment	0	0	673	2218	2141
(2)Other long term	0	136	703	1599	1966
(3)Short Term	0	10	347	1685	0
(E)PUBLIC CAPITAL(N)	643	2597	11088	11620	14865
(1)Gross Disb.	671	3717	14553	24049	27589
1.1-Project Aid	267	1047	7999	17293	18147
1.2-Non Food Aid	290	1686	1594	3541	3001
1.3-Food Aid	114	984	208	980	3106
1.4-BOP Support	0	0	4148	0	0
1.5-Relief Ass.	0	0	604	2235	3335
(2)Amortization	-29	-1120	-3465	-12428	-12724
(F)ALLOCATION OF SDR	0	0	366	0	0
(G)CHANGES IN RESERVES	162	2189	-1047	8564	3454
(H)ERRORS/OMISSIONS	-567	634	4327	6555	95

Source: Appendix Table 2.1

provides details of all those items which relate to currently produced goods and services. The capital account transactions, on the other hand are concerned with the changes in country's stocks of assets which have financial claims and therefore affect future income of the country.

The current account (row C in Table 2.1) is the total sum of visible and invisible. The visible consists of merchandise exports and imports and the balance of these two referred to as balance of trade (row A Table 2.1). The invisible on the other hand (rows B.1 to B.3 of Table 2.1) includes non-factors services (such as freight and insurance cost and tourism) factor payments which are net inflows of interest, profits, dividends from abroad and private transfers which cover things like remittances by migrant workers (1).

The capital account , after taking into account the changes in the foreign exchange reserves, is the mirror image of the current account balance. The capital account transactions are generally much more heterogeneous as compared to current account balance and, therefore, can be presented in many different ways. Generally a distinction is made between private and public capital and between portfolio and direct investment. The other important items, at the bottom of the sheet are about changes in the level of foreign exchange reserves. This item in this case is a change in holdings of gold and convertible currency with State Bank of Pakistan on 30th of June of each year.

The balancing item (row H) records any errors and omissions arising from the statistical compilation of the statistics.

Having looked at the current account and capital account in isolation we could now identify following two important relationships between these two:-

(i) Import of capital which is recorded as an inflow on capital account in the short run, the cost of this has to be paid (excluding grants) in the future in terms of factor payments besides amortization of the principal.

(ii) Although there will always be either a surplus or a deficit on the current account, when the two accounts are added together they must be in balance (after taking into account the changes in reserves and statistical errors) by definition. In other words a deficit on current account, if not financed from the reserves, must be accompanied by an equal transfer of capital from abroad. Thus current account transactions have a kind of binding implication for a capital account so that in an ex-post accounting sense BOP always balances.

The illustration so far about current account and capital account was in a very broad terms. In the following sections we will now discuss various components of current and capital account in a more intensive fashion before we proceed to the BOP policies.

2.1.1 Current Account Balance

The important components of a current account balance are exports, imports and invisible payments . We will discuss exports, imports and foreign private transfers from abroad in this section but leave returns on private investment and interest payments on foreign loans for the next chapter which has been primarily devoted for such items. These details will provide a basis for our econometric work described in Chapter 4.

2.1.1.1 Exports

Exports is one of the most important and the principal source of payment for imports and to a large extent the over all picture of BOP is determined by the volume of exports.

Exports from Pakistan ,except for the year 1972-73, have been less than imports despite a regular upward trend in real terms. Estimated, using a semi-log method, exports have grown in real terms at a compound rate of 8 percent per annum between 1959 and 1987. The estimated equation is as follows:-

$$x = 7.95 + 0.08 \text{ Trend} \qquad [2.1]$$

(where x is natural log of exports.)

The growth of exports from 1959 to 1973 was quite significant and was about 13 percent which subsequently came down to 6 percent in the later period. The rate of growth of exports has remained faster than the growth of GDP. As a result the share of exports in GDP has been regularly increasing. Table 2.2 provides yearly details of the share of exports in GDP. Figure 2.1 clearly shows a regular upward trend of share of exports in GDP.

According to economic classification exports are divided into three categories: (i) primary commodities ; (ii) semi-manufactures and (iii) manufactures. Tables 2.3 and 2.4 illustrate the economic composition and structure of exports.

Primary commodities referred to here are all land produced products (2) and Pakistan dose not exports any mineral products in raw form. The composition of exports is dominated by four items i.e rice, raw cotton, cotton yarn and cotton cloth which constitute about 50 percent of the total exports. Rice exports has risen sharply and has been Pakistan's leading export item from 1973-74 onwards. The share of raw cotton has been unstable and significant

F.2.1 SHARE OF EXPORTS IN GDP

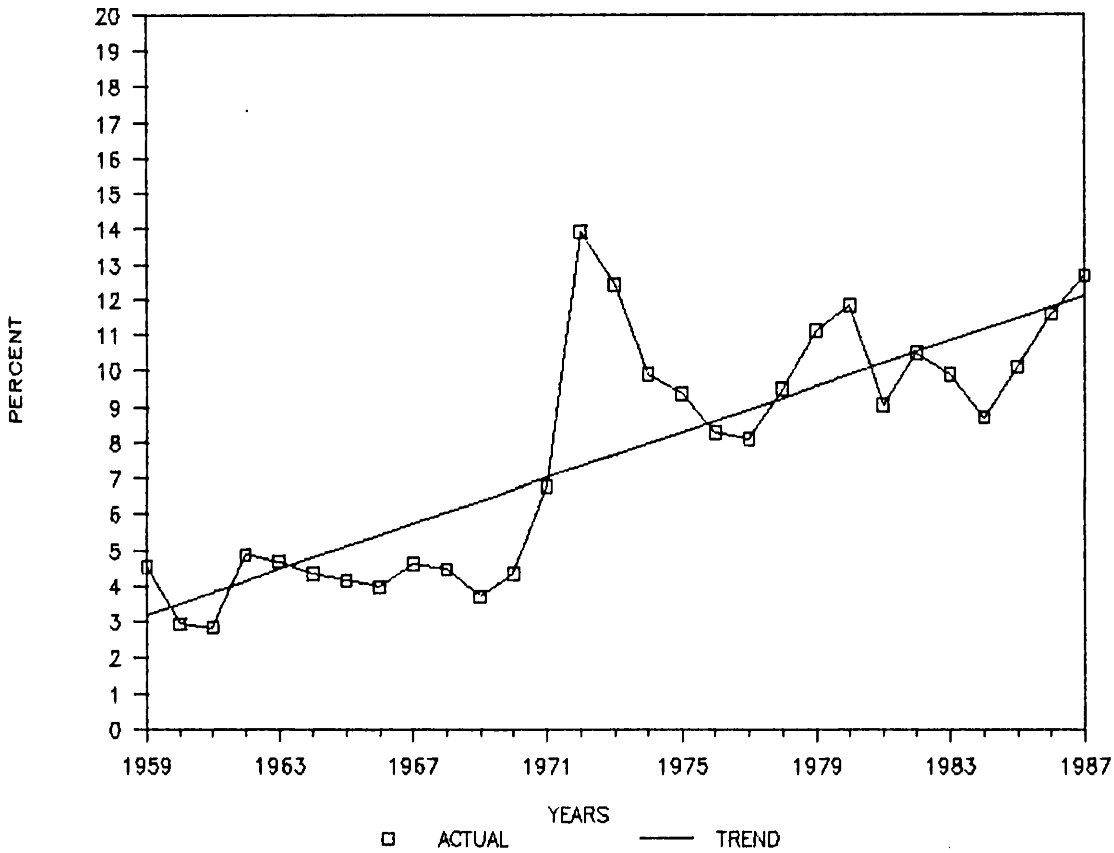


Table 2.2 Share of exports in GDP

YEAR	PERCENT
1959	4.5
1960	2.9
1961	2.8
1962	4.9
1963	4.7
1964	4.4
1965	4.2
1966	4.0
1967	4.6
1968	4.5
1969	3.7
1970	4.3
1971	6.8
1972	13.9
1973	12.4
1974	9.9
1975	9.4
1976	8.3
1977	8.1
1978	9.5
1979	11.1
1980	11.9
1981	9.1
1982	10.5
1983	9.9
1984	8.7
1985	10.1
1986	11.6
1987	12.7

Sorce: Econmic Survey of Pakistan, 1987-88

variations occurred over a number of years. The cotton share in exports has been dependent upon many factors like demand for raw cotton by domestic textiles and cotton yarn manufacturers and production of cotton itself which is significantly affected by weather conditions. The cotton group (cotton, cotton yarn, cotton cloth and cotton fabrics) constitutes more than 50 percent of the total exports.

Table 2.5 outlines, broadly, the variations in relative shares of exports going to different markets. The direction

Table 2.3 Economic Classification of Exports

[Percent]

Year	Primary Commodities	Semi-Manufacture	Manufactured GOODS	Total
1969	33	23	44	100
1970	33	23	44	100
1971	45	27	28	100
1972	39	31	30	100
1973	39	23	38	100
1974	48	13	39	100
1975	44	18	38	100
1976	41	17	42	100
1977	36	15	49	100
1978	32	21	47	100
1979	42	15	43	100
1980	44	11	45	100
1981	35	13	52	100
1982	30	13	57	100
1983	29	14	57	100
1984	29	17	54	100
1985	35	16	49	100
1986	26	21	53	100
1987	28	20	52	100

Source: Economic Survey of Pakistan 1988-89 Table 10.4

of export has been changing over the past three decades. In 1959-60 share of the developed economies was 49 percent which came down to about 36 percent during 1982-83. After 1982-83 there has been a kind of recovery in the share of developed countries and it has reached to the highest level of 61 percent during 1986-87. This clearly shows the importance of economic activities of developed economies for the exports from Pakistan. The share of other countries (excluding CMEA countries) is almost moving in the opposite direction of developed countries. The share of exports to CMEA countries has been continuously declining after reaching to the highest level of about 18 percent during 1970-71. This than stabilized around 4 percent.

Table 2.4 Structure of Exports
[Percent]

Year	Raw Cotton	Cotton Manu	Rice	Fish & Fish Prep.	Leather	Carpets & Rugs	Synth. Text.	Others	Total
1969	13.9	31.8	5.8	3.9	6.8	3.4	1.1	33.3	100
1970	14.3	32.8	8.7	3.1	5.4	3.3	0.8	34.9	100
1971	29.1	29.4	8.1	3.3	5.2	3.2	0.4	21.3	100
1972	14.0	37.4	13.3	2.7	6.4	3.3	0.7	22.2	100
1973	4.0	32.3	20.6	2.7	4.1	4.5	0.6	31.1	100
1974	15.2	21.6	22.4	1.5	3.6	4.4	0.2	31.1	100
1975	8.8	25.1	22.0	2.5	5.3	6.4	0.3	29.6	100
1976	2.8	25.0	21.9	3.4	5.7	8.1	0.3	32.8	100
1977	8.6	22.1	18.6	2.6	4.9	9.0	1.2	33.0	100
1978	4.0	24.5	20.0	2.7	7.4	10.4	0.4	30.6	100
1979	14.3	19.3	17.9	2.3	5.4	9.4	0.2	31.3	100
1980	17.8	15.5	19.1	1.9	3.0	7.7	4.3	30.6	100
1981	11.2	19.4	15.7	3.0	4.4	6.4	0.9	38.9	100
1982	11.6	20.0	10.7	2.6	3.5	5.6	8.1	38.0	100
1983	5.3	21.2	15.2	2.7	5.3	6.2	3.9	40.2	100
1984	11.9	22.9	8.8	3.2	6.1	5.3	1.7	40.1	100
1985	16.9	19.5	11.1	2.7	5.8	5.4	1.6	36.9	100
1986	12.3	23.2	8.1	3.0	6.4	5.4	4.3	37.2	100
1987	13.9	23.1	8.2	2.8	6.4	5.7	4.4	35.5	100

Source: Economic Survey of Pakistan 1988-89 Table10.5

Pakistan has been quite successful to maintain an access to its traditional markets. In addition it has been particularly able to take advantage of the expanding market of oil exporting countries.

2.1.1.2 Foreign private transfers

One of the most significant event of the second half of seventies and early eighties has been the dramatic increase in migration of Pakistani workers mainly towards Middle East and the increase in the share of private transfers (because of workers remittances) in the total

Table 2.5 Destination of Exports [percent share]

Year	Developed Countries	CMEA	Developing @ Countries
196o	49.1	5.8	41.6 (-)
1965	46.2	12.2	41.5 (0.5)
1970	43.1	17.5	39.4 (6.5)
1972	44.9	12.0	43.1 (10.9)
1975	41.0	4.4	54.6 (28.0)
1976	43.5	4.0	52.5 (33.3)
1977	39.3	4.3	56.4 (28.9)
1978	47.6	3.7	48.7 (25.3)
1979	39.7	3.9	56.4 (28.3)
1980	32.9	3.9	63.2 (30.7)
1981	38.6	4.1	57.4 (31.9)
1982	35.5	4.2	60.3 (40.3)
1983	40.3	4.5	55.2 (41.7)
1984	52.2	5.5	42.3 (22.5)
1985	51.7	5.9	42.4 (20.2)
1986	57.5	3.6	38.9 (17.1)
1987	60.7	4.0	35.3 (14.0)

@Figures in parenthesis are for the share of oil exporting countries.

Source:Economic Surveys of Pakistan,(1971-72,1988-89) and Table 6.3 Adam and Iqbal (1983)

foreign exchange earnings. During the years 1982 tO 1984 the share of private transfers was more than 50 percent of the total foreign exchange earnings. (see Table 2.6 for further details).

The private transfers played a major part in cushioning the adverse balance of trade position. However, a decline in these transfers have already started. The declining trend has begun in the mid 1980's and in the fiscal year 1987-88 dropped to rupees 39523 millions from the highest level of rupees 45575 millions (in nominal terms) achieved during 1985-86. In real terms (3) the decline has started

Table 2.6 Share of private transfer and workers remittances in total foreign exchange earnings

Year	Private Transfers [percent]	Remittances as percent of Private transfers
1969	23	NA
1972	15	NA
1975	23	NA
1976	34	57
1977	48	47
1978	47	77
1979	44	74
1980	43	78
1981	49	87
1982	53	72
1983	53	95
1984	53	97
1985	48	87
1986	41	89
1987	34	90

Source: Appendix Table 2.1

even earlier (see Figure 2.2).

2.1.1.3 Imports

Pakistan's Commercial Policy (discussed in section 2.3.1) has significant influence over volume and composition of imports. Total imports in real terms have been growing without any pause. The over all growth rate with semi-log method is as following:-

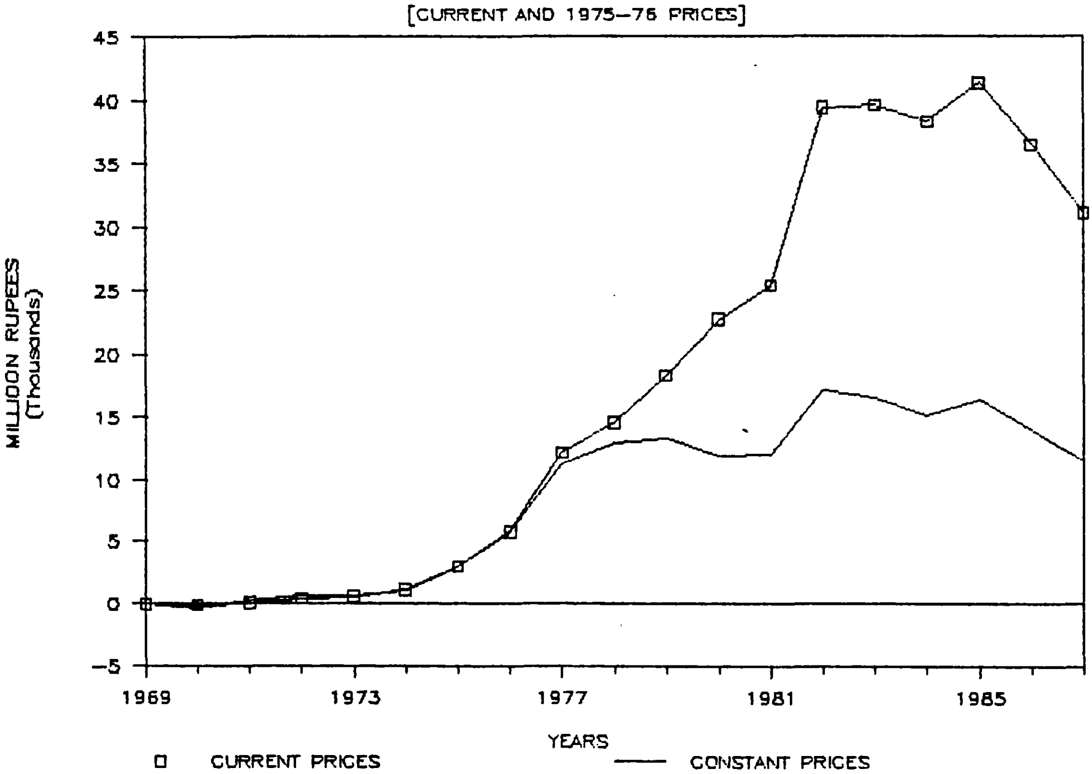
$$m = 8.91 + 0.06 \text{ Trend} \qquad [2.2]$$

(where m is log of real imports)

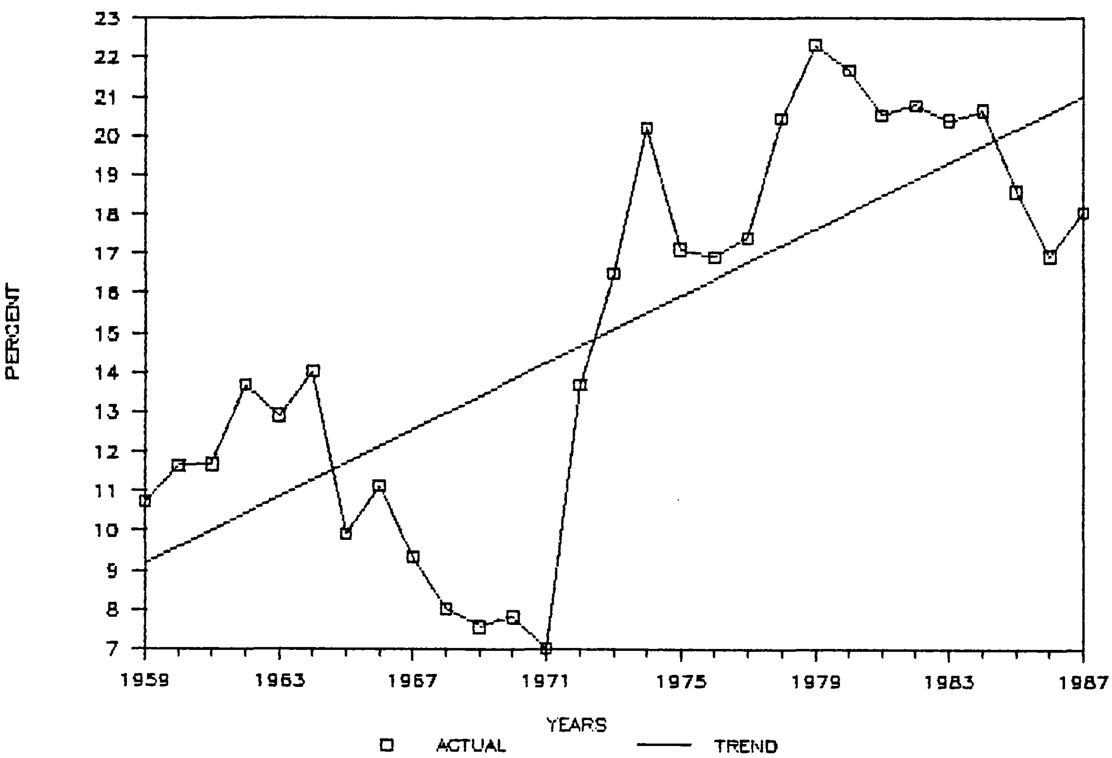
The growth rate of imports is less than exports but higher

F-2.2 NET PRIVATE TRANSFERS FROM ABROAD

[CURRENT AND 1975-76 PRICES]



F-2.3 IMPORTS AS PERCENT OF GDP



than GDP. Imports as percent of GDP have ,therefore, increased over the years. The rising trend of imports as percent of GDP is quite visible in Figure 2.3 though the variation around the trend are greater compared to the share of exports in GDP (Figure 2.1). An important point is that in contrast to exports the growth of imports in the early years (1959-73) was only 3 percent per annum and has increased subsequently.

The composition of imports has also gone through significant change. The share of capital goods has gradually declined from about 50 percent to 36 percent and the share of raw material has gone up to about 50 percent of total imports. Raw materials for consumer goods are now the major import items which fetch about 40 percent of total import bill. This is a clear reflection of import substitution in the consumer goods industry which has increased demand for the raw materials to produce consumer goods. The over all share of consumer goods in the total imports is fairly stable and it appears that early import substitution of the consumer goods is more or less equated by new products. Table 2.7 provides the details of composition of imports.

2.1.2 Capital Account

The principal items of capital account are private capital, public capital and changes in foreign exchange

Table 2.7 Economic classification of imports

Percent Share in Total Imports

Year	Capita Goods	Raw Materials For Capital Goods	Raw Materials For Consumer Goods	Consumer Goods	Total
1969	50.0	11.0	29.0	10.0	100
1970	52.0	11.0	26.0	11.0	100
1971	42.0	11.0	24.0	23.0	100
1972	30.0	10.0	31.0	29.0	100
1973	30.0	7.0	39.0	24.0	100
1974	29.0	9.0	40.0	22.0	100
1975	35.0	6.0	38.0	21.0	100
1976	38.0	6.0	40.0	16.0	100
1977	34.0	7.0	40.0	19.0	100
1978	30.0	6.0	42.0	22.0	100
1979	36.0	6.0	42.0	16.0	100
1980	28.0	8.0	49.0	15.0	100
1981	30.0	8.0	48.0	14.0	100
1982	31.0	6.0	49.0	14.0	100
1983	32.0	6.0	48.0	14.0	100
1984	32.0	6.0	46.0	16.0	100
1985	37.0	5.0	40.0	18.0	100
1986	37.0	7.0	39.0	17.0	100
1987	36.0	7.0	42.0	15.0	100

Source: Economic Survey of Pakistan 1988-89

Reserves held by State bank of Pakistan.

2.1.2.1 Private capital

Private capital account is not published officially in any consolidated form. The data presented in Table 2.1 is from different balance of payments statistics reported in Economic Surveys of Pakistan and is in net form. The private capital remained insignificant till mid seventies and particularly the short term borrowing has been almost zero. In the subsequent period both direct private investment and other long term transfers have gradually increased. Inspite of small share of the total capital inflow, private capital has implications for the current account balance in terms of repatriation of profits on investment and interest on loans (which we will discuss in some detail in Chapter 3).

For short term capital the data is available only in net terms and it is difficult to make any judgment of size of total short term borrowing. However, the data available indicates that short term borrowing has never assumed a long term status by repaying the past loans through new borrowing. In the situations where short term loans are repeatedly renewed for repayments of previous credits, then a separation of short term from long term capital is of limited analytical significance. Pakistan has successfully avoided any such renewals.

2.1.2.2 Public capital

Public capital inflow to Pakistan is primarily in terms of: (i) project assistance; (ii) commodities assistance; (iii) food assistance; (iv) BOP support and (v) relief assistance(4). Table 2.8 provides the details about percent share of different kinds of assistance from 1959 to 1987.

(i) Project assistance

The large bulk of foreign capital received by Pakistan has

Table 2.8 Composition of Foreign Public Capital

As percent of gross disbursement

Year	Project Aid	Comm. Aid	Food Aid	BOP Supp.	Relief Ass.
1959	39.7	43.3	17.0	0.0	0.0
1960	46.8	3.2	50.0	0.0	0.0
1961	66.4	2.6	30.9	0.0	0.0
1962	48.7	19.6	31.7	0.0	0.0
1963	48.9	23.8	27.3	0.0	0.0
1964	47.6	24.5	27.9	0.0	0.0
1965	68.9	20.5	10.7	0.0	0.0
1966	53.1	28.7	18.1	0.0	0.0
1967	55.0	20.0	25.0	0.0	0.0
1968	68.4	30.1	1.6	0.0	0.0
1969	57.3	28.0	14.7	0.0	0.0
1970	59.6	30.4	10.0	0.0	0.0
1971	68.7	19.3	12.0	0.0	0.0
1972	28.2	45.4	26.5	0.0	0.0
1973	34.1	36.3	23.5	6.0	0.0
1974	29.3	18.8	9.9	42.0	0.0
1975	36.6	14.6	15.0	33.8	0.0
1976	46.8	22.0	11.7	19.6	0.0
1977	60.3	16.7	11.1	11.9	0.0
1978	63.2	22.5	5.3	9.1	0.0
1979	55.0	11.0	1.4	28.5	4.1
1980	69.5	10.6	6.8	1.6	11.4
1981	48.6	15.8	8.1	0.9	26.6
1982	57.2	23.0	6.1	0.0	13.7
1983	59.1	12.7	15.1	0.0	13.2
1984	71.8	9.9	6.3	0.0	11.9
1985	69.0	6.1	16.0	0.0	8.8
1986	71.9	14.7	4.1	0.0	9.3
1987	65.8	10.9	11.3	0.0	12.1

Source :Economic Survey of Pakistan 1987-88

been specific to certain projects and most often strictly tied to the source and utilization. Most loans/grants received from donor countries, in form of project assistance, are allocated to the public sector projects. The mechanism of project assistance includes, besides foreign component, a counterpart local finance component which has to be met by raising the necessary resources domestically. The donor countries enjoy a significant control over project preparation, appraisal and execution. In order to have more flexibility government of Pakistan have always pleaded for commodity assistance (see for example Government of Pakistan Consortium Memorandum for the Pakistan Consortium 1970-71).

(ii) Commodity assistance

Commodity assistance in the form of industrial materials can be viewed as an inflow of foreign economic resource particularly designed to remove some of the obstacles to self-sustaining growth. It allows some degree of flexibility to the recipient country by not being tied to at least its utilization. Although in most cases it is tied to the source. Ratio of commodity assistance to the total capital inflow to Pakistan has decreased over the years.

(iii) Food assistance

Food assistance is also a part of commodity assistance and is mostly received from United States of America (USA) under Pl-480 through sale of surplus agricultural commodities. These commodities, ranging from wheat to edible oil,have been purchased by the Government of Pakistan from USA and were paid for in domestic currency till 1967 and in domestic currency and dollars after 1967. The funds generated by the sale of these commodities are deposited in a special "counter part" fund controlled by the US government through its mission in Pakistan.

(iv) Balance of payments support

The capital inflow received for temporary BOP support can be, strictly speaking, termed as untied and most flexible kind of loan. Such loans were provided to Pakistan by Saudi Arabia and Iran during the seventies (5). These are the best type of loans provided these are not for a too short period. The balance of payments support have been a significant proportion of total capital inflow during 1974-75 (42 %) 1975-76 (33.8 %) and 1979-80 (28.4 %). The bulk of this has come from IMF. IMF through these loans exert significant influence over government policies towards subsidies, pricing of government sector utilities, liberalization of imports and reducing the share of public sector investment (6).

(v) Relief assistance

Relief assistance to Pakistan on a massive scale has started in the year 1979 when Afghan refugees started coming to Pakistan. In the year 1981-82 relief assistance was about 27 percent of total resource inflow from abroad. Such assistance is quite important in relieving the economic burden of about three million refugees. Besides direct help to refugees, the relief assistance is being used in implementing a number of small projects in the areas where refugees are camped.

2.1.2.3 Principal sources of foreign capital

The relative importance of different countries/agencies as donor in different periods of time tells us some thing about the structure of a country's dependence on different sources of capital. Moreover, as we noted that most assistance is tied to source, the source structure of capital points towards the recipient's assistance determined import structure. The more diverse the source of capital from abroad is the lesser the influence of the donor on the recipient.

Pakistan's sources of foreign capital are conventionally divided into following four major groups:-

1. Consortium
2. Non Consortium
3. Islamic countries
4. IMF Trust Fund

The Aid to Pakistan Consortium has provided assistance to Pakistan both through bilateral (country to country) and

Table 2.9 Total Loans and Credits Contracted
[Percent Share]

Source/Years	1951 1955	1955 1960	1960 1965	1965 1970	1970 1978	1978 1983	1983 1988
[A] Consortium	100	100	95	94	66	78	91
A.1 Bilateral	52	81	73	78	44	39	36
A.1.1 USA	29	56	49	39	17	12	13
A.1.2 Others	23	25	24	39	27	27	23
A.2 Multil.	48	19	22	16	22	39	55
[B] Non Consortium	0	0	5	6	13	6	7
[C] Islamic Countries	0	0	0	0	21	12	2
[D] IMF Trust Fund	0	0	0	0	1	4	0
Total:	100	100	100	100	100	100	100

Source: Economic Survey of Pakistan 1987-88

multilateral (financial institutions to country) arrangements. The Consortium comprises Belgium, Canada, France, Germany, Italy, Japan, Netherlands, Sweden, U.K. and U.S.A. Table 2.9 provides the percent share of loans and credits contracted by Pakistan from different sources. The assistance under consortium arrangements has always assumed the largest share. During the first ten years, after independence, all the public sector capital inflow was from the Consortium countries. An important change with in Consortium over the years is the shift from bilateral to multilateral arrangements and a significant fall in the contribution from U.S.A.towards the total capital inflow to

Pakistan.

The multilateral arrangements of assistance are made through International Bank of Reconstruction (IBRD), International Finance Corporation (IFC), International Development Association (IDA), Asian Development Bank (ADB) and Food Aid Consortium (FAC). An increase in the share of Consortium multilateral assistance points towards a decline in the share of concessionery transfers. This is because Consortium multilateral financial institution have historically transferred a large amount of resources to Pakistan in form of loans whose financial terms and conditions, in some cases, have been equivalent to commercial loans.

The decline in the relative share of Consortium towards total capital inflow to Pakistan during seventies was principally caused by the emergence of the Islamic countries as a new important source of foreign capital. During the non plan period of 1970-78 the Islamic countries provided about 21 percent of total foreign capital. (In the year 1973-74 this share was as high as 45.6 percent). It declined in the subsequent period to 12 percent during the Fifth Five Year Plan (1978-83) and merely to 2 percent during 1983-88. The major donors were the oil exporting countries who have generated large current account surpluses because of rise in oil price. Similarly the share of Non Consortium countries increased from 6 percent during Second

Five Year Plan (1960-65) to 13 percent during the non plan period of 1970-78. The share of Non Consortium countries slided back to 6-7 percent when inflow from Consortium countries increased from 66 percent during 1978-83 to 91 percent during 1987-88.

2.1.2.4 Change in foreign exchange reserves

Foreign exchange reserves held by the State Bank of Pakistan change due to regular transactions. The strength and weakness of the capital account is reflected in the level of gross foreign exchange reserves. Table 2.10 shows the total foreign exchange reserves held by State Bank of Pakistan as percent of imports during that year and the extent to which it could have financed the import bill in terms of weeks requirement (see also Figure 2.4). Imports here are referred to physical imports and exclude all invisible payments. The lowest level of reserves in terms of meeting the import requirements of the country was in the year 1977-78 when these were barely sufficient to pay for eight weeks worth of imports. A very low level of reserves pushes a country to resort on short term borrowing if the current account balance deteriorates by a significant margin. This increases the debt service liability and also endanger credit worthiness. As an alternative to short term borrowing a government is likely to take administrative steps to restrict imports to arrest further depletion of

F–2.4 RESERVES AND IMPORTS REQUIREMENTS

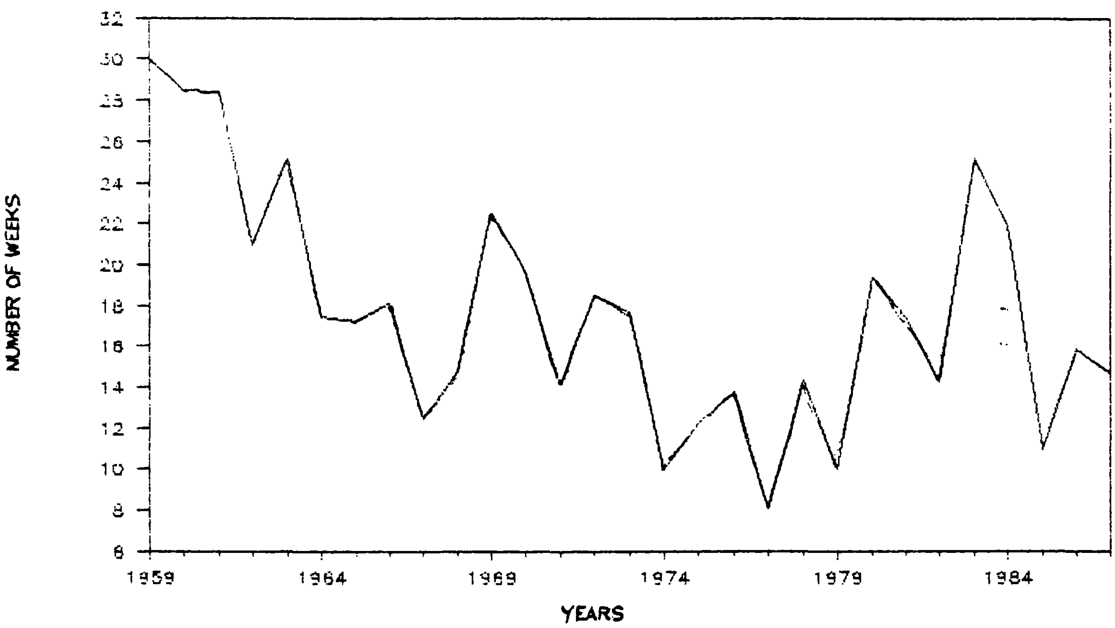


Table 2.10 Ratio of Foreign Exchange Reserves and Imports

	Foreign Exchange Reserves as	
YEAR	Weeks Eq. of Imports	Percent of Imports
1959	30.	58
1960	28	55
1961	28	55
1962	21	40
1963	25	48
1964	17	34
1965	17	33
1966	18	35
1967	12	24
1968	15	28
1969	22	43
1970	20	38
1971	14	27
1972	18	36
1973	18	34
1974	10	19
1975	12	24
1976	14	26
1977	8	15
1978	14	27
1979	10	19
1980	19	37
1981	17	33
1982	14	27
1983	25	48
1984	22	42
1985	11	21
1986	16	30
1987	15	28

Source: Economic Survey of Pakistan 1987-88

foreign exchange reserves. Effects of any such measure is most likely to reduce the imports in the coming year. In order to see such an effect on imports we have used the level of past year's reserves as one of the explanatory variables for imports with expecting a positive sign .

2.1.3 Export and import prices and terms of trade

The effect of import price rising faster than exports prices, other things remaining the same, is to worsen the current account balance. This relationship of exports and imports prices is known as the terms of trade. More precisely the terms of trade are defined as the exchange ratio between foreign and domestic goods and services. There are several alternative measures of this concept, but the one which we are using here is the net barter terms of trade and is defined as the ratio of the prices of exports to the prices of imports. i.e P_x/P_m (7)

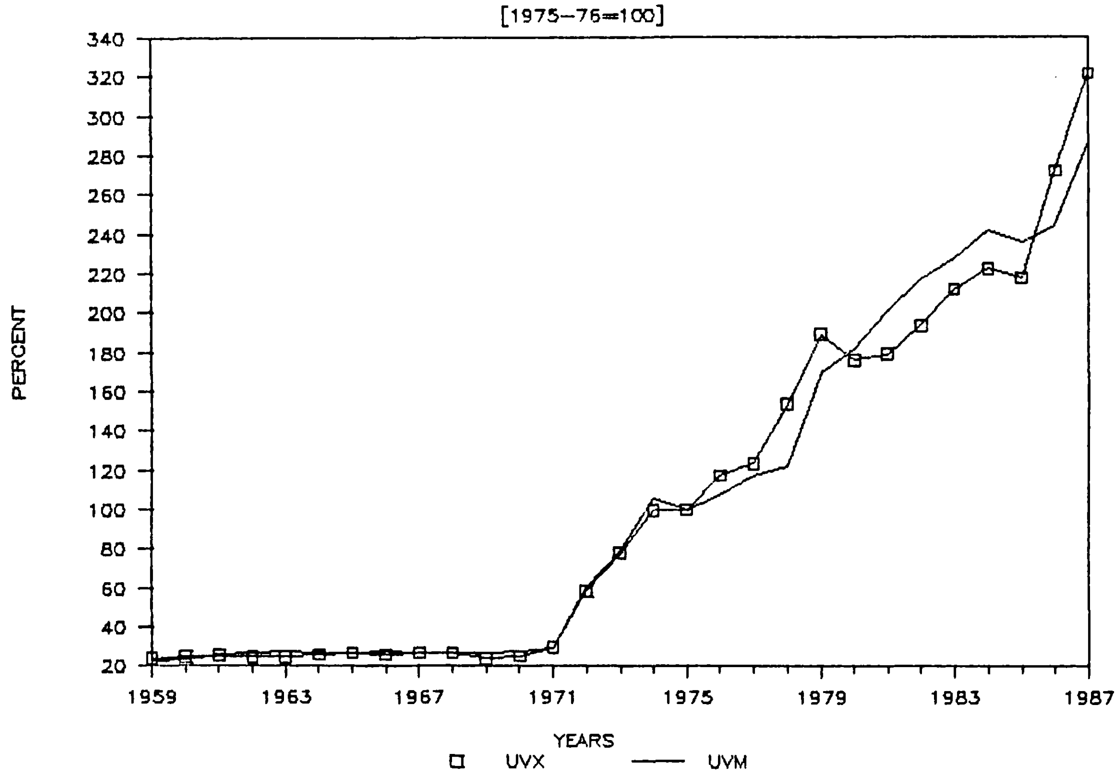
In order to see whether the terms of trade have moved systematically against or in favour of Pakistan we have to rely on aggregate weighted average indices of exports and imports prices reported in the Economic Surveys of Pakistan.

An index number is designed to reduce a large set of data into a single number. Certainly, if the goods included in index number are not homogeneous in quality over the years, for which the index number is being developed, than to that extent the index numbers will be less representative (8). Since countries import and export typically thousands of different types of goods it is necessary to develop some kind of index numbers which could be used to see the average terms of trade and also to see changes in exports and imports in real terms.

One of the concerns of many developing countries, particularly after the work of Prebisch (1950) and Emmanuel (1972) is the unfavourable impact of unrestricted trade on terms of trade and therefore on BOP of developing countries. However, in case of Pakistan there is no evidence of any systematic deterioration of terms of trade despite the fact that a major share of exports from Pakistan consists of primary or primary based commodities. Figures 2.5 and 2.6 show the historical values of price index of exports and imports and the average terms of trade. It is rather interesting that during the period 1959 to 1987 the trend growth rates of weighted average exports and imports price indices are the same (i.e 11 percent per annum). As a whole during past three decades, with the exception of some fluctuations on either side, we can safely conclude that Pakistan is neither a major beneficiary nor a looser in context of commodity terms of trade. However, because of a larger volume of imports as compared to the exports even an equal price rise in imports and exports would cause further increase in the current account BOP deficit in absolute terms. This inturn increases demand for foreign capital with associated consequences for foreign debt and debt service payments.

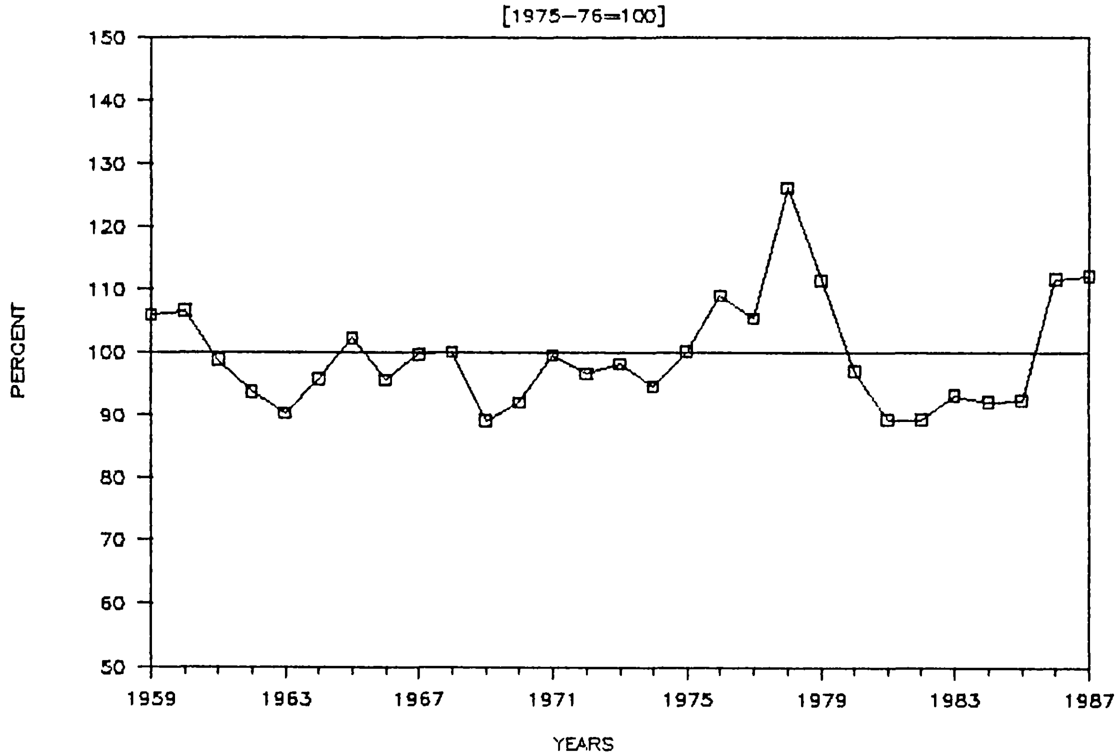
F-2.5 EXPORTS AND IMPORTS PRICE INDEXES

[1975-76=100]



F-2.6 TERMS OF TRADE

[1975-76=100]



2.2 The Balance of Payments as a Policy Problem

We have so far considered the BOP in an accounting framework. The importance of BOP is in fact far more than a simple double entry book keeping. An achievement of BOP equilibrium is often an important economic objective.

Since the independence, Pakistan's economy has been living with deficit at current account. On the whole BOP of Pakistan have remained structurally fragile. Pakistan's export growth has come primarily from primary or primary commodity based. For quite a long time there has been no significant change in the composition of exports which still heavily depends upon rice, cotton and cotton manufacture. The overall performance of exports remains hostage to variation in domestic output and international prices of only two commodities (rice and cotton) and in the case of cotton manufactures to rising protectionism in the importing countries. A large imbalance between exports and imports (see Trade Balance in Table 2.1), the latter being almost twice the former (with few exceptional years), also highlights Pakistan's BOP vulnerability. The pace of export growth which was quite impressive during 1960's was not maintained. The workers remittances which are helping to offset the negative trade balance and thereby improving the overall current account balance are also in decline.

Table 2.11 Trade and Current Account Balance

Year	As Percent Of GDP: Trade	As Percent Of GDP: Current Account
1959	-6-2	-6-3
1960	-8.7	-9.6
1961	-8.8	-10.0
1962	-8.8	-10.0
1963	-8.2	-9.0
1964	-9.7	-10.8
1965	-5.8	-7.9
1966	-7.1	-9.2
1967	-4.7	-6.4
1968	-3.5	-4.7
1969	-3.9	-5.1
1970	-3.5	-5.4
1971	-0.2	-1.4
1972	0.2	-0.1
1973	-4.1	-5.0
1974	-10.3	-10.6
1975	-7.7	-7.6
1976	-8.6	-6.9
1977	-9.3	-3.9
1978	-10.9	-5.1
1979	-11.2	-4.7
1980	-9.8	-2.9
1981	-11.5	-4.4
1982	-10.3	-0.6
1983	-10.5	-2.1
1984	-11.9	-5.3
1985	-8.5	-2.5
1986	-5.3	-0.4
1987	-5.3	-2.5

Source: Economic Survey of Pakistan 1987-88

Apparently there appears no signs of improvement in the international environment which could possibly help to overcome the BOP problem in an easy fashion. According to World Bank appraisal report (1988) *" Pakistan no longer can sustain current account deficit of over 3 percent of GDP"* (1988, p24). According to the same report the progressive reduction in the deficit to well below 3 percent of GDP is needed to maintain the credit worthiness of Pakistan. Table

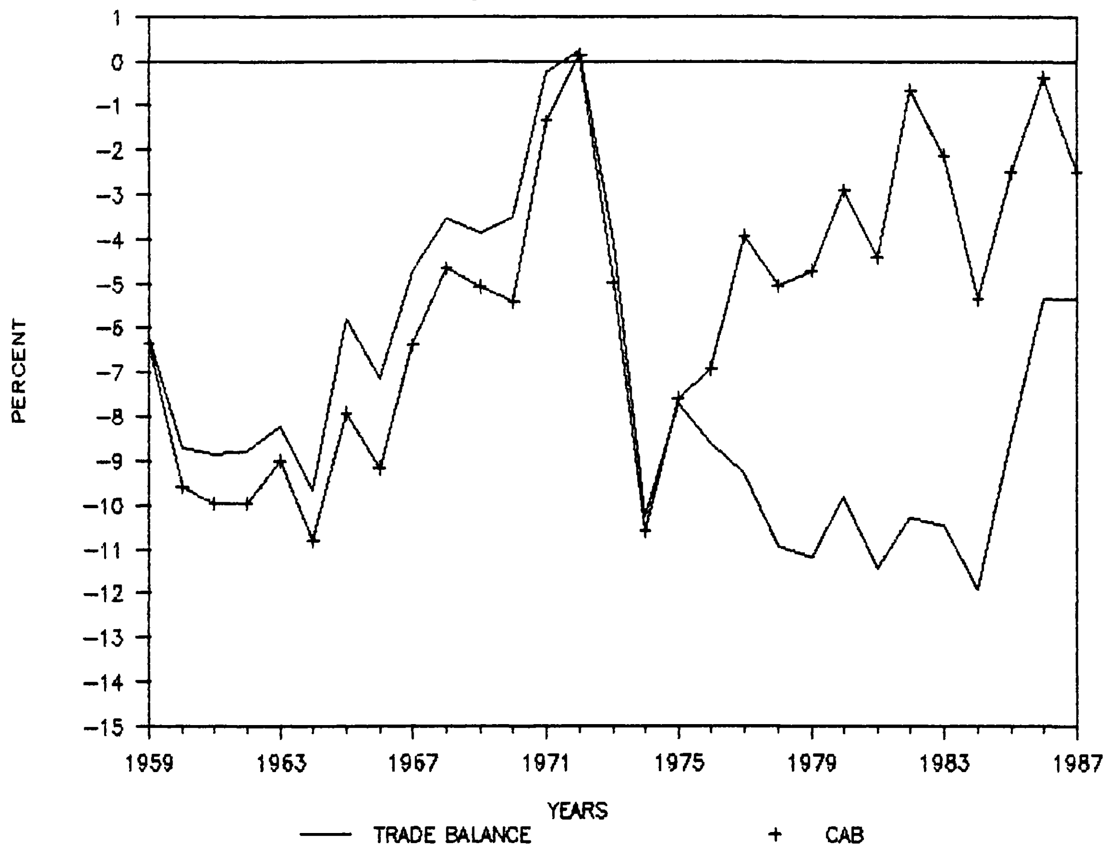
2.11 and Figure 2.7 show the ratio of current account balance (which includes private transfers from abroad) and trade balance (only difference of exports and imports) to GDP. The trade deficit as percent of GDP remained above 5 percent for most part of the period. The current account balance, as percent of GDP, because of large private transfers from abroad is, however, relatively low and according to World Bank criteria is in safe limits. The year 1986 is an exception when cotton and rice exports were highest because of record rise in output of these crops. The significant variation of these ratios in different years also highlights the vulnerability of trade and current account balance.

2.2.1 Temporary versus fundamental disequilibrium

It is very important to make a judgment to assess whether the BOP problem is of temporary nature or is it merely a reflection of fundamental disequilibrium in the economy. In principle, a temporary disequilibrium (TDE), deficit or surplus, should be for a very short period of time. For example a crop failure could cause a temporary current account deficit or because of seasonal or cyclical effects a deficit may emerge which would be automatically reversed subsequently. On the other hand fundamental disequilibrium (FDE) poses real problem which tends to persist. It is however sometimes difficult to understand that whether a

F-2.7 TRADE AND CURRENT ACCOUNT BALANCE

[PERCENT OF GDP]



deficit/surplus is of temporary nature or is likely to persist for a long period. The solution to TDE is simple. It requires a financing support when there is deficit and to accumulate reserves when it run surpluses - the arrangements which were agreed in 1944 under Bretton Wood System.

As we have seen in Chapter 1 that in the case of Pakistan, foreign capital has been used to bring fundamental changes in the economy rather than solving any short term current account deficit. Although Pakistan has availed the facility of BOP support at a number of times to finance its most immediate imports or to enhance the depleted foreign exchange reserves, the overall BOP situation clearly suggests that the problem is still of a fundamental nature and it demands appropriate policy measures.

2.3 The Balance of Payments Policies

Along with other economic issues, the BOP problem has caused a controversy among different school of thoughts. The BOP Policies can be classified as follows:-(9)

1. Traditional BOP policies.
2. Monetarist approach to BOP.
3. Structuralist approach to BOP

Out of these three kinds of policies, we have already discussed the structural approach under the "two gap hypothesis" (see chapter 1 of this thesis). Here we will, therefore, confine our discussion to the other two approaches.

2.3.1 Traditional balance of payments policies

Traditionally there are a number of policy options available to a government wishing to improve its BOP. These could be divided in to:

(i) expenditure changing;
(ii) expenditure switching and
(iii) direct controls.

We will first discuss the "expenditure changing" and expenditure switching" policies (besides direct control methods) and then show how they can be suitably deployed in pursuit of internal and external balance.

2.3.1.1 Expenditure changing policies (10)

"Expenditure changing" policies are designed to alter the level of spending. This approach is based upon a Keynesian income adjustment mechanism of an open economy first introduced by Machlup (1943). The extent of leakage effect depends upon the marginal propensity to import which measures the change in imports resulting from a given change in income. It is, therefore, realistic to expect a direct relationship between imports and income or expenditure. In other words any contraction in domestic economic activity would reduce the current account deficit. This could be done by lowering the government spending, raising taxes, curtailing investment or any combination of these. AS a result of these national income will fall through Keynesian multiplier process and the trade balance should improve, depending upon strength of the marginal propensity to import. It is quite obvious that the higher the marginal propensity to import the more effective the "expenditure changing" policy will be.

Another concept close to conventional "expenditure changing" policies is the "absorption approach", which also emphasizes the importance of reducing domestic expenditure. This was invented by Alexander (1952)(11) who based his approach on the national income identity i.e., output (Y) is equal to private consumption (C) plus domestic investment (I) plus government consumption (G) and plus the difference between exports(X) and imports (M):

$$Y = C + I + G + (X - M) \qquad [2.3]$$

If we write balance of trade (B) as

$$B = X - M \qquad [2.4]$$

and define domestic absorption A

$$A = C + I + G \qquad [2.5]$$

then

$$B = Y - A \qquad [2.6]$$

That is to say, the trade balance is a difference between domestic income or production and the domestic spending or absorption. So, if total domestic absorption exceeds total domestic output, by definition, the country must be running a current account deficit. Hence, to cure deficit requires either an increase in output or a reduction in absorption. An important feature of the absorption approach is its ability to relate the balance of payments to the overall operation of the economy.

2.3.1.2 Expenditure switching policies

"Expenditure switching" policies are intended to switch the spending away from imports to import substitutes produced locally and to switch spending by foreigners towards the deficit country's exports. This can be achieved by different means such as tariffs, fixing imports quotas or subsidizing exports to improve their competitiveness in the international markets (12) in addition to an appropriate exchange rate policy (which we will here confine to devaluation only) (13).

The analytical tool which explains the questions that whether or not the devaluation will bring the desired results is known as the "elasticities approach". An extreme simplified version of "expenditure switching " or Marshall-Lerner condition is based on following restricted assumptions:-

(i) Domestic prices (P) are unaffected by the exchange rate.

(ii) Domestic output (Y) is held constant.

(iii) Exports (X) and imports (M) volumes are determined by real competitiveness (with imports also affected by domestic output which is assumed to be constant).

(iv) Domestic economy is small and hence it could not influence world income and prices.

(v) There is no independent supply function and supply reacts passively to demand at a fixed price level.

The balance of trade (B) in domestic currency may be written as

$$B = P_d X - P_f ME \qquad [2.7]$$

where X and M are defined as:

$$X = \left[P_d/P_f E \right]^{\eta_1} \qquad [2.8]$$

$$M = \left[P_f E/P_d \right]^{\eta_2} \quad Y^{\pi} \qquad [2.9]$$

X measures the quantity of exports and P_d is the average price of exports, so that $P_d X$ is the value of exports in domestic currency and η_1 is the price elasticity of demand for exports (<0). M is the quantity of imports; P_f is the average foreign price of imports; E is the nominal exchange rate; η_2 is the price elasticity of demand for imports (<0) and π is income elasticity for imports (>0). Taking log of [2] and [3]

$$x = \eta_1 \ (p_d - p_f - e) \text{ and} \qquad [2.10]$$

$$m = \eta_2 \ (p_f + e - p_d) + \pi \ (y) \qquad [2.11]$$

(letters in small cases are the logs of variables of equations [2] and [3]).

Equation [2.10] suggests that exports depend on how fast domestic prices are changing relative to foreign prices, taking into account the exchange rate e, multiplied by the price elasticity of demand for exports. Import growth likewise depends firstly, on how fast import prices are changing relative to domestic substitutes (taking into account the exchange rate e) multiplied by the price elasticity of demand for imports; and secondly, how fast domestic income (or absorption) is changing together with the income elasticity of imports. Under the restrictive assumption of Marshall-Lerner condition, however, it is only the exchange rate which is allowed to change and influence the volume of exports and imports.The ultimate effect of devaluation, in this case, will depend upon the absolute sum of the elasticities of demand for exports (η_1) plus the elasticity of demand for imports (η_2). If "$[\eta_1 + \eta_2]>1$" the effect on balance of trade (in foreign currency) will be positive and vice versa (14). If the terms of trade effects of devaluation are ignored then in domestic currency the effect on balance of trade will always be positive as long η_1 and η_2 have the correct signs.

Marshall-Lerner elasticity approach is only a rough guide to the likely effects of a devaluation because of its very restrictive assumptions.

Combining elasticity approach with the absorption approach (discussed with "expenditure changing approach"), one can easily deduce that devaluation could only improve the trade balance where real output increases or the real expenditure (absorption) is brought down. The conventional view of elasticity approach that devaluation will always bring an improvement in the balance of trade is not true if the economy is operating at a full employment. In other words devaluation must be accompanied by other policies to reduce absorption in order to leave room for the necessary re-allocation of resources to increase exports and to substitute imports.(15)

2.3.1.3 Direct control

Many governments, particularly in developing countries, find it difficult to go for a price or income adjustment because of their political repercussions and ,hence, prefer of use direct control methods to solve the BOP problems. These methods include tariffs, export subsidies, quotas, and foreign exchange control.

Tariff is most popular instrument which provides an advantage to domestic producers in competition with imports in a home market. A tariff is essentially a tax on commodity imports designed principally to change the relative prices of commodities and thereby alter the pattern of international trade (though it could also be levied on revenue raising excuses)(16). As far the effects of a tariff are concerned, it is, in general, designed to shift the demand away from foreign goods, thereby lowering the imports, and attracting resources to the protected sector.

Export subsidy is frequently used for promoting exports of a particular commodity. An export subsidy represents a reward to exports implicitly or explicitly by the government. The production and consumption effects are similar to those of an import tariff in that it changes the output and price of the subsidized good. An important difference is that where a tariff increases government revenue a subsidy increases government spending which have different effects on domestic effective demand. An export tax is sometimes also imposed to discourage export of certain commodities and divert them to the local market. It happens particularly in case of those primary and unprocessed goods which are used as inputs in import substitutes or goods meant for export.

Imposing quota is another way to limit the import of a certain commodity whilst providing protection and encouragement in its production locally. The appeal of the quota lies in its flexibility and its ability to substitute for a tariff. It is especially popular in developing countries where it provides the quick and selective way of curbing unwanted imports.

Exchange control is a direct and legal restrictions imposed by the government to exchange one currency into another currency regardless of the motive. Most developing countries have some form of exchange control systems. Such a control enables a government to exercise maximum control over international trade particularly the import trade.

2.3.1.4 Internal and external balance

The BOP policies so far discussed, despite their popularity, are a kind of "laundry list" from where a government can "pick and choose" to solve the problem. Mead (1951) was amongst the first to consider the problem of attaining simultaneous internal and external balance (in terms of unemployment and BOP respectively) which in the absence of international capital mobility comes down to a current account balance. As in many areas of economics, simultaneous achievement of internal and external balance is likely to involve a trade off between the two. Salter (1959) and Swan (1963) essentially described Mead's ideas now most often referred to as the famous Swan's diagram.(produced as Figure 2.8). On vertical axis of the diagram *F* represents an index of international competitiveness (such as rise in *F* equates to devaluation and a fall in *F* to revaluation of a currency). On x-axis *A* represents the level of absorption or domestic demand. *IB* represents combinations of *F* and *A* that will yield internal balance. Above the line *IB* there is a problem of general price rise (inflation) and below the line economy is in recession. Similarly *EB* line represents the combinations of *F* and *A* which ensures external balance. Above the line there is a BOP surplus and below it is deficit. The policy combination which could be used to move the economy towards *E* in Figure 2.8 are summarized in Table 2.12.

F-2.8 INTERNAL AND EXTERNAL BALANCE

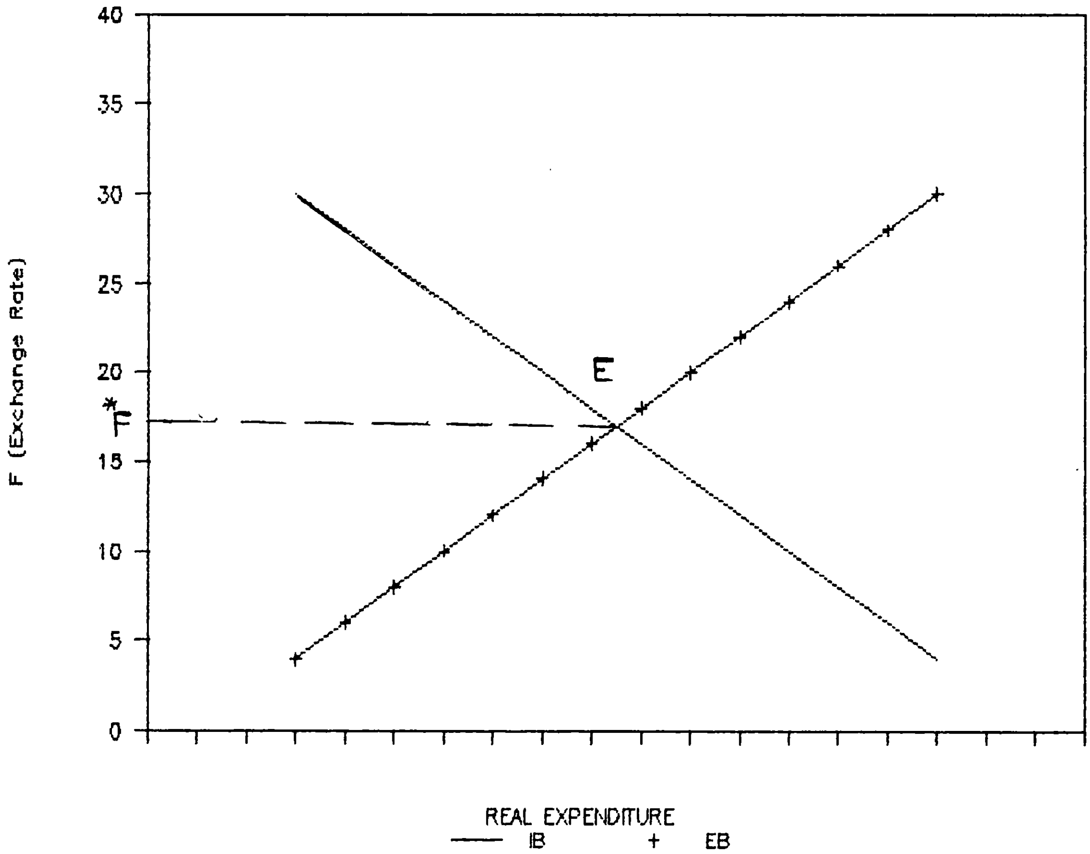


Table 2.12 Expenditure changing and switching policies

Case	Internal Balance	External Balance
A. Recession/Deficit	Increase *A*	Devalue *F*
B. Recession/Surplus	Increase A	Revalue *F*
C. Inflation/Surplus	Reduce A	Revalue *F*
D Inflation/Deficit	Reduce A	Devalue F

The Swan diagram shows how a mixture of "expenditure changing" and "expenditure switching" policies could, in theory, move an economy towards its internal and external goals. But if devaluation is ruled out then Mundell (1962, 1968) provided a novel idea of achieving an external balance and for the first time introduced an international capital mobility into the model and demonstrated that an equilibrium (such as point *E* in Figure 2.8) could be achieved by combination of monetary (to achieve external balance)and fiscal policy (to achieve internal balance).

In a typical Mundellian model BOP deficit could be taken care of by raising domestic interest rates in order to attract foreign capital and balancing current account deficit. The likely policy options to achieve internal and external balance are summarized in Table 2.13. A major drawback of Mundell model is its assumption of fixed prices.

Table 2.13 Fiscal and monetary policies for Internal and external balance

Case	Fiscal Policy for Internal Balance	Monetry Policy for External Balance
A. Recession/Deficit	expand	tight
B. Recession/Surplus	expand	easy
C. Inflation/Surplus	contract	easy
D. Inflation/Deficit	contract	tight

2.3.1.5 Limitations of traditional approach

The traditional approach to BOP as a whole is a kind of synthesis between a number of alternative policy options for achieving internal and external balance with in a macroeconomic framework of the economy. The full model of traditional approach is the familiar ISLM model of macro economics. The open economy ISLM model includes all the essentials of Keynesian income adjustment approach, the absorption approach and elasticities approach. The ISLM model is probably the most widely used in discussing policy options and developing empirically relevant hypothesis. In spite of this widespread application it has several limitations which helped the revival of monetarist approach to the BOP. The principle limitations of these policies are as following:-

(i) This whole approach is essentially a short run and based upon with given money stock, financial assets and physical capital.

(ii) It assumes the aggregate price level as given and makes no attempt to provide adequate explanation of inflation.

(iii) It is basically Keynesian biased and, therefore, tends to give more attention to the demand side and neglect the supply side of economy.

(iv) Despite Mundell's contribution, its treatment of international capital movement is very limited which is not very realistic in the present days circumstances particularly in case of developed economies.

(v) The traditional approach is quite relevant only under fixed exchange rates where monetary authorities protect domestic money supply from the effects of deficits and surpluses of BOP which is no more a realistic assumption in the post 1970 era.

All of these issues are of fundamental importance and we will address them appropriately in our empirical model. A change in financial assets, which is ignored in the traditional approach, brings a change in the private consumption and, therefore, in aggregate demand. The change in aggregate demand affects the demand for imports directly as well as by its effect on domestic price level which changes the relative competitiveness of exports and imports. Similarly, besides demand side, supply side of an economy has equal important role. Capital stock which is assumed as given in the traditional approach, has a very significant part to play in our model by changing capacity of the economy to produce more.

2.3.2 The monetary approach to balance of payments

The limitations of traditional approach helped the revival of monetarists. The monetary approach to the BOP began to take shape in 1970's although it has its origin in Hume (1752).(17)

Contrary to the traditional approach monetarists have been paying more attention to the long run problems with particular emphasis on:

(i) the built in tendency of an economy to move towards full employment;

(ii) price flexibility (including in some cases flexible exchange rate) and

(iii) importance of short term international capital movements.

Although the traditional approach did not ignore the role of money (since it is represented by LM side of ISLM model) monetarists associate with money to play a central role in the theory of BOP. Instead of looking narrowly at the current account the monetarists see the BOP in terms of inflow and outflow of money as a whole. The demand and supply of money is, therefore, in the heart of their analysis of BOP.

The way Hume presented specie-flow mechanism which corrects the balance of trade surplus or deficit, has more or less re-appeared in the monetarists explanation. According to most simple form the total money supply (M) consists of foreign exchange reserves (R) and domestic bank deposits (D) so that

$$M = R + D \qquad [2.12]$$

The implications of such an equation are obvious. A persistent current account deficit is monetary phenomenon which can only occur if a deficit in the trade balance (which will reduce R) is not allowed to feed through to a contraction of M, either because government would not allow to contract output and sterilize it by raising D to compensate or the banking system is unable to control its lending. Although this is highly simplified model but it does point towards an important fact that trade balance may spill over into the domestic money supply which was something completely ignored in the traditional approach by assuming perfect sterilization. In other words a deficit in BOP can only persist if it is accompanied by domestic increase in money supply. The fact that governments cannot continue indefinitely by running down their foreign exchange reserves and have to ultimately restrict the domestic money supply has been central in the philosophy of IMF in dealing with BOP problem.

In order to complete the model monetarists have provided an alternative explanation for the relationship between money, income, prices and the trade balance in an economy. According to the traditional ISLM model an increase in money supply brings down the interest rate which encourages investment and ultimately through a Keynesian multiplier process increases imports and thus indirectly creating current account deficit. The monetarists mechanism, on the other hand, operates, through cash balance effect on consumption. When money supply is increased, people temporarily increase their spending rather than holding extra cash balances. On the aggregate money supply is translated into an increased demand and prices are pushed up. As a result of this increase in prices, in an open economy, the exports are diverted to the domestic market and more demand is created for imports leading to trade deficit. This whole phenomenon is only transitory and once a trade deficit reduces the money supply, domestic and international prices converge back into the equation. One can see the likely implication of a devaluation from this analysis. Any improvement in the balance of payment will be temporary and transitory until a rise in import prices brought by devaluation feed into the domestic price level. In other words, for a small country devaluation will only raise the domestic price level equal to the devaluation. Thus the real solution will lie in the control of money supply. One can see the similarity in the final outcome of traditional approach and monetarists approach where there is no international capital mobility and exchange rate/ prices are constant. The explanation, however, differs in two approaches.

2.2.3 Concluding remarks on balance of payments policies

In terms of BOP, the traditional approach is based upon a macroeconomic framework which focuses primarily on the short run, with no need for automatically moving back towards full employment, fixed exchange rates and prices, with little international capital movement (except in the Mundell case). BOP is brought back to equilibrium through a combination of adjustment policies based upon a synthesis of elasticities approach and absorption approach by selecting appropriate demand management policies. The monetarists revival has undoubtedly enriched our understanding of the BOP problem and has highlighted some of the weaknesses of the traditional approach. Its focus on cash balance and imbalances in the money market adds an extra dimension to the BOP and reemphasises the monetary implications of BOP adjustment and its repercussions in the money market. In terms of ultimate result, however, both approaches would come closer to one another if under monetarists approach exchange rates are assumed fixed with no international capital mobility which is most often the case of developing countries. The real difference then revolves around differences in emphasis over the relative contribution of price adjustment, income adjustment etc. {For a full synthesis of these approaches see Cuthbertson (1979, Ch. 5) and Stein (1982, Ch. 6)}

In summary, we conclude that while the structural approach under the "two gap" hypothesis has failed both at theoretical and practical grounds, the traditional approach of only demand side management of the economy is equally not so satisfactory. Similarly, inspite of the new insight which monetary approach has given in understanding of BOP, yet its very strong reliance on financial sector of an economy in restoring the external equilibrium makes its application particularly difficult for developing countries where an LM curve for their economies is most often missing. It is these sorts of difficulties that make the macroeconomic behaviour some what different for developing countries than those from the developed countries. Taking full advantage of all these theories, but keeping in view the peculiar conditions of a developing country (like Pakistan), we have developed a macroeconomic model for Pakistan.

2.4 Balance of payments policies of Pakistan

As discussed in detail in Chapter 1, BOP in Pakistan has been basically considered to be a structural problem with a long run strategy to achieve external balance. For a short term control of the BOP, Government of Pakistan has traditionally relied on administrative measures. In the following section we will briefly describe the commercial and trade policies, exchange rate policy adopted by Pakistan and a broad view of the fiscal and monetary position.

2.4.1 Commercial policies and management of foreign trade

Pakistan's commercial policy is a combination of sub policies administered by different government agencies. These include: (a) the Exchange Control Policy administered by the Foreign Committee of Ministry of Finance which regulates the inflow and outflow of foreign exchange and allocates foreign exchange between the public and private sector; (b) the import licensing policy dealing with the disbursement of foreign exchange allocated to private sector between various uses and users and which is supervised by the Chief Controller of Imports and Exports; (c) the export promotion policy devised by the Ministry of Commerce most often concentrated on providing the incentives needed to maximize exports and (d) the tariff policy enforced by the Ministry of Finance mainly as a revenue raising device. These policies have altogether assumed the shape of non-tariff barriers (NTBs), tariff barriers and export incentive schemes (18)

2.4.1.1 Non tariff and tariff barriers

The NTBs in Pakistan are in terms of explicit import quotas and list of commodities which could be imported. Till 1983 there was a positive list of imports which were allowed to be freely imported. All other items needed explicit approval from the government in terms of an import license for the import of a commodity. In July 1983, the government switched from positive to a negative list system which explicitly listed banned and restricted imports. This list has been revised many times downwards in order to liberalize imports. However, Pakistan continues to depend on import bans and restrictions for protection of import substitute industry. According to World Bank estimates (1988, p64) when Pakistan's import regime reached its most restrictive stage in 1980 , about 41 percent of the domestic industrial value added was protected by import bans and another 22 percent by various form of import restrictions. With the introduction of a negative list system and some other import liberalizing measures, the equivalent percentages were 29 percent and 3.7 percent in 1986. The official position on import bans and restrictions, as expressed in Import Policy Orders, states that Pakistan's non-tariff barriers serves two purposes: to provide assured protection to import competing industries, and to restrict imports of luxury consumer goods.(19).

Pakistan's tariff structure is quite complicated and is a kind of mixture of number of tariff/taxes. The average tariff rate is now about 30 percent. The highest average import taxes were levied after the 1965 war with India when these taxes on average were above 50 percent for three consecutive years. Even today Pakistan's average (nominal) tariff rank at the top, along with India's amongst developing countries (World Bank 1988, p68). Individually for different kinds of items these rates vary from zero percent to above 200 percent.

2.4.1.2 Export incentives

In 1954 for the first time an Export Incentive Scheme was introduced but it was not very successful in promoting exports. Export Bonus Scheme introduced in 1959, which provided price incentives for exports of selected goods, is considered to be one of the most successful export promotion schemes in Pakistan. Under this scheme exporters of selected commodities were given import license equivalent to 20 to 40 percent of the value of their exports. Since the licenses commanded a high premium in the open market, this served as a strong incentive to export activity. In effect the scheme mounted to a selective devaluation of rupee or (alternatively) to a system of selective export subsidies and therefore, had the implicit effects of a multiple exchange rate (20). In 1972 after the devaluation of rupee the scheme was abolished.

Currently exports from Pakistan are subject to a number of incentives particularly rebates of sales,excise tax, custom duties and corporate income tax (21).

2.4.1.3 Exchange rate policy

At the time of independence Pakistani rupee was linked with pound sterling. The first major crises in the foreign exchange policy came in 1949 when pound sterling was devalued by 31 percent. While other members of the sterling areas followed the suit, Pakistan decided not to devalue its currency. This decision particularly disrupted the trade with India who refused to recognize the exchange rate of its currency in terms of Pakistani rupee. As a result Pakistan's exports substantially declined because India was a major trade partner of Pakistan. In 1955, as a late response to pound's devaluation, Pakistani rupee was also devalued. The new exchange rate in terms per US dollar was rupees 4.76.

The exchange rate of rupees 4.76 per US dollar was maintained for a quite a long time. The rupee was devalued second time in 1972 by about 56 percent. The new exchange rate in the beginning was rupees 10.47 per US dollar which was subsequently brought down to to rupees 9.90. This new exchange rate was kept fixed for another eight years. In the 1980's, the adoption of a flexible exchange rate system was by far the most important decision in the history of exchange rate of Pakistan. Since then rupee has substantially depreciated in real terms. (For definition of real versus nominal depreciation see Chapter 4 sections 4.5.1.2 and 4.5.1.3)

The exchange rate devaluation/depreciation, however, has not proved to be a successful tool for achieving an external balance. After the 1972 devaluation, particularly, the economy witnessed a rapid increase in general price level which clearly suggests that exchange rate policy is not going to solve the BOP problem unless it is accompanied by some other suitable policy measures to arrest the rising prices.

2.4.1.4 Fiscal and monetary policy

It is very difficult to identify any visible relationship between fiscal/monetary policy and the BOP problem of Pakistan. One reason, probably, is that Pakistan has always viewed BOP as an structural problem rather than a macroeconomic imbalance where, as we have already concluded, there is little room for fiscal and monetary policy. However, as we have noted in Chapter 1 that because of changing international environment with regard to availability of concessional and grant like capital from abroad the government is forced to change its attitude.

It is quite interesting to note that Pakistan has never achieved a budget surplus. The government expenditures have been growing, in real terms, at a compound rate of 7 percent per annum between 1959-60 and 1987-88. This rate is significantly higher than the rate of growth of GDP and as a result the government expenditures are now above 25 percent of GDP which were about 20 percent in the year 1959-60. Regarding revenue, government still heavily relies on indirect taxes (to the extent of 85 percent) and there is hardly any change in the overall structure of taxes over past three decades. The rate of growth of revenue is slightly higher than expenditure (8 percent per annum) which has gradually reduced the over all government budget deficit. However, the government budget deficit is still around 6 percent of GDP and is the major source of creation of financial assets. Table 2.14 and Figure 2.9 provide the yearly details of government revenue, government expenditure and government budget deficit as percent of GDP.

In context of the monetary policy during 1955, for the first time, guidelines were prepared in order to determine a kind of safe limits for monetary expansion. A formula governing the safe limit of monetary expansion, during 1955-65 laid down a monetary expansion equivalent to the target of real growth in GNP plus 2 percentage points to allow for the economy's progressive monetization at the appropriate level. Subsequently, in 1968 an annual increase of 2.5 percent above GNP growth was considered as the safe limit.(22).

In principle State Bank of Pakistan has all the instruments of monetary controls, but the monetary policy has most often played a passive role to accommodate government budget deficit. The seventies fully exposed the limitations of monetary policy when the government was rigorously following its social programmes and the State Bank of Pakistan found it difficult to control increasing government borrowing.

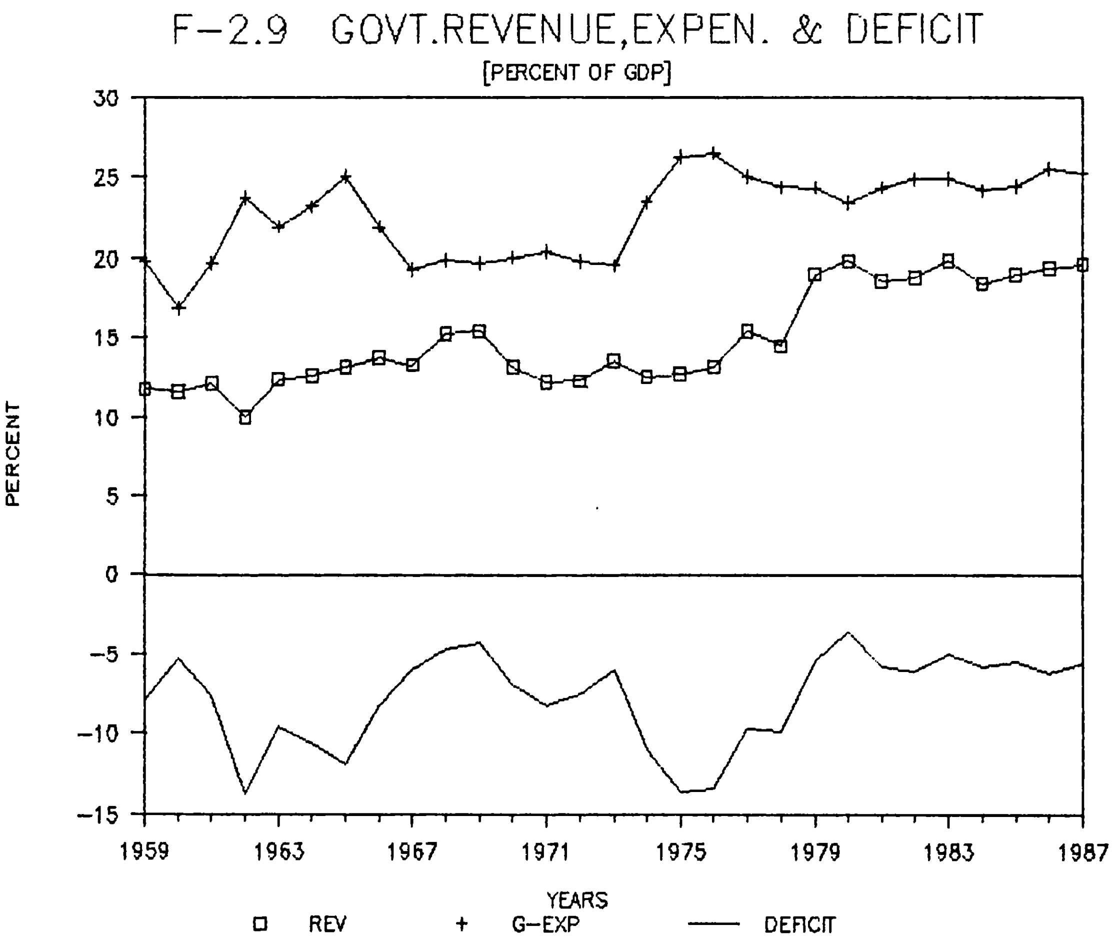

F-2.9 GOVT.REVENUE,EXPEN. & DEFICIT
[PERCENT OF GDP]
30
25
20
15
10
5
0
-5
-10
-15
PERCENT
1959
1963
1967
1971
1975
1979
1983
1987
YEARS
REV
G-EXP
DEFICIT

Table 2.14 Government Revenue, government expenditure and budget deficit as percent of GDP

Year	Revenue	Expen.	Deficit
1959	11.76	19.74	-7.98
1960	11.56	16.83	-5.26
1961	12.11	19.70	-7.59
1962	9.99	23.73	-13.74
1963	12.33	21.93	-9.60
1964	12.60	23.19	-10.59
1965	13.11	25.01	-11.90
1966	13.72	21.93	-8.21
1967	13.24	19.25	-6.01
1968	15.20	19.87	-4.67
1969	15.38	19.69	-4.31
1970	13.09	20.01	-6.93
1971	12.18	20.39	-8.21
1972	12.26	19.79	-7.53
1973	13.52	19.53	-6.01
1974	12.53	23.48	-10.95
1975	12.70	26.27	-13.57
1976	13.15	26.49	-13.34
1977	15.42	25.04	-9.63
1978	14.47	24.38	-9.91
1979	19.01	24.37	-5.36
1980	19.84	23.41	-3.57
1981	18.58	24.36	-5.78
1982	18.75	24.90	-6.15
1983	19.89	24.93	-5.03
1984	18.40	24.18	-5.78
1985	18.97	24.45	-5.48
1986	19.36	25.55	-6.19
1987	19.62	25.20	-5.58

Source: Econmic Survey of Pakistan 1987-88

2.5 Summary and Conclusions

We have discussed in great detail the BOP accounts of Pakistan and have observed that the nature of the problem is not temporary. When we combine it with our discussions of Chapter 1 we conclude that it is no more feasible to see the BOP only as a structural problem in the framework of " two gap" hypothesis. There is, however, very little evidence that

Pakistan has tried the traditional or monetary tools in order to achieve external and internal balance in a coherent way. We therefore argue that once it is established that the BOP problem of Pakistan is of fundamental nature then it should be properly addressed.

According to Khan et al. (1986, p8) *"When balance of payments deficits are not inherently temporary they must be rendered so by corrective policy measures. The formulation of such measures requires the possessions of an implicit model that links policy instruments controlled by the authorities to the balance of payments"*.This what in fact we precisely intend to do with the help of a macroeconomic model which we have developed for Pakistan.In our model, with in the limits posed by the peculiar conditions of Pakistan, we have made an effort to combine both demand and supply sides of the economy. In particular we have clearly defined role for financial and capital assets which are missing in the traditional Keynesian type approach.

Appendix

Table 2.1BALANCE OF PAYMENTS OF PAKISTAN
(MILLION RS)

ITEM/YE AR	1959 1960	1960 1961	1961 1962	1962 1963	1963 1964
(A)TRADE BALANCE	-1043	-1597	-1693	-1802	-1887
(1) Exports	763	540	543	998	1075
(2) Imports	-1806	-2137	-2236	-2800	-2962
(B)INVISIBLE(NET)*	-24	-162	-214	-238	-176
(1)Non Factor Servi	0	0	0	0	0
(2)Investment Incom	0	0	0	0	0
2.1-Income	0	0	0	0	0
2.2-Payments	0	0	0	0	0
(of which intrest	24	29	52	62	86
(3)Private Transfer	0	0	0	0	0
(of which remitten	0	0	0	0	0
(C)BALANCE ON CURRE	-1067	-1759	-1907	-2040	-2063
(D)PRIVATE CAPITAL(N)	19	90	90	81	90
(1)Direct Investmen	0	0	0	0	0
(2)Other long term	0	0	0	0	0
(3)Short Term	0	0	0	0	0
(E)PUBLIC CAPITAL(N)	643	1576	1352	2223	2390
(1)Gross Disbursem	671	1628	1447	2385	2599
1.1-Project Aid	267	762	962	1161	1271
1.2-Non Food Aid	290	52	38	466	619
1.3-Food Aid	114	814	447	757	709
1.4-BOP Support	0	0	0	0	0
1.5-Relief Ass.	0	0	0	0	0
(2)Amortization	-29	-52	-95	-162	-209
(F)ALLOCATION OF SDR	0	0	0	0	0
(G)CHANGES IN RESERV	162	127	55	-97	308
(H)ERRORS/OMMISSIONS	-567	-220	-520	361	109

Table 2.1 cont....

BALANCE OF PAYMENTS OF PAKISTAN

ITEM/YEAR	1964 1965	1965 1966	1966 1967	1967 1968	1968 1969
(A)TRADE BALANCE	-2532	-1676	-2329	-1682	-1347
(1) Exports	1140	1204	1297	1645	1700
(2) Imports	-3672	-2880	-3626	-3327	-3047
(B)INVISIBLE(NET)*	-300	-619	-666	-590	-424
(1)Non Factor Servi	0	0	0	0	0
(2)Investment Incom	0	0	0	0	0
2.1-Income	0	0	0	0	0
2.2-Payments	0	0	0	0	0
(of which intrest	119	157	209	219	309
(3)Private Transfer	0	0	0	0	0
(of which remitten	0	0	0	0	0
(C)BALANCE ON CURRE	-2832	-2295	-2995	-2272	-1771
(D)PRIVATE CAPITAL(N)	100	195	109	114	109
(1)Direct Investmen	0	176	0	0	0
(2)Other long term	0	19	0	0	0
(3)Short Term	0	19	0	0	0
(E)PUBLIC CAPITAL(N)	3184	2342	2242	3175	2266
(1)Gross Disbursem	3361	2537	2965	3470	2708
1.1-Project Aid	1599	1747	1576	1909	1852
1.2-Non Food Aid	823	519	852	695	814
1.3-Food Aid	938	271	538	866	43
1.4-BOP Support	0	0	0	0	0
1.5-Relief Ass.	0	0	0	0	0
(2)Amortization	-176	-195	-724	-295	-443
(F)ALLOCATION OF SDR	0	0	0	0	0
(G)CHANGES IN RESERV	-201	-283	311	-470	71
(H)ERRORS/OMMISSIONS	654	525	-955	1487	534

Table 2.1 cont....

BALANCE OF PAYMENTS OF PAKISTAN

ITEM/YEAR	1969 1970	1970 1971	1971 1972	1972 1973	1973 1974
(A)TRADE BALANCE	-1676	-1604	-124	153	-3318
(1) Exports	1609	1998	3371	8551	10161
(2) Imports	-3285	-3602	-3495	-8398	-13479
(B)INVISIBLE(NET)*	-524	-885	-552	-73	-752
(1)Non Factor Servi	-662	-752	-700	-701	-1525
(2)Investment Incom	-343	-438	-295	-890	-713
2.1-Income	176	86	52	178	950
2.2-Payments	-519	-524	-347	-1068	-1663
(of which intrest	338	386	243	900	782
(3)Private Transfer	481	305	443	1518	1485
(of which remitten	0	0	0	0	0
(C)BALANCE ON CURRE	-2200	-2489	-676	80	-4070
(D)PRIVATE CAPITAL(N)	362	438	328	147	574
(1)Direct Investmen	371	443	333	0	-59
(2)Other long term	0	0	0	136	634
(3)Short Term	-10	-5	-5	10	0
(E)PUBLIC CAPITAL(N)	2185	2432	1609	2597	3762
(1)Gross Disbursem	2685	2913	1947	3717	4930
1.1-Project Aid	1537	1737	1338	1047	1683
1.2-Non Food Aid	752	885	376	1686	1792
1.3-Food Aid	395	290	233	984	1158
1.4-BOP Support	0	0	0	0	297
1.5-Relief Ass.	0	0	0	0	0
(2)Amortization	-500	-481	-338	-1120	-1168
(F)ALLOCATION OF SDR	0	0	129	0	0
(G)CHANGES IN RESERV	559	-55	-419	2189	1446
(H)ERRORS/OMMISSIONS	-212	436	1809	634	-1180

Table 2.1 cont....

BALANCE OF PAYMENTS OF PAKISTAN

ITEM/YEAR	1974 1975	1975 1976	1976 1977	1977 1978	1978 1979
(A)TRADE BALANCE	-10639	-9212	-11718	-14835	-19463
(1) Exports	10286	11253	11294	12980	16925
(2) Imports	-20925	-20465	-23012	-27815	-36388
(B)INVISIBLE(NET)*	-317	109	2317	8554	10474
(1)Non Factor Servi	-1614	-1772	-1851	-1792	-2030
(2)Investment Incom	-970	-1436	-1673	-1792	-2307
2.1-Income	366	277	327	337	455
2.2-Payments	-1337	-1713	-2000	-2129	-2762
(of which intrest	1030	1069	1346	1604	2010
(3)Private Transfer	2267	3317	5841	12137	14810
(of which remitten	0	0	3307	5722	11444
(C)BALANCE ON CURRE	-10956	-9103	-9401	-6281	-8989
(D)PRIVATE CAPITAL(N)	950	1921	1594	1267	1614
(1)Direct Investment	149	228	40	337	327
(2)Other long term	802	1158	1030	733	891
(3)Short Term	0	535	525	198	396
(E)PUBLIC CAPITAL(N)	8237	9138	7772	6841	7069
(1)Gross Disbursem	9662	10534	9504	8474	9385
1.1-Project Aid	2831	3851	4445	5108	5930
1.2-Non Food Aid	1812	1535	2089	1416	2109
1.3-Food Aid	960	1584	1109	941	495
1.4-BOP Support	4059	3564	1861	1010	851
1.5-Relief Ass.	0	0	0	0	0
(2)Amortization	-1426	-1396	-1733	-1634	-2317
(F)ALLOCATION OF SDR	0	0	0	376	386
(G)CHANGES IN RESERVS	-599	828	1272	-1819	5737
(H)ERRORS/OMMISSIONS	-1170	1127	-1308	4022	-5657

Table 2.1 cont....

BALANCE OF PAYMENTS OF PAKISTAN

ITEM/YEAR	1979 1980	1980 1981	1981 1982	1982 1983	1983 1984
(A)TRADE BALANCE	-23519	-24264	-33211	-33709	-39368
(1) Exports	23410	29280	26270	34442	37339
(2) Imports	-46929	-53544	-59481	-68151	-76707
(B)INVISIBLE(NET)	13622	17097	20425	31592	31391
(1)Non Factor Servi	-2356	-2515	-1876	-2415	-3710
(2)Investment Incom	-2782	-2584	-3411	-5368	-5963
2.1-Income	515	941	1386	1546	2644
2.2-Payments	-3297	-3524	-4797	-6914	-8607
(of which intrest	2891	2455	2164	3144	3723
(3)Private Transfer	18761	22196	25712	39375	41064
(of which remitten	13830	17305	22333	28436	38932
(C)BALANCE ON CURRE	-9897	-7167	-12786	-2117	-7977
(D)PRIVATE CAPITAL(N)	1723	2584	7430	8601	3575
(1)Direct Investmen	673	703	1301	332	580
(2)Other long term	703	1356	2185	4741	1605
(3)Short Term	347	525	3944	3527	1389
(E)PUBLIC CAPITAL(N)	11088	6009	8677	11668	9753
(1)Gross Disburs.	14553	9623	11747	16627	15864
1.1-Project Aid	7999	6692	5714	9508	9376
1.2-Non Food Aid	1594	1020	1855	3821	2010
1.3-Food Aid	208	653	949	1022	2388
1.4-BOP Support	4148	158	107	0	0
1.5-Relief Ass.	604	1099	3123	2275	2091
(2)Amortization	-3465	-3614	-3070	-4959	-6111
(F)ALLOCATION OF SDR	366	0	0	0	0
(G)CHANGES IN RESERV	-1047	11036	-1520	-995	18475
(H)ERRORS/OMMISSIONS	4327	-9610	4841	19147	-13124

Table 2.1 cont....

BALANCE OF PAYMENTS OF PAKISTAN

ITEM/YEAR	1984 1985	1985 1986	1986 1987	1987 1988
(A)TRADE BALANCE	-51799	-41354	-29076	-32937
(1) Exports	37979	49592	63355	78445
(2) Imports	-89778	-90946	-92431	-111382
(B)INVISIBLE(NET)	28548	29167	27074	17515
(1)Non Factor Ser.	-4712	-6072	-4934	-7968
(2)Investment Inco	-7717	-10336	-11947	-14040
2.1-Income	2364	1809	1581	2387
2.2-Payments	-10080	-12145	-13529	-16427
(of which interest)	4377	4893	6498	7529
(3)Private Transfers	42977	45575	43955	39523
(of which remitten	41739	39503	39159	35767
(C)BALANCE ON CURRE	-23251	-12187	-2002	-15422
(D)PRIVATE CAPITAL(N)	1647	1793	5501	4107
(1)Direct Investmen	1525	2713	2218	2141
(2)Other long term	3142	2568	1599	1966
(3)Short Term	-3020	-3488	1685	0
(E)PUBLIC CAPITAL(N)	10950	14939	11620	14865
(1)Gross Disbursem	19169	24677	24049	27589
1.1-Project Aid	13771	17038	17293	18147
1.2-Non Food Aid	1906	1502	3541	3001
1.3-Food Aid	1205	3957	980	3106
1.4-BOP Support	0	0	0	0
1.5-Relief Ass.	2288	2180	2235	3335
(2)Amortization	-8220	-9738	-12428	-12724
(F)ALLOCATION OF SDR	0	0	0	0
(G)CHANGES IN RESERV	-1418	-15528	8564	3454
(H)ERRORS/OMMISSIONS	-9237	20072	6555	95

Note: N = Net

Sources: (i) Economic Surveys of Pakistan 1977-78, 1983-84 and 1987-88.
(ii) Second, Third and Fourth Five Year Plans of Government of Pakistan.
(iii) Statistical Year Book 1967-68, CSO Pakistan
(iv) Pakistan-The Econmic Profile by Badr Hasmi et al. (1976)

Notes

(1) Some time government grants are also treated as transfers from abroad (see for example Wilson, 1986, p156). But conventionally in the BOP statistics of Pakistan these are recorded as capital transfers from abroad.

(2) Primary commodities normally include products of the land such as food, agricultural raw materials, livestock, hides and skins, wool and timber or extracted by mining and subjected to a limited of processing. For other discussion related to the definition of primary production see Rowe (1965,pp 1-2)and Brown (1965, pp2-3).

(3) There is no easy way to estimate the real worth of private transfers from abroad. Here we have estimated by deflating with implicit deflator of net income from abroad derived from national accounts at current prices and constant prices as reported in the Economic Survey of Pakistan 1987-88.

(4) For evaluation of impact of different kinds of foreign assistance on Pakistan Economy see Brecher and Abbas (1973, chapters 7 to 10)

(5) See Economic Survey of Pakistan (1981-82, p163).

(6) See for further discussion Ahmad and Amjad (1984, p 303)

(7) A distinction is made between the commodity terms of trade and income terms of trade. While the commodity terms of trade, as we have mentioned in the main text, means the ratio of exports prices to imports prices the income terms of trade is the ratio of exports prices to import prices times the quantity of exports (i.e $Q_x(P_x/P_m)$ where Q_x, P_x and P_m stand for quantity of exports, prices for imports and prices for exports). In this case the terms of trade, in fact, measures the total purchasing power of exports over imports.

(8) See Leamer and Stern (1970, Appendix to Chapter 2) for problems associated with building indices of prices for exports and imports.

(9) Literature with respect to BOP polices is enormous. Our objective here is not to provide any comprehensive review of these policies. The idea is to set an agenda for evaluation of BOP policies adopted by Pakistan. For a synthesis of different kinds of BOP policies readers are referred to see Taylor (1990), Cuthbertson, Taylor (1987) and Cuthbertson (1979, chapter 5)

(10) Johnson (1958) first used the term "expenditure reducing" for policies that influence the level of spending and "expenditure switching" for those which alters its composition. Since policies might be used to increasing

spending as well "expenditure changing" is probably more representative.

(11) We have also discussed this concept in the context of foreign capital inflow and domestic absorption in Chapter 1.

(12) These are most often considered to be the tools discussed under direct control measures though their ultimate impact is in terms of "expenditure switching"

(13) Under fixed exchange rate system devaluation (revaluation) refers to an official lowering (raising) the value of the currency fixed in terms of other currencies or an international reserves assets such as gold. On the contrary a free fall (rise) of exchange rate in the foreign exchange market without official fixing is called as depreciation (appreciation) of a currency.

(14) For mathematical proof see Cuthbertsonand Taylor (1987,pp175-179).

(15) For original work with regard to a combined approach towards elasticities and absorption see Tsiang (1961).

(16) A distinction is most often made between nominal and effective rate of protection which we have not discussed here. Readers are referred to see Balassa (1965, 1971).

(17) In the recent years much effort has been expanded by the monetarists and others to model the money supply, the price level and the exchange rates. These models are still relatively new and we are not going to discuss these models. For a comprehensive survey of such models readers are referred to see Kreinin, and Officer (1978).

(18) For a detail evaluation of different policies see "*The trade Regimes in Pakistan* " World Bank Report No. 7005-Pak, November 1987.

(19) For negative impacts, in terms of misallocation of resources and development of illegal trade, of such a policy see World Bank (1988 Chapter III)

(20) For a detailed analysis of the Export Bonus Scheme see Bruton and Bose (1963).

(21) For further details of these rebates see World Bank (1988, Chapter III) and Adams and Iqbal(1983, chapter 5).

(22) Government of Pakistan *"Fourth Five Year Plan"* (1970, p.52).

CHAPTER 3

THE DEBT PROBLEM

3.1 The debt crisis

In the 1970s, the external indebtedness of developing countries caused increasing concern particularly after the first oil price rise of 1973-74, in the aftermath of which the debt and debt servicing obligations of developing countries rose rapidly. As a result of this rapid rise in debt servicing the 1980s saw an important turning point. In contrast to the past when the flow of capital from developed capital surplus countries to developing countries was considered as a vehicle of economic growth, there has been a net capital outflow since 1984 from developing countries to developed countries. During 1984 the net capital outflow from developing countries to developed countries was of the order of $ 7.3 billion which reached $ 30.7 billion by the end of 1986.(1).

A negative capital inflow and an ever increasing burden of debt service for the developing countries created serious concern about future prospects of growth of the developing countries together with likely negative implications for the international monetary system in case the debtor countries are forced to default for economic, financial, political and/or social reasons. In view of the serious implications for the world economy as a whole, the debt problem has attracted attention from all sides and within a short period enormous studies and literature have emerged which attempt to explain the causes and solution to the problem (see for example Hope .(1981) Cline (1984), Mehran (1985), Lever and Huhne (1987), and full World Development Report (1985). The problem of foreign debt is, however, quite complicated. According to Currie et al. (1988, p17) "*the ability of the south [i.e developing countries] to service the debt commitments is the result of complicated interactions between northern [i.e. advanced industrialized countries] macro economic policies, the movement of commodity terms of trade and southern adjustment strategies*". In these few sentences Currie et al. have very intelligently identified the important factors associated with the debt problem of developing countries.

3.2 Debt problem of Pakistan

The problem of debt in Pakistan received attention just after the Second Five Year Plan (1960-65) during which external capital financed a significant part of domestic investment (see Chapter 1). In spite of the fact that a large proportion of capital from abroad in the earlier years, after independence, was in terms of concessionery loans and grants some loans were quite hard which resulted in quick debt accumulation. In the 1970s after 1973-74 oil price shock, as in case of many other developing countries, the external debt and debt servicing obligations of Pakistan rose rapidly. The phenomenal exponential increase of foreign debt could be seen in Figures 3.1 and 3.2 in absolute and log terms. The semi logarithmic growth equations of debt in current and constant prices are as following:-

$$\ln D = 6.8 + 0.21 \text{ Trend} \qquad [3.1]$$

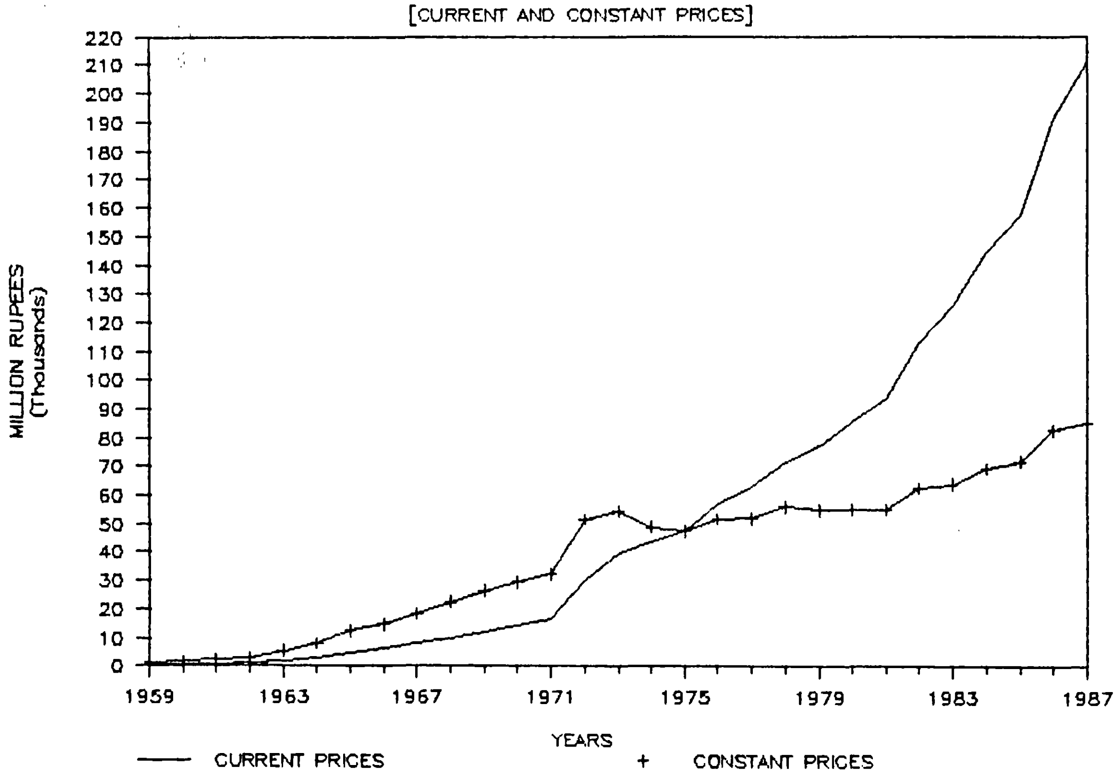
$$\ln Dc = 6.2 + 0.13 \text{ Trend} \qquad [3.2]$$

where D and Dc stand for foreign debt at current and constant prices.(2)

Foreign debt in the mid seventies, when the economy was shattered after 1971 war and other political events, assumed large and unmanageable proportions. After the first oil price shock, in order to overcome its immediate foreign exchange problem, Pakistan obtained for six consecutive years moratorium on the annual debt servicing as shown in Table 3.1.

The amortisation of past loans and payments of interest on debt have substantially reduced the net inflow (gross inflow less amortisation) and net transfers (net inflow less interest payments) to Pakistan as shown in Table 3.2. Although Pakistan still has a positive net transfer of resources from abroad , the continuous trend of fall in

F–3.1 DEBT OUTSTANDING AND DISBURSED
[CURRENT AND CONSTANT PRICES]



F–3.2 DEBT OUTSTANDING AND DISBURSED
[CURRENT AND CONSTANT PRICES]

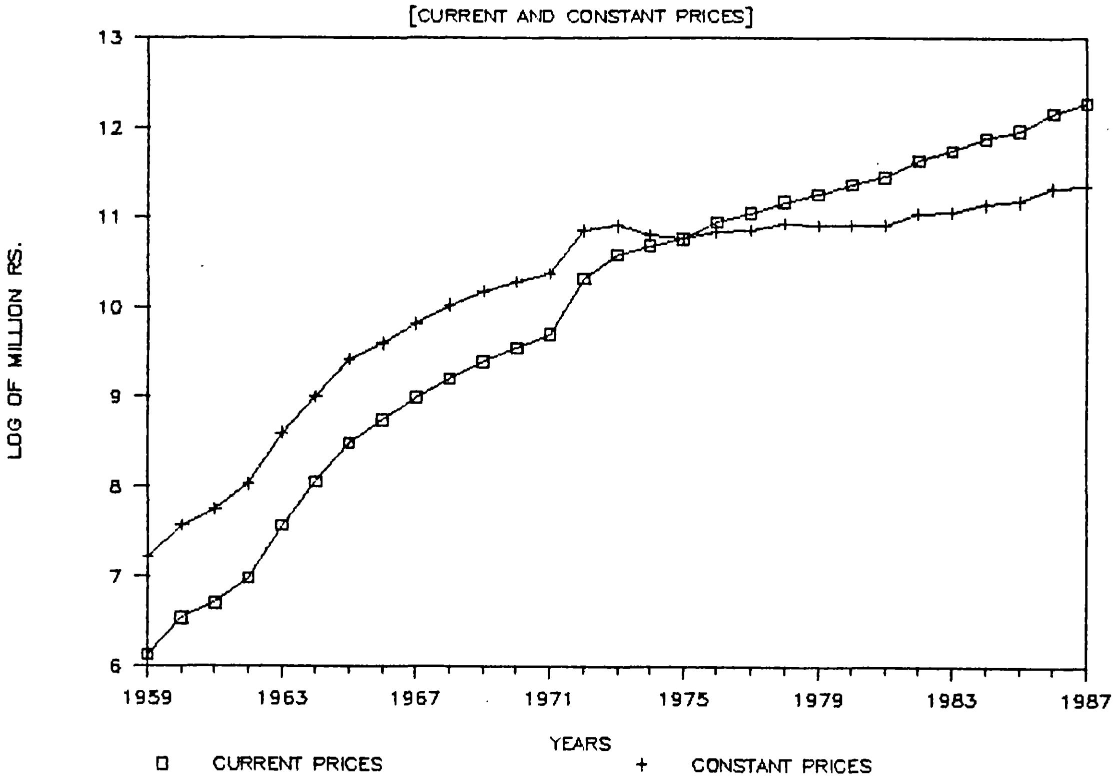


Table 3.1 Debt Service Moratorium
[Million Rupees]

Year	Debt Service Relief	Debt Service Relief as % of Debt Service Due
1974-75	1584	39.2
1975-76	1742	41.4
1976-77	1653	34.9
1977-78	2416	42.7
1978-79	1495	25.7
1979-80	891	12.4

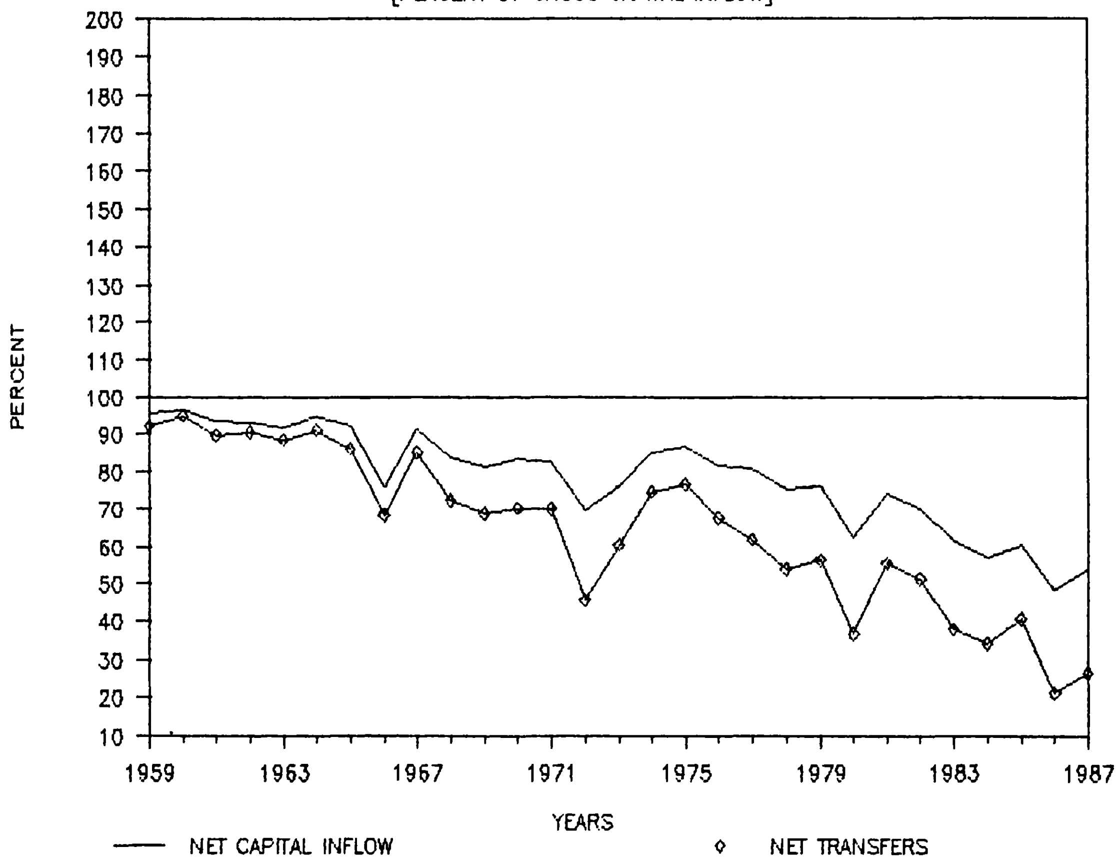
Source: Econmic Surveys of Pakistan 1979-80 (p153) and 1980-81 (p156)

these resource is evident in Table 3.2 (and Figure 3.3). One important thing that emerges is that the share of interest payments in outflow of capital is increasing rapidly. While the net capital inflow is still around fifty percent, net transfer is even less than one third of the gross capital inflow. If this rising trend of debt is not arrested there is a possibility of a net outflow of resources from Pakistan in the future.

It is quite obvious that the past, capital inflow, other than grants, has to be serviced in terms of repatriation of profit against private foreign investment and repayment of principle and interest payments against loans and credits. In the following sections we will evaluate private foreign investment and other capital inflows.

F-3.3 NET CAPITAL INFLOW AND TRANSFERS

[PERCENT OF GROSS CAPITAL INFLOW]



3.2 Net capital and net transfers as percent of gross capital inflow

Year	Net Capital	Net Transfers
1959	95.7	92.2
1960	96.8	95.0
1961	93.4	89.8
1962	93.2	90.6
1963	91.9	88.6
1964	94.8	91.2
1965	92.3	86.1
1966	75.6	68.5
1967	91.5	85.2
1968	83.7	72.2
1969	81.4	68.8
1970	83.5	70.3
1971	82.6	70.2
1972	69.9	45.6
1973	76.3	60.4
1974	85.2	74.6
1975	86.7	76.6
1976	81.8	67.6
1977	80.7	61.8
1978	75.3	53.9
1979	76.2	56.3
1980	62.4	36.9
1981	73.9	55.4
1982	70.2	51.3
1983	61.5	38.0
1984	57.1	34.3
1985	60.5	40.7
1986	48.3	21.3
1987	53.9	26.6

Source:Appendix Table 2.1 Chapter 2

3.3 Private investment

Foreign private investment (FPI), particularly by the multinational corporations (MNCs) with headquarters abroad, involves not only transfers of funds (including the reinvestment of profits) but a whole package of physical capital, techniques of production, managerial and marketing expertise, advertising and other business practices of the maximisation of profits at a global level (3). There is little doubt that such an investment would augment real resources in the beginning but it also involves repatriation of profits in the future which have implication for BOP and, therefore, foreign debt. Direct FPI has, in fact a potential disadvantage of a continual outflow of profits lasting much longer than outflow of debt service payments on a loan of equivalent size. While loans and credits only create obligations for a definite number of years, FPI may involve an unending commitment. As a result, in the long run if profits are repatriated the impact of continuous FPI on BOP must be negative unless the gross inflow of FPI grows substantially from year to year (4).

Almost in all planning documents of Government of Pakistan FPI has been considered as complementary to overall investment programme. As yet no effort has been made to publish the data for such investment and repatriation of profits. This makes it difficult to have a realistic and reliable assessment of the problem. The general assessment is, however, not very encouraging. According to Griffin the private capital outflows exceeded the inflows in Pakistan and according to his estimates in the year 1963-64 the outflows were about three times of the direct inflow of private capital. (See Griffin 1965, pp616-617). In the Fourth Five Year Plan (p69) it was first time officially documented that the impact of FPI on BOP was negative. The data presented in Table 2.1 of Chapter 2 also shows that net effect of FPI for most of the years is negative if investment payments(less interest payments) are taken as profits repatriated each year against net investment as shown in Table 3.3.

Table 3.3 Effect of Foreign private investment on balance of payments

[million Rupees]

Year	FPI	Profit Repatriated	impact on BOP
1969	371.3	180.9	190.4
1970	442.7	138.0	304.6
1971	333.2	104.7	228.5
1972	0.0	167.5	-167.5
1973	-59.4	881.1	-940.5
1974	148.5	306.9	-158.4
1975	227.7	643.5	-415.8
1976	39.6	653.4	-613.8
1977	336.6	524.7	-188.1
1978	326.7	752.4	-425.7
1979	673.2	405.9	-267.3
1980	702.9	1069.2	-366.3
1981	1300.5	2633.0	-1332.5
1982	332.3	3770.1	-3437.8
1983	580.1	4883.4	-4303.3
1984	1525.0	5703.5	-4178.5
1985	2713.2	7251.3	-4538.2
1986	2217.5	7030.7	-4813.2
1987	2141.1	8897.8	-6756.7

Source: Appendix Table 2.1 Chapter 2

Keeping in view the low level of direct FPI on year to year basis the outflow of profits appear to be very high. However, the cumulative foreign capital stock, after adjusting for a ten percent annual depreciation, approximated to 8800 million rupees by the year 1987. A

Table 3.4 Cumulative foreign private investment

[Million Rupees]

Year	Cum-Inv
1965	176.00
1966	158.40
1967	140.80
1968	123.20
1969	476.60
1970	864.90
1971	1098.90
1972	966.60
1973	834.30
1974	851.00
1975	931.80
1976	819.40
1977	1000.00
1978	1136.90
1979	1587.10
1980	2037.10
1981	3059.10
1982	3015.30
1983	3186.30
1984	4244.30
1985	6362.70
1986	7726.60
1987	8795.70

Source:Appendix Table 2.1 Chapter 2

yearly details of cumulative investment (with ten percent depreciation) are provided in Table 3.4.

In view of continuous rise in the volume of foreign physical assets, and corresponding increase in repatriation of profits, the long run effect of FPI on BOP in terms of direct inflow and outflow of resources appear to be negative. However, this would be a hasty conclusion. For a realistic estimate of BOP effects of FPI all the secondary costs and benefits (such as import substitution, or exports of goods, increase in imports of raw material etc.) should also be taken into account before a final judgment is made.

3.4 The changing pattern of foreign capital

One of the important developments of 1970s with regard to foreign capital inflow to developing countries was the significant shift from relatively soft public capital to more commercial and commercial like public capital. However, Pakistan is one of those countries which has successfully avoided borrowing at massive scale from the private commercial market. The share of private debt has, therefore, never exceeded from ten percent in the total foreign debt. Table 3.5 provides share of private and public foreign debt and average interest rate.

It is quite evident from Table 3.5 that rate of interest against public debt is significantly lower than the private commercial debt and to the extent of difference of these two interest rates net resources have been transferred from abroad to Pakistan.

3.4.1 Grants and grant element

The internal composition of public capital inflow is more important for Pakistan. The share of grants and grants like assistance was continuously declining over past two decades. As a result of Afghan crisis Pakistan has once again

Table 3.5 Share in total foreign debt
[Percent]

Year	Public Debt Share [%]	Public Debt Interest Rate	Private Debt Share [%]	Private Debt Interest Rate
1972	92	2.5	8	3.9
1973	94	3.0	6	6.8
1974	94	2.8	6	9.9
1975	95	3.4	5	7.5
1976	96	3.6	4	8.8
1977	95	3.1	5	8.5
1978	96	1.9	4	8.9
1979	96	2.2	4	11.3
1980	94	2.2	6	11.3
1981	95	3.4	5	15.6
1982	91	4.6	9	13.7
1983	92	4.1	8	10.4
1984	91	3.7	9	9.8
1985	93	5.3	7	8.5
1986	93	6.5	7	8.7

Source: World DEbt Tables 1982-83, 1983-84 and 1987-88

received a substantial amount of grants from abroad. But if the relief assistance is excluded from the total inflow of resources then the share of grants substantially declines. For example just before the Afghan crisis, share of such transfers from abroad had declined to only 12 percent (during 1970 to 1978) which was about 80 percent during the First Five Year Plan (1955-60). Table 3.6 provides the share of grants and grants like assistance over past four decades.

Contrary to an outright grant, grant element is the difference between face value of a loan and present value of all future repayments (amortisation and interest payments) discounted at an appropriate rate of discount (5). From such a definition one could clearly see the similarity between

Table 3.6 Share of grants and grants like assistance in total resource inflow from abroad

Years	Percent
1950-55	70
1955-60	80
1960-65	46
1965-70	31
1970-78	12
1978-83	22
1983-87	24

Source: Economic Survey of Pakistan 1987-88, Table 2.10

grant element and net out flow of resources where a flow of lending is offset by a reverse flow of debt service payments (6). In other words a capital inflow which has to be repaid with interest will be worth its face value only if a discount rate at which the repayments are discounted is equal to the rate of interest. An appropriate choice of discount rate is, therefore, crucial in estimating a grant element. There are different opinions with regards to selection of a discount rate. It could be recipient country's opportunity cost of capital or the interest rate on loans in the open market. The discount rate normally applied in estimating grant element is ten percent.

Other factors which determine the grant element in a loan are grace period and maturity period. The grace period is a period between disbursement of loan and the first installment of repayment. The longer the grace period for a loan of a given maturity the less the present value of the future discounted repayments. Similarly the longer the maturity period, the longer the concessionery interest rate is benefited and less the present value of future discounted repayments.

All the four elements (i.e. discount rate, interest rate,grace period and maturity period) of a loan can be put together for calculating grant element as following:-

$$GE = \left[P- \left(\sum_{t=1}^{M} \frac{Rt}{(1+r)^t} \right. \right] \qquad [3.3]$$

where GE (in absolute term)is a grant element, P is face value of a loan, R_t is total repayment of principle and interest in year *t*, M is maturity period of the loan and *r* is rate of discount. The GE in percent term will be:

$$GEP = \left(\frac{GE}{P} \right) * 100 \qquad [3.4]$$

Ohlin (1966, appendix) has worked out grant element for different combinations of interest rates, discount rates, grace periods and the lengths of maturity. At the one extreme, if the capital inflow is a pure grant, with zero Rt in equation [3.3], the grant element is 100 percent. At the other extreme, where capital inflow is at a rate of interest equal to the market rate of interest (assumed to be the appropriate discount rate) and the grace period and maturity of the loan are also as in the market, then sum of the discounted future value of the capital will be equal to the face value and the grant element will be zero. Table 3.7 gives some illustrative calculations from Ohlin (1966, appendix).

Table 3.7 Grant element in loans

Interest rate & Maturity Period	Discount Rate					
	5 Percent			10 Percent		
	G=0	G=5	G=10	G=0	G=5	G=10
2 percent						
10	13	12	-	30	42	-
30	29	34	37	55	62	67
40	34	38	41	60	67	73
4 Percent						
10	4	7	-	22	31	-
30	10	11	12	41	47	50
40	11	13	14	45	50	55
6 percent						
10	NE	NE	NE	15	21	-
30	NE	NE	NE	27	31	34
40	NE	NE	NE	30	33	37
7 percent						
10	NE	NE	NE	11	16	-
30	NE	NE	NE	20	23	25
40	NE	NE	NE	23	25	27

G = Grace period NE = Negative

According to calculations of Ohlin, the grant element is very sensitive to small changes in the interest rate and the discount rate and relatively insensitive to variations in the grace and maturity periods.

3.4.1.1 Grant element in loans acquired by Pakistan

The terms of various individual loans acquired by Pakistan varies from extreme concessionery loans provided by Canada (CIDA Loans) which bear no interest and have the maturity period of fifty years to pure commercial loans with no concessionery element (7). On the average interest paymentS as percent of debt outstanding (with a lag of one year) have varied from year to year. For most of the period the rates have remained close to four percent. The average terms of loans over different years and the corresponding grant element as estimated by World Bank for Pakistan are tabulated in Table 3.8.

Table 3.8 Average terms of loans and grant element[@]

Year	Interest [%]	Maturity Period [Years]	Grace Period [Years]	Grant element [%]
(i) Private Creditors				
1972	3.9	8.8	2.4	19.4
1973	0.0	0.0	0.0	0.0
1974	9.9	9.1	1.6	0.1
1975	7.5	8.4	1.1	8.4
1976	8.8	9.4	2.7	4.3
1977	8.5	8.7	1.9	5.0
1978	8.9	10.0	1.8	4.1
1979	11.2	9.3	1.3	-3.4
1980	11.6	9.9	0.7	-4.1
1981	15.6	6.6	2.0	-11.5
1982	13.7	3.4	2.0	-6.4
1983	10.4	5.6	2.9	-0.7
1984	9.8	7.2	2.7	2.1
1985	8.5	10.3	2.4	5.6
1986	8.7	8.6	2.8	1.5

Table 3.8 cont....

Year	Interest [%]	Maturity Period [Years]	Grace Period [Years]	Grant element [%]
(ii) Official Creditors				
1972	2.5	36.6	9.0	62.3
1973	0.4	40.3	9.4	81.3
1974	2.8	24.5	6.4	51.3
1975	3.4	35.1	8.1	55.8
1976	3.6	27.4	7.2	49.1
1977	3.1	33.5	8.2	56.1
1978	1.9	34.8	8.6	65.0
1979	2.2	28.3	7.1	56.9
1980	2.2	31.3	7.7	59.8
1981	3.4	31.9	7.9	56.8
1982	4.6	32.9	7.6	46.2
1983	4.1	30.6	7.4	46.8
1984	3.7	30.4	7.5	51.5
1985	5.3	28.8	6.7	37.0
1986	6.5	26.6	6.58	27.9
(iii) All Creditors				
1972	2.6	35.7	8.8	61.0
1973	0.4	40.3	9.4	81.3
1974	3.2	23.6	6.1	48.1
1975	3.6	34.2	8.4	54.1
1976	4.1	25.4	6.7	44.1
1977	3.8	30.1	7.4	49.0
1978	2.4	32.8	8.1	60.2
1979	3.3	26.1	6.4	49.9
1980	3.8	27.1	6.4	47.8
1981	7.8	22.3	5.8	32.2
1982	7.4	23.9	5.9	30.1
1983	5.5	25.4	6.4	36.8
1984	4.7	26.5	6.7	43.1
1985	5.6	26.8	6.4	34.8
1986	6.6	25.9	6.4	26.8

Source:World debt Tables 1982-83, 1983-84 and 1987-88

@[Grant element has been worked out with 10 % discount rate]

According to Mahmood's (1977)estimates the grant element (with 10 percent discount) is about 90 percent for CIDA loans followed by IDA and U.K. loans which have the grant element of 88 percent and 77 percent respectively. In official credits the lowest grant element is in German export credits and is about 16 percent. Mahmood has also estimated a weighted average grant element, using different discount rates for different periods. A summary of his findings is provided in Table 3.9.

Table 3.9 Grant element[@] in public capital from abroad

Year	Percent
1965-66	41
1966-67	43
1967-68	46
1968-69	43
1969-70	56
1970-71	54
1971-72	60
1972-73	71
1973-74	47
1974-75	62

Source:Mahmood (!977 p6) Table 2

@ The discount rates used to calculate the grant element were 8, 10, and 12 percent for the years 1965-1968, 1968-71 and 1971-75 respectively.

The overall picture which emerges from the above discussion is that except during 1979 to 1983 when private loans have some negative grant element, Pakistan has remained a net beneficiary on account of concessionery loans and credits received from abroad. However, the old days of concessionery loans and credits have clearly gone and the resurgence of increase in grants or grant like assistance in aftermath of the Afghan crisis is purely a temporary phenomenon.

3.4.2 Tying of loans and credits

The whole discussion with regard to grant element in loans and credits has been done under the assumption that prices which a recipient country has to pay for the goods and services bought with these loans and credits is the minimum competitive price. In reality, prices determined by the world competitive bidding have most often proved to be substantially lower than prices paid by recipient country in the donor country's market when loans are tied to the source. According to Griffin (1965, p615) products purchased under tied agreements usually cost 12 to 15 percent more than world prices. Even this, according to Griffin is an underestimate because foreign suppliers frequently raise their prices when loans are tied and world competition is eliminated. He has particularly observed that German industries charge 40 percent more under tied loans agreements . Similarly Mikesell (1968, p230) has observed that in case of USA under tied loan the cost of equipment is 10 to 20 percent higher than lowest international prices.

In order to investigate the element of higher prices under tied loans for Pakistan, Haq (1967) examined twenty projects where a tied loan facility was utilized and he found that the prices from tied sources were about 50 percent higher than the lowest bids on international tendering. Most alarming higher prices were, probably, charged for iron and steel under commodity assistance from USA. The prices were higher from the cheapest international sources ranging between 41 and 111 percent as shown in Table 3.10.

Table 3.10 Estimates of over valuation for iron and steel under tied commodity assistance, 1967
[prices in rupees per long ton]

Item	Tied source	Cheapest international source	Increase in cost due to tied credit (%)
M.s. billets	633	332	91
M.S. plates	808	469	72
M.S.strips	620	430	44
Structurals	930	555	68
G.P.sheets	1073	746	44
G.C.sheets	1066	754	41
Wire rod	905	429	111
Nail wire	976	495	97

Source:Pakistan Planning Commission, Memorandum for the Consortium 1968-69 (1968, p71)

The higher prices under tied loans have the obvious following implications for a recipient country:-

(a) By definition, raising the cost of imports, tied loans augment a deficit on current account of BOP and lead to a deterioration of terms of trade. Such a situation can persist for quite a long time if borrower country permanently becomes dependent upon a high cost supplier of spare parts, replacements and ancillary equipment.

(b) Tied loans lead to higher debt repayment obligations and greater foreign debt burden. In other words higher prices under tied loans affect the grant element negatively and, therefore, should be specifically included in any estimation of concessionery element in a loan or credit (8).

3.5 Debt servicing models

3.5.1 The debt cycle

The loan part of a foreign capital inflow has to be serviced and as a consequence net resource transfers from abroad could fall to zero or become negative except where gross lending always exceeds debt service payments. In case of Pakistan, as we have already noted, the net transfers of resources have fallen to a value less than one third of the gross inflow.(See Table 3.2).

Projections of capital import requirements based on a quantitative two gap model, discussed in Chapter 1, provide certain pattern of net resource inflow over a given time period. Such models are frequently employed to analyse the implications of debt service of foreign loans designed to achieve a target rate of self sustaining growth by filling a declining gap between domestic savings and investment {see for example Avramovic (1964, Chapter IV), Mikesell

(1968,Chapter 4), Thirlwall (1983, pp298-303), Healy (1971, Chapter 5) and World Bank (1985, pp47-48)}. Since resource inflows and debt service payments arising from foreign loans must always be accompanied by adjustments in the current account balance, the savings-investment and imports-exports gaps are always identical in such models. In other words the capital inflow and debt service payments may be derived from either savings-investment gap or imports-exports gap. The ultimate conclusion in either way, therefore, will be the same.

A typical debt cycle model, which explains the capital inflow and debt service payments, assumes a certain growth paths for imports and exports as hypothetically illustrated in Figure 3.4 and Table 3.11. Our illustration of the debt cycle is in terms of exports and imports, but the analysis is exactly analogous to that of investment and saving gap. The table has been built under following assumptions:-

(1) Exports and imports to grow over the base values at a constant rate of 5 percent and 3 percent respectively.

(2) Interest is charged at the rate of 5 percent per annum on debt of the past year.

F-3.4 HYPOTHETICAL DEBT CYCLE

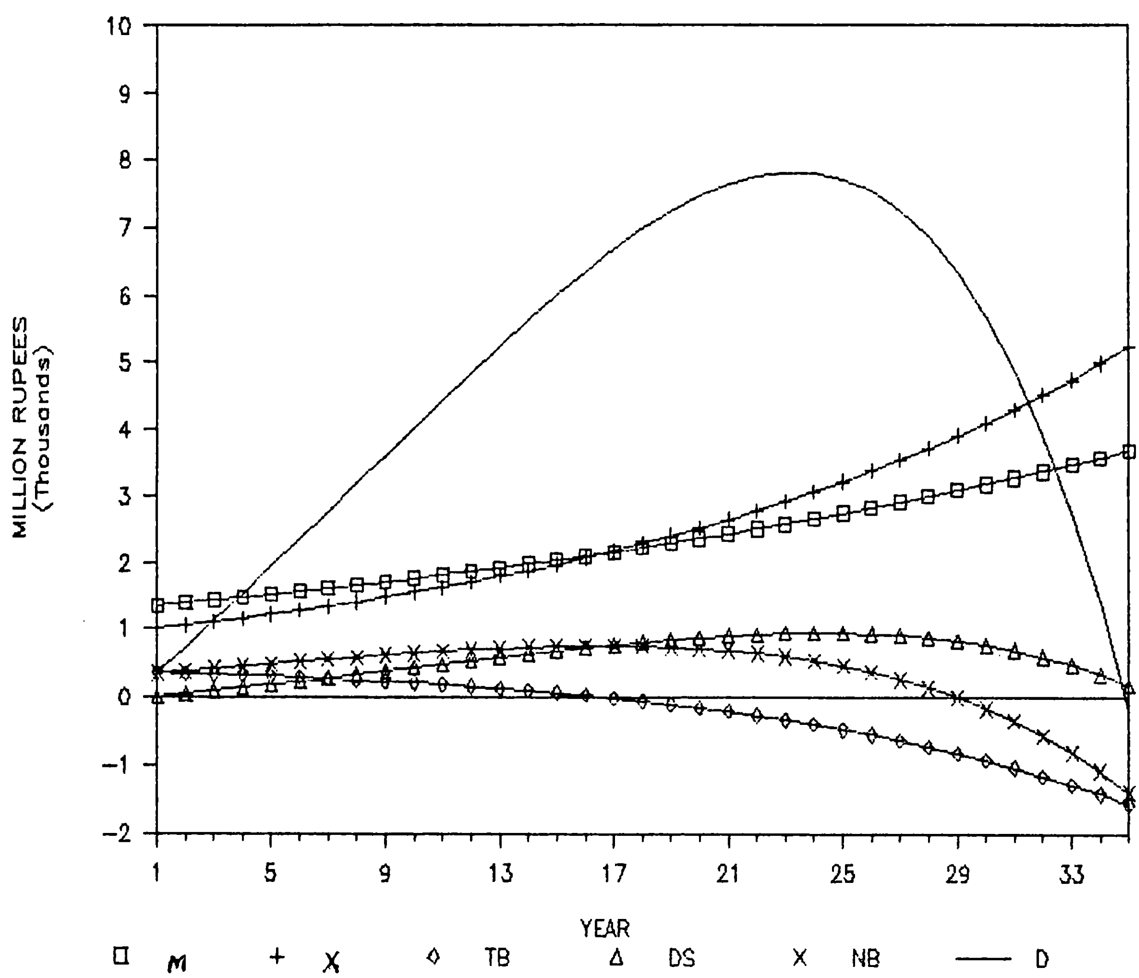


Table 3.11 Hypothetical foreign debt profile

Year	Imports [gr-3%]	exports [gr-5%]	Trade Bal-ance	Amort [7%]	Intr [5%]	Debt Ser	Net [Less Re Borr.Payment]	Net Indb.
1	1350	1000	350	0	0	0	350	350
2	1391	1050	341	25	18	42	383	733
3	1432	1103	330	51	37	88	418	1126
4	1475	1158	318	79	56	135	453	1527
5	1519	1216	304	107	76	183	487	1935
6	1565	1276	289	135	97	232	521	2349
7	1612	1340	272	164	117	282	554	2768
8	1660	1407	253	194	138	332	585	3189
9	1710	1477	233	223	159	383	615	3610
10	1761	1551	210	253	181	433	643	4030
11	1814	1629	185	282	202	484	669	4447
12	1869	1710	158	311	222	534	692	4857
13	1925	1796	129	340	243	583	712	5257
14	1983	1886	97	368	263	631	728	5645
15	2042	1980	62	395	282	677	739	6016
16	2103	2079	24	421	301	722	746	6367
*17	2166	2183	-17	446	318	764	748	6694
18	2231	2292	-61	469	335	803	743	6991
19	2298	2407	-108	489	350	839	731	7253
20	2367	2527	-160	508	363	870	711	7474
21	2438	2653	-215	523	374	897	682	7648
22	2511	2786	-275	535	382	918	643	7768
23	2587	2925	-339	544	388	932	594	7826
24	2664	3072	-407	548	391	939	532	7815
25	2744	3225	-481	547	391	938	457	7724
26	2827	3386	-560	541	386	927	367	7544
27	2911	3556	-644	528	377	905	261	7264
28	2999	3733	-735	508	363	872	137	6873
*29	3089	3920	-831	481	344	825	-7	6358
30	3181	4116	-935	445	318	763	-172	5705
31	3277	4322	-1045	399	285	685	-361	4899
32	3375	4538	-1163	343	245	588	-575	3925
33	3476	4765	-1289	275	196	471	-818	2764
34	3581	5003	-1423	193	138	332	-1091	1399
*35	3688	5253	-1565	98	70	168	-1397	-192

* Indicates the various turning points

(3) Loans are amortised at the rate of 7 percent per annum.

The difference between exports (X) and Imports (M) as resource transfers (R_t) from abroad required to bridge the exports-imports gap which according to our assumption steadily declines and after year 16 exports exceed imports. The net borrowing (NB) goes on a little longer (till year 28) in order to cover interest charges. The excess of exports help to clear the accumulated debt and the country becomes net creditor after year 34.

According to World Bank assessment (World Development Report 1985, p47) United Kingdom and United States over the past 150 years have followed the pattern of debt cycle quite closely. But, according to the same report, for ~~the~~ developing countries the evidence is mixed and because of sudden shifts in major economic variables, as have occurred during seventies, often lead to a significant departure from the predicted path.

Despite the fact that debt cycle model has not proved to be precisely relevant for most of the developing countries, following are the important points which deserve attention:-

(i) If exports do not grow at a rate higher than the rate of growth of imports for a number of years,the gross capital inflow and debt service would soon reach huge proportions. In our example even if we reduce the rate of growth of exports from 5 percent to 4 percent per annum, with other assumptions remaining the same, the time for exports to exceed imports will reach to 32 years from 16 years. Accordingly the period of net borrowing and full debt liquidation will extend from 28 and 34 years to 75 and 82 years respectively. It may be noted that in the base year the imports are only 35 percent higher than exports and no past debt is assumed. If difference of exports and imports in the base year is increased and the assumption of zero debt in the beginning is dropped then the required rate of growth of exports to liquidate the debt in the same length of time will be much higher.

(2) Long periods of capital inflow financed by loans on hard terms quickly buildup a large volume of debt service payments which could become unmanageable. In our hypothetical example both interest rate and amortisation (5 and 7 percent respectively) represent relatively soft loans. If the rate of interest is raised to 7 percent and amortisation to 10 percent the time for net borrowing to continue will extend to 37 years (from 28 years) and debt liquidation to 42 years (from 34 years).

If we apply the concept of debt cycle on Pakistan then the picture is not very bright. The total outstanding debt is still rising (see figure 3.1). If we project the exports and imports into the future on the basis of historical trend growth rates in current prices, estimated with semi-logarithmic method, the imports will continuously exceed the exports till the year 2010 into the next century (see Figures 3.5 and 3.6). The projections are based on following equations:-

$$\ln X = 5.93 + 0.19 \text{ Trend} \quad [3.5]$$

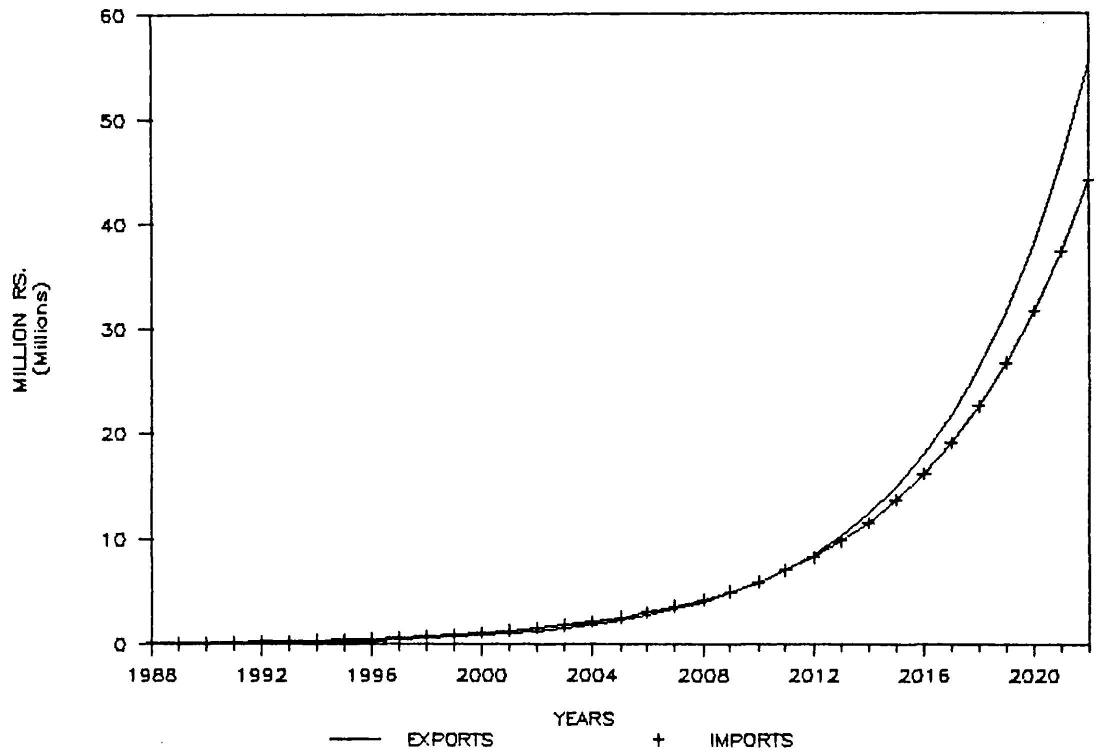
$$\ln M = 6.94 + 0.17 \text{ Trend} \quad [3.6]$$

Keeping in view the fragile nature of exports from Pakistan and falling private transfers from abroad (see sections on exports and private transfers from abroad in Chapter 2) and fall in grants and grants like capital from abroad, the problem of foreign debt does not appear to get solved without consistent and concrete measures which could ensure a simultaneous stable and rapid rise in exports compared to imports.

3.5.2 The debt and debt service ratios

Although the external debt of Pakistan has increased rapidly during the past two decades and indications are that in future it is going to be more expensive to borrow from abroad, this dose not mean that Pakistan cannot or should not borrow any more to meet its foreign exchange requirements. Some indication of the capacity for further

F—3.5 PROJECTED EXPORTS AND IMPORTS



F—3.6 PROJECTED EXPORTS AND IMPORTS

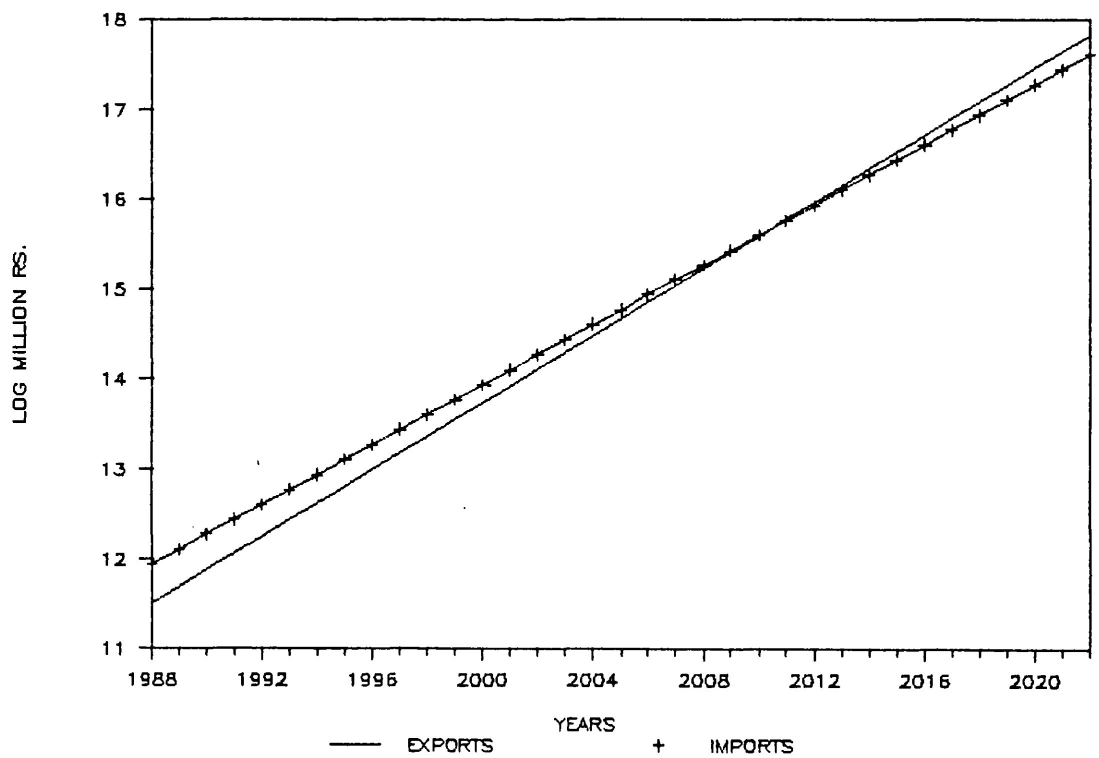


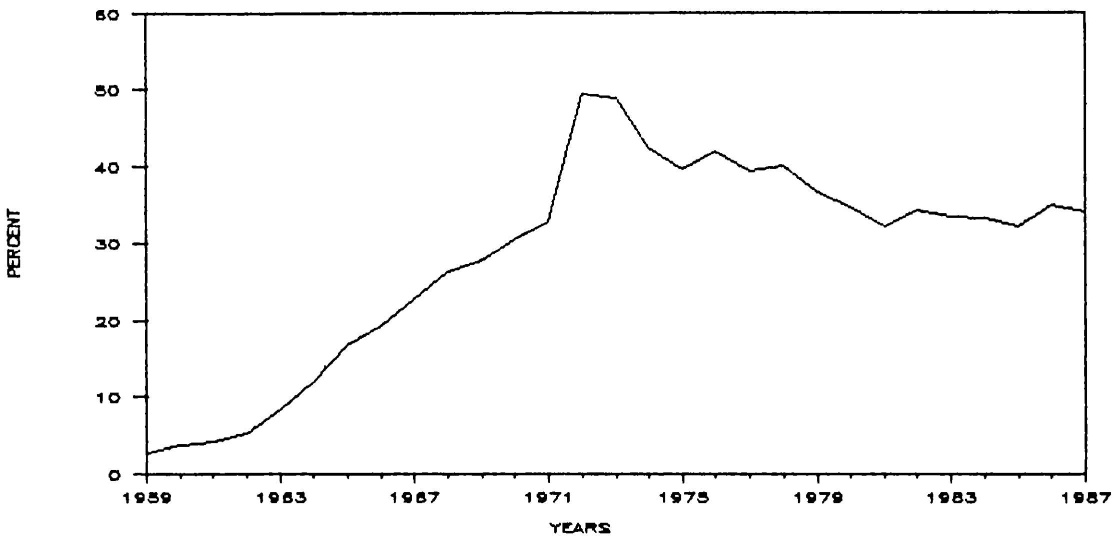
Table 3.12 Debt and debt service ratios

YEAR	DQ%	DSQ%	INTQ%	DSX%	INTX%
1959	2.7	0.3	0.1	6.9	3.1
1960	3.8	0.4	0.2	15.0	5.4
1961	4.3	0.8	0.3	27.2	9.6
1962	5.2	1.1	0.3	22.4	6.2
1963	8.5	1.3	0.4	27.5	8.0
1964	12.0	1.1	0.5	25.9	10.4
1965	16.8	1.2	0.5	29.3	13.0
1966	19.3	2.9	0.6	71.9	16.1
1967	22.7	1.4	0.6	31.3	13.3
1968	26.3	2.0	0.8	44.2	18.2
1969	27.8	1.9	0.8	52.1	21.0
1970	30.6	1.9	0.8	43.4	19.3
1971	32.7	1.2	0.5	17.2	7.2
1972	64.2	3.3	1.5	23.6	10.5
1973	48.7	2.4	1.0	19.2	7.7
1974	42.3	2.4	1.0	23.9	10.0
1975	39.7	2.1	0.9	21.9	9.5
1976	41.9	2.3	1.0	27.3	11.9
1977	39.3	2.0	1.0	24.9	12.4
1978	40.0	2.4	1.1	25.6	11.9
1979	36.7	3.0	1.4	27.1	12.3
1980	34.7	2.5	1.0	20.7	8.4
1981	32.2	1.8	0.7	19.9	8.2
1982	34.3	2.5	1.0	23.5	9.1
1983	33.4	2.6	1.0	26.3	10.0
1984	33.2	2.9	1.0	33.2	11.5
1985	32.1	3.0	1.0	29.5	9.9
1986	35.0	3.5	1.2	29.9	10.3
1987	34.1	3.3	1.2	25.8	9.6

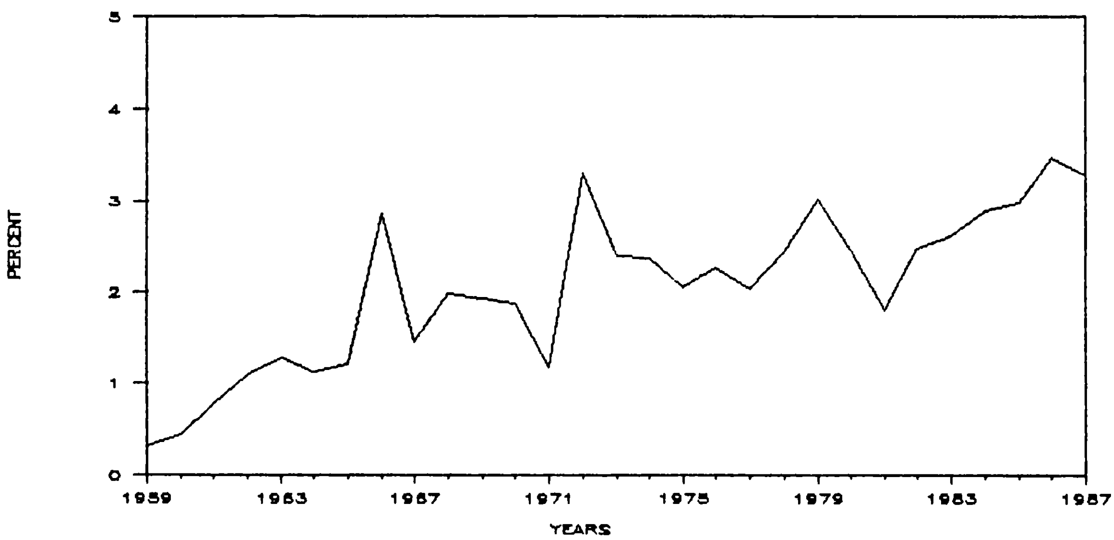
(1) DQ % = Total debt as percent of GDP.
(2) DSQ % = Debt service as percent of GDP.
(3) INTQ % = Interest payments as percent of GDP.
(4) DSX % = Debt service as percent of exports.
(5) INTX % = Interest payments as percent of exports.

borrowing can be obtained by comparing the situations over years, as measured by the changes in ratios of debt and debt service payments. Table 3.12 and Figures 3.7 to 3.11 show ratios of total debt outstanding, debt service and interest payments to GDP and exports.

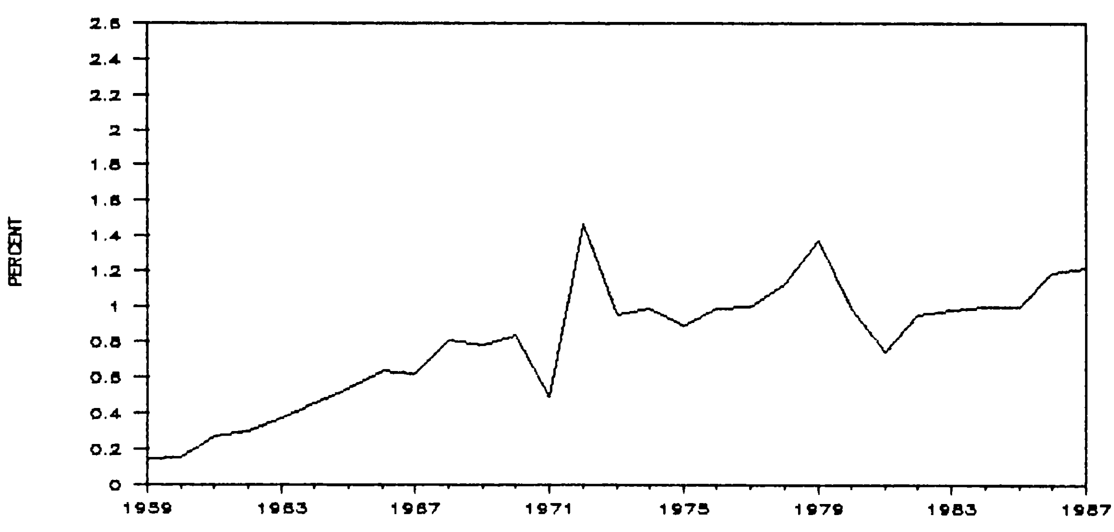
F—3.7 DEBT—GDP RATIO



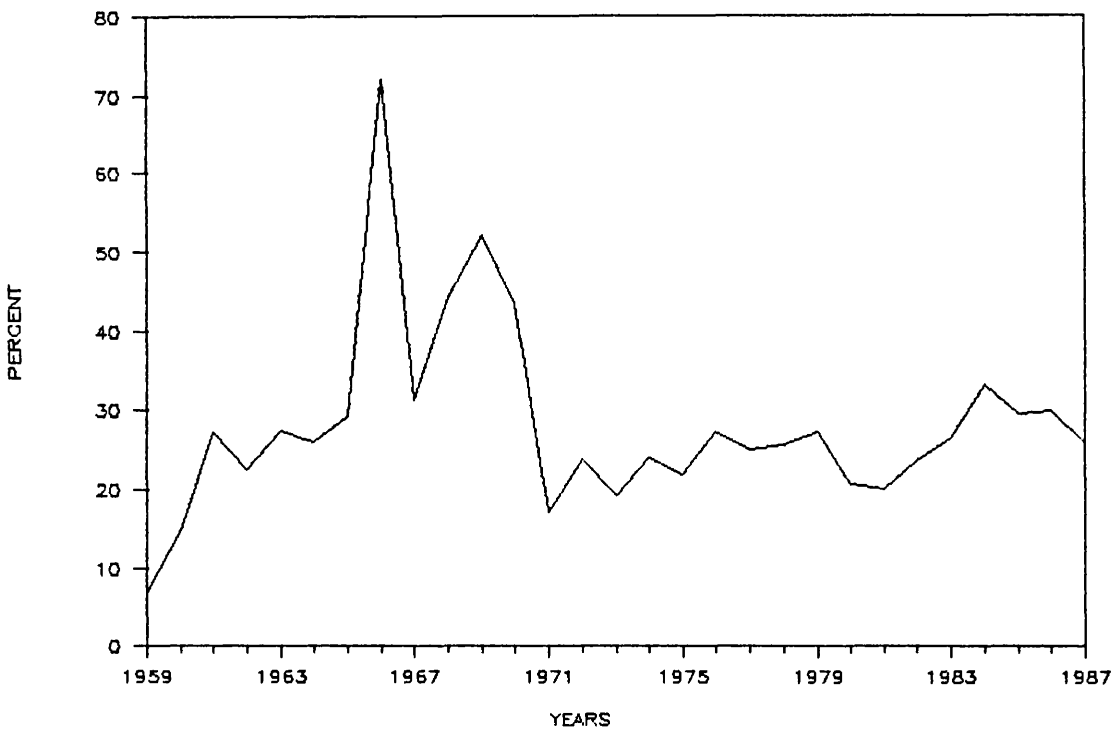
F—3.8 DEBT SERVICE—GDP RATIO



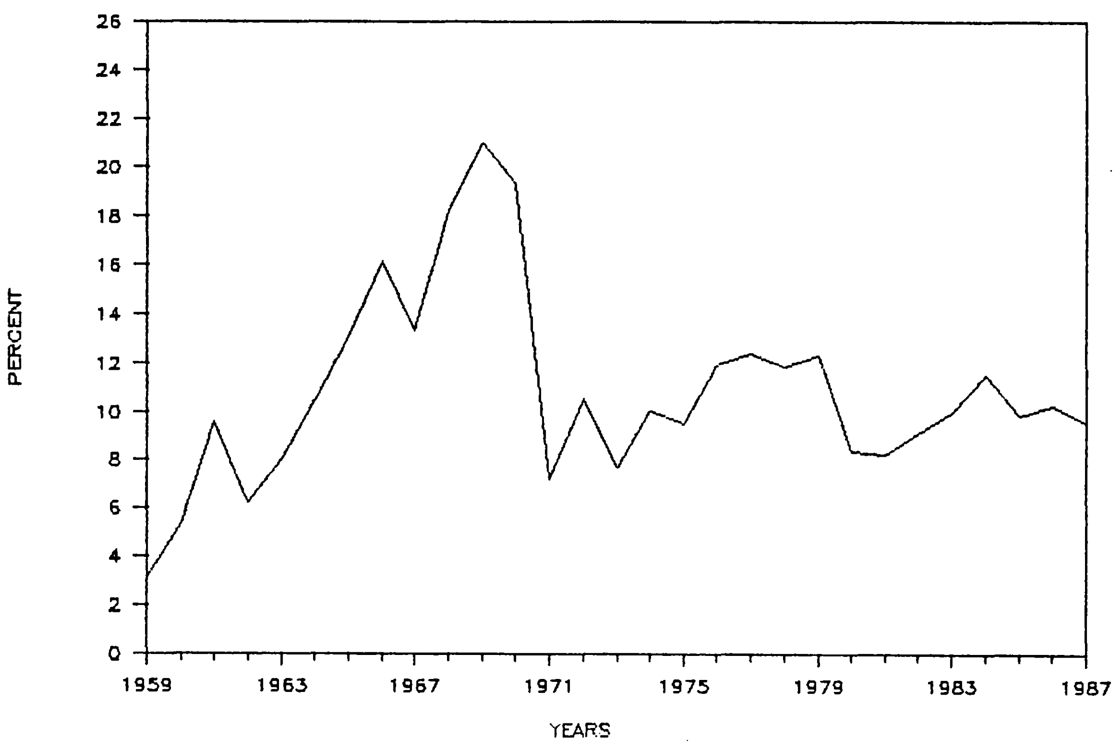
F—3.9 INTEREST—GDP RATIO



F-3.10 DEBT SERVICE-EXPORTS RATIO



F-3.11 INTEREST-EXPORTS RATIO



The ratios in Table 3.12 suggest that Pakistan is not in a much worse position to day as it was 7-8 years back. Interest payments and debt service as percent of exports are stable with some decline after 1979. However, the interest payments as percent of GDP have risen to 1.2 percent compared to 1 percent which were some what stable for a long time. Similarly the total debt outstanding as percent of GDP have more or less stabilized since 1980. The important point is that debt service is now more than 3 percent of GDP and is taking slightly above 25 percent of total exports earnings.

3.5.3 The critical rate of interest

It is not possible to fix a kind of limit to the ratios (discussed above) which could be used as a yardstick in order to determine the seriousness of the debt and debt service problem. Hayes (1964) has, however, formulated a concept of the *critical rate of interest* which is the highest rate of interest which a country can afford to pay on external borrowing to cover its investment-savings gap without letting the interest charges rise faster than its GDP. Assuming no external debt at the beginning, the *critical rate of interest* can be defined as following:-

$$i = \frac{g\ (S_o - S_m)}{(S_o - kg)} \qquad [3.5]$$

where i is *critical rate of interest*, g is rate of growth of GDP, S_0 an initial saving rate, S_m the marginal propensity to save and k the incremental capital output ratio. If the critical rate of interest is exceeded, the debt could well be unmanageable, in the sense of unserviceable by further borrowing. The *critical rate of interest* is of particular interest in view of the distinction between soft and hard loans. If the *critical rate of interest* is lower than the interest rate for hard loans then a growth strategy based on external capital could be pursued only on soft loans for which the interest rate is lower than *critical rate of interest*.

In case of Pakistan if we ignore the current level of debt and take the 10.2 percent level of saving rate of 1987-88 as the initial and 19 percent as marginal saving rate (achieved in the year 1987-88) then the target growth rate of 6.5 percent with capital output ratio of 3:1 (9) will have a *critical rate of interest*:

$$i = \frac{6.5\ (10.2-19)}{10.2 - 3\ (6.5)} \qquad [3.6]$$

$$= 6.2\ \%$$

The *critical rate of interest* of 6.2 percent based on very optimistic assumption of 19 percent marginal propensity to save is not very encouraging. In the past for a number of times the marginal propensity to save has been even lower than the initial saving rate. Similarly Pakistan is already facing the burden of debt which is a missing variable in the *critical rate of interest* estimation. A major upset in the terms of loans from abroad could make it difficult to continue a high growth rate strategy dependent upon foreign borrowing.

3.6 Conclusion

The 1970s witnessed a very rapid buildup of the external debt of Pakistan accompanied by some shift from soft loans to hard loans and a fall in grants and grant like capital from abroad particularly if refugees assistance is excluded. Although the average terms for foreign debt are hardening and debt is rising quite rapidly there is no major deterioration in the debt and debt service ratios. However, it is going to be increasingly difficult to pursue a high growth strategy on external borrowing withoutadequate policy measures to restrict imports and accelerate exports. The ultimate conclusion is the same which we arrived in Chapter 2, that Pakistan can no more afford to rely on only structural approach of "two gap hypothesis" for solving the problem of imports-exports gap over a period of fifteen to twenty years. The attitude has to be changed towards a more pragmatic and consistent macroeconomic policy.

Notes

(1) Lever and Huhne (1987, p41)

(2) It is difficult to construct any deflator which can realistically convert the debt from current prices into constant real prices. For the sake of comparison we have, therefore, applied the domestic GDP deflator.

(3) In this section we will only evaluate the effects of foreign private investment on BOP rather than a full cost-benefit analysis. For such an analysis of foreign investment see Lal(1975).

(4) For a hypothetical numerical example see Thirlwall (1983,p306)

(5) See for further details on this point Pincus (1963 pp360-367).

(6) For further discussion on similarity of these two concepts see Ohlin (1966, appendix).

(7) See Economic Surveys of Pakistan, section on Foreign Capital Inflow for terms and conditions of different loans.

(8) For a useful discussion of problems and policy

implications of tied loans see Bhagwati (1970)

(9) The basic data for savings (average and marginal), are for the year 1987-88 as reported in the Seventh Five Year Plan of Planning Commission Government of Pakistan (p94) and is assumed to hold for the subsequent period. It may however be mentioned that in reality the marginal propensity to save has shown significant fluctuations during the past and may so happen in the future. The GDP growth rate of 6.5 percent is the target growth rate of GDP for Seventh Five Year Plan and capital output ratio of 3:1 is used in estimating the capital requirement in order to achieve a target growth rate.

CHAPTER 4

MACRO ECONOMIC MODEL FOR PAKISTAN

4.1 Macro Economic Models and Developing Countries

In capitalist economies before the great depression of 1930's economic theory was largely devoted to a study of the behaviour of individual economic units. The whole economic system was to be working automatically by the functioning of price system. This is now known as microeconomics. As a reaction to the depression and the publication of Keynes "General Theory Of Employment, Interest, and Money" in 1936, modern macroeconomic developed as an analytical tool for understanding behaviour of broad economic aggregates. By concentrating on aggregate economic magnitudes, economists have derived relationships and used them to control an overall economic activity.

The literature related to macroeconomic is is enormous but is mostly devoted to developed economies.(1). Macroeconomics models based on standard ISLM tools are not quite relevant to the third world economies although macroeconomic problems have always existed there.{See Taylor (1979, Chapter 1) and Vines, (1987)}. Blejer and Khan (1984, p152) have listed the following factors which particularly distinguish developing economies from the developed economies :-

(i) A weak and very thin capital market;

(ii) shortage of credit;

(iii) non market credit allocation;

(iv) managed and non market official interest rate; and

(vi) investment in specific sectors in order to achieve planned objectives.

These factors are equally true for Pakistan. In particular, as we have noted in Chapter 1 investment in Pakistan is actively guided by a planning process rather than being determined by the market forces. Pakistan cannot, therefore, be described a full market economy. Similarly following views of Leff and Sato (1975, p171) are also quite relevant for Pakistan :-

> *"..interest-rate changes, an adjustment mechanism familiar from more developed economies, are not very relevant to LDCs. For doctrinal and political reasons, the governments in these countries generally do not permit interest rates to move sufficiently to clear the financial markets. Rather , the monetary authorities create new credit more or less independently of domestic savings.".*

It is for these kind of reasons that we have kept investment as exogenous in our model. However, in spite of such limitations numerous studies have been undertaken on analysis of investment in the developing countries (2)

An indiscriminate application of rich-country models to third world country (like Pakistan) has not been found to be very useful. Klein (1965) had reported that in early sixties while Japan was not an advanced economy the models where the *"parametric structure of the equations and definition of variables were made to look almost like those of established United States models.....were not successful or lasting models"* (p 665). Such failures some times had caused temptation to believe that *" the economic concepts applied to the developed western world were inappropriate [for developing countries] and that search should be made for alternatives"* (3). This is of course not a realistic conclusion. Instead what Taylor (1979) calls the *"characteristics (or stylized facts)"* (p3) of a country should be incorporated appropriately in the model.

4.2 Types of Macroeconomic Models

Macroeconomic models are broadly classified as models of national economy or international economy. The national economy models consist of national income or input output models. The national income models are then either in terms of the tradition of Keynes's general theory with its short run orientation, or models which followed after the publication of Harrod-Domar model and placed emphasis on long run behaviour of an economy. The models developed in the context of third world countries in the macroeconomic tradition are significantly different in substance. Park (1980) has classified the macroeconomic models of developing countries into following three categories:-

(1) Keynesian models of effective demand both with and without the financial sector and the supply of real output.

(2) Chenery's two gap model.

(3) Real models based on either Harrod-Domar or on one sector or two sector non classical growth models.

{For a brief list of models under each category see Park (page 676)}

4.3 The Model

Keating (1985) has defined an economic model as "*a description of the whole or part of the economy, omitting those aspects of the economy that the model-builder believes to be relatively unimportant*".(p,50). As such in building a model there is, in principle, no limit to the level of disaggregation and the refinements that one could incorporate. The description of a model may take a form of words or diagrams or mathematical expressions.

The economy of Pakistan, as a result of political instabilities and wars, for most of the time has experienced turbulence economic environments. This coupled with the usual problems which a developing country faces such as structural bottlenecks, imperfection of markets, lack of data and comparable work etc. make it difficult to go for an ambitious model. In spite of all these limitations, however, we have particularly made an effort to avoid most obvious drawbacks of the traditional Keynesian type and "two gap" models. Our objective is to build a model which is both theoretically sound to explain the basic macroeconomic behaviour of the economy and in practical terms could also be empirically estimated. The basic idea of our model comes from Vines (1987) (4)

It is an open economy model. An aggregate demand side includes behavioral equations for private consumption, imports and exports. Investment (both private and public) and government consumption are exogenous. An aggregate supply is represented by the productive capacity of capital stock. Inflation is explained by the gap between aggregate demand and aggregate supply.

As in case of most of the developing countries, the model lacks "LM curve". A government budget deficit and current account balance of payments which determine a change in financial assets in our model become crucially important. Influence of financial assets over private consumption is direct and strong. It is particularly worth noting that an increase in government expenditure directly adds to monetary assets and as such fiscal policy also works as an instrument of the monetary policy.

The evolution of assets is an important part of our model. Besides private sector financial assets and capital stock (mentioned above) the model includes accumulation of foreign debt. The evolution of these stocks will be described in detail in section 4.5.3.

4.4 The Estimation Procedure

Our main focus in this section is the quantitative measurement of economic relationships in terms of their theoretical relevance and policy importance. The central problem at issue would be specification of the relationships suitable for statistical fitting rather than going into depth of regression methods. This is because the subject is very much familiar and a number of standard books on the subject are available. We shall also discuss certain special problems in choosing variables that may be relevant to Pakistan. Use of the error correction mechanism (ECM) with cointegration used in an estimation of dynamic structure of the model, however, does need some elaboration since it is a relatively recent development in the field of econometric work related to developing countries like Pakistan.

4.4.1 Error Correction Mechanism and Cointegration

Economic theory generally deals with equilibrium relationships. Most empirical econometric studies are an attempt to evaluate such relationships by summarizing economic time series using statistical techniques. Most of the econometric studies in developing countries are still dominated by partial adjustment specifications *"although existing evidence clearly indicates that such models are potentially misspecified."* (5). The models based on ECM, first introduced by Sargan (1964) and popularized by Hendry {see for example Davidson, Hendry, Srba, Yoo (1978) and Hendry, Pagan, and Sargan (1983)} has put the ECM into mainstream of macroeconomic research work. As a result in the last few years a voluminous literature has emerged in this field (6). The ECM particularly enjoyed revival and popularity with the work of Engle and Granger (1987) on cointegration. This recent work by Granger and Engle has particularly demonstrated the use of long run equilibrium relationships from economic theory in empirical work to explain the short run dynamics. They have concluded that such error-correction models would not only produce better short run forecasts but also produce long run forecasts which are economically more meaningful.

A necessary condition for cointegration is that explanatory variables of an equation be of order of integration greater than one (7). For this purpose the series are tested for their unit root. Dickey and Fuller (1981) have suggested to test significance of β in the regression

$$\Delta X_t = \beta x_{t-1} + v_t \qquad [4.1]$$

To test the null hypothesis of non-stationarity, a test is performed on β. A negative and significant t-ratio of β rejects the null hypothesis. Sargan and Bhargava (1983) propose a test of the hypothesis that the errors on the regression equation follow a random walk. According to this test, whether a series is I(0), the regression $X_t = c + U_t$ is run and null hypothesis of $U_t = U_{t-1} + e_t$ is rejected against the alternative that the errors follow a stationary first order error process. The critical values of Cointegration Durbin-Watson statistic (CRDW) are provided by Sargan and Bhargava. The Dickey-Fuller (DF) and CRDW, however, are not suitable tests if their is a data generating process. In order to overcome this problem DF is augmented as:

$$\Delta X = c + \beta x_{t-1} + \sum_{j=1}^{p} d_j \Delta x_{t-i} + v_t \qquad [4.2]$$

The OLS estimator of β and its t-statistic (ADF) has the same limiting distribution as DF with drift. Engle and Yoo (1987) provide the appropriate tables of significance levels for Df and ADF. It is important to note that the tests for unit roots described here have low power. Hence, in accepting a null hypothesis extra care is needed in choice of a significance level. It would, therefore, be quite appropriate to reject the null hypothesis if there is some statistical evidence and a priori theoretical reason to accept a relationship. {See for such an argument Mizon (1984, p139)}.

Once the series are tested for their unit roots Engle-Granger two stage procedure estimate the long run static equation

$$Y_t = \alpha + \beta X_t + U_t \qquad [4.3]$$

by OLS method where β and Xt are the vectors of long run elasticities and explanatory variables. U_t and α stand for constant and error term. The residual U_t is subjected to test of null hypothesis that U_t is I(1). We reject the null hypothesis if Df/ADF are negative and significantly different from zero.Unless the left and right hand sides of the equation are of the same order of integration the residual U_t will not be stationary. An other view of this test is that we are testing the null hypothesis that variables of the equation are not cointegrated against the alternative hypothesis that variables are cointegrated. The residual U_t is entered into the dynamic equation as ECM expecting significant negative parameter for it.

There is one problem that the Engle-Granger procedure sometimes might give biased long run parameters. Banerjee et al. (1986) have provided Monte Carlo evidence that such bias is higher with small samples. However, probability of such bias is smaller with annual data as compared to high-frequency data {see Muscatelli and Hurn (1990)}. Since our data frequency is annual we are using the Engle-Granger procedure in estimating consumption and import equations.

4.5 Specification and Estimation of the Model Equations

Our model consists seven behavioural equations and thirty one identities and link/ definitional equations which are described under following three main sub sections:-

(i) Aggregate Demand;

(ii) Aggregate Supply and

(iii) The Evolution of Assets Stocks.

These sections are, however, not strictly restricted to these topics only. In the process of modeling an equation or defining an identity if it is deemed suitable various explanatory variables of an equation or components of an identity are explained under the same section. At end of the chapter all equations and identities have been listed and a Flow Chart of the model has been added which provide an overall summarised picture of the model.

4.5.1 Aggregate Demand (1975-76 Prices)

Private consumption

Most of the empirical work on the consumption function has the following two origins:-

(i) Simple Keynesian 'absolute income hypothesis' which implies proportionally lower level of consumption at higher level of income.

(ii) A more sophisticated approach towards consumption function which began after Kuznet's (1955) observation (for United States) that whereas cross section data support 'absolute income hypothesis' the annual time series data shows near constancy of consumption ratio despite a secular rise in income level. The alternate theories commonly known as 'permanent income hypothesis' are a kind of attempt to reconcile this seemingly contradictory behaviour. Most notable of these are Dusenbery's (1949) Relative Income Hypothesis, Modigliani and Brumberg's (1953) and Modigliani and Ando (1963) Life Cycle Hypothesis and Friedman's (1957) Permanent Income Hypothesis. Amongst these theories, Modigliani model is more useful for building an econometric model since it explicitly includes measured current income and assets to explain consumption. (See Mayer

(1972) for a comprehensive review of these theories). Molana (1987), besides the review of empirical work on these lines provides a good empirical evidence about the role of wealth in the aggregate consumption (of U.K.).

In addition to above theories, as we discussed in Chapter 1, in the context of developing countries a negative effect of foreign capital on domestic savings (therefore positive effect on consumption) has received much attention though a significant difference of opinion exists.

Keeping in view the above theoretical considerations, real private consumption has been modeled as a function of real disposable income and real assets (see section 4.5.3.1 for definition of real assets) (8). The equation has been modeled in log linear form with real values (1975-76 prices) using the Engle-Granger two stage procedure discussed in section 4.4.1. Although the data is limited to 29 observations the frequency is annual which provides enough time-span to capture the long-term effects.

Prior to estimating the equation we wish to establish the time series properties of the individual series. The natural logs of consumption (conc), disposable income (ydc) and real assets (a) were tested for I(1). The CRDW, DF and ADF statistics are reported in Table 4.1.

Table 4.1

Testing for unit root in consumption function variables

Variables	CRDW	DF	ADF
δconc	2.55	(-)1.50	(-)1.13
δydc	2.98	(-)1.70	(-)1.18
δa	2.69	(-)2.82	(-)2.10

The ADF and DF tests reported in Table 4.1 are all negative and greater 1. The larger values of CRDW particularly suggest that the first difference are stationary. We, therefore, conclude that 'conc', 'ydc' and 'a' are integrated of order one. Having established that our all variables are I(1), we run a static regression. If the variables are infact cointegrated then the residuals of the equation should be I(0). The tests for residuals indicate that DF, ADF and CRDW are (-)3.78, (-)3.86 and 2.1 respectively. This provides further evidence that variables are cointegrated. The coefficients of the consumption function, therefore,represent the long run elasticities. The lagged residual values of the static equation, used as ECM, have also significant negative parameter. It may, however, be noted that the critical values for DF and ADF are available for a minimum sample size of 50 observations. Since we have a sample size of 29 observation our tests are indicative rather than conclusive.

The static and dynamic equations are as following:-

Static Consumption Equation [4.4]

$$\underset{(1.7)}{\text{conc} = 0.1} + \underset{(8.9)}{0.85}\ \text{ydc} + \underset{(1.1)}{0.15}\ \text{a}$$

R SQUR. = 0.995 RSS=0.034 DW = 1.7

Parameter constancy:(three years forecast period)

Forecast CHI SQUR.. = 0.82
CHOW Test = 0.55
{cri value = 3.30 }

Dynamic Consumption Equation [4.4a]

$$\delta conc = \underset{(3.2)}{0.73}\ \delta ydc + \underset{(1.1)}{0.15}\ \delta a - \underset{(-3.7)}{0.53}\ ECM_{t-1}$$

R SQUR. = 0.721 RSS = 0.016 DW = 1.98

Parameter constancy:(three years forecast period)

Forecast CHI SQUR. = 1.20
CHOW Test = 1.10
{cri value = 3.07 }

Imports

Import includes all kinds of goods and services. It has been modeled with GNP, effective rate of exchange, and levels of foreign exchange reserves of the past year. All variables are in real terms. The GNP is considered to be more appropriate explanatory variable (as a compared to GDP) because of significant private transfers from abroad after 1973. A dummy variable has been used to capture effects of the disruption of 1971 war with India.

The real effective exchange rate with expecting negative sign has been arrived at as following:-

$$REE = (E \times IMD \times UVM)/DEF \qquad [4.5]$$

where

E = Nominal exchange rate.

IMD = Average rate of import duty.

DEF = GDP deflator.

REE = Real effective exchange rate.

UVM = Unit value index of imports.

The nominal exchange rate, import duty and import prices are exogenous. (In domestic currency, however, import prices are influenced by changing E or IMD).

We have discussed in Chapter 2 (section 2.1.2.4), that a very low level of foreign exchange reserves might force a government to put some kinds of restrictions to reduce volume of imports. In order to capture effects of such a government reaction, we have introduced foreign exchange reserves with a lag as one of the explanatory variable in import equation. However, this effect is kept constant in our model because we wish to explore the evolution of foreign debt without changing reserves. We, therefore, define identity for foreign exchange reserves as:

$$R = R_{t-1} + CAB - AMT + FA + DISB \qquad [4.6]$$

where CAB, AMT, FA and DISB stand for current account balance, amortisation, foreign aid (grants) and disbursement on new loans). Substituting identities for foreign debt {$D_t = D_{t-1} - AMT + DISB$ ([4.49])} and disbursements of foreign loans, {$DISB = AMT - CAB - FA$ ([4.50]})} in identity for reserves gives '$R = R_{t-1}$'. Switching-off the change in foreign exchange reserves, however, will not change the basic properties of our model. Effects of an exogenous change in reserves for imports (which we have not done in our simulation) could still be evaluated.

Import equation has been also estimated using the Engle-Granger method with all those steps described for the consumption function. The variables of the import equation were tested for I(1). The statistics for set of variables are reported in Table 4.2 (9).

Table 4.2

Testing for unit root in import function variables

Variables	CRDW	DF	ADF
δmtc	3.19	(-)5.44	(-)2.29
δyc	2.97	(-)1.75	(-)1.00
δRee	3.00	(-)5.03	(-)3.45
δLR_{t-1}	2.91	(-)4.25	(-)2.70

('mtc','yc','Ree', and 'LR_{t-1}' stand for log of imports, GNP, effective exchange rate and level of foreign exchange reserves with a lag of one year in real terms).

The unit root statistics indicate that variables of the import equation are I(1). This evidence is further strengthened by unit root statistics of residuals from static equation which were tested for I(0). The DF, ADF and CRDW for residuals are (-)5.7, (-)-3.2 and 3.2 respectively. The parameters of the static equation are, therefore, the long run elasticities.The equations are as following:-

Static Import Equation [4.7]

$$mtc = \underset{(7.6)}{0.82}\ yc + \underset{(4.2)}{0.12}\ LR_{t-1} - \underset{(-3.7)}{0.20}\ Ree -)\underset{(-3.0)}{0.30}\ DUMMY$$

R SQUR. = 0.999 RSS= 0.141 DW = 2.3

Parameter constancy:(three years forecast period)

Forecast CHI SQUR.. = 1.37
CHOW Test = 1.28
{cri value = 3.30 }

Dynamic Import Equation [4.7a]

$$\delta mtc = \underset{(3.2)}{0.95}\ \delta yc + \underset{(1.1)}{0.05}\ \delta LR_{t-1} - \underset{(-3.7)}{0.29}\ \delta\ Ree - \underset{(-4.3)}{0.3}\ \delta DUMMY - \underset{(-5.27)}{1.03}\ ECM_{t-1}$$

R SQUR. = 0.723 RSS= 0.011 DW = 2.1

Parameter constancy:(three years forecast period)

Forecast CHI SQUR.= 1.11
CHOW Test = 1.08
{cri value = 3.07 }
DF = -5.7 ADF = -3.2 CRDW = 3.2

Exports

Pakistan being a small country can realistically be assumed to be a price taker economy which can only change its domestic prices for exports by changing the exchange rate. In other words exports are supply constrained and, other things being given, an increase in output capacity will increase the volume of exports.(10) In addition, as we have discussed in Chapter 3, exports from Pakistan are still dominated directly or indirectly by the agricultural sector. As a result fluctuation in agricultural output have direct bearing on volume of exports. Keeping in view these facts, exports in real terms have been modeled as following:-

(i) Exports are assumed to increase proportionally to potential GDP (see section 4.5.2.for definition of potential GDP) and any temporary or permanent change in this ratio is explained by a real exchange rate and index of agricultural marketable surplus (IAMS) which are defined as in (ii) and (iii) below respectively.

(ii) Real exchange rate as an explanatory variable for exports was defined as following:-

$$RE = E\ (UVX/XDEF) \qquad [4.8]$$

where

E = Nominal exchange rate.

UVX = Unit value index of exports.

XDEF = Adjusted GDP deflator for exports.

The XDEF is an adjusted downward GDP deflator for rebate of the indirect taxes to exports. These indirect taxes add to the cost and therefore pushes up the prices of home produced goods. Rebate of the indirect taxes neutralize this effect. Such a downward adjustment depreciates the real exchange rate and encourages exports. After making this adjustment for indirect taxes the XDEF is estimated by a link equation with GDP deflator.

$$xdef = def + \underset{(10.4)}{0.005}\ Trend \underset{(-2.5)}{-0.21} \qquad [4.9]$$

$$R\ SQUR. = 0.800 \quad RSS = 0.013$$

The minus term of 0.21, after taking account of parameter of 0.005 with trend, is the extent of indirect tax adjustment to the GDP deflator.

(iii) We have discussed in Chapter 2 that agricultural sector has significant influence over exports and fluctuations in agricultural production bring parallel fluctuation in exports. In order to capture this effect the difference of trend index of agricultural output and the actual index of output (abbreviated as IAMS) has been used as explanatory variable. The estimated IAMS equation is as following:-

$$IAMS = iap - (3.94 + 0.07\ Trend) \qquad [4.10]$$

$$R\ SQUR. = 0.967 \quad RSS = 0.112 \quad DW = 1.00$$

where 'iap' is the log of actual index of agricultural production and the second term (3.94 + 0.07 TREND) stand for the trend index of agricultural production.

The export equation is as following:-

$$xtc = kqc + (\underset{(4.3)}{1.52} - \underset{(-2.1)}{0.01}\ Trend + \underset{(8.0)}{0.47}\ Re \qquad [4.11]$$

$$+ \underset{(2.1)}{1.09}\ IAMS + \underset{(2.6)}{0.87}\ IAMS_{t-1})$$

R SQUR. = 0.910 RSS= 0.183 DW = 1.40

Parameter constancy:(three years forecast period)

Forecast CHI SQUR. = 3.06
CHOW Test = 1.89
{cri value = 3.10 }

The terms 'xtc' and 'kqc' stand for the log of total exports and capacity output respectively. Other variables have already been explained. Except with the IAMS there is no lag with any other explanatory variable.

Investment

Gross investment, both private and government, are treated as exogenous as we have explained in section 4.1. A net investment is estimated after adjusting for depreciation.

$$NIC = IC - DEPC \qquad [4.12]$$

where NIC, IC and DEPC stand for net investment, gross investment and depreciation of capital stock. The capital stock and depreciation have been discussed in detail in section 4.5.3.

Gross domestic product ,gross national product and disposable income

Gross domestic product at market prices (QCM) is based on standard national income accounting identity.

$$QCM = CONC + PIC + GIC + GCC + XTC - MTC + CSTC \qquad [4.13]$$

CONC, PIC, GIC, GCC, XTC, MTC and CSTC stand respectively for private consumption, private investment government investment, government consumption, exports of goods and services, imports of goods and services and change in stocks.

Gross domestic product at factor (QC) has been arrived at after adjustment of net indirect taxes as following:-

$$QC = QCM\ (1-INTAXR) \qquad [4.14]$$

The rate of net indirect taxes (INTAXR) is based on actual indirect taxes, after adjusting for subsidies, as a percent of gross domestic product at market prices.

Gross national product (YC), in accordance with the national income accounting system is defined as following:-

$$YC = QCM + NIAC \qquad [4.15]$$

The term NIAC stands for net income from abroad which is defined as :

$$NIAC = PTAX - PTAM - INTR \qquad [4.16]$$

where PTAX is for private transfers from abroad and are exogenous. The term PTAM is for transfers to abroad (other than interest payments) and is exogenous. Interest paid against foreign debt is endogenous which is defined as following:-

$$INTR = D_{t-1} * INTRR \qquad [4.17]$$

where INTR is for total amount of interest paid, D_{t-1} is the level of foreign debt at end of the past year and INTRR is average rate of interest. For the purpose of our model we have estimated the average rate of interest based on the relationship as defined in [4.17] i.e. the actual interest payments divided the level of debt of the past year.

Disposable income (YDC) is estimated by adjusting the 'YC' for direct tax which has been assumed to be a fixed percentage of 'YC' based on actual direct tax collected.

$$YDC = YC\ (1 - DTAXR) \qquad [4.18]$$

4.5.2 Aggregate Supply

Modeling inflation

Inflation is one of the most controversial issues between Keynesian, Monetarists and New Classical Economists. While from Keynesian point of view an increase in aggregate demand leads to an increase in prices, for Monetarists it is purely a monetary phenomenon (11). The famous Phillips Curve (12) for the first time established the relationship between growth rate of money wages and unemployment. Samuelson and Solow (1960) estimated a direct relationship between the rate of unemployment and the rate of price inflation. However, Friedman (1968) has criticized the whole concept of long run trade off between inflation and unemployment. According to Friedman it is the real wage and not the money wage which matters. Workers offer their labour and accept a money wage after giving full consideration to the anticipated inflation. New Classical Model, somewhere in between these two concepts is *"a development of introduction of endogenous expectations in to the Phillips curve"* {Hillier (1988, P151)}.

The concept of expectation also faces criticism. The adaptive expectation which allows some learning from previous experience and past mistakes is relatively simple to model but is only dependent on the past. Rational expectations on the other hand *"is highly controversial"* {Hillier (1988, p140). It may be noted that controversy which is referred to here is in the context of developed economies. Problems of applying this concept on developing countries are more difficult to resolve (13). Inspite of these difficulties and complications we have modelled the home product inflation equation for Pakistan as following:-

$$HPI - HPI_{t-1} = (\Pi^e - HPI_{t-1}) + \theta\ CU \qquad [4.19]$$

where HPI, HPI_{t-1} Π^e, and CU stand for home product inflation, home product inflation with a lag, expected inflation and index of capacity utilization. If Π^e is assumed to be equal HPI_{t-1} then the change in inflation δHPI (which is by definition equal to '$HPI-HPI_{t-1}$') is explained by the index of capacity utilization as following:- (14)

$$\delta HPI = CONSTANT + \theta CU \qquad [4.20]$$

Capacity output, capacity utilisation and home product inflation

Capacity utilisation is defined as a ratio of actual GDP to potential GDP. i.e.

$$CU = QC/KQC \qquad [4.21]$$

The terms 'QC' and 'KQC' stand for actual and potential GDP.

The capacity output (KQC) depends on an explicit production function. In its most simple form, (particularly with reference to developing countries where capital is considered to be a limiting factor) the capacity output is most often estimated in the following form:-

$$KQC = \alpha K \qquad [4.22]$$

The term 'K' is for the capital stock and 'α' is the familiar capital out put ratio. The drawback of this form is that it ignores the change in capacity output that takes place with variations in total labour and change in productivity. In order to estimate the capacity output for Pakistan we selected the following functional form (15):-

$$KQC = A \; [e^{\alpha \, Trend} K^{\beta}] \qquad [4.23]$$

or in natural log form

$$kqc = a + \alpha Trend + \beta k \qquad [4.24]$$

in which 'a' and 'Trend' were expected to capture the contribution of other factors and technological progress. However, because of strong collinearity between Trend and capital stock series the result was not quite satisfactory.(See section 4.5.3.2 for estimating the capital series). Alternatively following equation was estimated:-

$$KQC = A[K^{\beta}] \qquad [4.25]$$

with the underlying assumption that 'A' will capture all effects other than the capital. The resulting equation is as following:-

$$\underset{(10.00)}{kqc = 7.81} + \underset{(4.9)}{0.33\ k} \qquad [4.26]$$

R SQUR. = 0.984 RSS= 0.069

The parameter of 0.33 of log of capital stock is close to a generally accepted share of 25 percent for capital and the rest for the other factors of production in total output.

The final equation for change in home product inflation which also includes a DUMMY variable to capture the effect of 1971 war is as following:-

$$\delta HPI = \underset{(1.2)}{-0.01} + \underset{(2.03)}{0.66}\ CU_{t-1} + \underset{(3.5)}{0.06}\ DUMMY \qquad [4.27]$$

R SQUR. = 0.372 RSS= 0.028 DW = 2.2

Parameter constancy:(three years forecast period)

Forecast CHI SQUR. = 0.21
CHOW Test = 0.20
{cri value = 3.07 }

Consumer price equation

Consumer prices are influenced by prices of imports (in domestic currency) and home product inflation as following:-

$$\delta cdef = \alpha\ \delta def + \beta\ \delta uvmd \qquad [4.28]$$

where cdef, def and uvmd stand for the log of indexes for consumer prices, home product and import price (in domestic currency). The term 'δ' is for first deference and 'α' and 'β' are the parameters. Since by definition '$\alpha + \beta$' are equal to 1:

$$\delta cdef = \alpha\ \delta def + (1-\alpha)\ \delta uvm \qquad [4.29]$$

(i.e. $\beta = 1-\alpha$) and therefore

$$\delta cdef = \alpha\ \delta def - \alpha\ \delta uvm + \delta uvm \qquad [4.30]$$

which is equal to

$$(\delta cdef - \delta uvm) = \alpha\ (\delta def - \delta uvm) \qquad [4.31]$$

The final estimated equation is as following:-

$$\delta cdef = 0.96\ \delta def + 0.04 \delta uvm \qquad [4.32]$$

R SQUR. = 0.976 RSS= 0.010 DW = 2.15

The resulting equation is not entirely satisfactory because of relative dominance of the home product inflation in the consumer price index though the share of imports in GDP is higher. However, it will have little effect on overall behaviour of the model though it indicates relatively smaller direct influence of import prices on the consumer price index which is something not entirely realistic.

Other price indices

The implicit price deflators for government consumption, government and private investment have ben derived from the current and constant estimates of their values given in national income accounts. These are assumed to be proxied by GDP deflator as following:-

$$gcde = def \qquad [4.33]$$

$$gide = def \qquad [4.34]$$

$$pide = def \qquad [4.35]$$

The terms 'gcde', 'pide' 'gide' and 'def' stand for log of deflators in respect of government consumption, government investment, private investment and GDP.

The unit value index of imports and exports, as already mentioned, are exogenous in foreign currency though in local currency are changed by the exchange rate which is also exogenous. As we have described in Chapter 2 the implicit price deflator for net income from abroad has been derived from the national income accounts at current and constant prices. There are, however, no further details available as to how net income from abroad has been estimated at constant prices in the national income accounts.

4.5.3 The evolution of assets stocks

Our model has the following three kinds of assets:-

(a) Private sector financial assets.
(b) Capital stock.
(c) Foreign debt.

4.5.3.1 Private sector financial assets

The total private sector assets consist of physical and financial assets. However, for lack of data it was not possible to take into account physical assets. Financial assets which are claims on goods and services consist of money, bonds, loan stocks etc. As Taylor (1979,p3) pointed out that " *bonds which enter as an alternative interest bearing assets in advanced country models simply are not there* [*in developing countries models*] ".is equally true for Pakistan. The term financial assets referred in our study include currency in circulation, demand deposits and time deposits (including deposits with State Bank of Pakistan).

The change in financial asset is brought by government budget and current account balance of payments. An increase in government deficit and surplus in the current account increase financial assets of private sector and vice versa. This is a significant departure from the traditional Keynesian type approach where assets are assumed to be constant (see Chapter 2 section 2.3.1.5)

For the current account balance of payment as an agent of affecting financial assets, it is important to note that neither a surplus nor a deficit can continue indefinitely. A persistent current account surplus will lead to ever increasing assets of the private sector and vice versa. However, in either case, the model has correcting mechanism, through change in consumption, which changes the aggregate demand and therefore balance of payments directly as well as through change in prices. It is some times argued that in case of a deficit in balance of payments governments use deficit financing to maintain an economic activity (and vice versa) and in that process sterilize the financial assets. But certainly such a policy cannot be pursued indefinitely.

Since an asset is a stock variable, it is measured at a point in time as following:-(16)

$$A = A_{t-1} + \Delta A \qquad [4.36]$$

where

A_t = the private sector nominal financial assets at the end of time.

A_{t-1}= the private sector assets at the end of period 't-1'(or beginning of 't')

ΔA = the change in the financial assets

The change in financial assets is brought as following:-

$$\Delta A = (GE-REV) + CAB \qquad [4.37]$$

where

GE = Autonomousus government expenditure (consists of government consumption and investment);

CAB = current account balance and

REV = government revenue and

Current account balance is driven by the following identity (see for details Chapter 2):-

$$CAB = XT + NIA - MT \qquad [4.38]$$

XT, NIA, MT are for total exports, net income from abroad and total imports (all in current prices). The exports and imports are brought to current prices by using appropriate indexes (see for definition of these indexes Chapter 2 section 2.1.3)

Government revenue has been linked with GNP. The estimated equation is as following:-

$$rev = y + \underset{(6.9)}{0.02}\ Trend \underset{(-5.7)}{-2.3} \qquad [4.39]$$

R SQUR. = 0.98 RSS = 0.010 DW = 1.70

where 'rev' 'y' stand for log of revenue and GNP respectively.

In consumption equation (described above) these are the real financial assets which positively influence the private consumption. The real assets are defined as following:-

$$AC = (A/P) \qquad [4.40]$$

where

AC = real private sector financial assets and

P = consumer price index.

The equation for 'AC' represents the real balance or Pigou effect and could be be assumed as simplified 'wealth effect' in which only money is considered as wealth and it effects the aggregate demand by influencing private sector consumption {see for such definition Cuthbertson and Taylor (1987, p21).

4.5.3.2 Capital stock series

Capital stock series for Pakistan are not readily available. The only information available was the data for depreciation of capital stock reported in National Accounts Statistics of United Nations from 1968 through 1985 with additional details about rate of depreciation for different sectors. There were following two possible ways for developing a capital stock series for Pakistan:-

(1) Estimating production function and capital stock series simultaneously as recommended by Dadkhah and Zahedi (1986).

(2) Using the data for depreciation of capital stock reported in the United Nations National Accounts Statistics for the years 1968 to 1985 which also include details of rate of depreciation of different sectors.

According to method (1) the capital stock series is estimated on the basis of following relationships:-

$$Q_t = \alpha K_t + \varepsilon_t \qquad [4.41]$$

$$K_t = (1-\lambda)K_{t-1} \qquad [4.42]$$

and therefore

$$Q_t = \alpha\ (1-\lambda)K_{t-1} + \alpha I + v \qquad [4.43]$$

$$= (1-\lambda)Q_{t-1} + \alpha I + v \qquad [4.44]$$

where

Q_t = output (potential GDP)'

K_t = capital stock,

λ = rate of depreciation of capital stock,

I_t = fixed investment,

α = capital out put ratio,

ε = error term,

$v = \varepsilon - (1-\lambda)\varepsilon_{t-1}$

Assuming 'ε' to be zero and 'α' to remain constant over the sample period the capital stock series could be developed as following :-

$$K_t = (Q_t/\alpha) \qquad [4.45]$$

where 'α' is derived from relationship at (iv) above as

$$\alpha = [Q_t - (1-\lambda)Q_{t-1}]/I_t \qquad [4.46]$$

In order to use this method equation [4.44] was estimated. However, the result was not satisfactory because the parameter (1-λ) was greater than '1' which implies as if there is no depreciation of capital stock. In view of this inconsistency the data available for depreciation in UN

National Accounts Statistics was used to develop the capital stock series as following:-

(a) In absence of sectoral share of capital stock, a weighted average rate of depreciation was estimated, assuming that capital stock of different sectors is in proportion to the value added of these sectors. An implicit assumption is that capital output ratio of different sectors is the same. The weighted average depreciation so estimated is 5.7 percent and 5.6 percent for the years 1969 and 1985 respectively. A rate of overall depreciation of about 6 percent is quite realistic for an economy like Pakistan. Details of exercise are provided in Table 4.3.

Table 4.3 Estimate of Weighted Average Rate of Depreciation for Pakistan

S.NO	Sector	% Share in total value added		Rate of	Weighted Rate of dep.	
		1969-70	1984-85	dep.	1969-70	1984-85
1	Agriculture	0.368	0.246	0.050	0.018	0.012
2	Mining	0.005	0.022	0.050	0.000	0.001
3	Industry(L)	0.125	0.124	0.100	0.013	0.012
4	Industry(S)	0.035	0.043	0.050	0.002	0.002
5	E & Gas	0.015	0.023	0.070	0.001	0.002
6	Construction	0.042	0.060	0.025	0.001	0.002
7	T & C	0.068	0.080	0.100	0.007	0.008
8	Banks	0.018	0.030	0.050	0.001	0.002
9	Owner dwel.	0.037	0.039	0.240	0.009	0.009
10	Ser.& oth.	0.287	0.333	0.020	0.006	0.007
					0.057	0.056

Notes:

1)The data for rate of depreciation has been taken from National Accounts Statistics of United Nations for the year 1985 and the share of value added has been derived from the national accounts available in Economic Survey of Pakistan (1987-88)

2) L and S in parenthesis stand for large scale and small scale.

(b) The rate of depreciation of 5.7 percent was used to estimate the capital stock (K) for the year 1969 as bench mark i.e.

$$K(1969)=[(Dep1969)/0.057] \quad [4.47]$$

(c) For the years 1969 onwards the capital stock has been developed according to identity given below. For the years 1985-87 the depreciation has been assumed to be 5.7% of the past year capital stock.

$$K_t = K_{t-1} + (I_t\text{-Depreciation}) \quad [4.48]$$

It may be mentioned that in absence of data for depreciation capital stock with a lag for the period prior to 1969 the depreciation rate has been assumed to be 5 percent of capital stock of the current year (17) Table-4.4 provides full details of capital stock series.

4.5.3.3 Foreign debt evolution

As in the case with financial assets, foreign debt is also a stock variable and is driven by new disbursements after making adjustment for amortisation.

$$D_t = D_{t-1} - AMT + DISB \quad [4.49]$$

Table 4.4

Table 4.4 Estimated Capital Stock at Constant 1975-76 Prices (Million Rs.)

YEAR	Investment	Depreciation	Capital Stock
1959	5504	992	19845
1960	7223	1289	25779
1961	8486	1632	32633
1962	10903	2073	41463
1963	14168	2649	52981
1964	15829	3277	65533
1965	13984	3787	75731
1966	13691	4258	85164
1967	13124	4680	93607
1968	12771	5066	101313
1969	14946	6269	109990
1970	14695	6128	118667
1971	13406	6128	127234
1972	12987	5727	134512
1973	14544	7494	141773
1974	18178	7184	148823
1975	24057	7497	159816
1976	25173	7571	176376
1977	25292	8147	193977
1978	26030	8533	211123
1979	29385	9297	228620
1980	27579	9781	248707
1981	28931	10465	266505
1982	31504	11247	284971
1983	32185	12029	305228
1984	34374	12807	325383
1985	36803	13640	346950
1986	40504	21096	370113
1987	41027	22203	389521

The terms D_t, D_{t-1}, AMT, and DISB respectively stand for current outstanding debt, debt outstanding at the end of last year (in case of Pakistan the date is 30th June) and new disbursement of foreign loans/credits respectively. The term DISB is defined as following.

$$DISB = AMT - CAB - FA \qquad [4.50]$$

CAB is for current account balance which we have already explained. FA stands for non repayable foreign aid. Amortisation (AMT) is driven by a fixed average rate of amortisation (AMTR) times D_{t-1}. The average rate of amortisation has been derived according to the same relationship, where the actual amount of amortisation is divided by the level of debt of the past year. The algebraic definition for amortisation is as following:-

$$AMT = D_{t-1} * AMTR \qquad [4.51]$$

4.6 Summary and Flow Chart of the Model

The aim of this section is to summarise the model we have estimated and to describe briefly some of its important features.

Despite the aggregate nature of the model, it differs from the traditional Keynesian type models because:

(i) It permits the change in financial assets brought by government budget and current account balance of payments and

(ii) Besides the aggregate demand of the economy there is also an aggregate supply side which is represented by the productive capacity of capital stock and accordingly the domestic prices respond to changes in aggregate demand and supply.

As a whole, inspite of the problems associated with model building for a developing country like Pakistan, we have successfully combined the important features of a macroeconomic system.

4.6.1 Summary Listing of the Equations

In Table 4.5 we have listed all the equations and identities. The equations estimated with two stage cointegration have been combined rather than presenting the long run and short run equations separately.

Table 4.5 Summary listing of the model

Private consumption

$$conc = conc_{t-1} + 0.73\ \delta ydc + 0.15\ \delta a - 0.53\{(conc_{t-1} - (0.1 + 0.85\ ydc_{t-1} + 0.15\ a_{t-1})\} \quad [1]$$

Imports of goods and services

$$mtc = mtc_{t-1} + 0.95\ \delta yc + 0.05\ \delta LR_{t-1} - 0.29\ \delta\ Ree - 0.3\ \delta DUMMY - 1.03\ \{mtc_{t-1} - (0.82\ yc_{t-1} + 0.12\ LR_{t-2} - 0.20 Ree_{t-1} - 0.30\ DUMMY_{t-1})\} \quad [2]$$

Exports of goods and services

$$xtc = kqc + (1.52 - 0.01\ Trend + 0.47\ Re + 1.09\ IAMS + 0.87\ IAMS_{t-1}) \quad [3]$$

Gross domestic product at market prices and factor cost, Gross national product and disposable income

$$QCM = CONC + PIC + GIC + GCC + XTC - MTC + CSTC \quad [4]$$

$$QC = QCM\ (1-INTAXR) \quad [5]$$

$$YC = QCM + NIAC \quad [6]$$

$$YDC = YC\ (1 - DTAXR) \quad [7]$$

Depreciation, investment, and capital stock

$$DEPC = KC_{t-1} * LEMDA \quad [8]$$

$$NIC = IC - DEP \quad [9]$$

$KC_t = KC_{t-1} + NIC$ [10]

Capacity out put and capacity utilization

$kqc = 7.81 + 0.33\ kc$ [11]

$CU = (QC/KQC)$ [12]

Price and price indices

$\delta HPI = -0.01 + 0.66\ CU_{t-1} + 0.06\ DUMMY$ [13]

$HPI = \delta\ HPI + HPI_{t-1}$ [14]

$def = HPI + def_{t-1}$ [15]

$\delta cdef = 0.96\ \delta def + 0.04 \delta uvm$ [16]

$cdef = \delta cdef + cdef_{t-1}$ [17]

$xdef = def + 0.005\ Trend - 0.21$ [18]

$gcde = def$ [19]

$gide = def$ [20]

$pide = def$ [21]

Real and real effective exchange rate

$RE = E\ (UVX/XDEF)$ [22]

$REE = (E \times IMD \times UVM)/DEF$ [23]

Evolution of real assets

$A = A_{t-1} + \Delta A$ [24]

$\Delta A = (GE-REV) + CAB$ [25]

$$AC = (A/P) \quad [26]$$

Net income from abroad, Current account balance, Foreign exchange reserves, Foreign debt, Amortisation, Interest payments and Disbursements of loans

$$NIA = PTAX - PTAM - INTR \quad [27]$$

$$CAB = XT + NIA - MT \quad [28]$$

$$INTR = D_{t-1} * INTRR \quad [29]$$

$$AMT = D_{t-1} * AMTR \quad [30]$$

$$DISB = AMT - CAB - FA \quad [31]$$

$$D_t = D_{t-1} - AMT + DISB \quad [32]$$

$$R = R_{t-1} + CAB - AMT + FA + DISB \quad [33]$$

Government revenue and government expenditure

$$rev = y + 0.02\ Trend - 2.3 \quad [34]$$

$$IG = IGC * GIDE * 0.01 \quad [35]$$

$$GC = GCC * GCDE * 0.01 \quad [36]$$

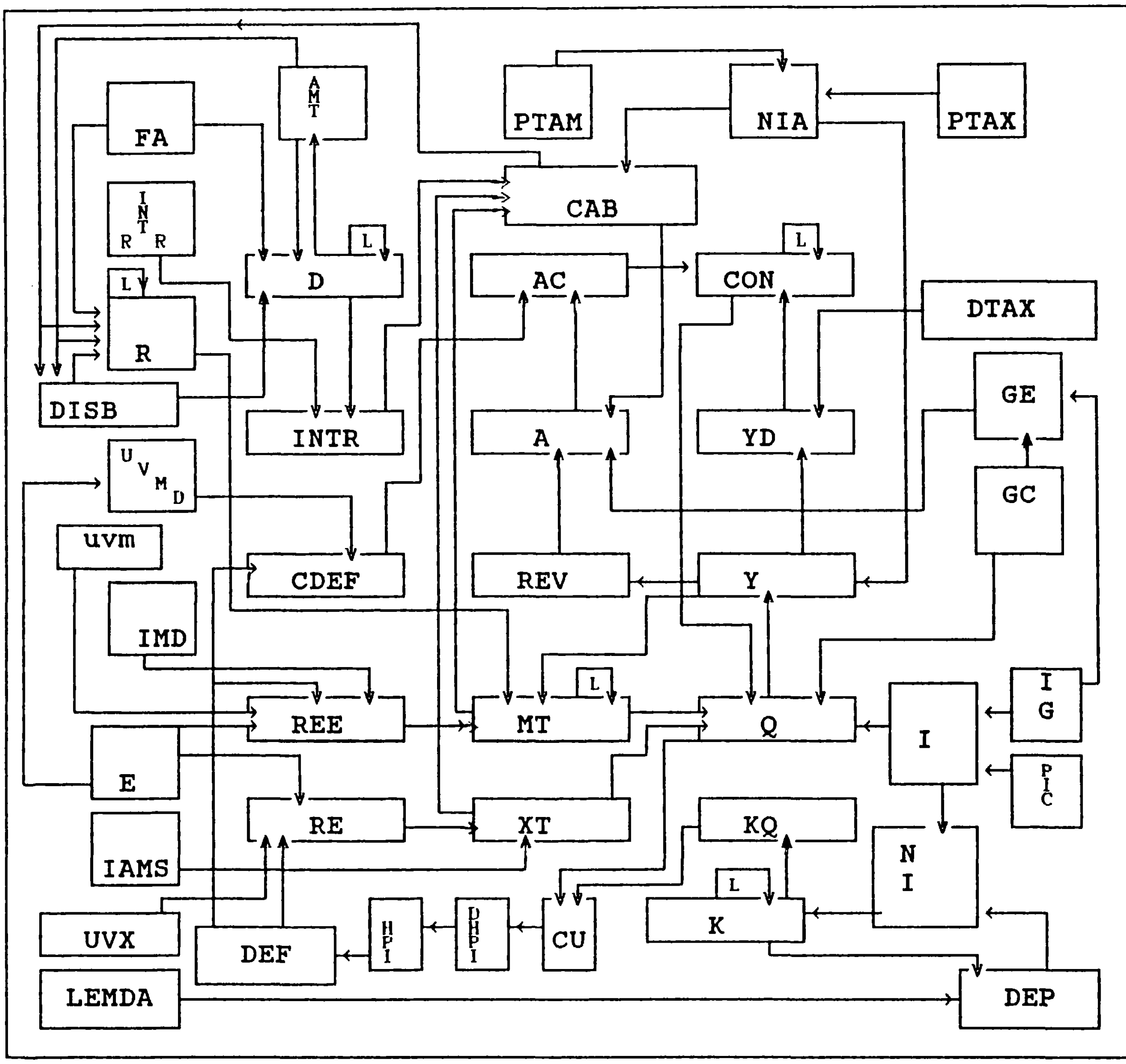
$$GE = IG + GC \quad [37]$$

Ratio of actual and trend agricultural production

$$IAMS = iap - (3.94 + 0.07\ Trend) \quad [38]$$

Note: All variables written in small cases or started with letter 'L' are in natural logs

Figure 4.1 Flow Chart of the Model



4.6.2 Flow chart of the model

In figure 4.1 the flow-chart summarises in a very general and simple terms the main elements and interrelationships of our model. In this chart endogenous variables are determined by the variables to which they are linked by the inward pointing arrows. Definitions of the variables used in the chart ~~is~~ are as follows.

Definition of variables

A	=	nominal financial assets
AC	=	real financial assets
AMT	=	amortisation
CAB	=	current account balance of payments
CONC	=	private consumption
CDEF	=	consumer price deflator
CU	=	index of capacity utilization
D	=	foreign out standing debt
DEF	=	GDP deflator
DEP	=	depreciation
DHPI	=	change in home product inflation
DISB	=	disbursement of loans
DTAX	=	direct tax rate
E	=	nominal exchange rate
FA	=	foreign aid (grants)
GE	=	government expenditure
HPI	=	home product inflation
I	=	total investment
IAMS	=	index of agricultural surplus
IG	=	government investment
IMD	=	rate of import duty
INTR	=	interest paid on foreign debt
INTRR	=	average interest rate on foreign loans
K	=	capital stock
KQ	=	capacity output
L	=	lag of same variable
LEMDA	=	rate of depreciation
MT	=	gross imports
NI	=	net investment
NIA	=	net transfers from abroad
PTAX	=	private transfers from abroad
PTAM	=	private transfers to abroad
Q	=	gross domestic product

R	=	foreign exchange reserves
RE	=	real exchange rate
REE	=	real effective rate of exchange
REV	=	government revenue
UVM	=	unit value index of imports
UVMD	=	unit value index of imports (domestic prices)
UVX	=	unit value index of exports
XT	=	total exports
Y	=	gross national product
YD	=	disposable income

Notes

(1) For a brief history and developments in macroeconomics see Mankiw (1990).

(2) A good sample of such literature is Scott (1981), Leff and Sato (1975) and Behrman (1972).

(3) Coats et al. (Page 3)

(4) The same model has been applied more rigorously by Vines and Srinvison in a World Bank financed project *"Macroeconomics in the South-Adjustment with Growth."* The draft version of this paper was prepared in 1988. The final version is yet to come.

(5) Gemech (1990,p1)

(6) See for example the entire issue of Oxford Bulletin of Economics and Statistics (1986) vol 48, No 3. Dolado et al. (1990) provide a good review of the recent literature on cointegration and unit roots.

(7) Most often the economic series are assumed to be stationary of order 1 and a cointegration equation is run directly. The residuals from that equation are then tested to ensure whether the series used in the regression are integrated.

(8) In order to investigate the impact of foreign capital on

domestic consumption gross and net foreign capital inflow were also used as explanatory variables expecting a positive relationship with the hypothesis that foreign capital reduces domestic savings. However, foreign capital has not shown a significant relationship both in terms of size of parameter and statistical significance. In fact this requires further empirical work where different kinds of foreign capital are separated for their impact on consumption.

(9) A dummy variable cannot be put to the test of integration .However, such dummy variable is used in regression with cointegration .See for example Drobny and Hall (1988).

(10) See for such specification Aghevi and Khan (1980,p691)

(11) There is relatively little difference of opinion on cost push inflation . See for example for further discussion on this point (i) John Hudson (1982) (ii) Ball and Doyle (1969) and (iii) Hillier (1988,Chapter 6)

(12) First published by Phillips (1958) in article "*The relationship between Unemployment and the Rate of change of Money Wage Rates in the United Kingdom ,1861-1957.*"

(13) See also Hillier (1988, Chapter 6 and 7) and entire book by Stein (1982) which provide a good synthesis and

comparative analysis of Keynesian, Monetarists and Classical (including New Classical) approach to inflation and other related issues.

(14) See for such specification IMF (Research Department) Staff Studies for the World Economic Outlook (1988, pp61-63) where inflation has been modeled as following:-

$$\Delta q-(\Delta q_{-1})=\text{Constant}+(\Pi^{e}-\Delta q_{-1})+.169\ \text{MCU}$$

$$R^{2}=0.398 \qquad \text{SER}=0.022$$

Δq = inflation ;

Π^{e} = Expected inflation and

MCU = Two years of moving average of capacity utilisation.

(15) See for a relatively more complicated production function for the developing countries by Singh (1975, Chapter 6). However, most often in the empirical analysis of growth in developing countries the simpler form (in which 'α' is set to zero) is used {see Khan and Montiel (1988, p7)}.

(16) See for further discussion on this point Hillier (1988,pp140-141).

(17)) In order to be more realistic the overall rate of depreciation should increase with increasing share of rapid depreciating capital stock of industrial sector. However, the share of capital formation of industrial sector in the total capital formation from 1959 to 1988 has been slightly

higher and is unlikely to cause a significant shift in the overall rate of depreciation.

CHAPTER 5
SIMULATION OF THE MODEL

5.1 The meaning of simulation

In economics " *simulation refers to the operation of a numerical model that represents the structure of a dynamic process(1)*". It has evolved as one of the most powerful tools available for analyzing economic problems. Building and running a simulation model permits observation of the dynamic behaviour of a system under controlled conditions. For a given values of the initial conditions, parameters and exogenous variables a simulation represents behaviour of the process over time. In contrast to mathematical approaches, simulation enables to determine not only the long run state of the system but also time path through which the system passes to reach its final state.

The exogenous variable simulation is done by altering the relevant variables for a certain magnitude (permanently or temporarily) and then difference for this change is noticed for endogenous variables. In order to have clear identification of this impact it is now customary to keep the residual terms of equations constant at their base run values so that they do not influence the differential effect on endogenous variables(2). In order to make such residual adjustments we have used in our simulation exercise the software Semafore (Pc Version of the LBS Model of Centre for Economic Forecasting).

Once such a solution is established then the dynamic behaviour i.e . the response over time, can be determined by so-called "dynamic multiplier" as follows : First a basic run solution for the endogenous variables is established without any exogenous change. Then a new solution corresponding to "disturbed values" of the exogenous variables is made in order to see how much influence they have on endogenous variables which is measured by taking a difference of the base run values and new "disturbed solution". The ratios of the difference between the base run and "disturbed solution" and the difference between the actual and "disturbed" exogenous variables over time are the familiar dynamic multipliers. Algebraically for each period of time the multiplier will be as following :-

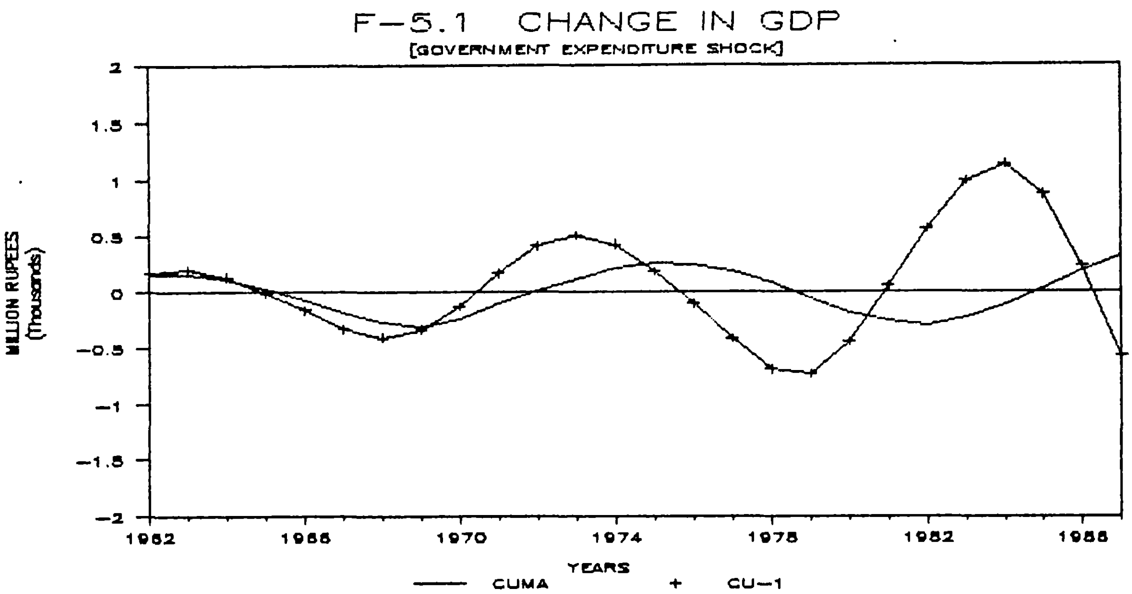
$$DM = (E^{+} - E^{B})/(Z_t^{+} - Z_t) \qquad [5.1]$$

where $(E^{+} - E^{B})$ represent a change in the endogenous variable resulting from the exogenous change $(Z_t^{+} - Z_t)$. {See for a detailed exposition of the concept of dynamic multipliers Klein (1974, Chapter 6 PP226-280)}. If the exogenous shock is a policy instrument then these multipliers are in fact the policy multipliers or ready-reckoners describing the response of endogenous variables (target) to a unit shock in policy instrument. (See David et al. (1989,p106).

5.2 Tuning of the model

As described, above a simulation involves examining the sensitivity of some important endogenous variables with respect to changes in key exogenous variables allowing for all feedbacks and lag effects. In this process it is possible that dynamic behaviour of the model is unstable and as a result any change in exogenous variables will not give a meaningful change in endogenous variables. A minor adjustment in the structure of the model or coefficient of an individual equation might stabilize it. Such adjustments are quite common in the simulation of macroeconomic model and is known as tuning and adjustments (3).

A full simulation of the model was done with the original estimated equations described in Chapter 4. A permanent increase of rupees 100 million in government consumption indicated that model is oscillatory and unstable (see Figure-5.1). Since full dynamic multipliers cannot be determined from the inspection of the model this problem was not visualized at the beginning. A diagnostic exercise with respect to different equations was conducted and it was found that the capacity utilization (CU) as the explanatory variable (with a lag)of the price equation has made the model unstable and oscillatory. Alternatively we also estimated price equation with a two years moving average of the CU as explanatory variable but the full model simulation outcome was still oscillatory (see Figure 5.1)



Note:
CUMA and CU_{t-1} stand for two years moving average of capacity utilization (CU) and CU with a lag used as explanatory variables in home product inflation equation. In all other graphs in this chapter, unless other wise explained, following abbreviations have been used:-

(1) AP-EXO = Nominal financial assets and prices Exogenous;

(2) P-EXO = Prices Exogenous;

(3) A-EXO = Nominal financial assets Exogenous;

(4) Full = Full Model

The actual estimated equation for change in home product inflation (δHPI) is following:-

$$\delta HPI = (-)0.01 + 0.66\ CU_{t-1} + 0.06DUM \qquad [5.2]$$

When this equation was replaced by the following for the purpose of simulation, the result was quite satisfactory.

$$\delta HPI = (-)0.01 + 0.5CU + 0.5\delta CU + 0.06DUM \qquad [5.3]$$

The basic difference between the two equations is the absence of lag and an additional term of change in CU in equation [5.3].

5.3 The simulation exercise and the results

The dynamic chain of effects in the model to an external shock are quite complicated. (See flow diagram of the model given at the end of Chapter 4). In order to understand properly the mechanism of the model some parts of the model were kept fixed to reduce this complexity. Keeping certain variables exogenous is not intended to change the properties of the model or to represent reality. It is only for investigation (4). We have simulated our model under following different conditions:-

(I) Prices and Nominal Assets exogenous.

(II) Prices exogenous.

(III) Nominal Assets exogenous.

(IV) Full Model.

It may be noted that once we keep the prices and assets exogenous we are more or less in the tradition of Keynesian framework.

In addition to four options some special partial simulations have also been run to estimate Keynesian Multipliers and effect of exchange rate depreciation if Marshall-Lerner conditions hold.

The simulation exercise under each of the option has been done with following internal and external shocks:-

(a) Internal Shocks

(1) A rupees 100 million increase in real government consumption.

(2) A rupees 100 million increase in private investment.

(3) A depreciation of nominal exchange rate by 20 percent

(4) A ten percent increase in direct tax rate.

(b) External shocks

(1) A rupees 100 million permanent fall in foreign grants.

(2) A ten percent fall in private transfers from abroad.

(3) A ten percent increase in interest rate on foreign loans.

(4) A ten percent increase in unit value index of imports.

(5) A ten percent fall in unit value index of exports.

The nine shocks, besides special simulations, under four options involves 36 simulations. All the simulation results could not be included in this study for brevity. However, for the purpose of illustration we have prepared the comparative graphs for selected key variables which include all the options. In addition simulation results for selected variables under option IV (i.e. full model) are also appended at the end of the chapter.

In describing our simulation results we have emphasized the results for full model simulation though for the purpose of comparison all the other options have also been referred and compared in graphs.

5.3.1 Keynesian Multipliers

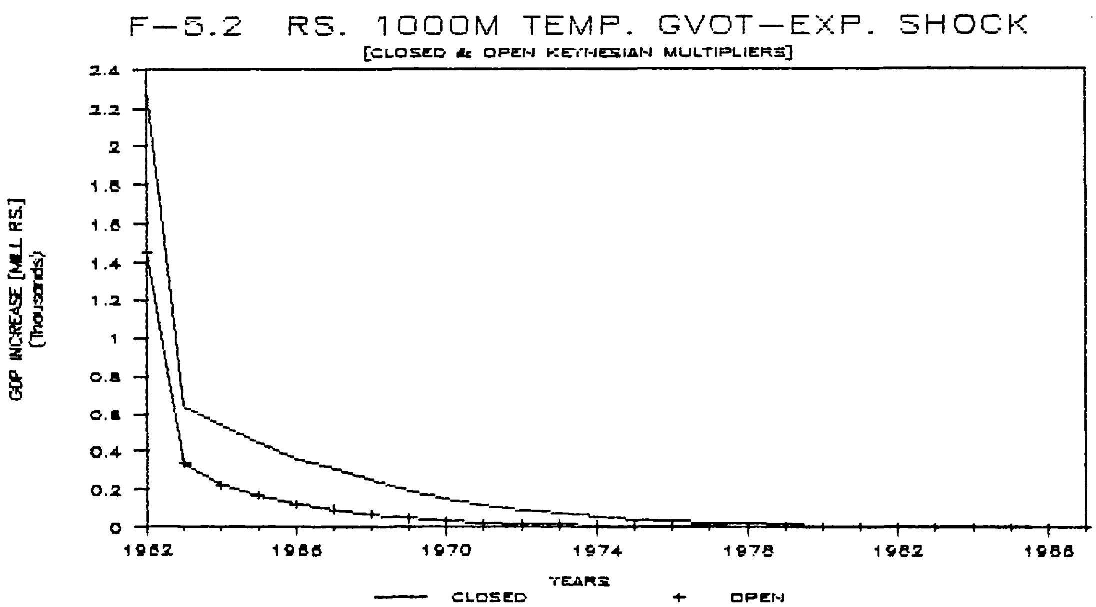
Keynesian multipliers have been estimated for closed economy as well open economy with a temporary rupees 1000 million increase in government consumption beside for rupees 100 million permanent increase mentioned above. For the closed economy all the variables are kept exogenous except private sector consumption, GDP (GNP and disposable income as well) and in open economy imports are also endogenous. The closed economy long run Keynesian multiplier is about 5 and open economy, which allows for imports leakage, is around 3. Figures 5.2 and 5.3 show the dynamic Keynesian multipliers in terms of change in GDP for a temporary and permanent fiscal expansion of 1000 million and rupees 100 million rupees respectively.

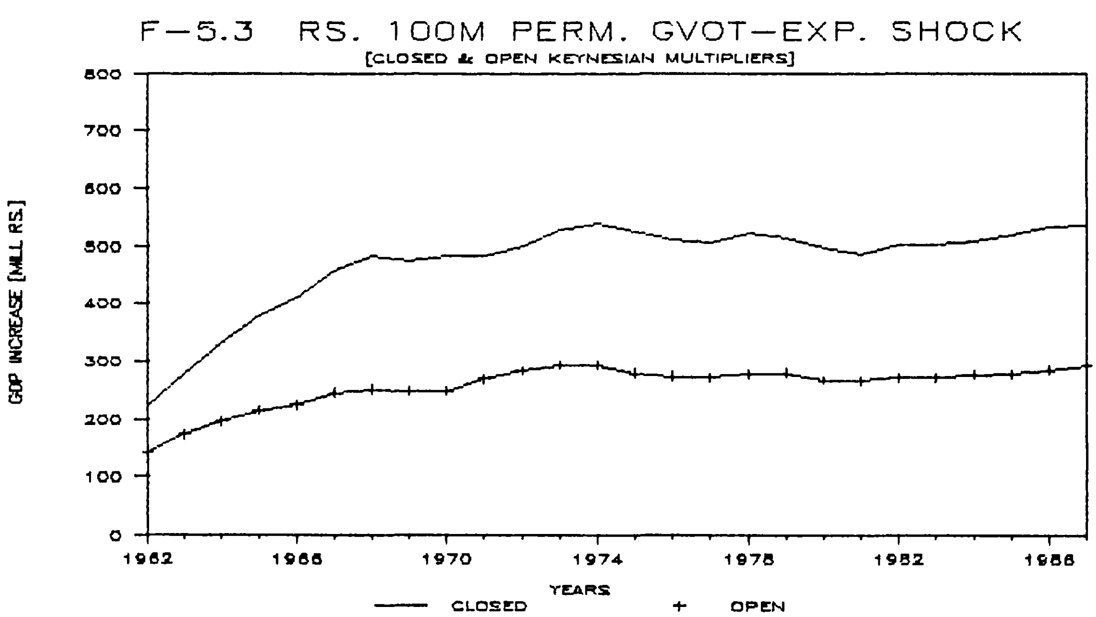
5.3.2. Simulation of internal shocks

All the internal shocks are policy variables and could be used as instruments to influence the economic activities. Among the four internal shocks government consumption, exchange rate and tax rate are directly controlled by the government. Although investment is not a policy variable yet as we have discussed in Chapters1 and 4 investment both in its volume and composition is controlled under the planned growth strategies. So a simulation exercise with a change in investment is quite sensible.

5.3.2.1 Increase in Government Consumption

A government spending carries with it either creation of money or new bonds floating. In our model, however, a change in government spending is not a *"pure fiscal shock"* because it is not associated with a tax increase (5). The increase in government consumption, of 100 million rupees, therefore, adds directly to nominal financial assets (if assets are not

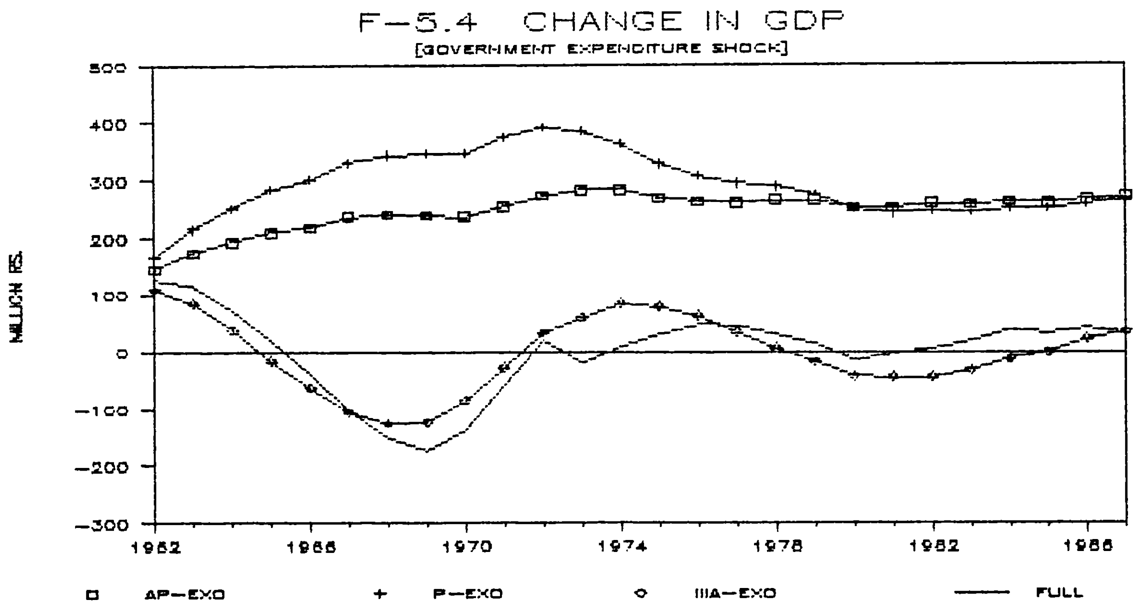

F—5.2 RS. 1000M TEMP. GVOT—EXP. SHOCK
[CLOSED & OPEN KEYNESIAN MULTIPLIERS]
GDP INCREASE [MILL RS.]
(Thousands)
2.4
2.2
2
1.8
1.6
1.4
1.2
1
0.8
0.6
0.4
0.2
0
1962
1966
1970
1974
1978
1982
1986
YEARS
CLOSED
OPEN


F—5.3 RS. 100M PERM. GVOT—EXP. SHOCK
[CLOSED & OPEN KEYNESIAN MULTIPLIERS]
GDP INCREASE [MILL RS.]
800
700
600
500
400
300
200
100
0
1962
1966
1970
1974
1978
1982
1986
YEARS
CLOSED
OPEN

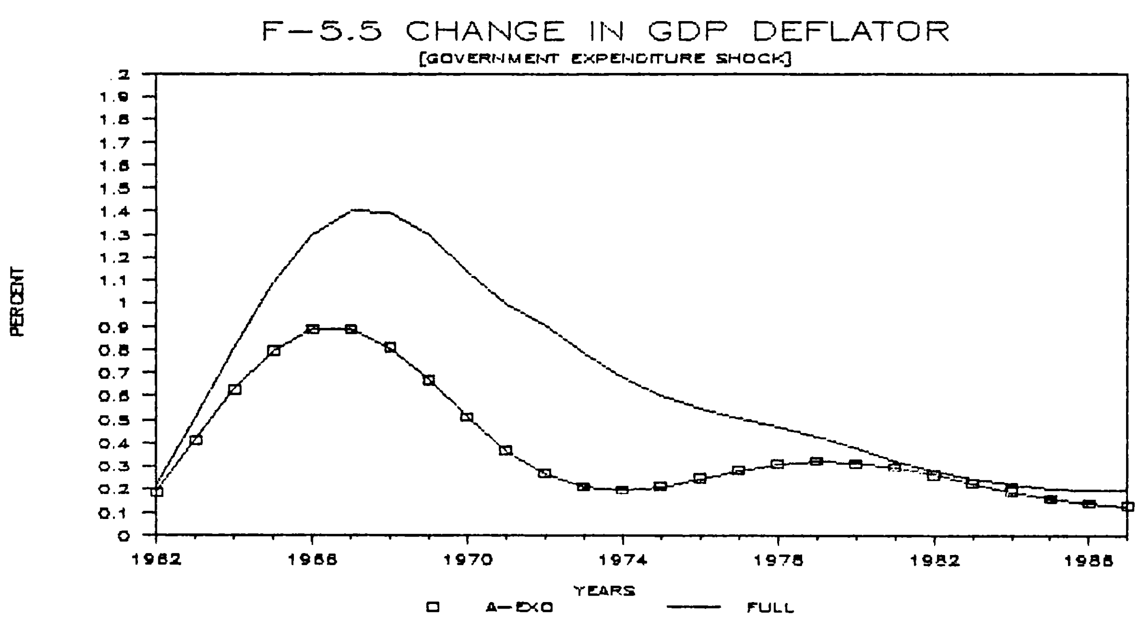
exogenous) besides aggregate demand.

When prices are exogenous the dynamic chain of effects are relatively simple and increase in GDP is somewhere near to Keynesian Multiplier of open economy. Endogenous prices make the government expenditure shock less effective with respect to GDP which converges over base run values in the long-run after some fluctuation on both sides of the base run value at a diminishing rate. Figure-5.4 compares the change in GDP under different options. The reasons for this convergence could be traced, among other things, particularly, in changes which took place in home prices and assets (discussed in detail below). It is for this reason that when these two variables are kept exogenous the result is like traditional Keynesian model where such fiscal expansion is always expansionary.

The change in the rate of inflation is mixed, but there is a permanent upward shift in the GDP deflator. The rise is higher when assets are endogenous. When assets are exogenous it inhibits the additional increase in aggregate demand because of private consumption rise as a result of new assets creation. After a sharp increase in the initial years there is a continuous decline but it is not completely leveled back as it nearly happens when assets are exogenous (Figure-5.5). The highest increase in GDP deflator is around 1.4 percent which occurs in the fifth year with subsequent continuous downward trend stabilizing at about



F—5.4 CHANGE IN GDP
[GOVERNMENT EXPENDITURE SHOCK]
MILLION RS.
500
400
300
200
100
0
—100
—200
—300
1962
1966
1970
1974
1978
1982
1986
AP—EXO
P—EXO
IIIA—EXO
FULL



F—5.5 CHANGE IN GDP DEFLATOR
[GOVERNMENT EXPENDITURE SHOCK]
PERCENT
2
1.9
1.8
1.7
1.6
1.5
1.4
1.3
1.2
1.1
1
0.9
0.8
0.7
0.6
0.5
0.4
0.3
0.2
0.1
0
1962
1966
1970
1974
1978
1982
1986
YEARS
A—EXO
FULL

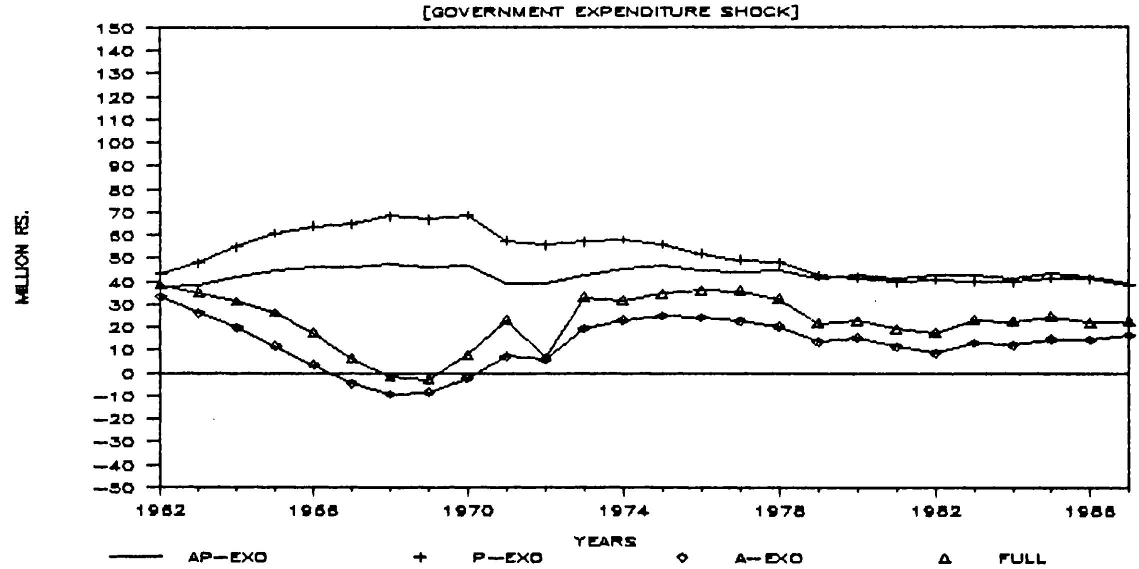
0.2 percent above the base run values. In view of quite dominant role of price in the model, the permanent increase of even less than one point percent has significant effects on other dependent variables. The rise in price level appreciates the real exchange rate which reduces exports and increases imports. In addition it reduces the real worth of the assets (i.e.creating a negative real balance effect) and therefore have a depressing effect on private consumption and so on.

The increase in imports is on account of increase in aggregate demand and rise in domestic prices which appreciates the real exchange rate. It is interesting to note that highest increase in imports is under option II (when prices are exogenous) because there is no fall in real assets and, therefore, there is no downward pressure on aggregate demand as it happens in full model simulation.(see Figure-5.6). In the long run imports under the full model simulation increase by about 30 million rupees as compared to 100 million rupees increase in real government consumption.

The exports are affected only when prices are endogenous. A rise in home prices appreciates the real exchange rate which reduces the exports. The change in exports over base run is a kind of mirror reflection of the price rise discussed above.(See Figure-5.7).

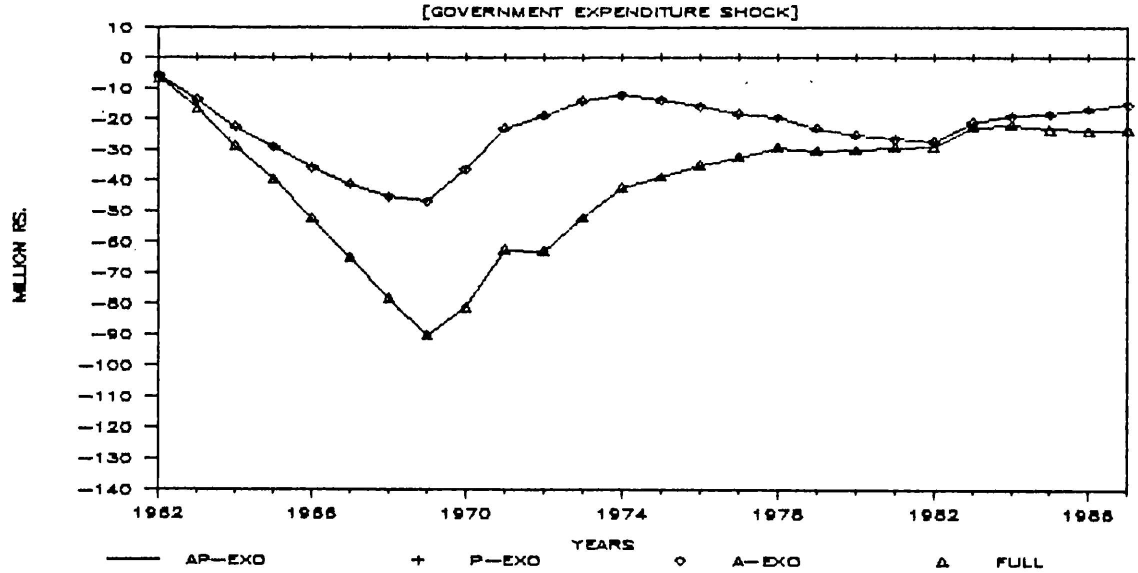
F—5.6 CHANGE IN REAL IMPORTS

[GOVERNMENT EXPENDITURE SHOCK]



F—5.7 CHANGE IN EXPORTS

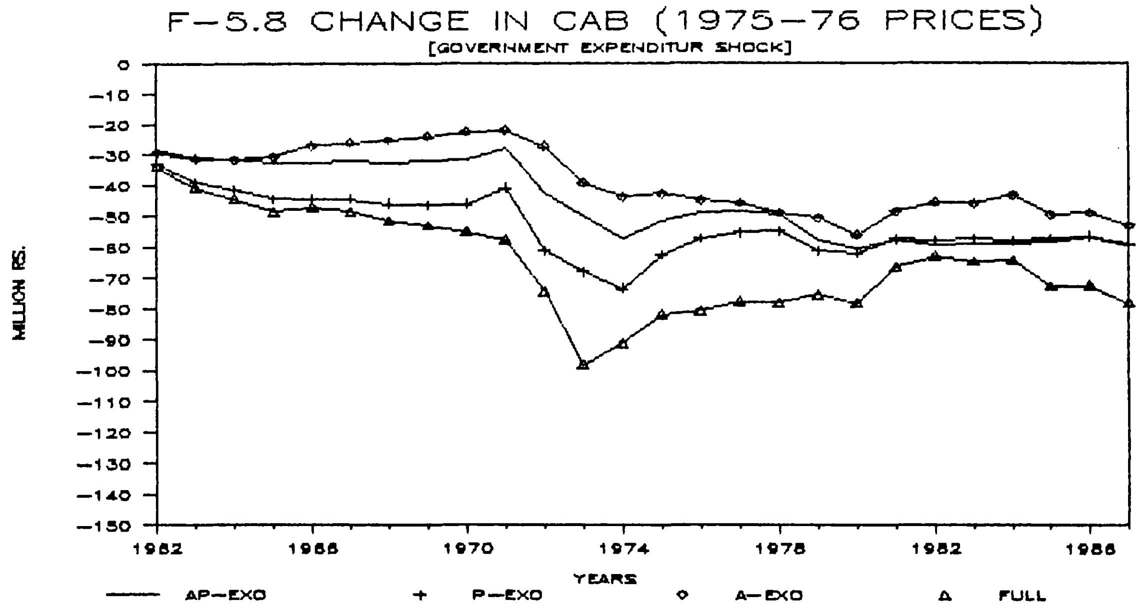
[GOVERNMENT EXPENDITURE SHOCK]

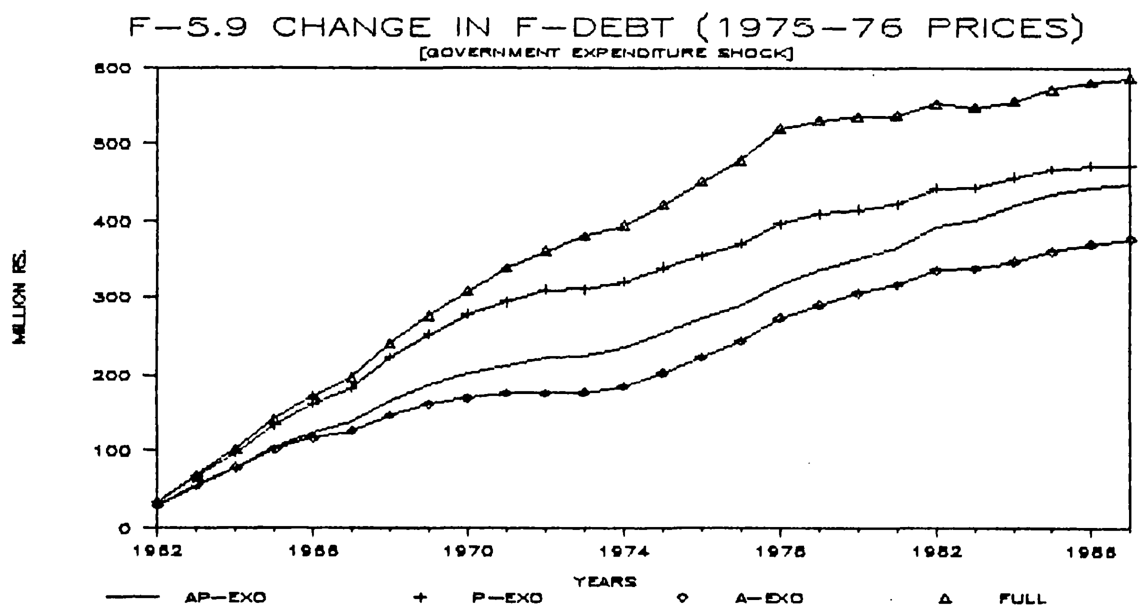


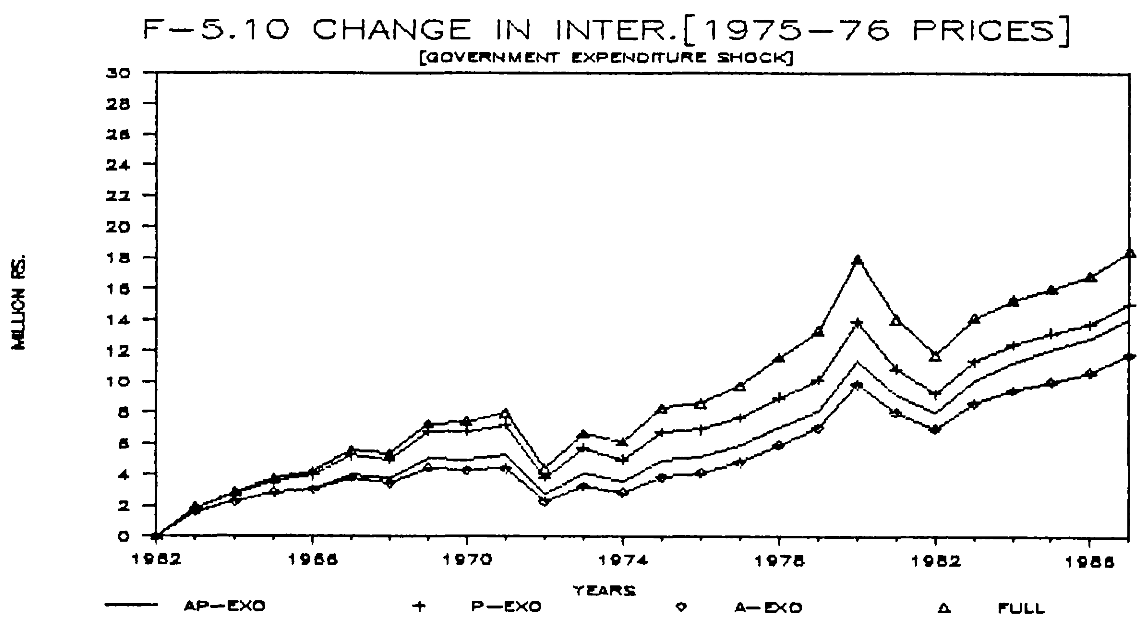
In view of increase in imports and fall in exports the effect on current account balance of payments is obvious. The deficit is further accelerated by increase in interest payments because of foreign debt accumulation. Figure-5.8 compares the changes in current account balance (1975-76 prices) under different options. In accordance with the change in exports and imports, increase in deficit is highest in the full model. The deficit increases continuously and approaches the level of shock. The government consumption is fully transformed into an external deficit. This points towards the effectiveness of restraint on government consumption (particularly when it is money financed) for the balance of payments.

Figures 5.9 and 5.10 are for changes in foreign debt and interest payments (in real terms) over base run values under different options. The changes are in accordance with the change in current account deficit. The accumulation of debt and interest payments are quite significant in absolute terms. As in the long-run the change in current account balance stabilizes, the foreign debt also stabilizes at about six times of the size of shock.

Impact of real assets with its positive influence on aggregate demand (through private consumption) is very significant in the model. As a result of increase in government consumption it remains unchanged when prices and nominal assets both are exogenous. Real assets remain above


F—5.8 CHANGE IN CAB (1975—76 PRICES)
[GOVERNMENT EXPENDITUR SHOCK]
MILLION RS.
YEARS
AP—EXO
P—EXO
A—EXO
FULL


F—5.9 CHANGE IN F—DEBT (1975—76 PRICES)
[GOVERNMENT EXPENDITURE SHOCK]
MILLION RS.
YEARS
AP—EXO
P—EXO
A—EXO
FULL


F—5.10 CHANGE IN INTER.[1975—76 PRICES]
[GOVERNMENT EXPENDITURE SHOCK]
MILLION RS.
YEARS
AP—EXO
P—EXO
A—EXO
FULL

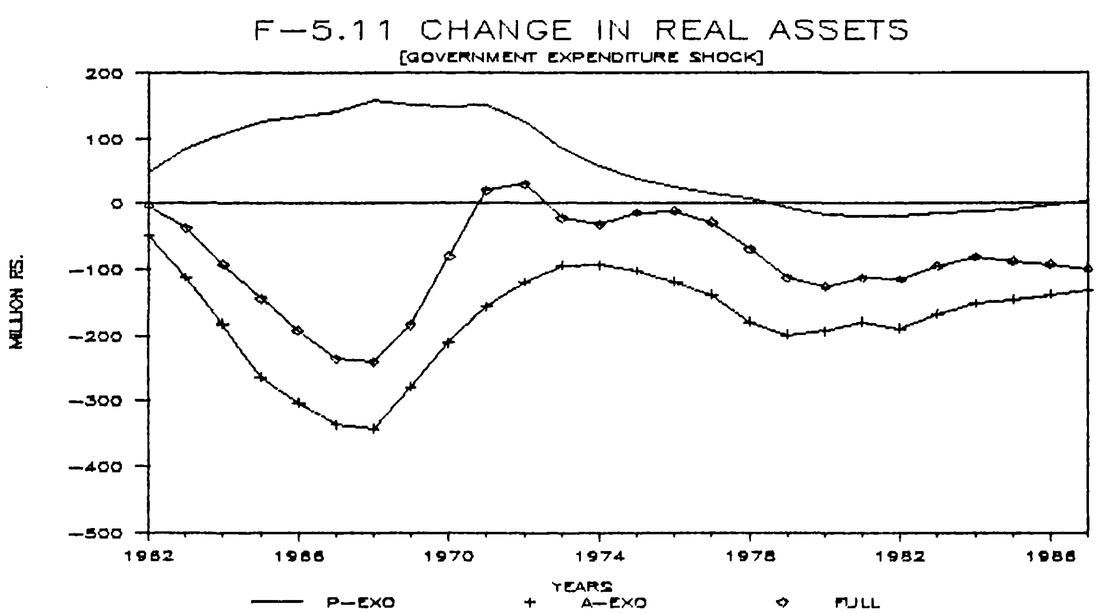
the base run values for a quite long period when prices are exogenous and nominal assets endogenous. It converges on the base run values particularly because of increase in current account deficit. Conversely when prices are endogenous and assets exogenous there is an immediate sharp fall in real assets which remains negative over simulation period. Under the full model simulation, when both prices and nominal assets are endogenous, there is still fall in the real assets and stabilize at about 50 percent below the increase of government consumption. Figure 5.11 compares the changes in real assets under different options. It may be noted that although the increase in government consumption is not financed by raising direct taxes, it still reduces the private financial assets by a significant margin.

5.3.2.2 Increase in Investment(6)

We now turn to investment increase whose effects differs from increase in government consumption in following respects:-

(a) While government consumption increase adds to the nominal assets investment adds to capital stock assets. The increase in capital stock then increases the supply of output which relieves the pressure on prices.

(b) The increase in capital stock by increasing the


F—5.11 CHANGE IN REAL ASSETS
[GOVERNMENT EXPENDITURE SHOCK]
200
100
0
-100
-200
-300
-400
-500
MILLION RS.
1962
1966
1970
1974
1978
1982
1986
YEARS
P—EXO
A—EXO
FULL

potential GDP also increases the exports directly.

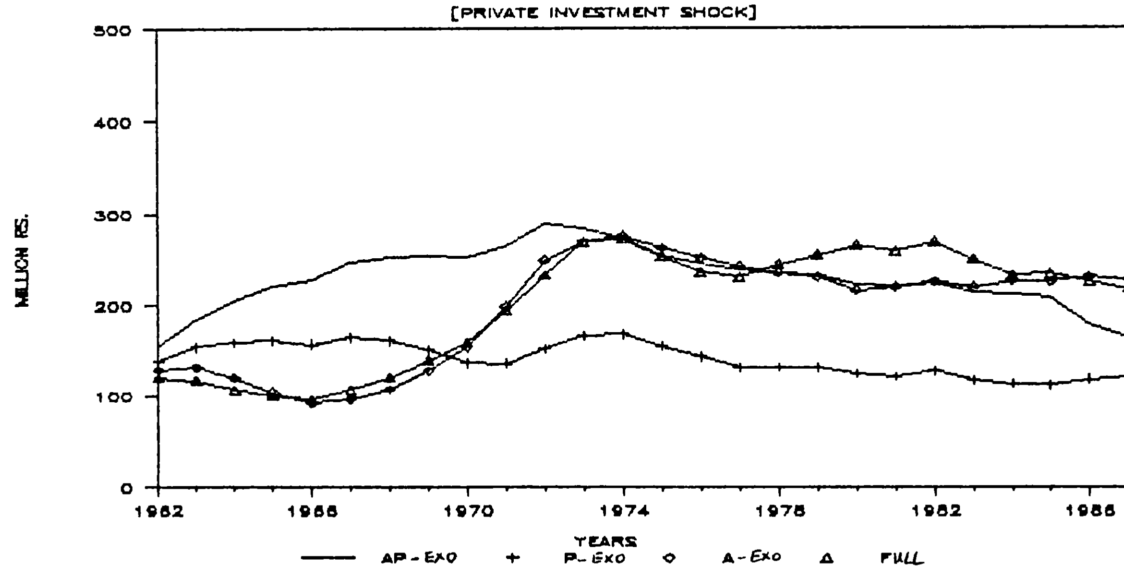
The 100 million rupees permanent increase in private investment keeps the change in real GDP above the base run values under all the options. It may be particularly noted that the highest increase in GDP, which is about three times of the size of the shock, is in the full model simulation.(Figure-5.12) which is a clear reflection of supply side effects on GDP as could well be seen in the rise of potential GDP. (Figure-5.13). The permanent rise in private consumption is quite obvious.(Figure-5.14).

In view of a relatively higher increase in aggregate demand in the initial years, as compared to potential GDP, the prices tend to rise during that period. As capital stock accumulates over the years the supply starts equating/exceeding the demand and pressure on prices decreases. In full model simulation the downwards pressure on demand, in the initial years, also takes place because of the current account deficit and fall in real assets. When nominal assets are exogenous, the initial negative effect on real assets (because of current account deficit) is missing and the price, therefore, falls relatively at a smaller pace. It remains slightly above the base run values as against full model where the fall in price is permanent (Figure-5.15).

The exports in our model are influenced by rise in

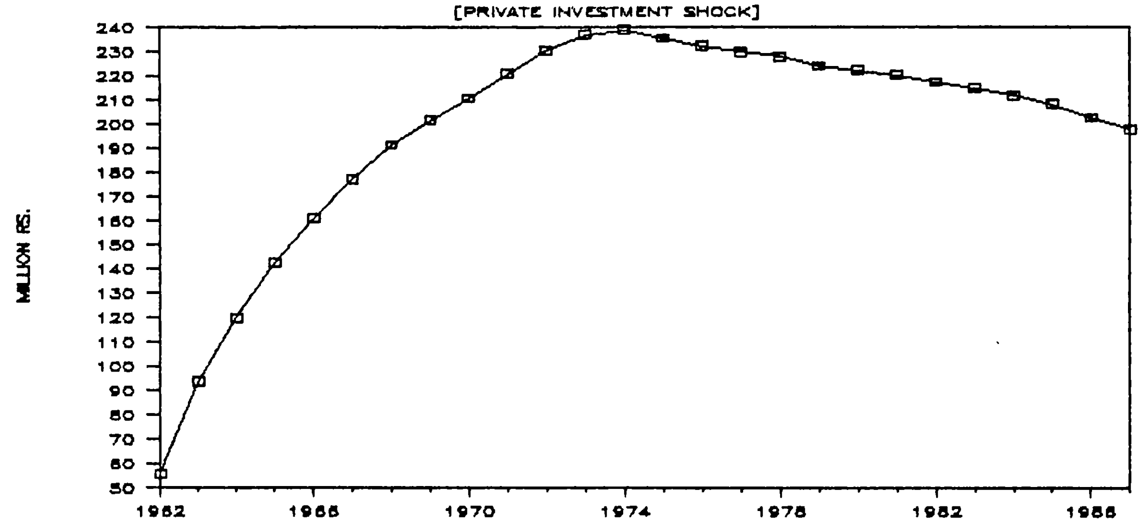
F—5.12 CHANGE IN REAL GDP

[PRIVATE INVESTMENT SHOCK]



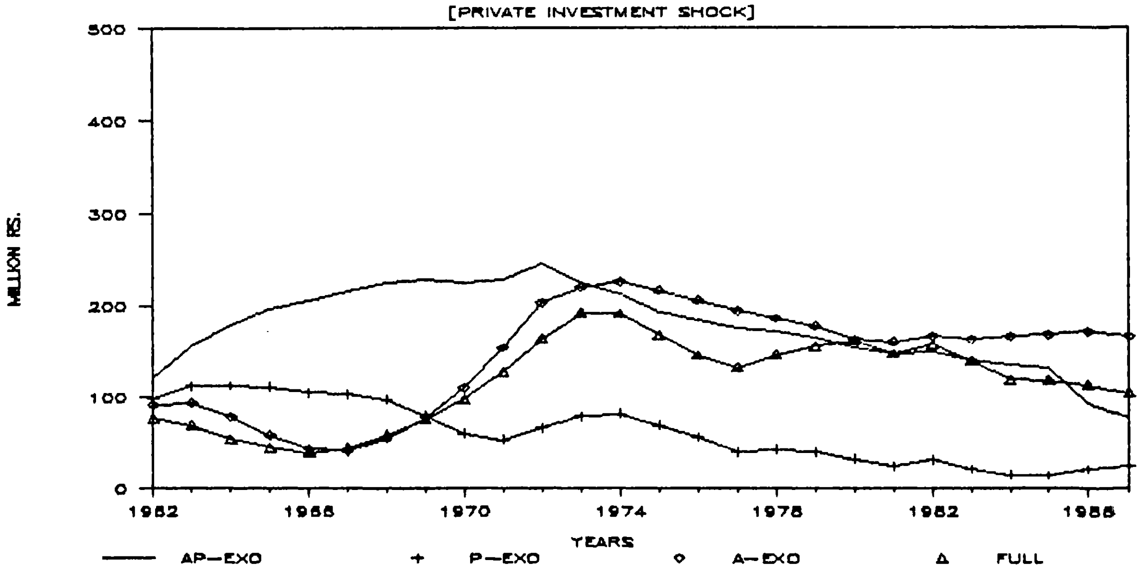
F—5.13 CHANGE IN CAPACITY OUTPUT

[PRIVATE INVESTMENT SHOCK]



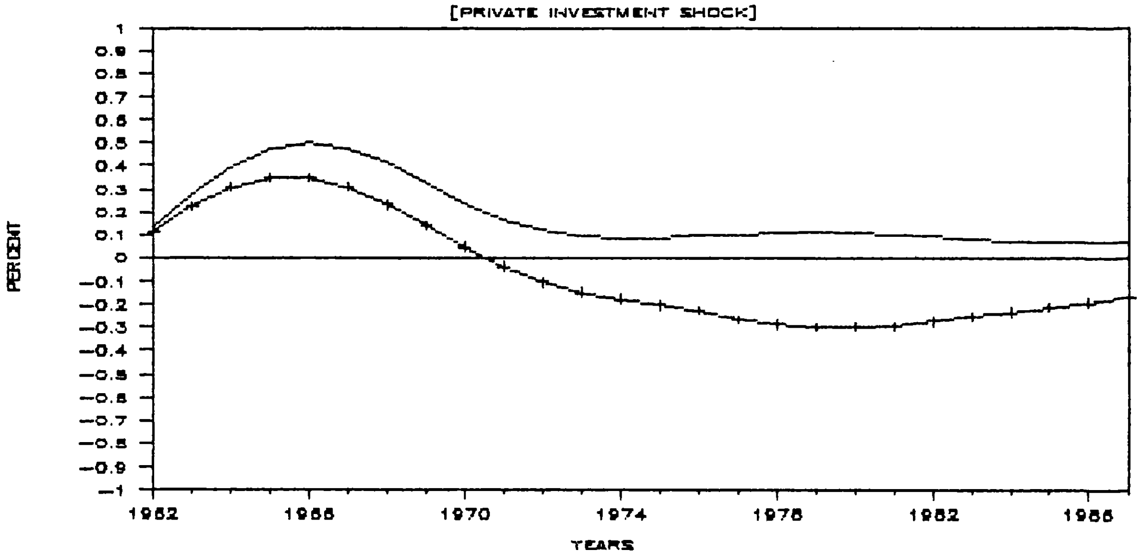
F—5.14 CHANGE IN PRIVATE CONSUMPTION

[PRIVATE INVESTMENT SHOCK]



F—5.15 CHANGE IN GDP DEFLATOR

[PRIVATE INVESTMENT SHOCK]



investment directly (with increase in capacity output) and through change in price level. The highest rise in exports, as expected, is in full model simulation.(Figure-5.16)(7)

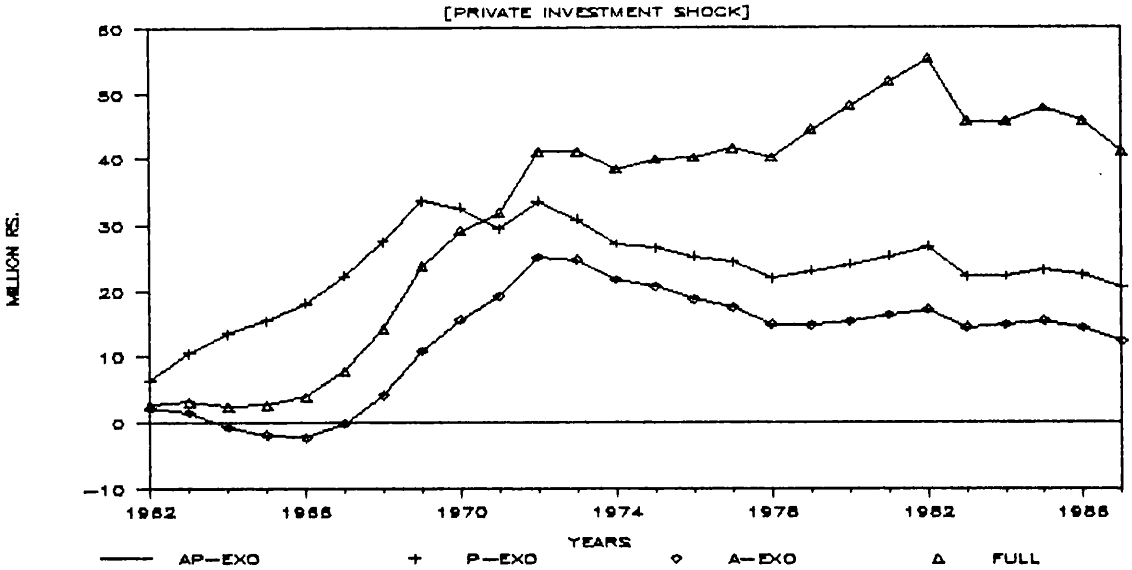
The actual change in imports over base run is the net outcome of the two forces working in the opposite direction i.e. (i) the aggregate demand and (ii) the price change. While rise in aggregate demand increases the demand for imports, falling prices reduce the demand for imports. This is in quite contrast to government consumption increase where aggregate demand and price move in the same direction and the out come is clear. There is, however, a permanent increase in imports and as expected lower when prices are endogenous. (Figure-5.17).

The impact on current account balance is quite obvious. While there is a permanent increase in deficit when prices are exogenous (because of more rise in imports compared to exports in absolute terms) there is a significant improvement (except for some earlier years losses) when prices are endogenous. The surplus is highest in full model simulation.(Figure-5.18)

The impact on foreign debt is the cumulative effect of change in the current account balance (Figure-5.19) and interest payments on foreign debt changes in accordance with the change in foreign debt (Figure-5.20)

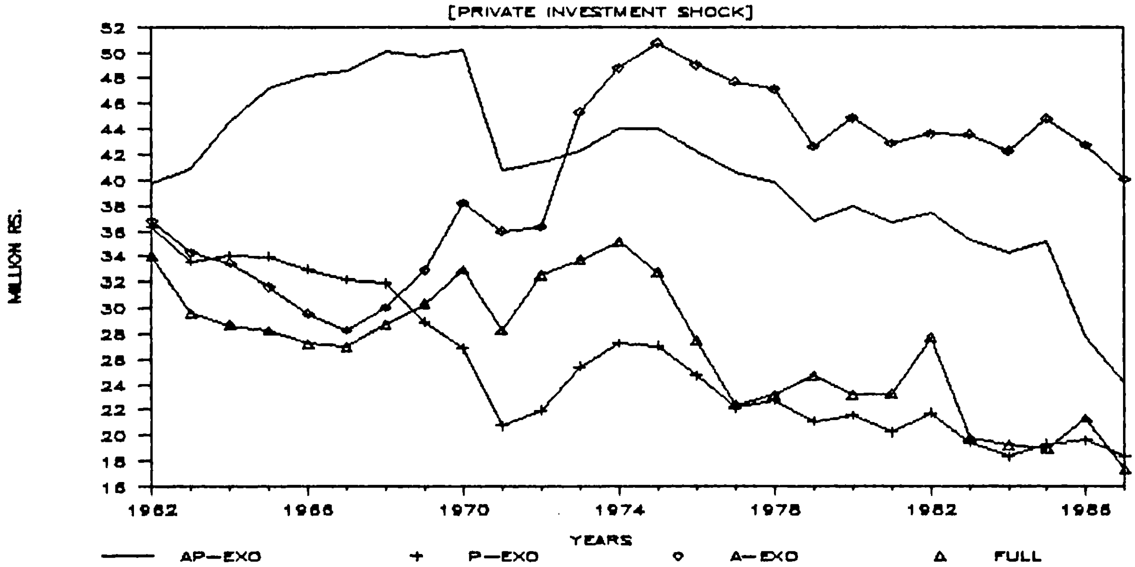
F-5.16 CHANGE IN REAL EXPORTS

[PRIVATE INVESTMENT SHOCK]



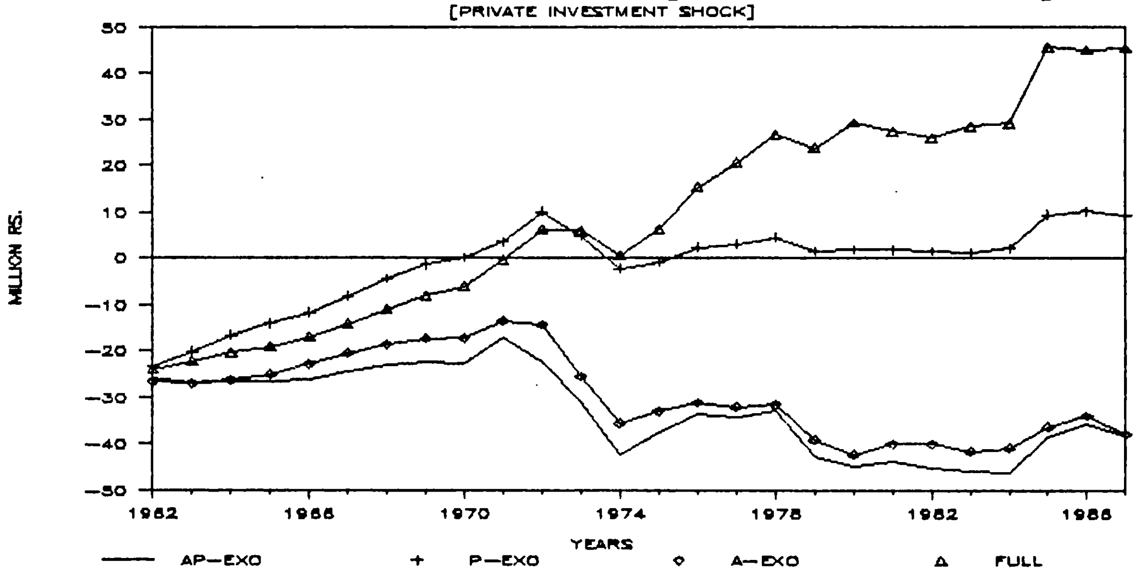
F-5.17 CHANGE IN REAL IMPORTS

[PRIVATE INVESTMENT SHOCK]



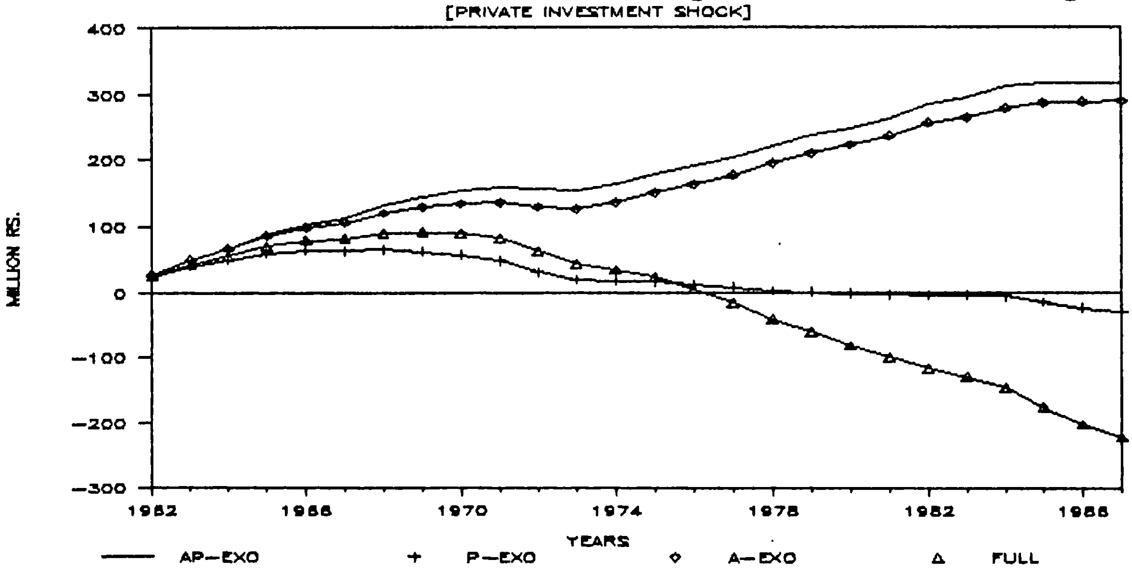
F-5.18 CHANGE IN CAB [1975-76 PRICES]

[PRIVATE INVESTMENT SHOCK]



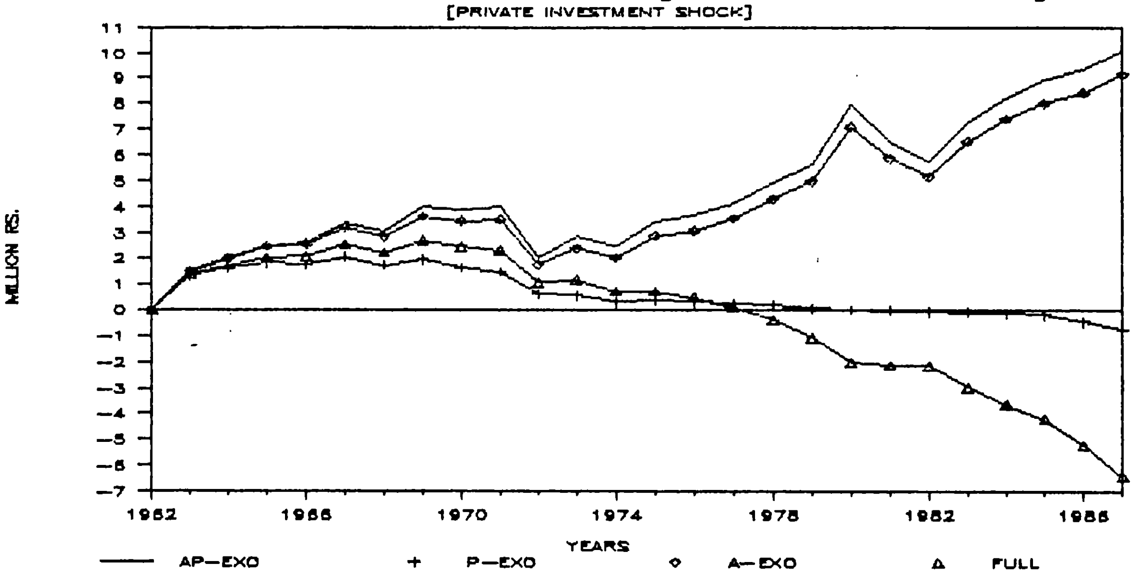
F—5.19 CHANGE IN F—DEBT[1975—76 PRICES]

[PRIVATE INVESTMENT SHOCK]



F—5.20 CHANGE IN INTER.[1975—76 PRICES]

[PRIVATE INVESTMENT SHOCK]

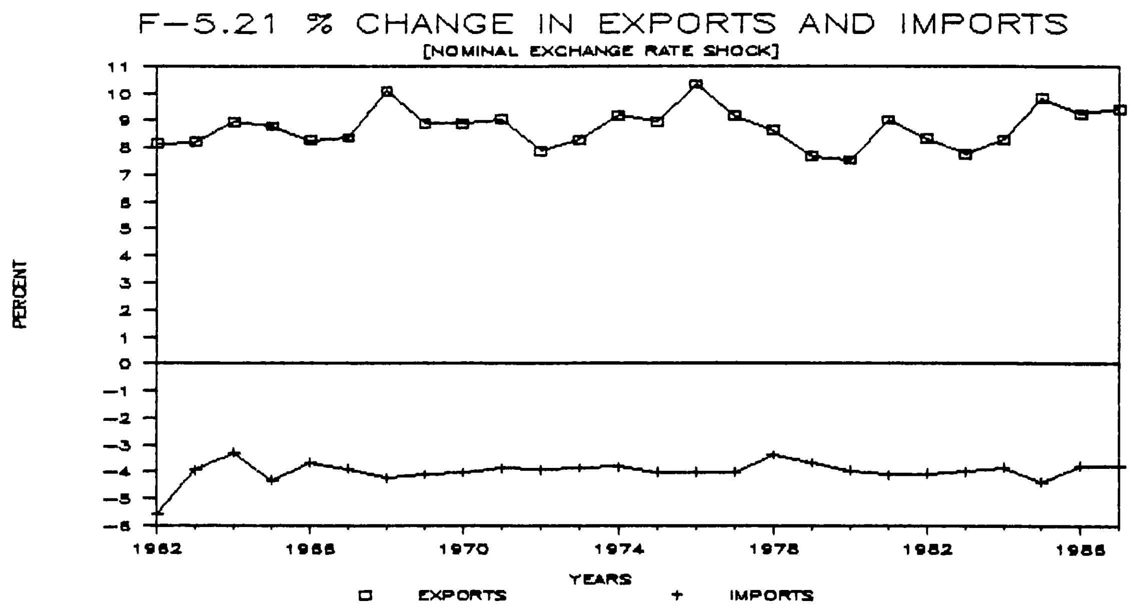


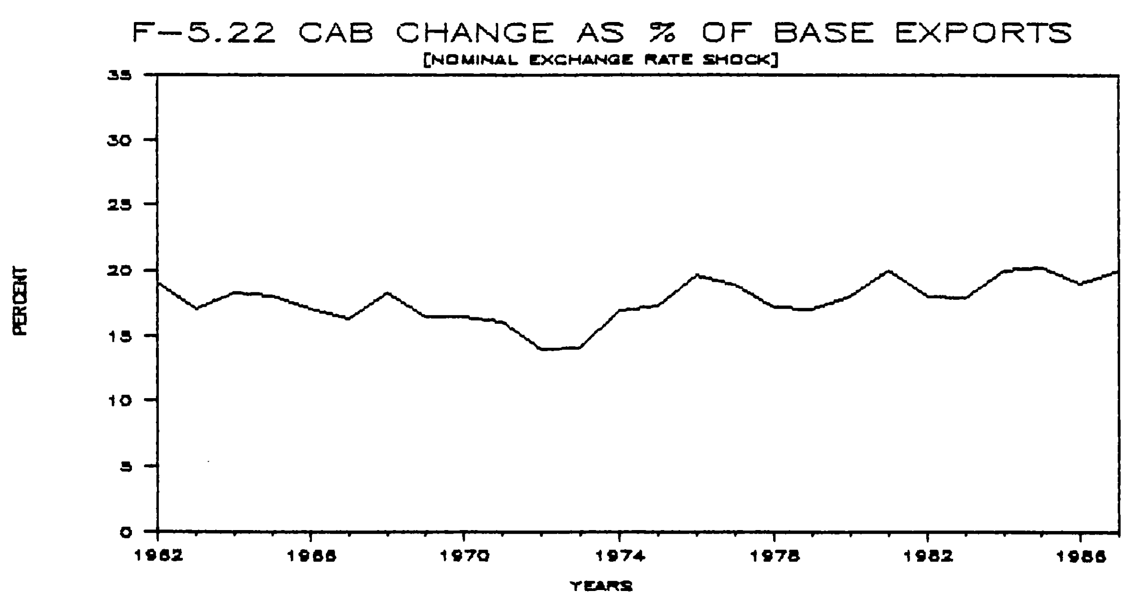
5.3.2.3 Depreciation of nominal exchange rate

The nominal exchange rate has no direct influence over exports and imports. It is the real exchange rate which matters. Real exchange rate, in addition to nominal exchange rate, also depends on domestic and international prices (see for definition of real exchange rate Chapter 4, equations [4.5] and [4.8]). Since the depreciation of nominal exchange rate pushes up the domestic prices because of its immediate upward pressure on aggregate demand, the initial real exchange rate depreciation is not going to sustain unless prices are controlled by some other measures.

Under Marshall-Lerner conditions, described in Chapter 3, when output and domestic prices are constant, 20 percent depreciation in nominal exchange rate causes around 9 percent points increase in real exports and about 5 percent fall in real imports. (Figure-5.21). The current account balance improvement as percent of base run exports is about 20 percent (with some fluctuation over different years.) (Figure-5.22). So the overall elasticity of trade balance with respect to devaluation is around unity.

When prices are exogenous there is a permanent depreciation of real exchange rate and the rise in exports is as under Marshall-Lerner conditions . With endogenous prices, as the prices start rising the exports start falling. When assets are exogenous the ultimate rise in


F—5.21 % CHANGE IN EXPORTS AND IMPORTS
[NOMINAL EXCHANGE RATE SHOCK]
PERCENT
YEARS
EXPORTS
IMPORTS


F—5.22 CAB CHANGE AS % OF BASE EXPORTS
[NOMINAL EXCHANGE RATE SHOCK]
PERCENT
YEARS

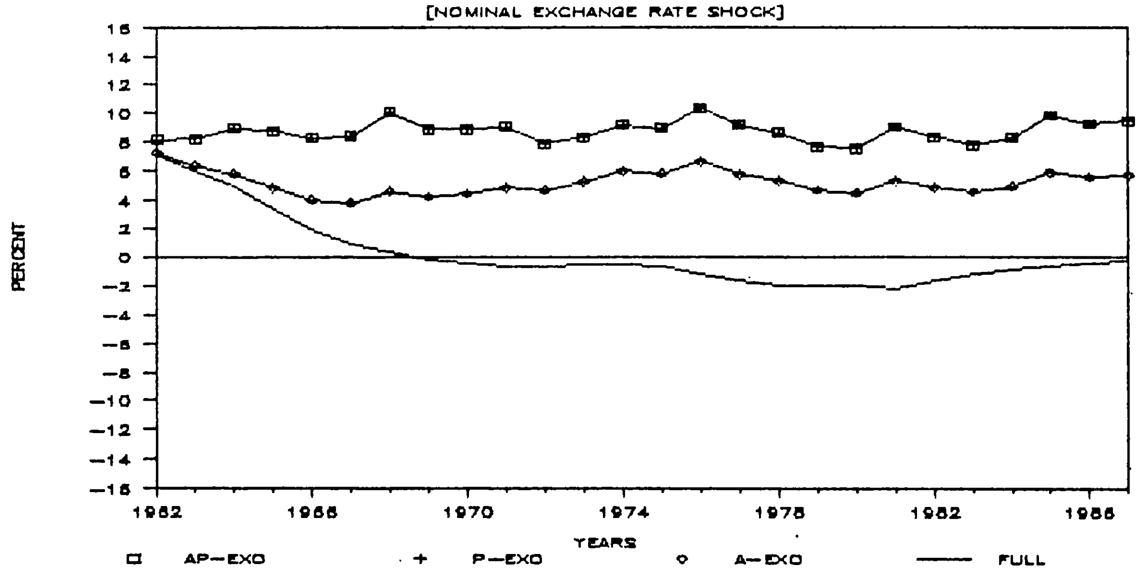
domestic prices is half the nominal exchange rate depreciation and therefore, there is a permanent increase in exports. In the full model the ultimate price rise is equal to nominal exchange rate depreciation and the real exchange rate depreciation is, therefore, completely neutralized. The exports also converge back on the base run values (see Figures 5.23, and 5.24 for change in exports and GDP deflator over base run values under different options).

The effect on imports of nominal exchange rate is twofold. On the one hand imports are influenced by the changes in real exchange rate and on the other hand by the changes in the aggregate demand. The aggregate demand converges back to the base run values over long run when prices are endogenous and is about 3-4% above of base run values when prices alone and both prices and assets are exogenous.(Figure-5.25). When prices and aggregate demand do not move together and influence imports in the opposite direction, the net impact on imports is always ambiguous as discussed in section 5.3.2.2 above. The impact on imports could be, however, summarized as following:-

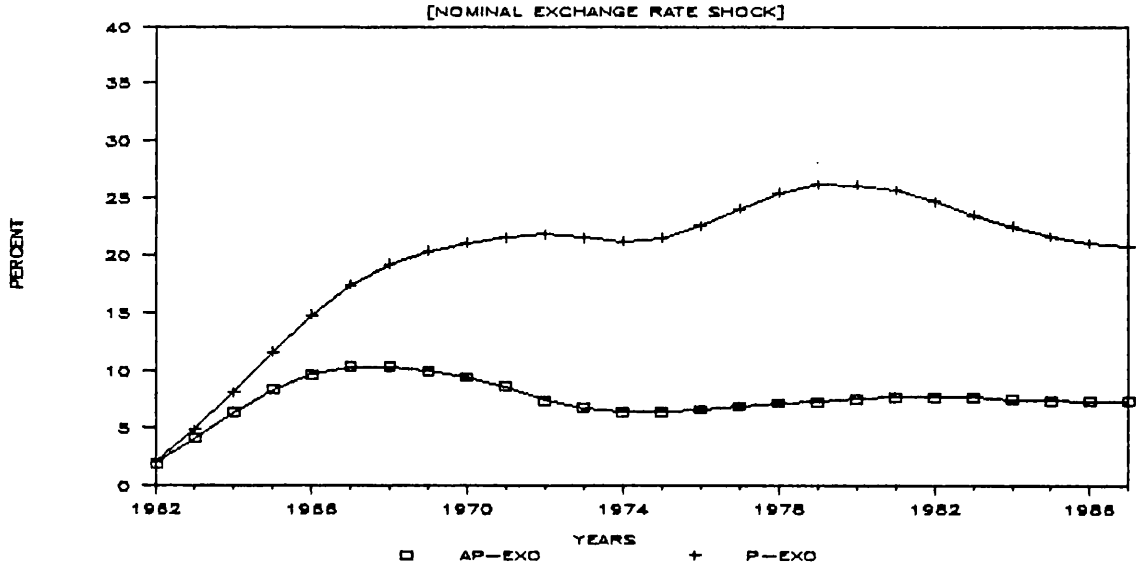
(i) When aggregate demand is decreasing and there is a permanent depreciation of real exchange rate, change in imports remain below the base run values.

(ii) In full model where aggregate demand and real exchange rate fall back over base run values, imports

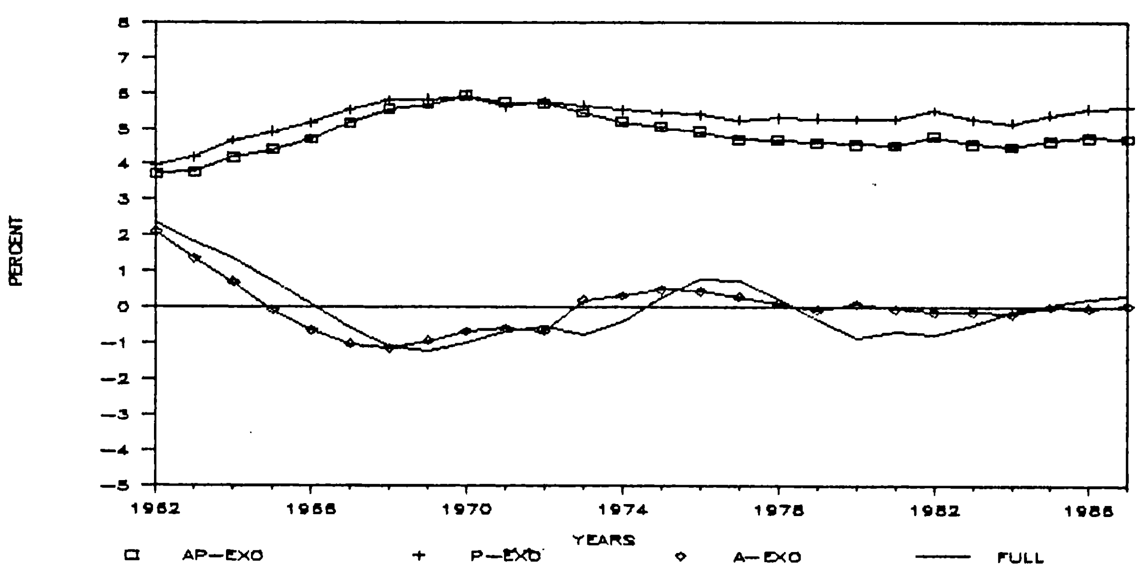
F—5.23 CHANGE IN REAL EXPORTS
[NOMINAL EXCHANGE RATE SHOCK]



F—5.24 CHANGE IN GDP DEFLATOR
[NOMINAL EXCHANGE RATE SHOCK]



F—5.25 PERCENT CHANGE IN GDP



also follow the same pattern.

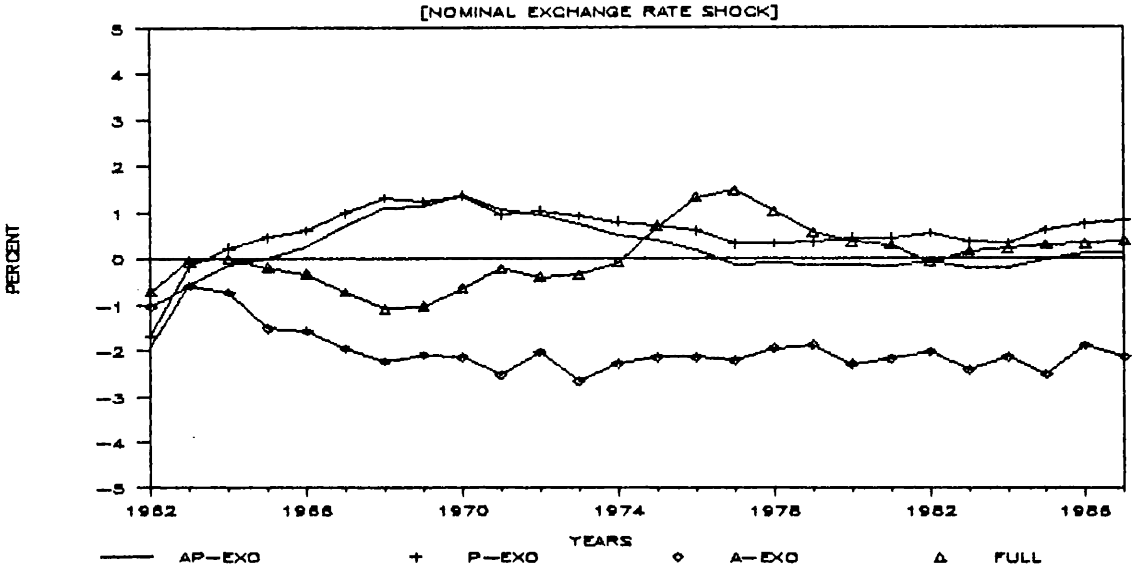
(iii) With prices (alone) exogenous real exchange rate depreciation remains intact but the increase in aggregate demand pushes the imports up and neutralize the real exchange rate effect.

(See Figure 5.26 for change in imports under different options)

The net effect on current account balance depends upon the absolute changes in imports and exports together with any change in interest payments. When prices and assets are exogenous there is significant permanent improvement in the current account balance. In the full model simulation, initially there is an improvement in real terms, but as exports ceases to rise and demand for imports picks up, the ultimate current account deficit is more then the initial gain (Figure-5.27). The rise in current account deficit causes the accumulation of foreign debt in full model simulation and interest payments also go up (see Figures 5.28 and 5.29). The extra interest payments make the current account deficit permanent though there is little difference in imports and exports in the long run. In spite of some quick improvement in current account balance the long run implications make the use of nominal exchange rate depreciation in isolation an unsuitable instrument for achieving external balance.

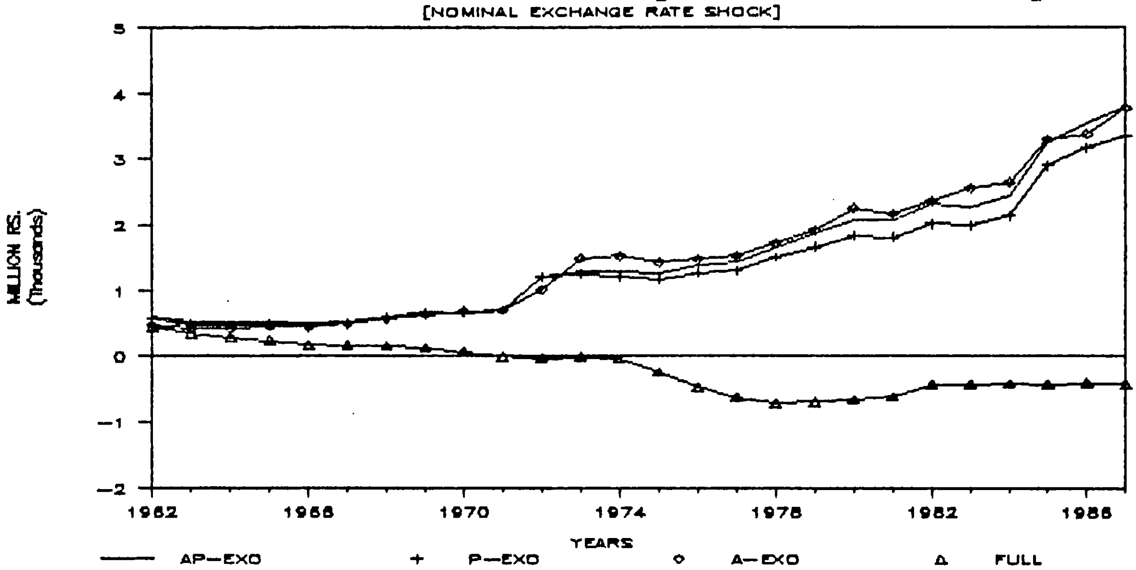
F—5.26 PERCENT CHANGE IN IMPORTS

[NOMINAL EXCHANGE RATE SHOCK]



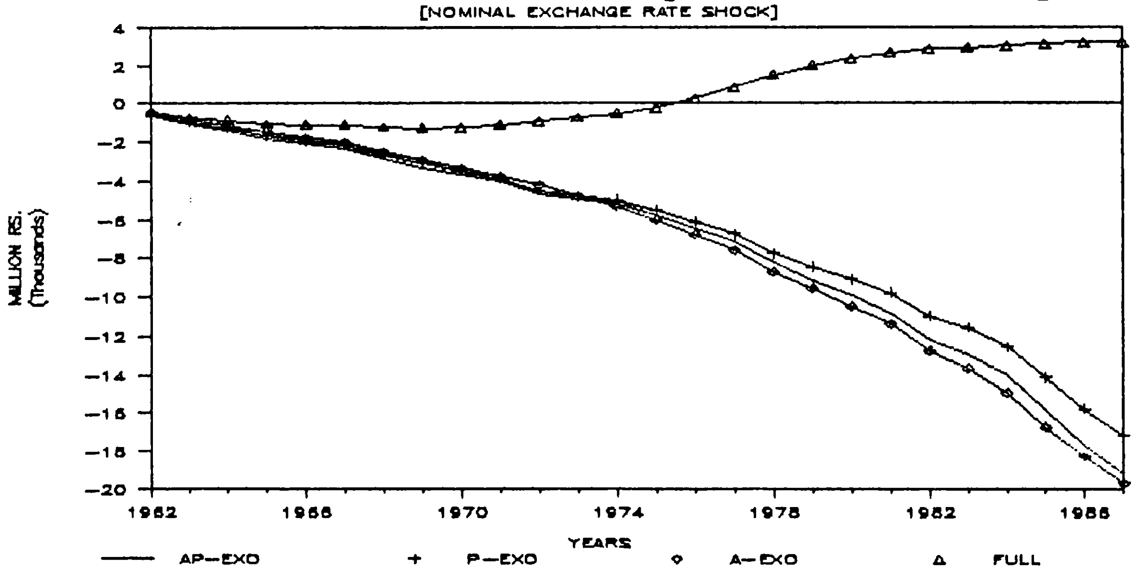
F—5.27 CHANGE IN CAB [1975—76 PRICES]

[NOMINAL EXCHANGE RATE SHOCK]



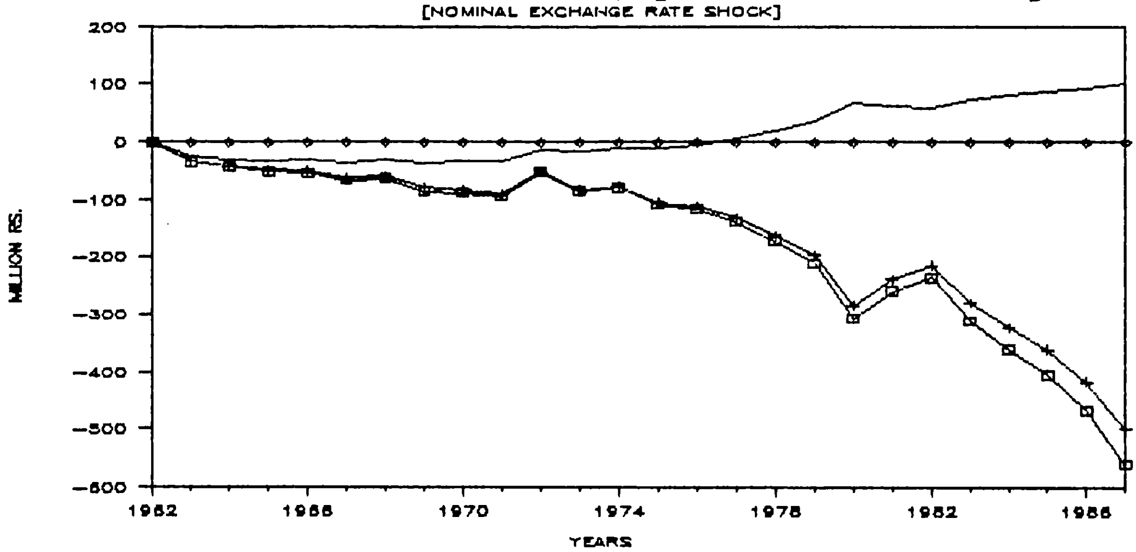
F—5.28 CHANGE IN DEBT [1975—76 PRICES]

[NOMINAL EXCHANGE RATE SHOCK]



F—5.29 CHANGE IN INTR.[1975—76 PRICES]

[NOMINAL EXCHANGE RATE SHOCK]



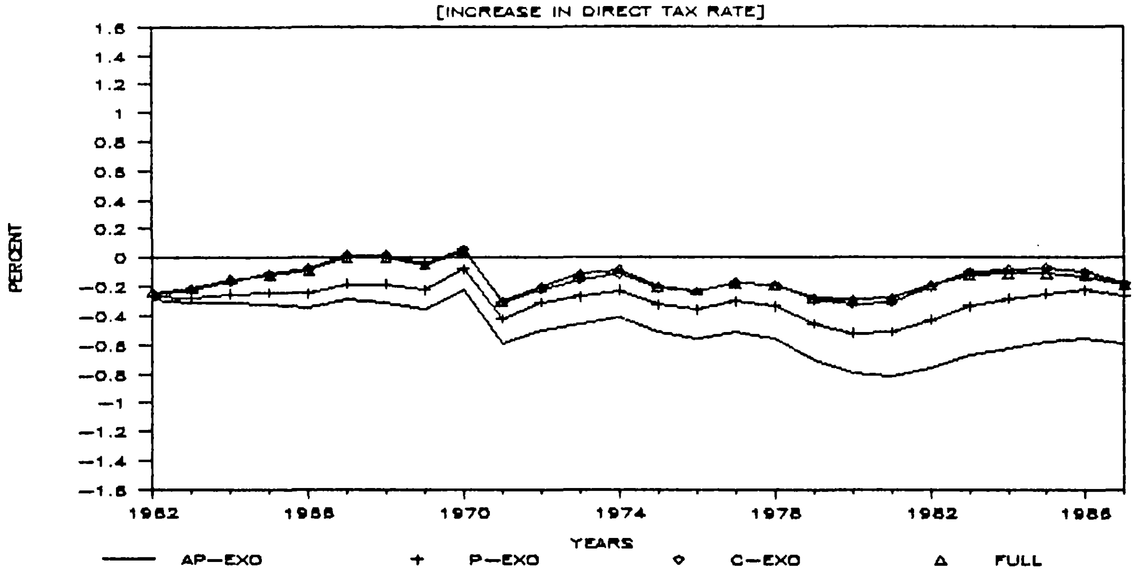
5.3 2.4 Increase in Direct Tax Rate

We now turn to increase in direct tax rate which reduces the disposable income. With slightly varying rate, on the average the direct taxes have remained about 3 percent of GNP. Thus a 10% increase in direct tax rate reduces the disposable income by about 0.3%. The fall in disposable income, after taking into account the other chain of effects, remains close to this level (with some fluctuations) with endogenous prices. When prices and assets are exogenous, there is a continuous fall in the GDP and GNP caused by the fall in private consumption. Figures 5.30 and 5.31 show the percent change in GDP and disposable income over base run values under different options.

As expected there is a fall in prices particularly when assets are exogenous (Figure-3.32) In percentage terms though it is small but still powerful enough to increase exports and reduce imports (because of depreciation of real exchange rate) creating a visible positive effect on current account balance of payments which ultimately reduce the foreign debt and interest payments by a big margin. Figures 5.33 to 5.37 provide the comparison of change under different options for exports, imports, current account balance, foreign debt and interest payments on outstanding foreign debt respectively.

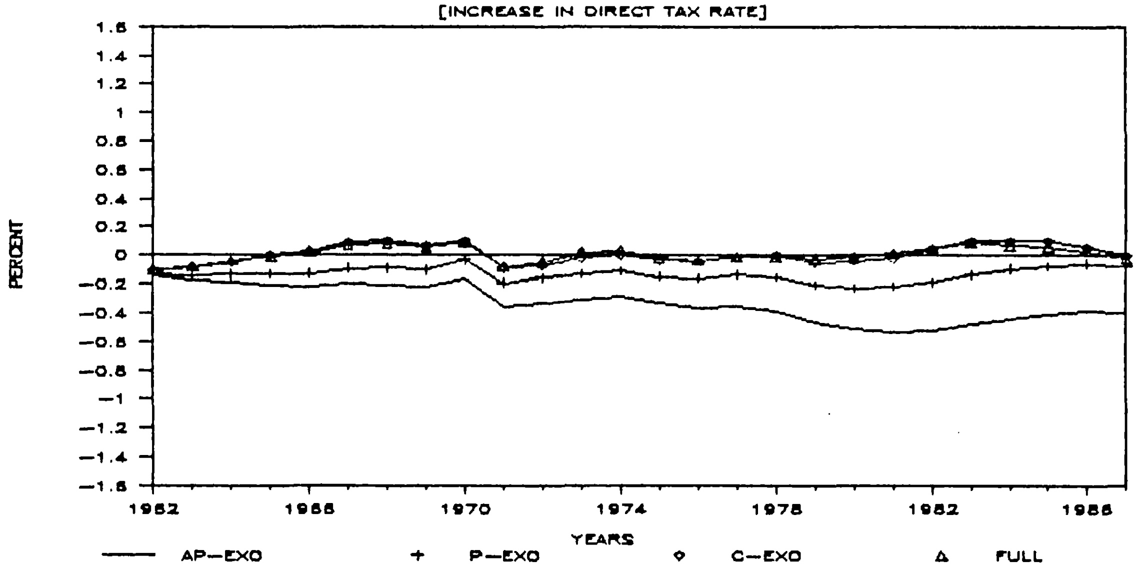
F—5.30 CHANGE IN DISPOSABLE INCOME

[INCREASE IN DIRECT TAX RATE]



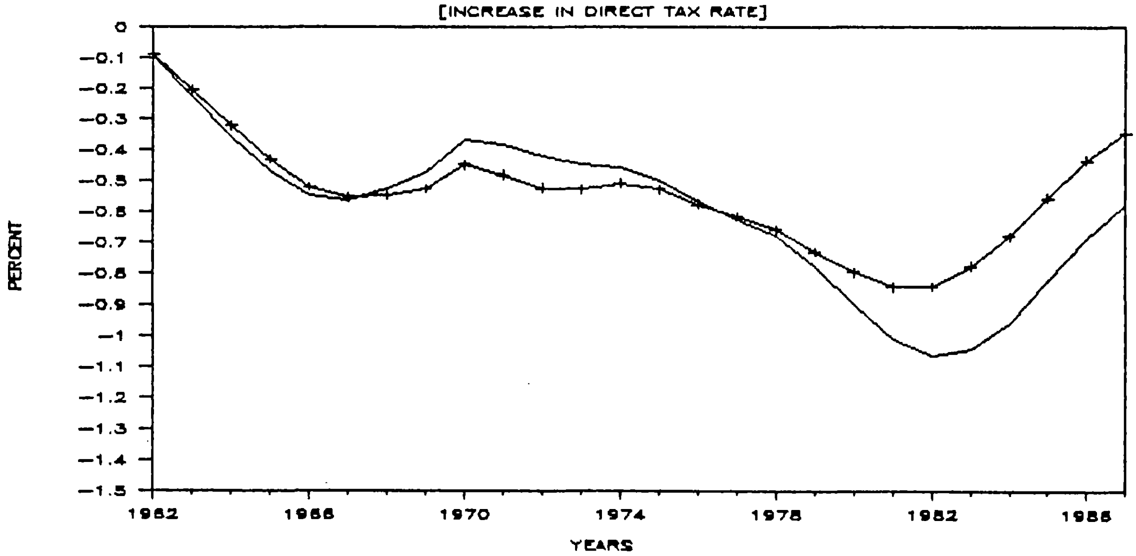
F—5.31 CHANGE IN REAL GDP

[INCREASE IN DIRECT TAX RATE]



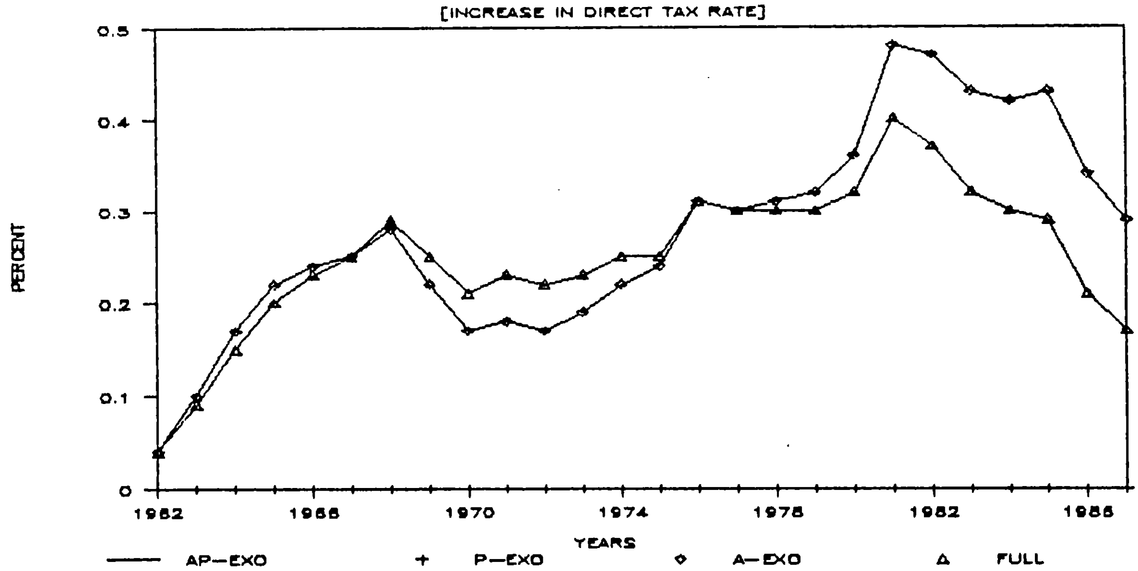
F—5.32 CHANGE IN GDP DEFLATOR

[INCREASE IN DIRECT TAX RATE]



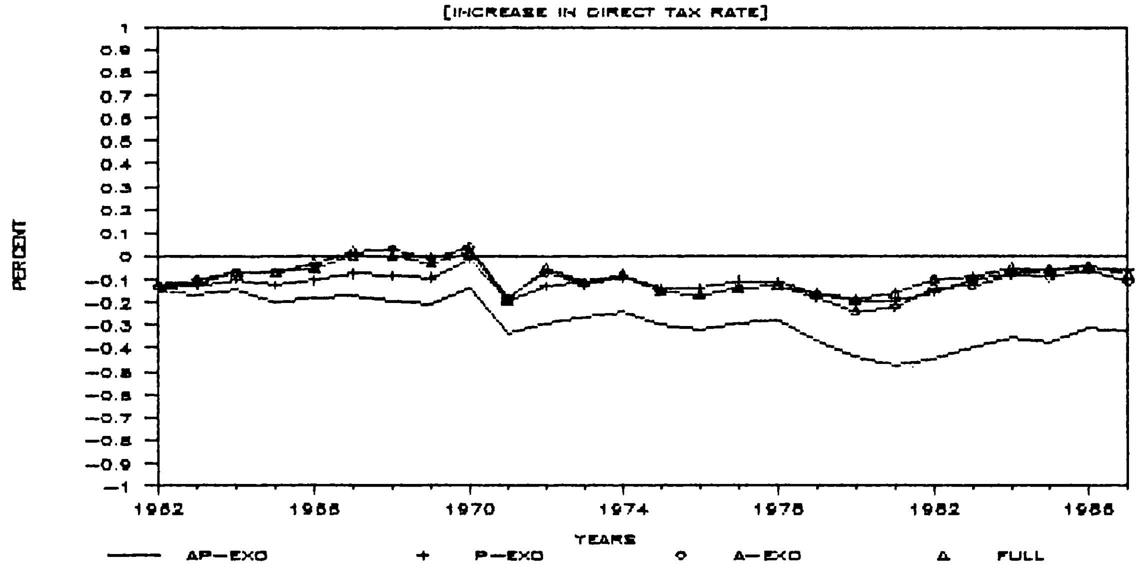
F-5.33 CHANGE IN REAL EXPORTS

[INCREASE IN DIRECT TAX RATE]



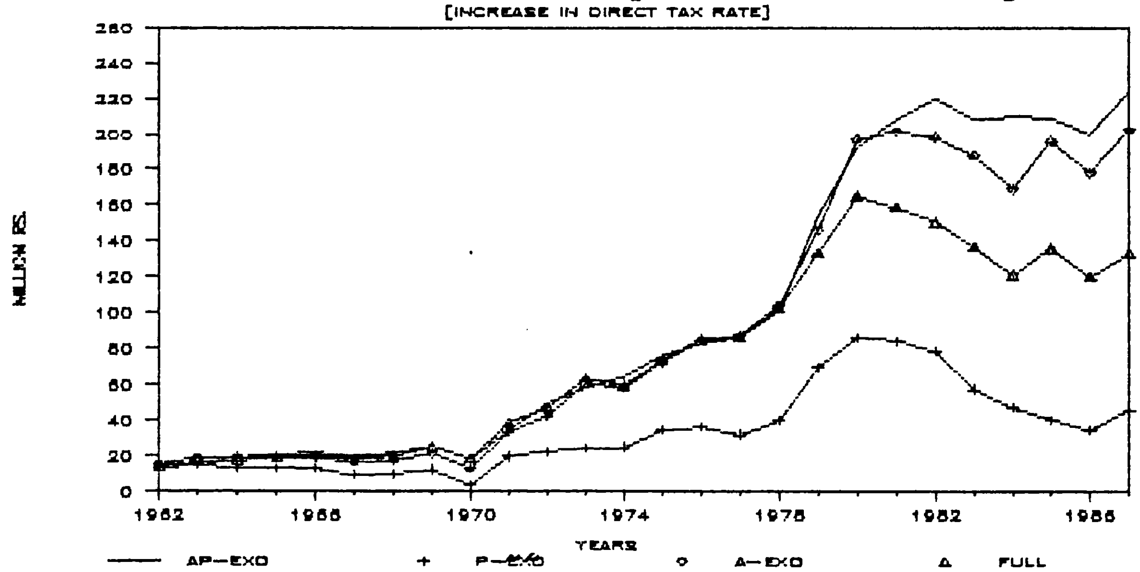
F-5.34 CHANGE IN REAL IMPORTS

[INCREASE IN DIRECT TAX RATE]



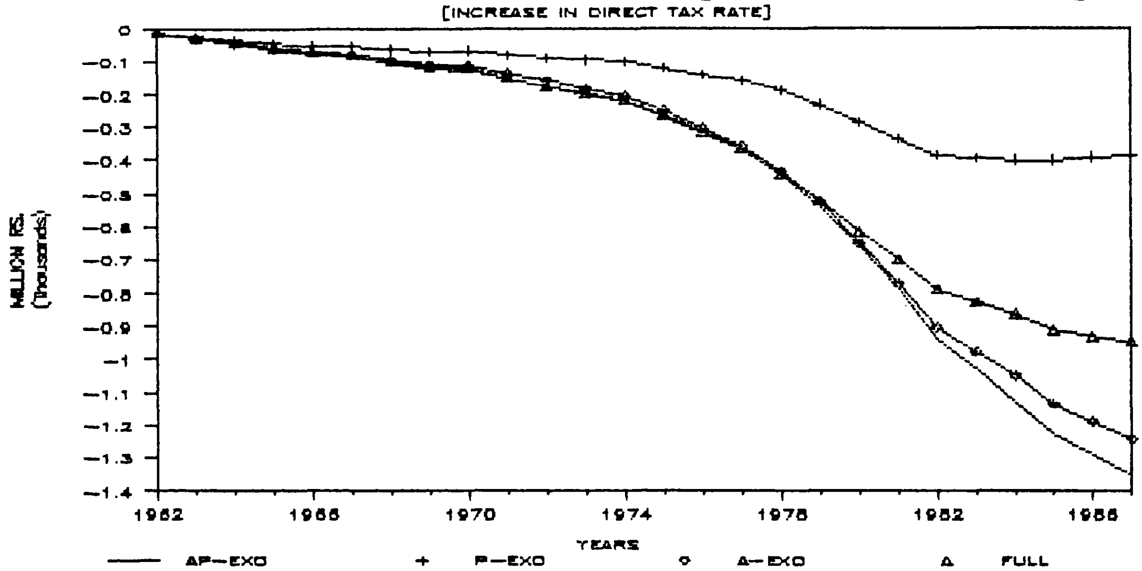
F-5.35 CHANGE CAB[1975-76 PRICES]

[INCREASE IN DIRECT TAX RATE]



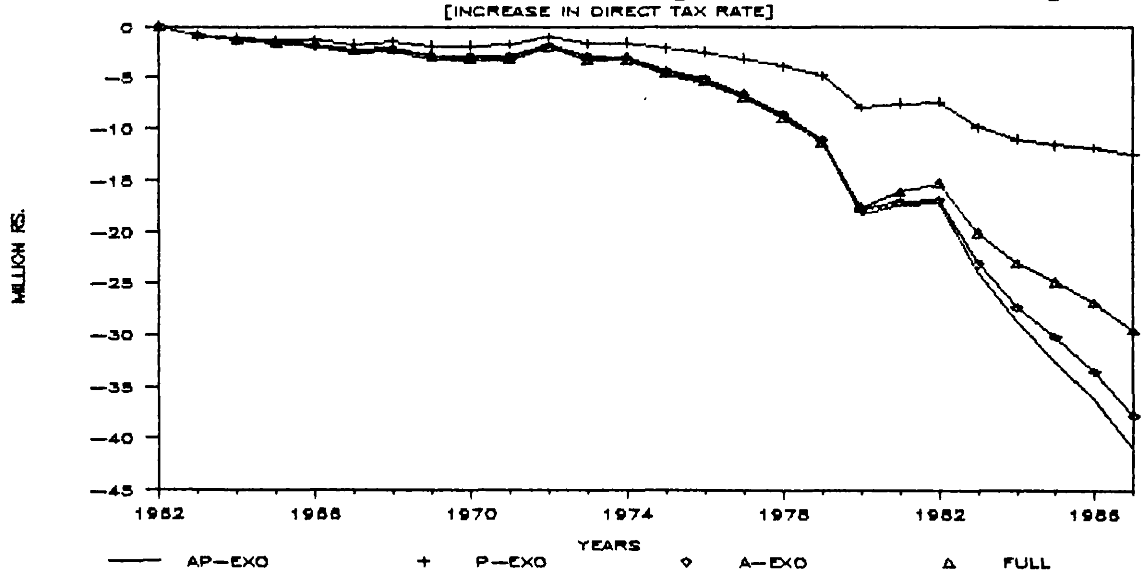
F—5.36 CHANGE IN F—DEBT[1975—76 PRICES]

[INCREASE IN DIRECT TAX RATE]



F—5.37 CHANGE IN INTR.[1975—76 PRICES]

[INCREASE IN DIRECT TAX RATE]



5.3.3 Simulation of External Shocks

The external shocks consist of change in foreign aid (grants), interest rate on foreign loans/credits, private transfers from abroad and prices for imports and exports. The first two have been selected in order to relate our simulation exercise with present day reality of a continuous fall in the share of grants and gradual shift from soft loans (with large grant element), towards hard loans (with small or no grant element)(8). Similarly as we have noted in Chapter 2 that the private transfers from abroad are now declining after a continuous rise over past two decades. The simulation of a fall in private transfers from abroad also represents the reality. The increase in unit value index of imports and a fall in unit value index of exports is, however, only to see the effect of any such change rather than representing reality.

5.3.3.1 Rupees 100 million permanent fall in foreign grants

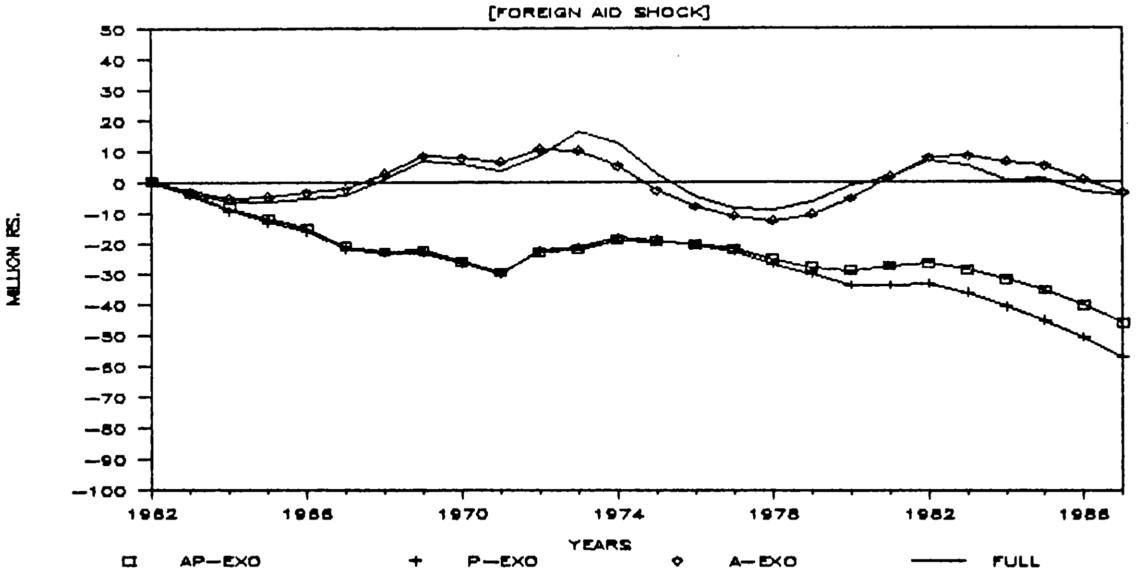
The permanent fall in grants of 100 million rupees is assumed to be in real terms (9). A fall in grants from abroad lead to an equal amount (in current prices) (10) of increase in foreign debt which over time cumulates and hence also increases the interest payments. The higher interest payments reduce the level of GNP and,therefore, disposable income and private consumption. Thus the important ultimate effect, other than rising debt, is in terms of fall in aggregate demand which puts downward pressure on prices. A fall in domestic prices depreciates the real exchange rate pushing up exports and reducing demand for imports and as a result the GDP converges back on the base run values as time passes. Quite obviously when prices are exogenous then there is a permanent fall in GDP. Figure 5.38 shows change in GDP over base run values under different options.

The increase in exports (Figure-39) and fall in imports (Figure 5.40), because of depressed prices (Figure-5.41), is more or less equal to the additional interest payments in full model simulation. However, because of direct impact of foreign grants there is sustained rise in the foreign debt under all the options. The ultimate increase in foreign debt in full model simulation (the lowest increase among four options) is roughly eight times of the size of the shock.(see Figure-5.42). The additional interest payments move according to change in debt level. Figure-5.43 compares the change in interest payments over base run values under different options.

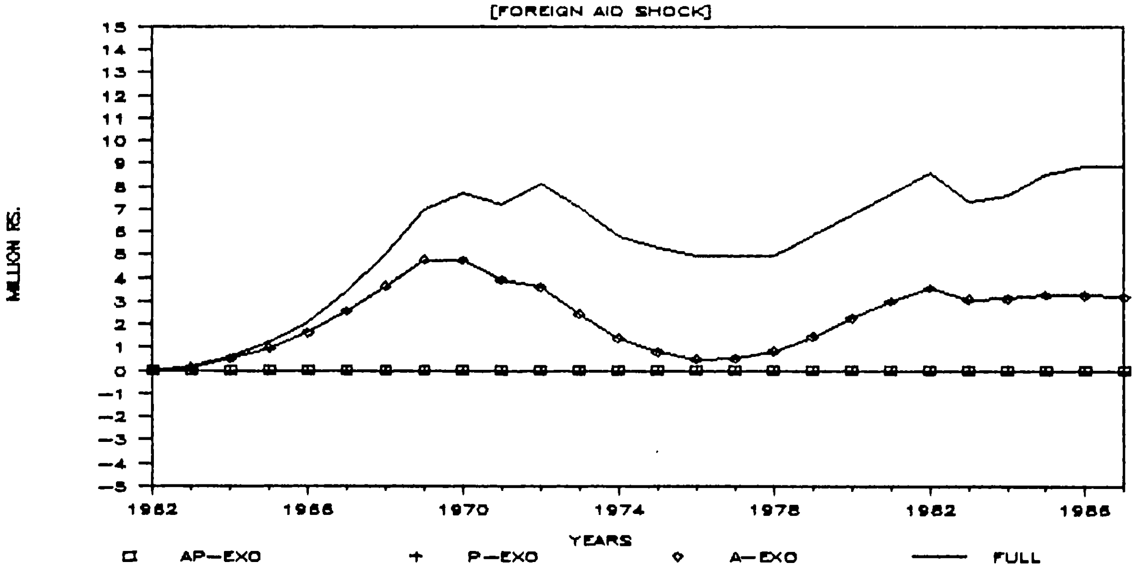
5.3.3.2 Increase in interest rate

The chain of effects of increase in interest rate (by 10 percent) is more or less the same as that of fall in grants from abroad (except the direct implication of grants for debt). It reduces the GDP permanently if prices are exogenous. When prices are endogenous GDP changes in a

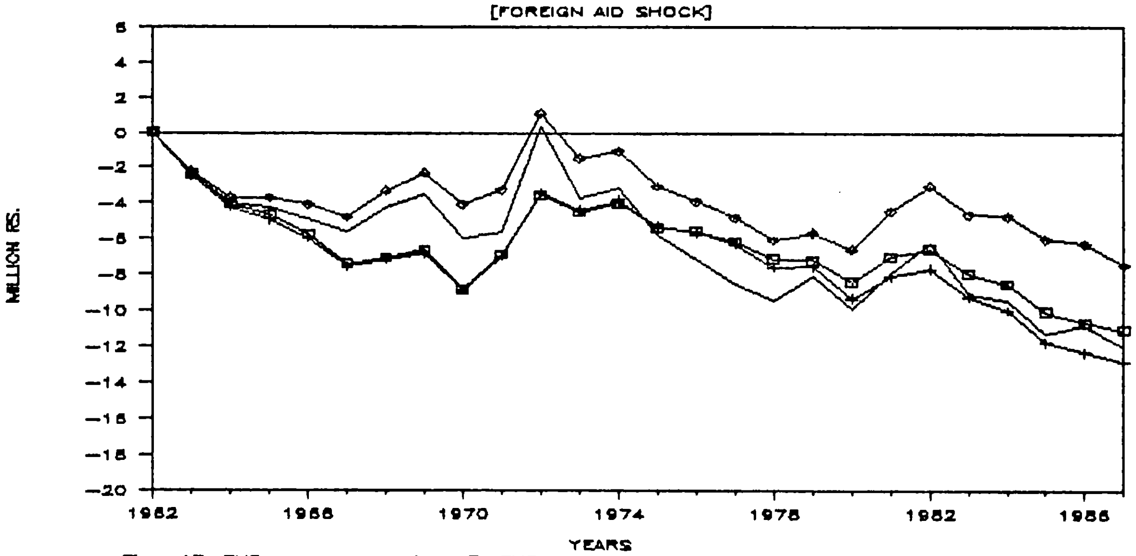
F—5.38 CHANGE IN GDP
[FOREIGN AID SHOCK]



F—5.39 CHANGE IN REAL EXPORTS
[FOREIGN AID SHOCK]

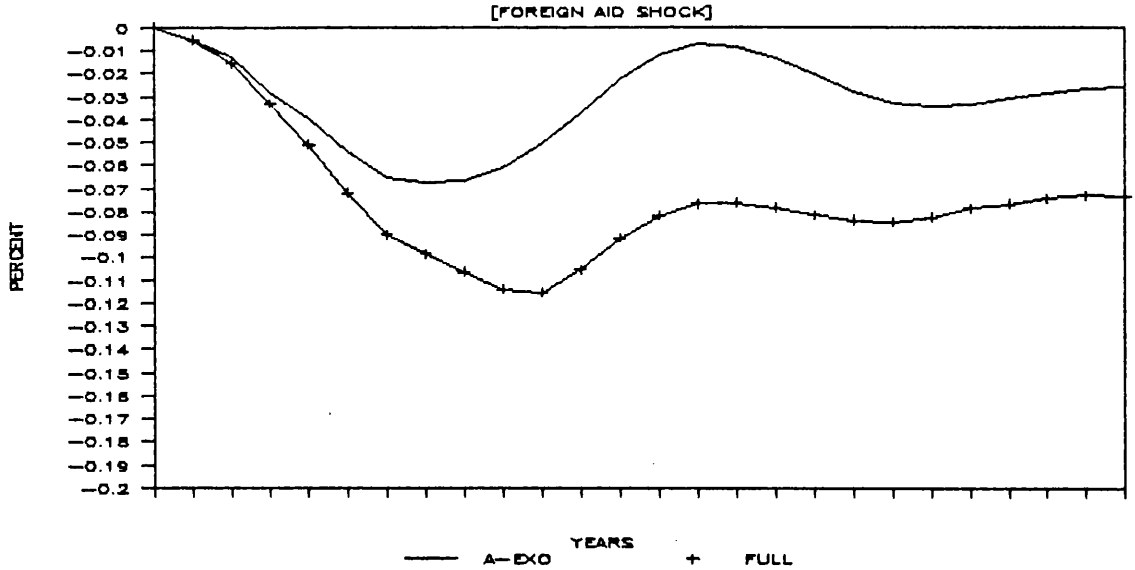


F—5.40 CHANGE IN REAL IMPORTS
[FOREIGN AID SHOCK]



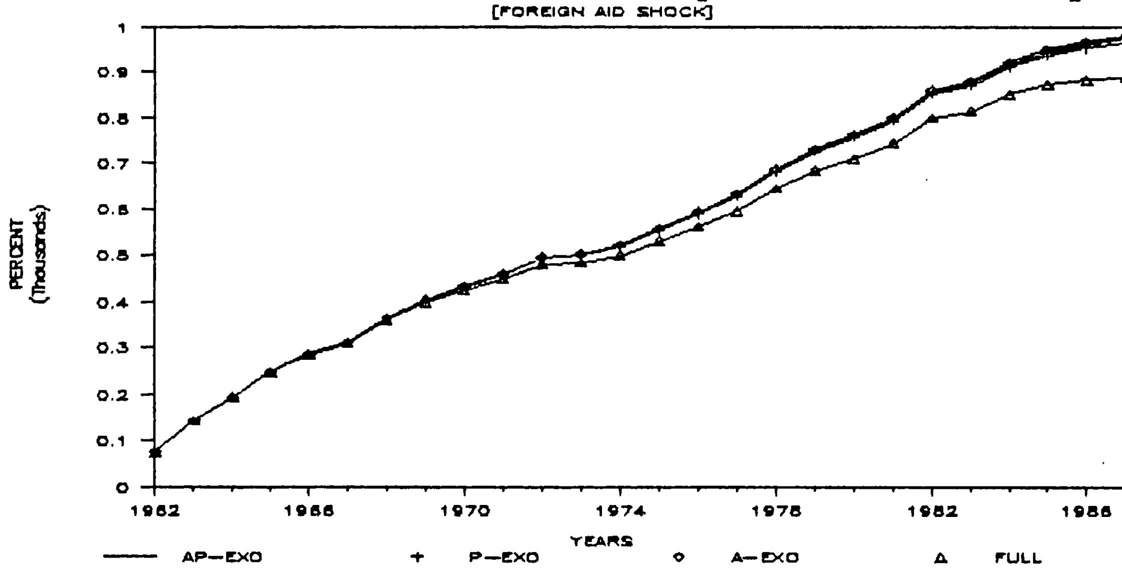
F-5.41 CHANGE IN GDP DEFLATOR

[FOREIGN AID SHOCK]



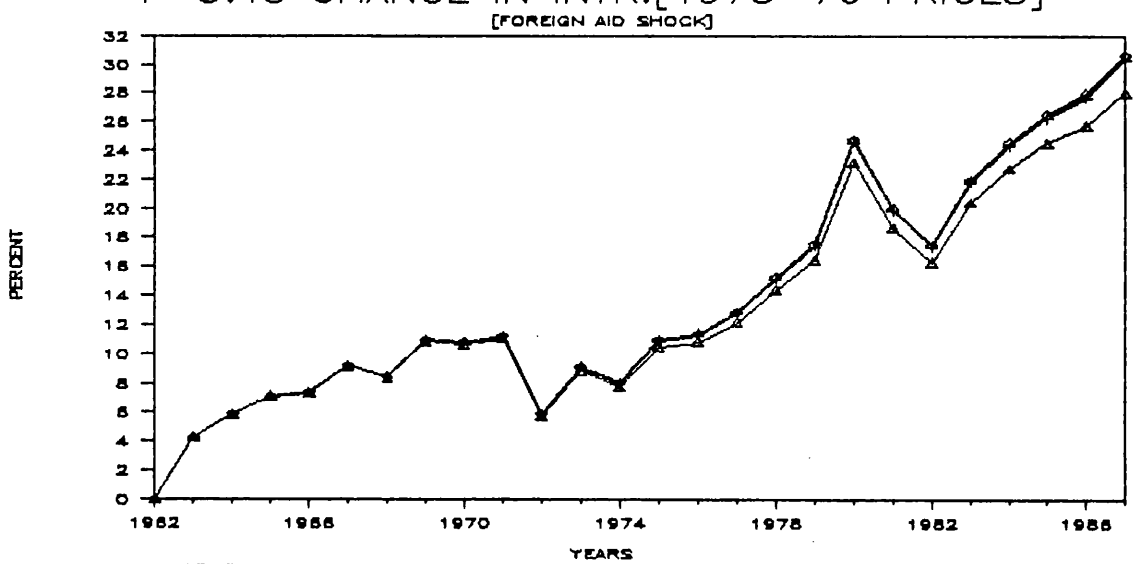
F-5.42 CHANGE IN F-DEBT[1975-76 PRICES]

[FOREIGN AID SHOCK]



F-5.43 CHANGE IN INTR.[1975-76 PRICES]

[FOREIGN AID SHOCK]



cyclical fashion and converges back to base run values (Figure-5.44). Such a behaviour of GDP is because of the following reasons:-

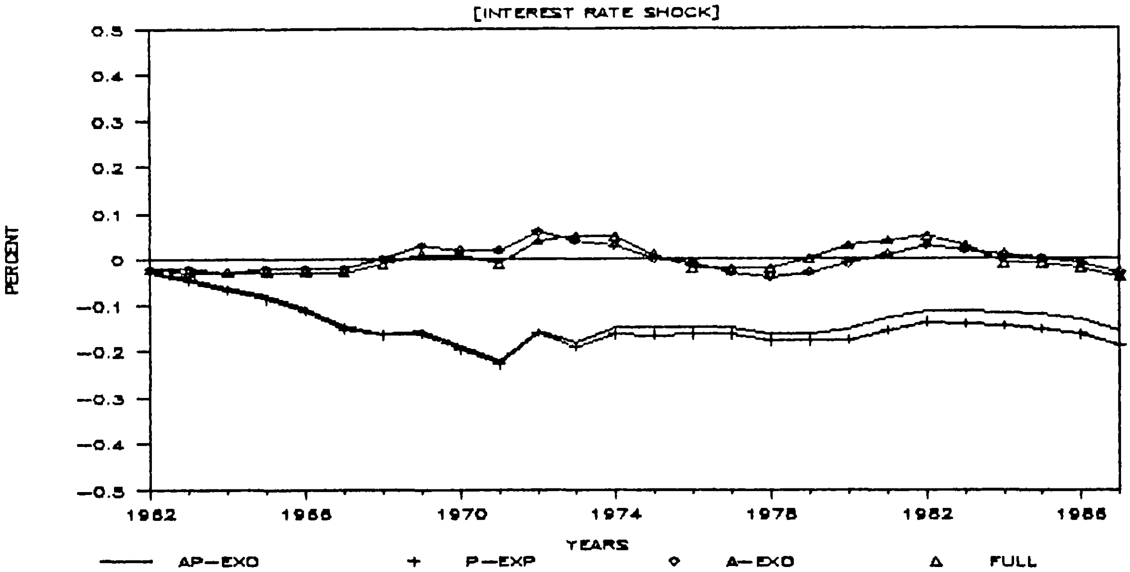
(i) As a result of higher interest payments the GNP falls which reduces the disposable income and thereby private consumption and GDP.

(ii) The fall in GDP puts downward pressure on prices which depreciates the real exchange rate and therefore increases exports and reduces imports. The fall in prices also increases the real worth of the financial assets and so starts boosting private consumption. As a result of these changes the GDP and home prices gradually rise and reverse the kinds of changes we have just described. In the long run the movements of GDP on either side of the base run values die away and the system moves towards stability.

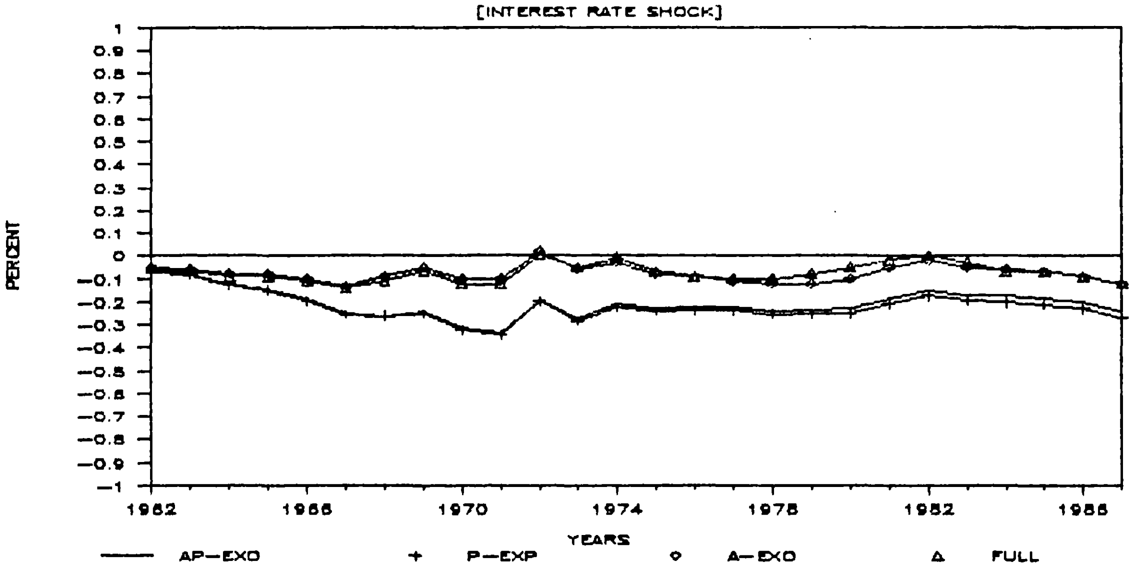
The GNP, as compared to GDP, because of rise in interest payments experiences a permanent fall under all the options and clearly points towards a transfer of resources to abroad (see Figure 5.45).

The ultimate effect on price level is depressing (Figure 5.46) with a parallel movement to changes in GDP. The depressing prices cause the exports to rise and imports to

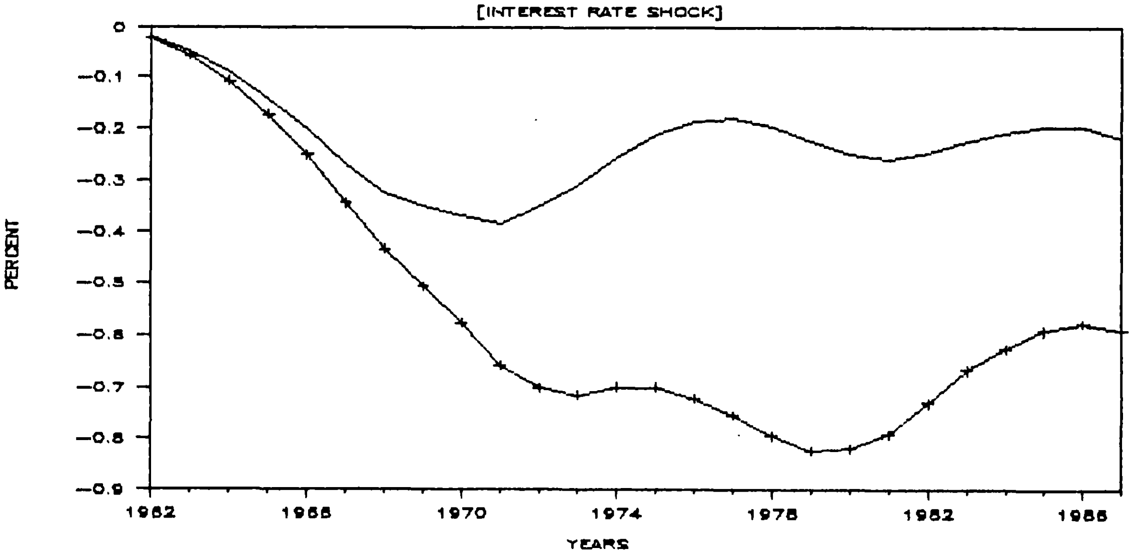
F—5.44 CHANGE IN REAL GDP
[INTEREST RATE SHOCK]



F—5.45 CHANGE IN REAL GNP
[INTEREST RATE SHOCK]



F—5.46 CHANGE IN GDP DEFLATOR
[INTEREST RATE SHOCK]



fall which in the full model offset most of the current account deficit. However, under all the options there is an increase in the external deficit (see Figure 5.47).

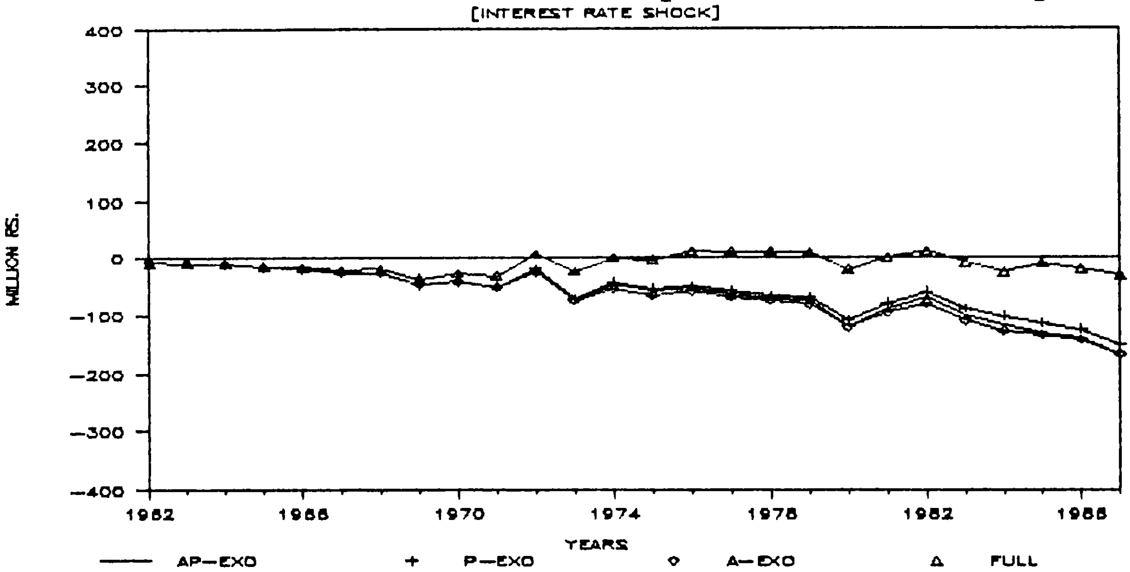
In accordance with changes in current account balance foreign debt rise is slightly above the base run values in full model simulation and about 1 percent above base run values when prices and assets are exogenous (Figure 5.48).

5.3.3.3 Ten percent fall in private transfers from abroad

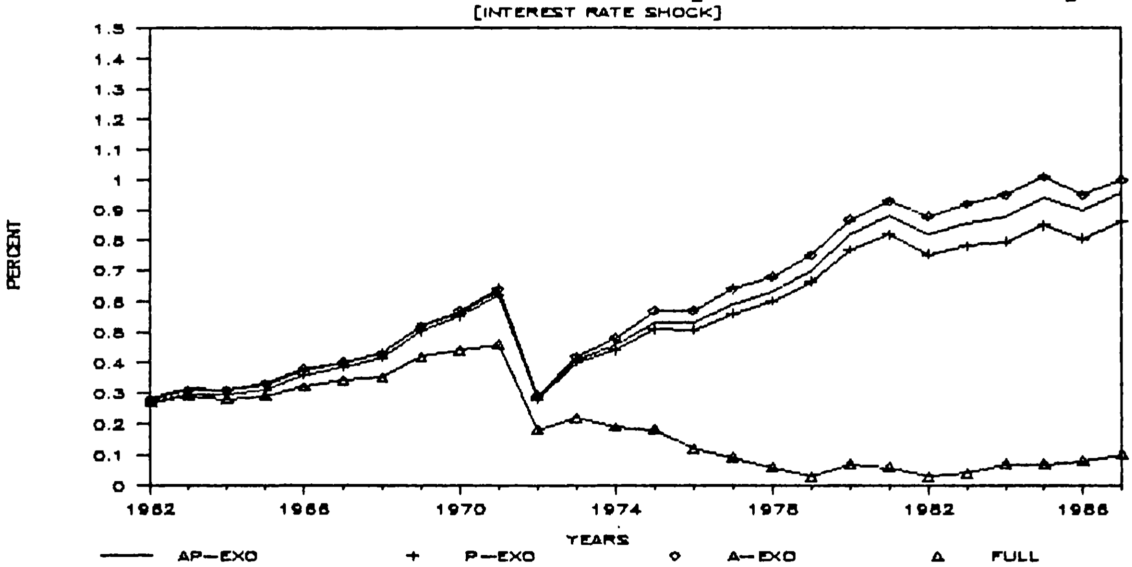
The private transfers have played a very vital role in the aftermath of two oil price shocks and helped to cushion the deteriorating balance of payment situation. In our simulation exercise we have applied the shock in percentage term so its immediate effect from year to year varies in absolute terms according to the size of transfers from abroad in that year. The ultimate effects of fall in private transfers from abroad are similar to rise in the interest rate discussed in section 5.3.3.2 because both of these reduce the net income from abroad.

The immediate result of fall in private transfers is in terms of fall in GNP and increase in current account deficit. The fall in GNP is lower when prices are endogenous (see Figure 5.49).As a result of fall in disposable income and fall in assets the private consumption also falls. The effect of fall in private consumption on

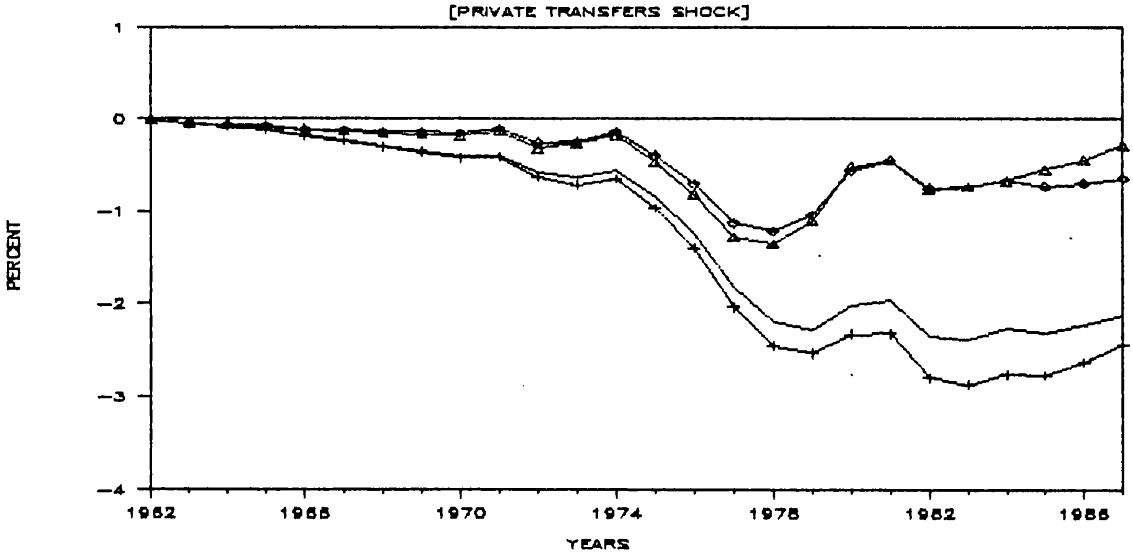
F-5.47 CHANGE IN CAB [1975-76 PRICES]
[INTEREST RATE SHOCK]



F-5.48 CHANGE IN F-DEBT[1975-76 PRICES]
[INTEREST RATE SHOCK]



F-5.49 CHANGE IN REAL GNP
[PRIVATE TRANSFERS SHOCK]

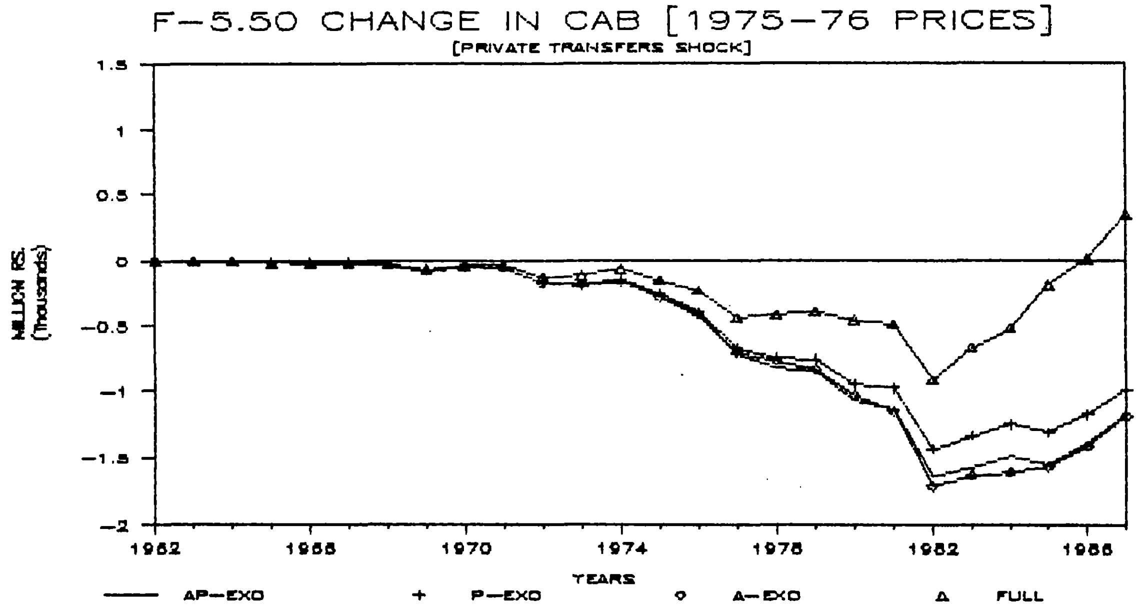


prices, as part of aggregate demand, is substantial and is around 7 percent in the long run in full model simulation.

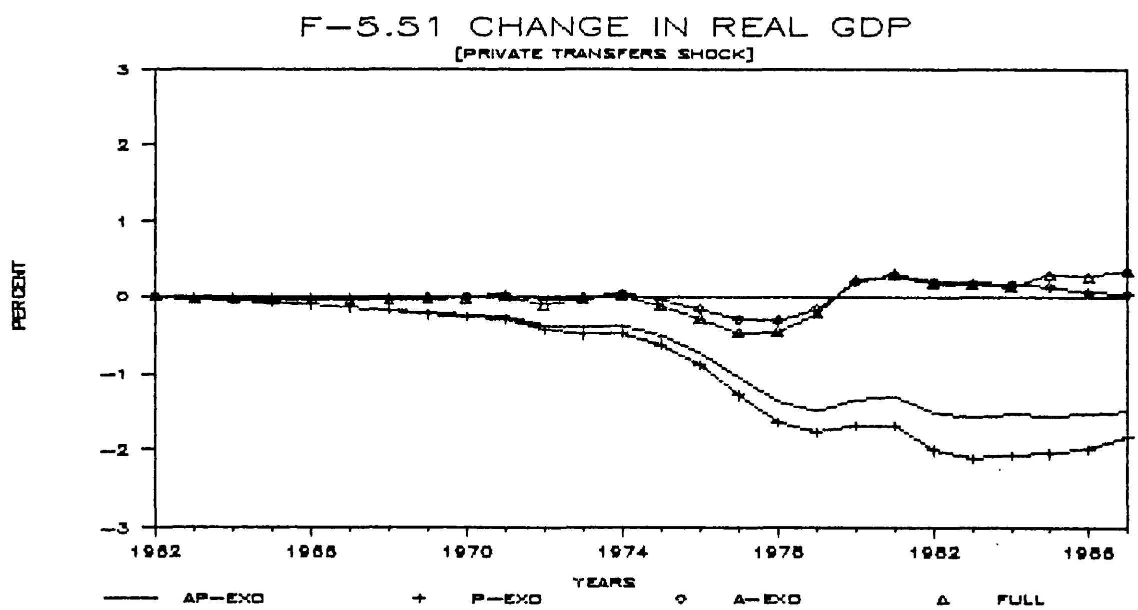
In the full model simulation fall in price level depreciates the real exchange rate leading to an increase in exports and fall in imports. (In addition imports also fall because of fall in GNP). Thus the immediate negative effect on current account deficit is partly offset. Figure 5.50 compares the changes in current account under different options.

The fall in imports, increase in exports and some recovery of private consumption keep the GDP in the long run more or less to its base run level though there are some fluctuations for the years when fall in private transfer is quite significant. The relative sharp fall (over 2%) when prices are exogenous is because of the absence of the positive effects on aggregate demand of falling prices. (See Figures 5.51 and 5.52 for changes in GDP and GDP deflator over base run values).

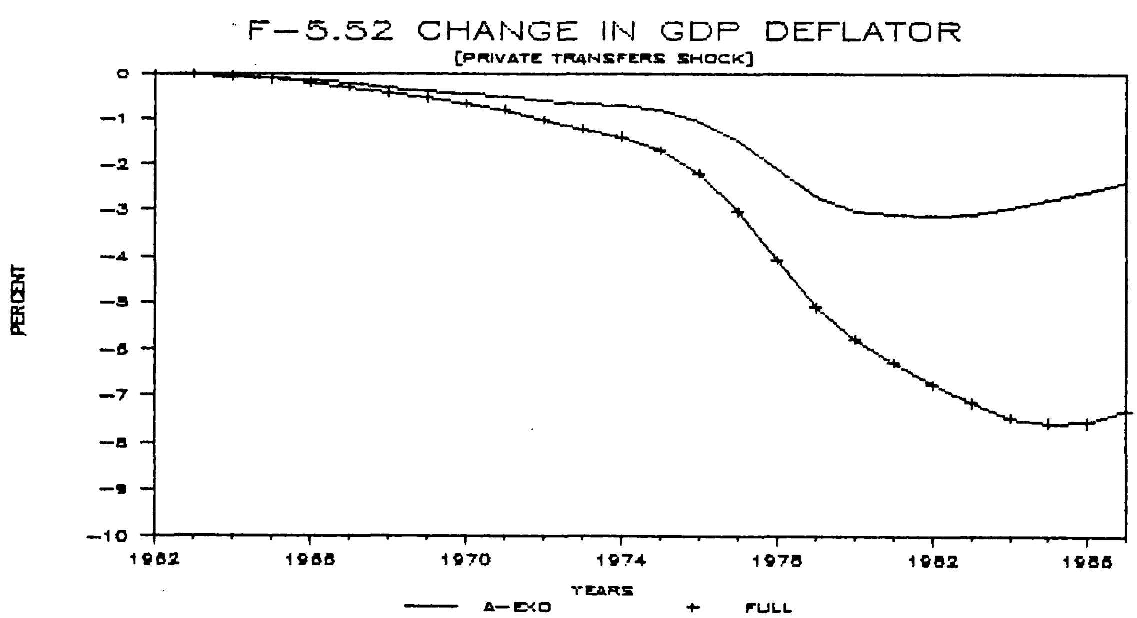
The increase in current account deficit increases the foreign debt significantly and even with full price effects the rise is about 3 percent above the base run values in the long run. Interest payments increase accordingly. (See Figures 5.53 and 5.54 for changes over base run values in foreign debt and interest payments).



F-5.50 CHANGE IN CAB [1975-76 PRICES]
[PRIVATE TRANSFERS SHOCK]
MILLION RS. (Thousands)
1.5
1
0.5
0
-0.5
-1
-1.5
-2
1962
1966
1970
1974
1978
1982
1986
YEARS
AP-EXO
+ P-EXO
◇ A-EXO
Δ FULL



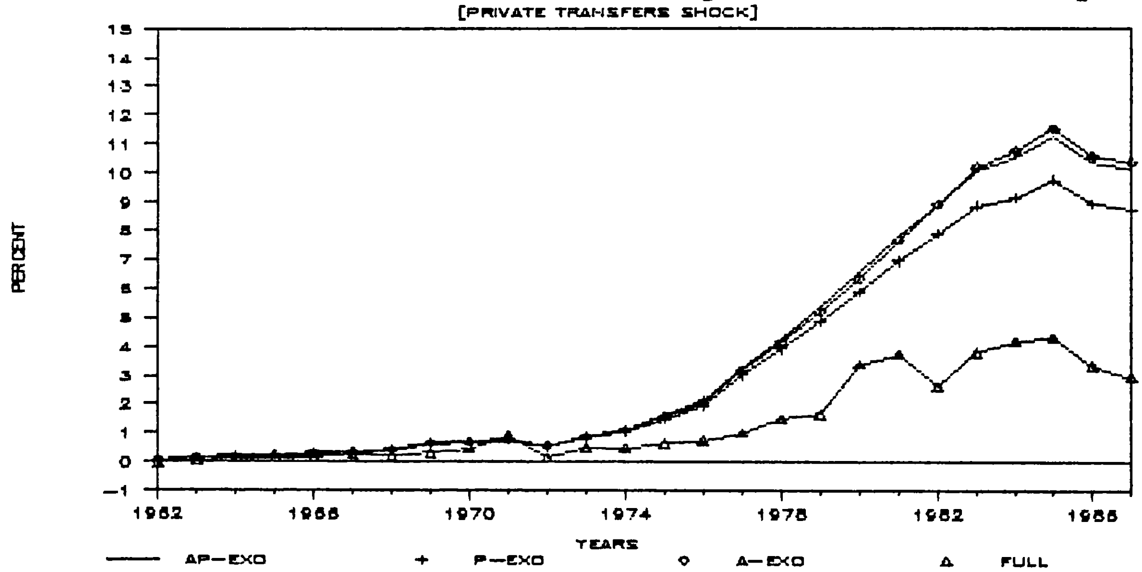
F-5.51 CHANGE IN REAL GDP
[PRIVATE TRANSFERS SHOCK]
PERCENT
3
2
1
0
-1
-2
-3
1962
1966
1970
1974
1978
1982
1986
YEARS
AP-EXO
+ P-EXO
◇ A-EXO
Δ FULL



F-5.52 CHANGE IN GDP DEFLATOR
[PRIVATE TRANSFERS SHOCK]
PERCENT
0
-1
-2
-3
-4
-5
-6
-7
-8
-9
-10
1962
1966
1970
1974
1978
1982
1986
YEARS
A-EXO
+ FULL

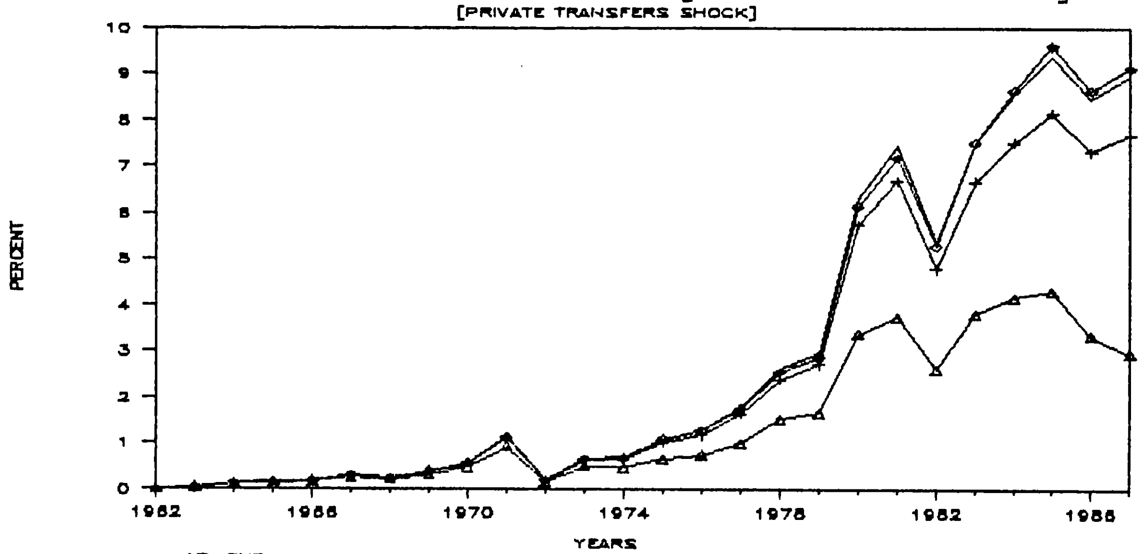
F—5.53 CHANGE IN F—DEBT[1975—76 PRICES]

[PRIVATE TRANSFERS SHOCK]



F—5.54 CHANGE IN INTR. [1975—76 PRICES]

[PRIVATE TRANSFERS SHOCK]

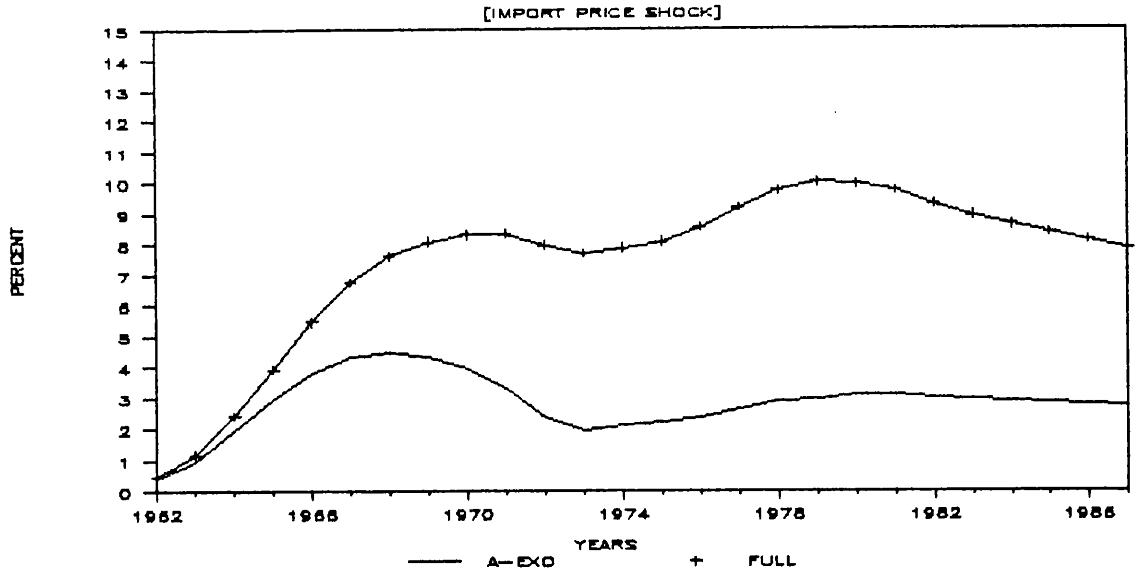


5.3.3.4 Increase in import prices

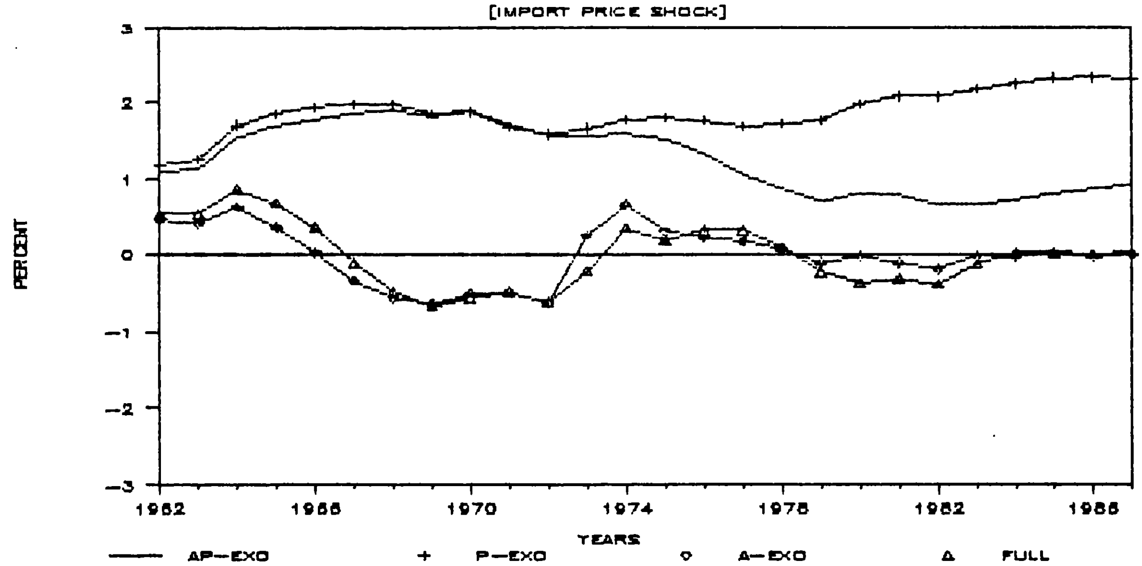
We now turn to the rise in import prices. As an exogenous variable import prices affect the real exchange rate (11) for imports. An increase in import prices reduces imports and puts upward pressure on prices because of higher aggregate demand relative to supply. In a full model simulation the ultimate price rise is equal to the shock. The domestic price rise is about half the level of import price rise when assets are exogenous because the improvement in current account balance is blocked to increase the assets which would have pushed up the private consumption (and therefore aggregate demand) and prices further.(See Figure 5.55 for change in GDP deflator over base run). In the full model simulation the change in GDP subsides gradually and converges back to base run values. However, when the prices are exogenous there is a permanent increase in aggregate demand (see Figure 5.56) because of a permanent fall in imports (Figure 5.57).

The change in current account balance moves around base run values in full model simulation. The domestic price rise more or less neutralizes the initial depreciation of real exchange rate. Particularly, when assets and prices are exogenous there is an increase in current account deficit because now there is no increase in exports though there is some fall in imports. A slight improvement in current account balance in full model simulation, because of its

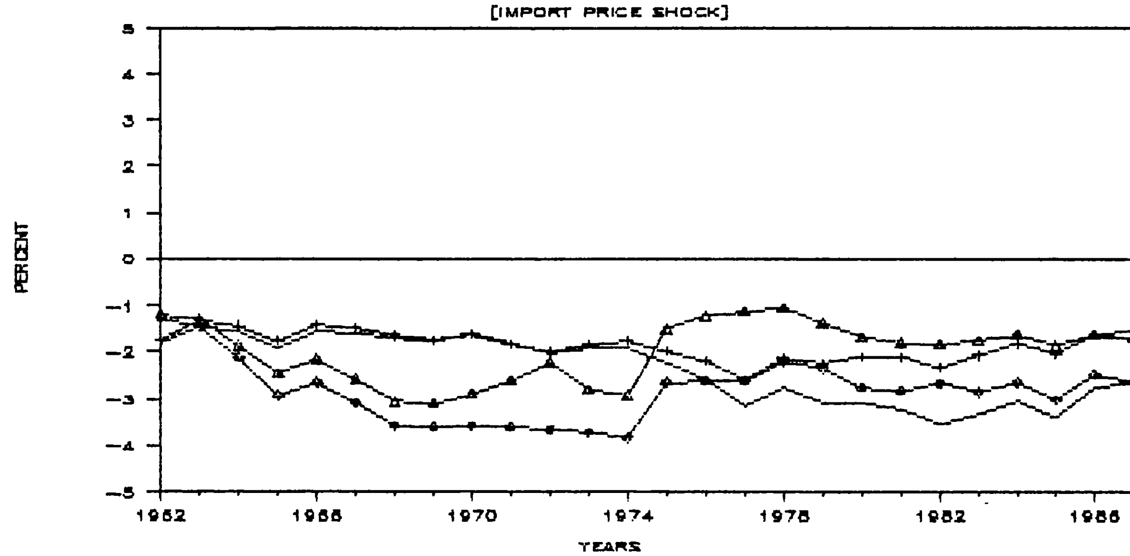
F-5.55 CHANGE IN GDP DEFLATOR
[IMPORT PRICE SHOCK]



F-5.56 CHANGE IN REAL GDP
[IMPORT PRICE SHOCK]



F-5.57 CHANGE IN REAL IMPORTS
[IMPORT PRICE SHOCK]



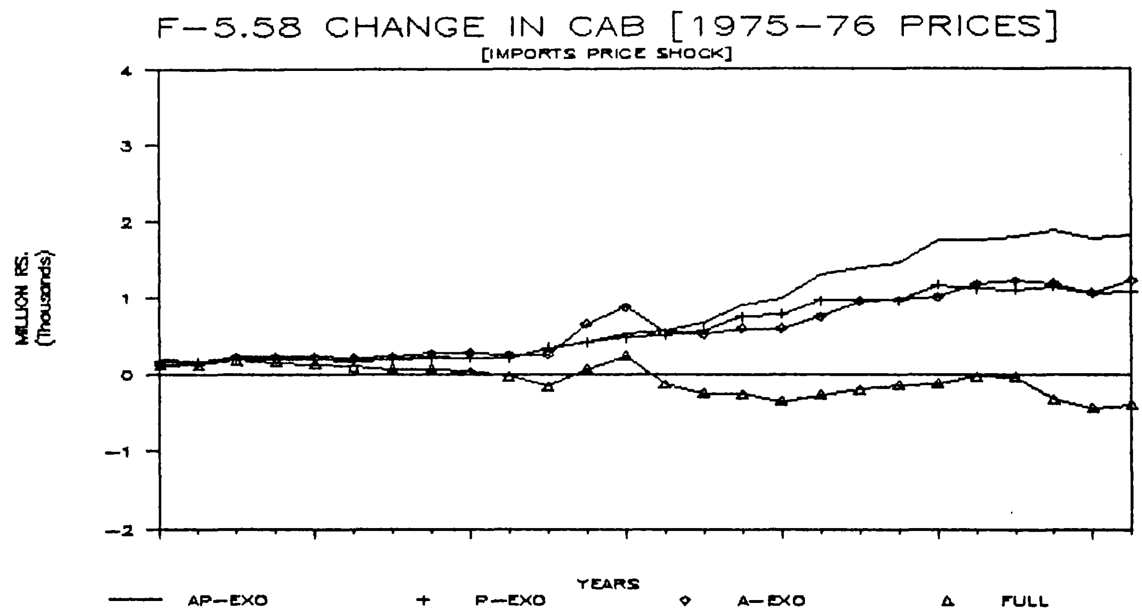
cumulative effect on debt has produced little improvement in the foreign debt and reduction in interest payments. The situation under all other options is worse than before. (Figures 5.58, 5.59, 5.60 are for changes in current account balance, foreign debt and interest payments over base run under different options).

5.3.3.5 Fall in exports prices

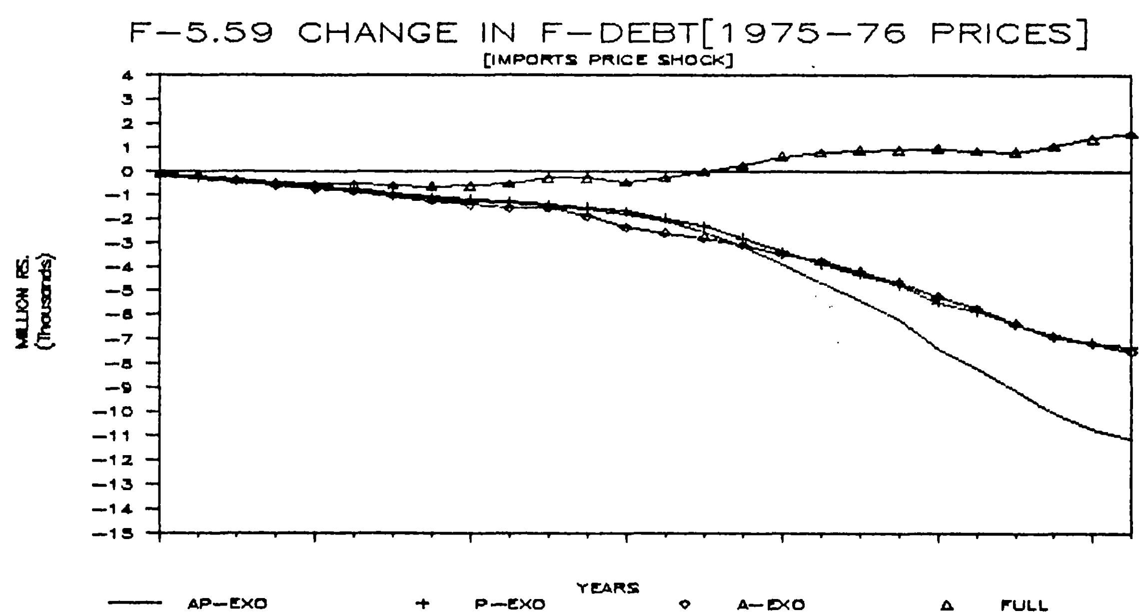
A fall in export prices appreciate the real exchange rate for exports and causes exports to fall. The immediate impact of export price fall is, therefore, in terms of fall in exports. Figure 5.61 is for change in exports under different options. (It may be noted that when prices are exogenous under option I and II the change in exports is the same).

The effect on home prices is depressing because of fall in aggregate demand and is slightly less then the fall in export prices in full model simulation (see Figure 5.62). As expected when nominal assets are exogenous the price fall is relatively smaller because of appreciation of assets with the initial price fall which pushes up the aggregate demand and restrict further fall in prices.

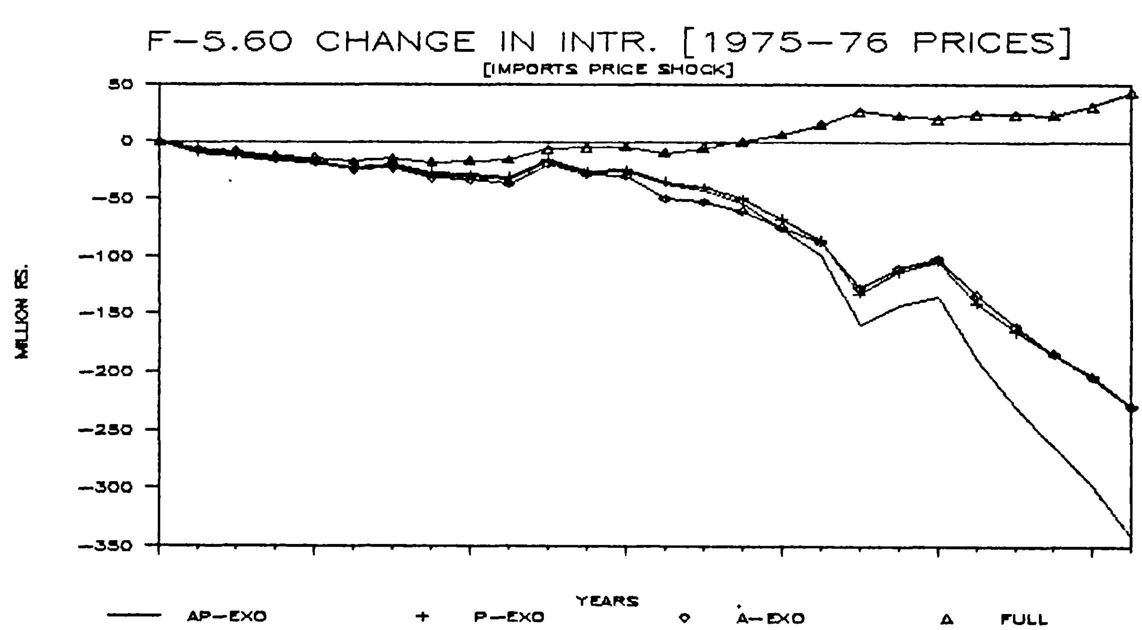
The change in GDP is brought about by falling exports and appreciation of assets in the opposite direction (when prices are endogenous). As a result the GDP converges back



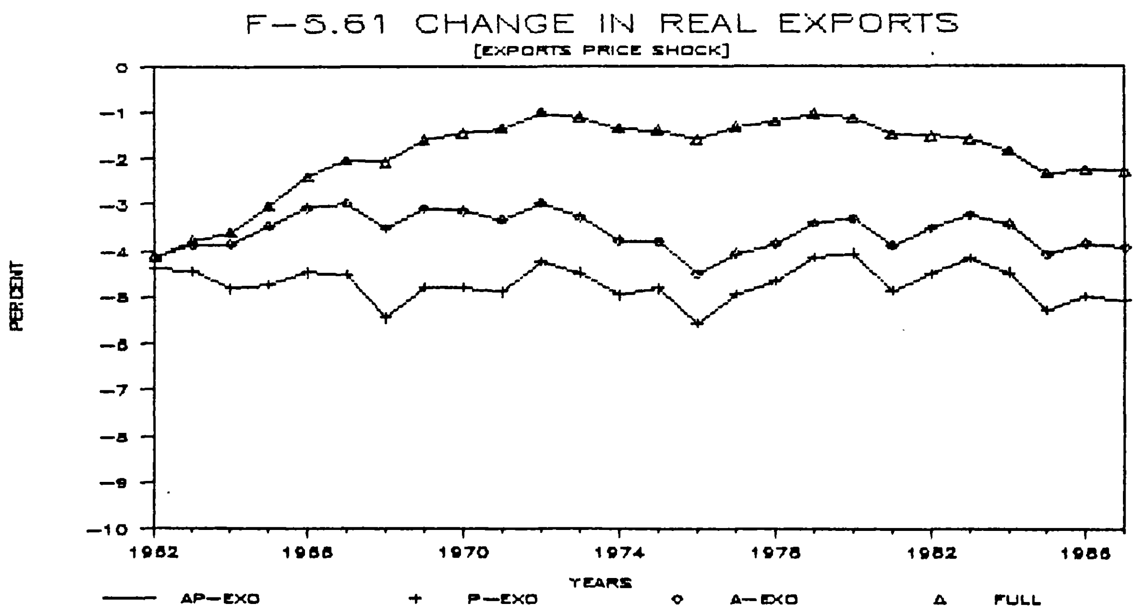
F-5.58 CHANGE IN CAB [1975-76 PRICES]
[IMPORTS PRICE SHOCK]
MILLION RS. (Thousands)
YEARS
AP-EXO
+ P-EXO
◇ A-EXO
△ FULL

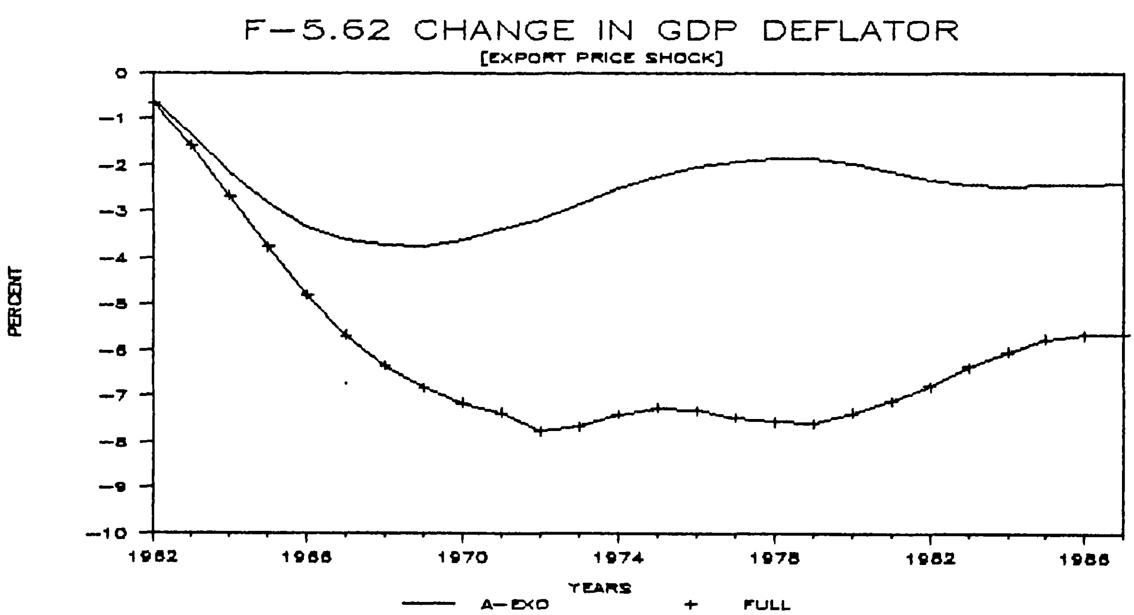


F-5.59 CHANGE IN F-DEBT[1975-76 PRICES]
[IMPORTS PRICE SHOCK]
MILLION RS. (Thousands)
YEARS
AP-EXO
+ P-EXO
◇ A-EXO
△ FULL



F-5.60 CHANGE IN INTR. [1975-76 PRICES]
[IMPORTS PRICE SHOCK]
MILLION RS.
YEARS
AP-EXO
+ P-EXO
◇ A-EXO
△ FULL

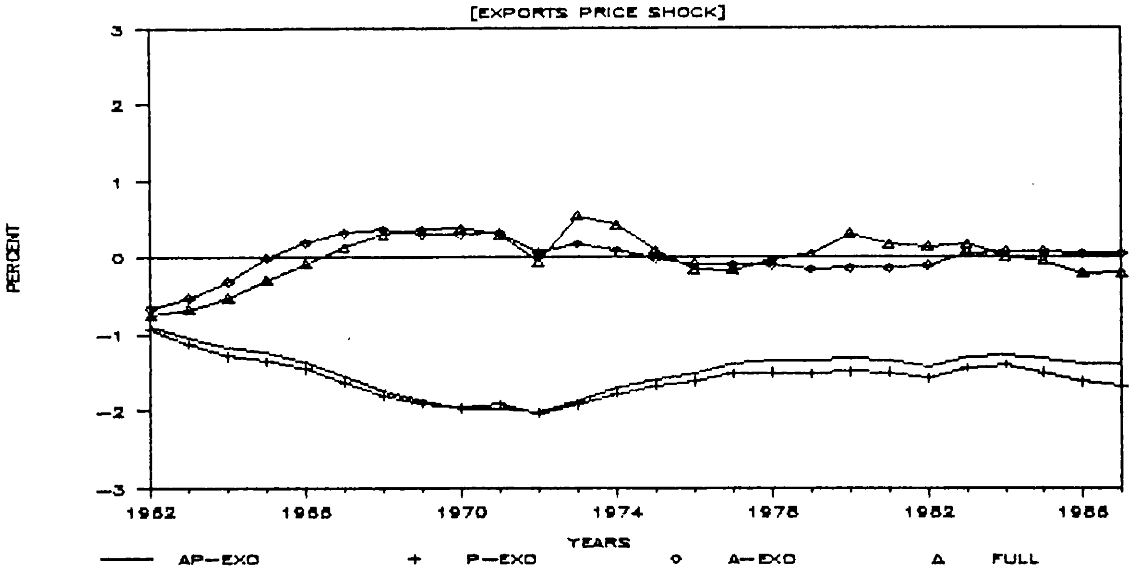

F—5.61 CHANGE IN REAL EXPORTS
[EXPORTS PRICE SHOCK]
PERCENT
YEARS
AP—EXO
P—EXO
A—EXO
FULL


F—5.62 CHANGE IN GDP DEFLATOR
[EXPORT PRICE SHOCK]
PERCENT
YEARS
A—EXO
FULL

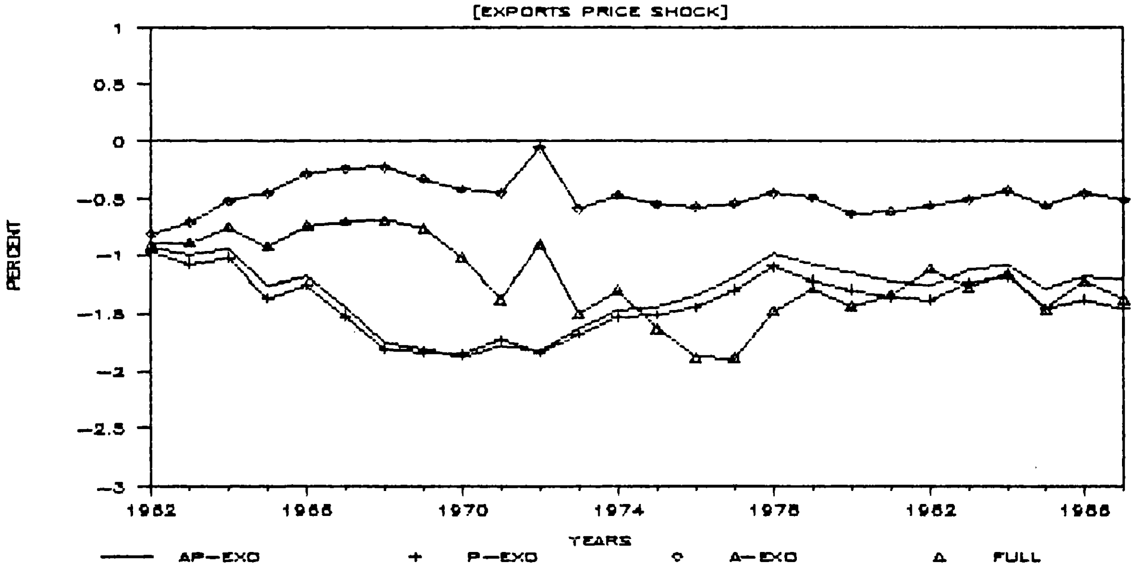
on the base run values as the time passes. When prices are exogenous there is, however, a permanent fall in GDP of about 2 percent. (See Figure 5.63 for comparison under different options).

The fall in prices on the one hand pushes up exports again and on the other hand depresses demand for imports. Imports are initially also depressed by falling aggregate demand (see Figure 5.64 for change in imports under different options). The net outcome for current account balance appears in terms of long cycles with tendency towards improvement in full model simulation. This happens because of relatively more fall in imports than exports in absolute terms. In absence of price and assets effects the net outcome is simple and there is permanent increase in external deficit (see Figure 5.65). The long cycle of current account balance, in cumulative form is more visible in the foreign debt rise over base run in full model simulation. Under other options the result is quite obvious (Figure 5.66). Change in interest payments are the direct reflection of extra debt accumulated (Figure 5.67). The outcome in the full model for current account balance appears paradoxical and not very much convincing but it has happened because of significant fall in price level which has pushed up the exports and reduced imports. Thus it is more a reflection of a deflated economy rather than any kind of efficiency of the economic system. However, it does show the effect of a deflationary policy on imports and exports.

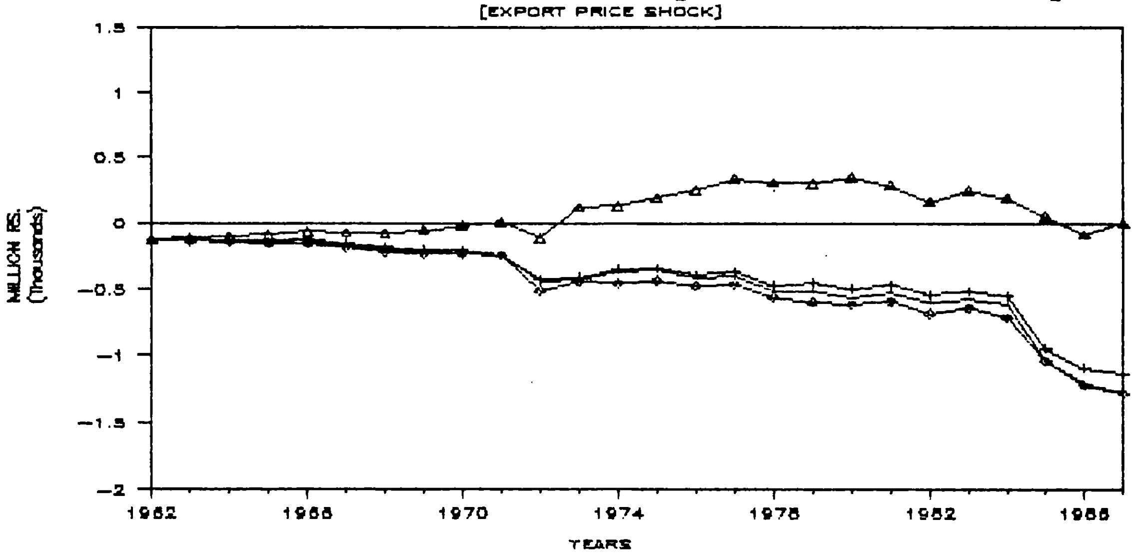
F—5.63 CHANGE IN REAL GDP
[EXPORTS PRICE SHOCK]

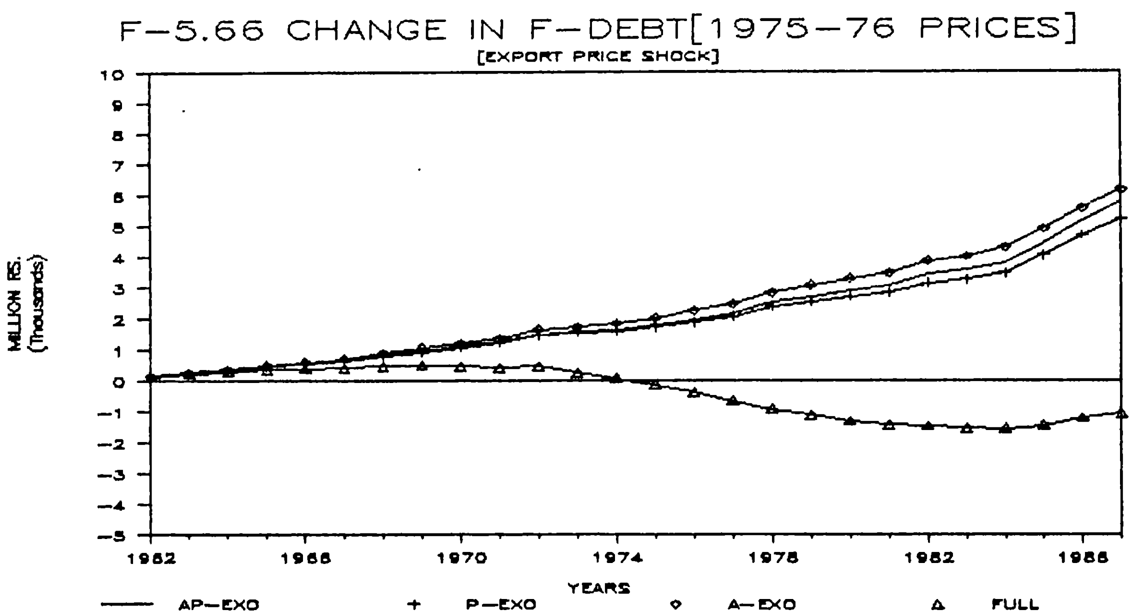


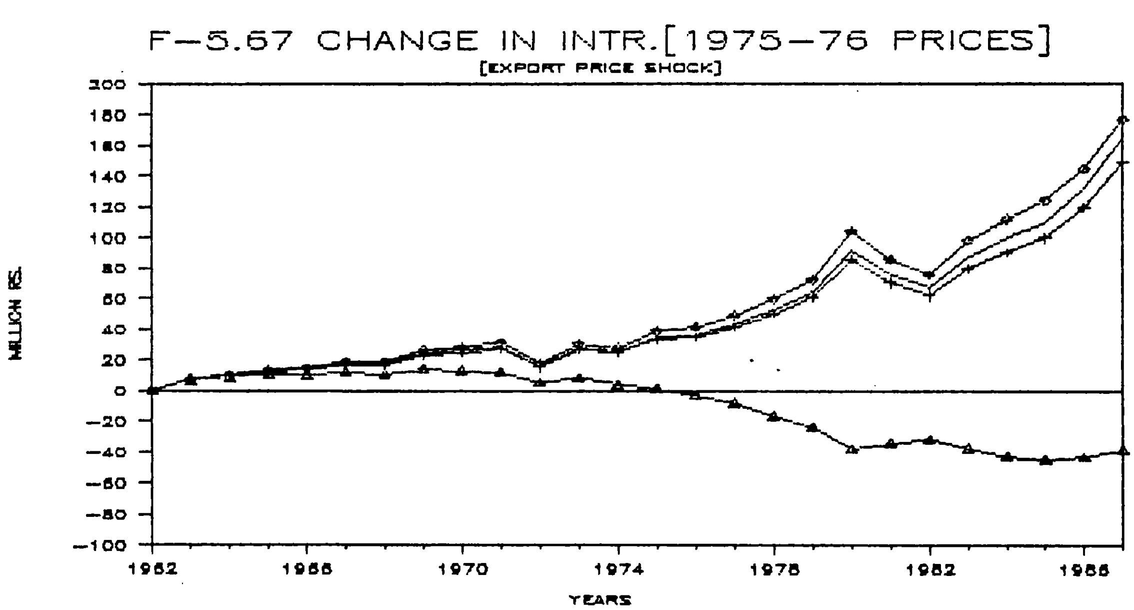
F—5.64 CHANGE IN REAL IMPORTS
[EXPORTS PRICE SHOCK]



F—5.65 CHANGE IN CAB [1975—76 PRICES]
[EXPORT PRICE SHOCK]




F—5.66 CHANGE IN F—DEBT[1975—76 PRICES]
[EXPORT PRICE SHOCK]
MILLION RS.
(Thousands)
10
9
8
7
6
5
4
3
2
1
0
—1
—2
—3
—4
—5
1962
1966
1970
1974
1978
1982
1986
YEARS
AP—EXO
P—EXO
A—EXO
FULL


F—5.67 CHANGE IN INTR.[1975—76 PRICES]
[EXPORT PRICE SHOCK]
MILLION RS.
200
180
160
140
120
100
80
60
40
20
0
—20
—40
—60
—80
—100
1962
1966
1970
1974
1978
1982
1986
YEARS
AP—EXO
P—EXO
A—EXO
FULL

5.4. Summary and Conclusions

The simulation exercise which we have done under different options is of special significance. The four different options are like four different kinds of models. The comparison of full model with these options further highlights the properties of our basic model.

The simulation exercise has the expected results identifying clearly the policy options available for price stability, balance of payments problem and foreign debt problem. The government consumption has shown significant influence over prices and balance of payments. An appropriate exchange rate policy, in order to maintain the competitiveness in the international market for exports and reduce imports, is undoubtedly desirable but it has to be accompanied by suitable policy measures to keep the domestic price level stable. The simulation exercise has clearly demonstrated that the rising share of hard loans, fall in grants and private transfers from abroad are clear signals for the deteriorating situation in the future and, therefore, warrant some adjustment policy measures to tackle the problem. The long lasting durable solution lies in sustain rise in productive investment - the issue further examined in Chapter 6.

FULL MODEL SIMULATION RESULTS

(1)RUPEES 100 MILLION PERMANENT INCREASE IN REAL GOVERNMENT CONSUMPTION [CHANGE OVER BASE RUN]

YEARS	EXPORTS [M-RS]	IMPORTS [M-RS]	GDP [M-RS]	CURRENT ACCOUNT BALANCE [M-RS]	FOREIGN DEBT [M-RS]	GDP DEFLATOR [%]
1962	-6.64	38.27	126.55	-34.06	34.06	0.21
1963	-16.49	35.19	114.19	-40.84	69.12	0.50
1964	-28.81	31.33	72.25	-44.61	102.05	0.81
1965	-39.64	26.43	19.69	-48.69	142.41	1.08
1966	-52.53	17.58	-40.23	-47.35	172.47	1.30
1967	-65.15	6.17	-105.05	-48.74	196.88	1.40
1968	-78.26	-1.57	-150.53	-51.62	241.08	1.40
1969	-90.45	-2.9	-173.99	-53.21	276.86	1.29
1970	-81.38	7.95	-137.45	-55.12	308.25	1.14
1971	-62.48	23.13	-57.6	-57.88	338.75	1.00
1972	-63.14	6.89	19.84	-74.38	360.7	0.91
1973	-52.18	32.96	-20.91	-98.3	381.05	0.79
1974	-42.57	31.71	8.87	-91.19	393.75	0.68
1975	-38.93	34.77	30.66	-81.96	421.84	0.60
1976	-35.11	36	46.9	-80.81	450.8	0.54
1977	-32.43	35.85	43.95	-77.89	478.93	0.50
1978	-29.46	32.24	30.55	-78.1	520.2	0.47
1979	-30.39	21.68	12.77	-75.4	530.95	0.43
1980	-30.01	22.77	-14.2	-78.4	535.98	0.37
1981	-29.33	19.09	-3.48	-66.54	537.16	0.33
1982	-29.07	17.57	6.14	-63.07	553.31	0.28
1983	-22.69	23.14	20.8	-64.82	547.45	0.24
1984	-21.96	22.45	38.52	-64.29	556.48	0.22
1985	-23.43	24.57	33.23	-72.65	571.38	0.20
1986	-23.89	21.95	40.95	-72.55	580.91	0.20
1987	-23.63	22.35	33.69	-78.27	585.45	0.20

Note:
(1) M-RS= Million Rs.
(2) All absolute figures ar in 1975-76 prices.

(2)RUPEES 100 MILLION PERMANENT INCREASE
IN REAL PRIVATE INVESTMENT
[CHANGE OVER BASE RUN]

YEARS	EXPORTS [M-RS]	IMPORTS [M-RS]	GDP [M-RS]	CURRENT ACCOUNT BALANCE [M-RS]	FOREIGN DEBT [M-RS]	GDP DEFLATOR [%]
1962	2.67	33.93	119.13	-24.07	24.07	0.12
1963	3.13	29.6	115.91	-22.17	42.15	0.22
1964	2.47	28.64	106.16	-20.36	55.39	0.31
1965	2.71	28.23	99.74	-19.12	70.01	0.35
1966	3.93	27.19	96.02	-16.99	78.50	0.35
1967	7.86	26.92	106.58	-14.14	81.55	0.30
1968	14.19	28.72	120	-10.97	89.46	0.23
1969	23.73	30.27	138.72	-8.11	91.12	0.14
1970	29.08	32.91	159.13	-6.01	89.32	0.05
1971	31.79	28.24	193.45	-0.33	81.72	-0.04
1972	40.96	32.5	233.13	6.23	62.84	-0.11
1973	41.01	33.69	269.63	5.96	43.30	-0.15
1974	38.38	35.17	271.86	0.63	33.75	-0.18
1975	39.84	32.7	252.67	6.43	22.71	-0.20
1976	40.09	27.38	236.48	15.38	4.54	-0.23
1977	41.43	22.34	231.19	20.64	-16.60	-0.26
1978	40.11	23.16	244.25	26.70	-42.02	-0.29
1979	44.34	24.65	254.36	23.76	-60.55	-0.30
1980	47.97	23.16	265.39	29.27	-81.46	-0.30
1981	51.75	23.25	258.8	27.39	-98.92	-0.29
1982	55.11	27.66	268.47	26.08	-116.36	-0.27
1983	45.54	19.78	249.16	28.46	-129.96	-0.25
1984	45.54	19.26	232.97	29.09	-145.93	-0.24
1985	47.71	18.89	234.22	45.68	-176.46	-0.21
1986	45.62	21.29	225.69	45.08	-202.08	-0.19
1987	40.95	17.33	218.22	45.40	-221.83	-0.17

Note:
(1) M-RS= Million Rs.
(2) All absolute figures ar in 1975-76 prices.

(3)TWENTY PERCENT DEPRECIATION
OF NOMINAL EXCHANGE RATE
[CHANGE OVER BASE RUN]

YEARS	EXPORTS [M-RS]	IMPORTS [M-RS]	GDP [M-RS]	CURRENT ACCOUNT BALANCE [M-RS]	FOREIGN DEBT [M-RS]	GDP DEFLATOR [%]
1962	-297.71	-117.24	-388.11	441.32	-441.32	2.12
1963	-288.93	-122.08	-383.77	348.71	-715.13	4.86
1964	-276.58	-133.04	-322.72	290.39	-884.65	8.11
1965	-242.96	-132.78	-199.09	239.82	-1052.23	11.52
1966	-225.7	-129.35	-62.34	180.38	-1104.85	14.76
1967	-217.62	-115.74	97.16	169.69	-1118.69	17.41
1968	-223.07	-111.94	234.77	158.10	-1234.63	19.24
1969	-242.69	-138.79	311.05	136.91	-1282.28	20.37
1970	-223.04	-197.27	327.82	71.26	-1243.66	21.08
1971	-180.87	-218.87	270.62	3.72	-1136.89	21.58
1972	-170.95	-61.73	-63.73	-27.31	-933.65	21.85
1973	-170.7	-287.68	589.57	-3.08	-728.81	21.55
1974	-177.1	-283.3	479.75	-37.89	-540.77	21.22
1975	-194.45	-388.03	113.15	-233.94	-232.86	21.50
1976	-189.57	-465.67	-212.67	-459.49	255.24	22.56
1977	-178.78	-525.26	-243.45	-624.81	851.87	24.05
1978	-168.64	-516.61	-57.69	-700.41	1486.77	25.41
1979	-186.62	-413.48	81.5	-676.86	1978.83	26.20
1980	-230.82	-491.98	507.77	-651.93	2357.31	26.11
1981	-284.24	-456.98	302.41	-600.18	2670.04	25.66
1982	-362.13	-422.58	273.03	-423.30	2860.11	24.64
1983	-364.18	-518.65	346.06	-423.06	2917.83	23.48
1984	-423.74	-509.38	7.67	-402.61	3025.92	22.47
1985	-523.66	-640.64	-123.77	-419.77	3131.59	21.60
1986	-564.88	-611.98	-541.77	-401.39	3187.61	21.04
1987	-562.01	-669.02	-553.81	-414.05	3197.08	20.74

Note:
(1) M-RS= Million Rs.
(2) All absolute figures ar in 1975-76 prices.

(4)TEN PERCENT PERMANENT INCREASE
IN DIRECT TAX RATE
[CHANGE OVER BASE RUN]

YEARS	EXPORTS [M-RS]	IMPORTS [M-RS]	GDP [M-RS]	CURRENT ACCOUNT BALANCE [M-RS]	FOREIGN DEBT [M-RS]	GDP DEFLATOR [%]
1962	2.76	-15.91	-52.65	14.15	-14.15	-0.09
1963	6.82	-14.26	-46.23	16.68	-28.42	-0.21
1964	11.69	-11.74	-25.69	17.44	-41.06	-0.32
1965	15.99	-10.4	-6.54	19.48	-57.16	-0.43
1966	21.38	-8.53	11.03	20.13	-70.34	-0.52
1967	26.16	-0.25	50.56	18.25	-78.69	-0.55
1968	31.16	0.76	61.71	20.48	-96.19	-0.55
1969	37.33	-4.6	48.01	25.28	-114.52	-0.53
1970	32.53	3.28	77.78	18.40	-123.11	-0.45
1971	30.63	-30.58	-69.03	38.92	-151.10	-0.48
1972	37.06	-8.42	-45.64	47.55	-175.27	-0.53
1973	35.42	-20.88	21.06	63.83	-201.22	-0.53
1974	32.13	-17.66	33.73	60.03	-219.80	-0.51
1975	34.6	-34.64	-26.91	73.86	-263.59	-0.53
1976	37.54	-41.74	-49.8	85.75	-316.94	-0.58
1977	40.11	-39.87	-15.36	86.78	-368.73	-0.62
1978	42.03	-45.22	-13.08	103.08	-443.46	-0.66
1979	52.56	-50.01	-52.58	133.88	-522.21	-0.73
1980	64.27	-64.35	-12.88	165.25	-615.30	-0.80
1981	76.72	-54.55	20.52	158.87	-699.14	-0.84
1982	88.13	-36.87	100.73	151.14	-789.20	-0.84
1983	72.79	-34.56	175.02	137.08	-825.48	-0.78
1984	67.92	-23.59	164.08	121.53	-863.69	-0.68
1985	64.2	-26.63	146	136.44	-910.48	-0.56
1986	53.05	-20.28	71.13	120.60	-930.67	-0.44
1987	42.07	-37.36	-43.41	133.26	-945.80	-0.35

Note:
(1) M-RS= Million Rs.
(2) All absolute figures ar in 1975-76 prices.

(5)RUPEES 100 MILLION PERMANENT
FALL IN FOREIGN GRANTS
[CHANGE OVER BASE RUN]

YEARS	EXPORTS [M-RS]	IMPORTS [M-RS]	GDP [M-RS]	CURRENT ACCOUNT BALANCE [M-RS]	FOREIGN DEBT [M-RS]	GDP DEFLATOR [%]
1962	0.00	0.00	0.00	0.00	76.56	0.00
1963	0.17	-2.35	-3.34	-2.38	143.67	-0.01
1964	0.60	-3.92	-6.12	-2.71	193.01	-0.02
1965	1.21	-4.27	-6.57	-3.40	247.82	-0.03
1966	2.11	-4.83	-5.55	-2.97	284.35	-0.05
1967	3.40	-5.62	-4.55	-3.68	308.73	-0.07
1968	5.04	-4.21	1.21	-2.77	360.24	-0.09
1969	7.02	-3.51	6.63	-5.06	398.49	-0.10
1970	7.71	-5.93	5.90	-3.14	425.16	-0.11
1971	7.21	-5.57	3.52	-3.53	449.48	-0.11
1972	8.11	0.36	8.49	1.93	481.15	-0.12
1973	7.04	-3.67	16.38	2.67	483.46	-0.11
1974	5.78	-3.12	12.50	2.41	499.70	-0.09
1975	5.34	-5.75	2.84	0.61	530.72	-0.08
1976	4.98	-7.12	-4.73	1.41	561.39	-0.08
1977	4.93	-8.49	-8.38	1.16	595.58	-0.08
1978	4.98	-9.47	-8.97	0.71	644.93	-0.08
1979	5.87	-8.07	-6.48	0.22	685.30	-0.08
1980	6.75	-9.89	-1.02	-4.04	711.14	-0.08
1981	7.68	-7.87	1.72	-1.50	744.23	-0.08
1982	8.57	-6.22	6.97	0.08	799.46	-0.08
1983	7.37	-9.11	5.09	-2.13	814.59	-0.08
1984	7.65	-9.41	0.36	-3.89	851.86	-0.08
1985	8.56	-11.30	1.09	-1.36	871.92	-0.07
1986	8.92	-10.77	-3.09	-2.22	883.15	-0.07
1987	8.91	-11.96	-4.41	-1.41	887.88	-0.07

Note:
(1) M-RS= MILLION RS.
(2) All absolute values are in 1975-76 prices

(6)TEN PERCENT PERMANENT INCREASE IN INTEREST RATE ON FOREIGN LOANS/CREDITS
[CHANGE OVER BASE RUN]

YEARS	EXPORTS [M-RS]	IMPORTS [M-RS]	GDP [M-RS]	CURRENT ACCOUNT BALANCE [M-RS]	FOREIGN DEBT [M-RS]	GDP DEFLATOR [%]
1962	0.64	-8.35	-12.25	-8.14	8.14	-0.02
1963	1.77	-9.66	-16.65	-9.11	15.86	-0.06
1964	4.11	-14.63	-18.24	-9.92	23.10	-0.11
1965	6.53	-18.06	-21.41	-14.53	35.73	-0.17
1966	10.86	-23.6	-20.13	-16.02	47.42	-0.25
1967	16.4	-29.32	-24.51	-21.15	61.89	-0.35
1968	24.69	-27.32	-8.34	-19.73	79.27	-0.43
1969	35.26	-24.87	12.38	-37.04	110.58	-0.51
1970	41.87	-42.69	7.02	-26.83	127.95	-0.58
1971	41.64	-40.26	-8	-31.76	148.35	-0.66
1972	49.32	-0.71	35.88	6.52	118.85	-0.70
1973	48.37	-45.59	53.98	-24.23	117.40	-0.72
1974	44.31	-33.01	61.96	-0.99	94.20	-0.70
1975	45.72	-55.48	11.57	-3.97	85.29	-0.70
1976	46.64	-61.8	-19.91	11.12	63.69	-0.72
1977	49.53	-74.12	-25.11	9.90	46.76	-0.76
1978	50.47	-80.29	-21.64	10.95	32.21	-0.79
1979	59.55	-68.27	2.5	9.22	18.98	-0.82
1980	66.01	-78.55	55.19	-20.27	36.63	-0.82
1981	72.17	-60.51	69.33	-0.14	32.30	-0.79
1982	76.13	-44.89	97.31	11.89	17.59	-0.73
1983	62.8	-74.58	54.56	-7.61	22.96	-0.67
1984	61.73	-77.06	-15.22	-24.97	45.61	-0.63
1985	68.26	-95.56	-20.58	-9.83	50.71	-0.59
1986	70.46	-92.34	-61.67	-19.29	64.41	-0.58
1987	71.5	-112.79	-99.75	-30.74	86.97	-0.59

Note:
(1) M-RS= Million Rs.
(2) All absolute figures ar in 1975-76 prices.

(7)TEN PERCENT PERMANENT FALL IN PRIVATE TRANSFERS FROM ABROAD [CHANGE OVER BASE RUN]

YEARS	EXPORTS [M-RS]	IMPORTS [M-RS]	GDP [M-RS]	CURRENT ACCOUNT BALANCE [M-RS]	FOREIGN DEBT [M-RS]	GDP DEFLATOR [%]
1962	0.16	-2.07	-3.04	-2.03	2.03	-0.01
1963	0.86	-7.91	-11.84	-7.65	9.33	-0.03
1964	2.29	-11.49	-17.60	-7.39	15.14	-0.06
1965	4.45	-16.59	-23.84	-13.53	27.43	-0.12
1966	8.26	-24.85	-30.70	-17.39	41.49	-0.20
1967	14.18	-28.35	-30.99	-19.71	55.37	-0.30
1968	23.51	-36.31	-27.91	-28.25	81.53	-0.41
1969	38.20	-46.34	-27.44	-69.01	144.65	-0.54
1970	48.48	-57.60	-19.38	-37.15	169.40	-0.67
1971	50.63	-46.93	-7.74	-35.18	189.53	-0.80
1972	72.11	-57.68	-102.62	-131.10	291.30	-1.02
1973	82.68	-106.72	-37.34	-113.15	341.49	-1.22
1974	88.86	-100.97	15.77	-65.19	336.35	-1.40
1975	111.56	-210.09	-131.30	-155.90	446.23	-1.69
1976	145.06	-336.01	-347.27	-231.46	622.86	-2.20
1977	201.24	-560.02	-628.97	-445.17	999.26	-3.04
1978	266.61	-667.12	-639.80	-421.34	1343.76	-4.08
1979	378.55	-599.62	-342.53	-397.36	1574.10	-5.10
1980	484.47	-623.68	392.75	-461.73	1818.31	-5.78
1981	595.45	-613.09	514.92	-489.01	2085.60	-6.28
1982	738.09	-785.17	351.14	-906.09	2809.52	-6.75
1983	700.82	-954.41	333.30	-672.53	3123.18	-7.14
1984	784.90	-913.99	306.39	-525.21	3333.14	-7.47
1985	920.56	-1075.52	709.84	-187.07	3174.23	-7.57
1986	969.71	-891.12	700.14	8.60	2815.56	-7.55
1987	934.13	-866.41	949.69	340.73	2117.46	-7.31

Note:
(1) M-Rs= Million Rupees
(2) All absolute values are in 1975-76 prices

(8)TEN PERCENT PERMANENT INCREASE IN
UNIT VALUE INDEX OF IMPORTS
[CHANGE OVER BASE RUN]

YEARS	EXPORTS [M-RS]	IMPORTS [M-RS]	GDP [M-RS]	CURRENT ACCOUNT BALANCE [M-RS]	FOREIGN DEBT [M-RS]	GDP DEFLATOR [%]
1962	-14.47	-156.45	273.21	109.40	-109.40	0.46
1963	-38.36	-178	300.42	117.63	-208.49	1.17
1964	-85.33	-330.81	524.68	185.28	-358.50	2.42
1965	-139.83	-354.53	442.63	155.41	-484.64	3.91
1966	-213.3	-378.57	238.98	125.52	-551.30	5.44
1967	-300.63	-423.37	-71.86	93.21	-566.73	6.73
1968	-408.13	-497.42	-373.54	69.34	-614.74	7.61
1969	-538.3	-565.81	-583.25	70.00	-640.25	8.07
1970	-563.42	-556.11	-500.31	39.22	-624.61	8.30
1971	-494.55	-412.47	-443.88	-30.17	-538.96	8.32
1972	-528.21	-350.82	-605.34	-157.49	-298.06	7.95
1973	-486.31	-533.08	-234.98	66.72	-300.36	7.67
1974	-466.78	-636.82	379.85	235.92	-474.41	7.86
1975	-497.48	-359.05	210.51	-128.48	-281.03	8.06
1976	-520.13	-304.85	396.45	-248.80	2.30	8.52
1977	-555.69	-314.2	424.28	-263.87	265.92	9.15
1978	-576.17	-361.52	132.97	-356.65	602.12	9.71
1979	-663.7	-442.34	-351.5	-266.21	793.49	9.97
1980	-743.14	-573.52	-609.94	-198.37	882.21	9.93
1981	-821.69	-608.86	-568.64	-140.44	915.08	9.74
1982	-902.9	-694.21	-750.55	-121.89	957.03	9.27
1983	-777.18	-709.63	-241.84	-30.91	865.69	8.90
1984	-806.17	-721.55	52.86	-34.95	813.27	8.62
1985	-904.29	-814.13	56.52	-321.02	1049.88	8.36
1986	-927.76	-818.29	30.27	-436.73	1370.81	8.10
1987	-898.57	-817.93	66.28	-393.77	1590.59	7.86

Note:
(1) M-RS= Million Rs.
(2) All absolute figures ar in 1975-76 prices.

(9)TEN PERCENT PERMANENT FALL IN

UNIT VALUE INDEX OF EXPORTS
[CHANGE OVER BASE RUN]

YEARS	EXPORTS [M-RS]	IMPORTS [M-RS]	GDP [M-RS]	CURRENT ACCOUNT BALANCE [M-RS]	FOREIGN DEBT [M-RS]	GDP DEFLATOR [%]
1962	-297.71	-117.24	-388.11	-123.67	123.67	-0.66
1963	-288.93	-122.08	-383.77	-114.63	217.32	-1.58
1964	-276.58	-133.04	-322.72	-102.27	282.85	-2.66
1965	-242.96	-132.78	-199.09	-87.86	347.61	-3.76
1966	-225.7	-129.35	-62.34	-65.25	370.66	-4.80
1967	-217.62	-115.74	97.16	-73.30	391.68	-5.68
1968	-223.07	-111.94	234.77	-77.65	454.56	-6.34
1969	-242.69	-138.79	311.05	-59.37	481.06	-6.83
1970	-223.04	-197.27	327.82	-17.29	457.13	-7.15
1971	-180.87	-218.87	270.62	11.08	405.45	-7.37
1972	-170.95	-61.73	-63.73	-111.89	454.59	-7.77
1973	-170.7	-287.68	589.57	122.69	233.65	-7.66
1974	-177.1	-283.3	479.75	133.23	52.29	-7.41
1975	-194.45	-388.03	113.15	192.49	-147.36	-7.26
1976	-189.57	-465.67	-212.67	255.25	-384.49	-7.32
1977	-178.78	-525.26	-243.45	336.26	-678.31	-7.46
1978	-168.64	-516.61	-57.69	307.65	-933.79	-7.56
1979	-186.62	-413.48	81.5	302.42	-1120.14	-7.60
1980	-230.82	-491.98	507.77	350.26	-1315.61	-7.36
1981	-284.24	-456.98	302.41	285.36	-1440.56	-7.10
1982	-362.13	-422.58	273.03	164.13	-1478.85	-6.78
1983	-364.18	-518.65	346.06	249.04	-1538.99	-6.37
1984	-423.74	-509.38	7.67	187.81	-1571.46	-6.03
1985	-523.66	-640.64	-123.77	54.16	-1462.50	-5.75
1986	-564.88	-611.98	-541.77	-84.28	-1216.93	-5.66
1987	-562.01	-669.02	-553.81	1.29	-1063.76	-5.67

Note:
(1) M-RS= Million Rs.
(2) All absolute figures ar in 1975-76 prices.

Notes:

(1) Meir et al.(1969,p1)

(2) See on this point Wallis et al. (1984 and 1985chapter 1) and Cuthbertson and Taylor (1987,pp241-244).

(3) See for further discussion Pindyck and Rubinfield (1983,pp384-388)

(4) See Wallis et al. (1985, pp5-7) and David et al. (1987, pp107-110) for algebraic treatment of exogenising an endogenous variable in a macroeconomic model .

(5) For distinction between fiscal and monetary implication of government expenditure see Blinder and Solow (1974,p57)

(6) Simulation here has been confined to private investment only. Government investment, in addition to capital stock also adds to financial assets. The ultimate result of such a simulation will be like a combined and equal increase in private investment and government consumption. In Chapter-7 the impact of private investment versus government investment on economy has been dealt with (though it is slightly in different context).

(7) It may be noted that when prices are exogenous the rise in exports is only because of change in potential output. So the change in exports under option I and II (where prices

are exogenous) is the same.

(8) The grant element, in addition to interest rate (viz a viz domestic opportunity cost of capital) also depends on the repayment schedule and grace period (see on this point for detailed discussion Chapter 3 section 3.4.1). Since grant element has not been explicitly modeled, reduction in maturity period of loans has not been simulated.

(9) In order to arrive at real values of foreign aid and foreign debt, as explained in Chapter 2 and Chapter 3, unit value index of imports and GDP deflators have been used.

(10) Some time grants are treated as simple transfers from abroad making positive contributions in current account balance and therefore, do not appear to affect the foreign debt directly. In our case, as we described in Chapter 2 grants are a part of overall inflow of capital from abroad which are non repayable and bear no interest.

(11) For the sake of simplicity and developing a meaningful argument, at one time we have assumed only a rise in import prices. Such a price rise depreciates the real exchange rate only for imports. The price change with respect to exports has been simulated separately.

CHAPTER 6

EXTERNAL SHOCK AND POLICY SIMULATION

6.1 Introduction

The exercise of this chapter is a logical extension of Chapter 5 where effects of different kinds of shocks have been evaluated in very broad and general terms. Here in this chapter we wish to be relatively more specific.

We have noted in Chapter 1 that the objective of elimination of dependence on foreign capital could not be achieved during 1965-85. Instead, the past capital inflow has resulted in an accumulation of foreign debt. (See Chapters 1 and 3). The simulation exercise of this chapter is designed for a possible policy response to overcome the balance of payments problem and control the foreign debt accumulation. This has been done by introducing an external shock leading to an increase in foreign debt together with a possible cut in domestic investment.

6.2 Shock and Impact of Shock

The likely consequences of different internal and external shocks have been discussed in detail in Chapter 5. In the present exercise a shock has been defined as net loss of transfers of those kinds of foreign resources which are non repayable and bear no interest. Foreign aid fully coincides with this definition of resources from abroad. The effects of a rising interest rate on foreign loans/credits, of a fall in export prices, of a fall in private transfers from abroad etc. all ultimately cause a loss of transfers of resources from abroad, though their direct impacts are some what different which have been explained in Chapter 5. Such details do not change the ultimate effects of the analysis. In fact our direct approach here also helps to examine the problem of already accumulated debt since such a shock acts through debt identity (see identities [4.49] and [4.50] in Chapter 4).

A simulation exercise has been done with a shock of 1000 million rupees loss of foreign resources in real 1975-76 prices which is close to one percent of GDP in the earlier years. As an immediate impact it would increase the debt burden by an equal amount (in nominal terms). In real terms, because of different price deflators used to bring the foreign aid and foreign debt in current prices, the immediate impact is some what different as shown in Table 6.1. (In Chapters 2-4 we have explained using different deflators to arrive at constant prices).

The simulation exercise has been done under following three different scenarios:-

(I) An equal fall in private investment.

Table 6.1 Loss of Foreign Grants and Its Equivalent Direct Impact on foreign Debt Position

Year	Current prices Grants	Current prices Debt	Constant prices Grants	Constant prices Debt
1962	-267.20	267.20	-1000.00	765.62
1963	-277.30	277.30	-1000.00	777.19
1964	-271.70	271.70	-1000.00	709.22
1965	-264.50	264.50	-1000.00	671.66
1966	-273.80	273.80	-1000.00	636.45
1967	-269.60	269.60	-1000.00	608.03
1968	-268.00	268.00	-1000.00	603.74
1969	-270.90	270.90	-1000.00	592.39
1970	-276.50	276.50	-1000.00	576.76
1971	-297.60	297.60	-1000.00	585.60
1972	-607.40	607.40	-1000.00	1031.59
1973	-795.20	795.20	-1000.00	1089.61
1974	-1054.80	1054.80	-1000.00	1182.25
1975	-1000.00	1000.00	-1000.00	1000.00
1976	-1076.80	1076.80	-1000.00	973.07
1977	-1173.80	1173.80	-1000.00	973.22
1978	-1219.80	1219.80	-1000.00	958.51
1979	-1697.90	1697.90	-1000.00	1207.61
1980	-1815.30	1815.30	-1000.00	1165.00
1981	-2010.80	2010.80	-1000.00	1183.03
1982	-2167.00	2167.00	-1000.00	1203.15
1983	-2272.40	2272.40	-1000.00	1151.28
1984	-2414.30	2414.30	-1000.00	1155.89
1985	-2354.80	2354.80	-1000.00	1071.34
1986	-2437.20	2437.20	-1000.00	1051.74
1987	-2863.70	2863.70	-1000.00	1154.07

(II) An equal fall in government investment.

(III) No fall in private or public investment.

The rationale and logic of the these three scenarios are in line with the recent difference of opinion with regard to impact of foreign capital inflow on domestic investment. Scenarios (I) and (II) imply that foreign capital inflow increases the domestic investment to the full extent and does not add to domestic consumption (or alternatively reduces savings). A fall in transfer of resources from abroad is, therefore, matched by an equal fall in investment. In addition it also shows the consequences of squeezing of economy by curtailing investment to solve the problem.

Apparently it appears that there is little difference between scenario (I) and (II) because private and public sector investment are not treated separately with regard to their productivity. However, where private investment only adds to capital assets, government investment equally adds to private financial assets which positively influence the private consumption. In other words a fall in government investment will have more depressing effect on aggregate demand compared to a fall in private investment alone. However, it may be recalled from Chapter 1 that empirically we have found no relationship between foreign capital and government investment. It is the private investment which has shown positive association with the foreign capital.

The scenario (III) is the one where immediate impact on foreign debt is the same but since there is no fall in capacity output there is no immediate fall in exports. This could happen when either foreign capital inflow is assumed to have no influence on domestic investment or government adopt such a policy which helps to maintain the level of investment intact.

6.3 The policy response

The traditional theory of economic policy dating back to Meade (1951) and Tinbergen (1952) requires specific targets, instruments, and an empirical macroeconomic model. In the simulation approach, which we have described in Chapter 5, the values of endogenous variables, within the framework of empirical model,are determined under alternative assumptions about policy variables. The simulation exercise thus shows to policy-makers the implications of alternative policies, out of which they can select their preferred alternative. Such an approach has the advantage of not demanding any objective function from the policy makers (1).

The objective of improvement of current account deficit (in order to reduce the external debt), as we have discussed in Chapter 3 under balance of payment policies, could be accomplished in either of two ways (or some combination of two):

(a)"expenditure changing " policies are designed to affect the level of aggregate demand by depressing economic activities which inturn reduce demand for imports and

(b) "expenditure switching" policies that would affect the composition of demand by curtailing imports and inducing an extra flow of goods to the external market.

Nominal exchange rate and real government consumption are the two instruments applied in each of the three scenarios. Changing growth rate policy is implicit in the fall of investment in two scenarios.

6.4 Simulation Exercise

A full account of impact of different shocks with implication of loss of foreign resource has already been provided in Chapter 5. The detailed evaluation in this chapter is therefore confined primarily to change in current account balance and foreign debt over the base run values.

The evaluation of three scenarios starts from the most difficult one (where there is also a fall in private investment) followed by scenarios related to fall in the government investment and no impact on investment. In each case we consider "expenditure changing" and "expenditure switching" policies.

6.4.1 Fall in Private Investment

While loss of foreign transfers add to the foreign debt directly, as a result of shock the fall in private investment reinforces the accumulation of foreign debt because of:

(i) the fall in exports as the capacity output shrinks (see Chapter 4, Equation [4.11]) and

(ii) an upward pressure on prices (also because of fall in capacity output) which appreciates the real exchange rate reducing the competitiveness for exports and creating additional demand for imports.

The full simulation results for change in current account balance, foreign debt, GDP, capacity output,and GDP deflator over base run values are provided in Table 6.2.

The fall in aggregate demand (as a result of fall in private investment and additional interest payments on foreign debt) has significant dampening effect on prices though the fall in capacity output puts upward pressure on price level. Initially there is relatively a higher fall in imports than fall in exports which produces an improvement in current account balance. However, this improvement is very small compared to shock and as a result debt accumulates rapidly.

Different levels of cut in real government consumption were simulated. The exercise revealed that it would require a cut of 900 million rupees to improve the current account balance enough to stabilise the debt accumulation. Table 6.3 provides the yearly details of change for selected variables.

Table 6.2

Simulation of 1000 million Rs. loss of foreign transfers with an equal fall in private investment

Change Over Base Run

Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	242.29	523.33	-1199.06	-561.14	-1.20
1963	200.30	1088.77	-1203.10	-947.16	-2.32
1964	177.39	1545.85	-1139.33	-1216.34	-3.23
1965	155.47	2020.04	-1084.92	-1446.51	-3.78
1966	137.85	2347.72	-1043.38	-1638.89	-3.97
1967	100.80	2785.05	-1150.88	-1807.92	-3.78
1968	75.82	3309.83	-1240.41	-1956.29	-3.26
1969	20.34	3784.89	-1378.16	-2059.92	-2.46
1970	21.68	4165.50	-1594.73	-2156.40	-1.64
1971	-40.47	4555.50	-1967.01	-2259.49	-0.92
1972	-41.13	5004.63	-2301.81	-2360.27	-0.26
1973	-26.66	5153.99	-2563.94	-2426.23	0.30
1974	26.96	5371.12	-2617.05	-2446.83	0.72
1975	-51.17	5843.29	-2529.64	-2407.37	1.09
1976	-131.85	6385.32	-2453.13	-2371.96	1.42
1977	-187.98	7019.75	-2441.75	-2346.05	1.79
1978	-255.86	7867.30	-2577.94	-2322.98	2.01
1979	-233.18	8561.65	-2651.84	-2283.31	2.11
1980	-341.07	9231.45	-2701.50	-2264.56	2.09
1981	-297.05	9943.01	-2610.86	-2242.58	2.04
1982	-268.80	10855.19	-2652.92	-2211.75	1.87
1983	-322.50	11379.18	-2485.89	-2183.50	1.69
1984	-353.96	12263.05	-2381.13	-2150.83	1.54
1985	-499.75	13224.34	-2390.50	-2114.06	1.35
1986	-510.43	14105.69	-2355.56	-2057.55	1.12
1987	-512.13	14839.05	-2300.88	-2007.03	0.85

Table 6.3

Simulation of 1000 million Rs. loss of foreign transfers with an equal fall in private investment and 900 million Rs cut in government consumption

Change Over Base Run

Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	560.90	204.72	-2378.38	-561.14	-3.23
1963	599.19	378.24	-2313.27	-947.16	-6.98
1964	646.44	415.04	-1956.82	-1216.34	-10.71
1965	701.30	374.12	-1479.50	-1446.51	-13.92
1966	709.75	269.17	-926.02	-1638.89	-16.33
1967	722.55	146.63	-368.68	-1807.92	-17.62
1968	772.92	-22.72	74.30	-1956.29	-17.75
1969	787.36	-217.02	224.54	-2059.92	-16.86
1970	857.30	-487.55	-317.03	-2156.40	-15.55
1971	850.53	-724.86	-1446.48	-2259.49	-14.41
1972	1138.95	-732.98	-2395.91	-2360.27	-13.64
1973	1519.28	-1021.03	-1617.74	-2426.23	-12.15
1974	1488.85	-1141.79	-2039.50	-2446.83	-10.69
1975	1348.57	-1367.27	-2510.11	-2407.37	-9.48
1976	1344.47	-1606.96	-2940.42	-2371.96	-8.66
1977	1323.52	-1824.70	-3033.73	-2346.05	-8.03
1978	1313.54	-2084.37	-2893.69	-2322.98	-7.54
1979	1339.90	-2018.89	-2620.14	-2283.31	-7.03
1980	1320.69	-1977.39	-2031.92	-2264.56	-6.23
1981	1150.16	-1779.90	-2160.19	-2242.58	-5.41
1982	1073.74	-1550.29	-2262.06	-2211.75	-4.60
1983	1030.12	-1293.48	-2379.30	-2183.50	-3.86
1984	948.22	-1014.65	-2698.59	-2150.83	-3.25
1985	938.63	-831.49	-2730.16	-2114.06	-2.76
1986	869.79	-606.73	-2972.50	-2057.55	-2.49
1987	918.72	-331.26	-2946.59	-2007.03	-2.37

A permanent stability in foreign debt after the loss of foreign transfers require an equal improvement in current account balance. This happens from year 10 onwards and ultimately debt stabilises slightly above the base run values. The important points to be noted are:

(i) The significant fall in GDP which also causes prices to fall. At one stage prices are about 18% below the base run values.

(ii) The cut in government consumption is 90% of loss of foreign transfers if it is accompanied by an equal fall in the private investment and takes six years to fully offset the increasing debt problem.

As we have already observed in Chapter 5 exchange rate depreciation alone is not a solution to improve the balance of payments on permanent basis because of its upward pressure on prices which ultimately offsets the depreciation in real terms. A 10% depreciation of nominal exchange rate was simulated. In the short run it slightly improves the balance of payments .As prices start moving up the situation again deteriorates and the initial improvements are fully wiped out. The ultimate rise in price is more than the nominal exchange rate depreciation since the fall in capacity output is higher than the fall in aggregate demand. It is this difference which is causing an extra price rise. Table 6.4 provides results of simulation for selected variables.

Table 6.4

Simulation of 1000 million Rs. loss of foreign transfers with an equal fall in private investment and 10 % depreciation of nominal exchange rate

Change over Base Run

Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	464.93	300.69	-562.75	-561.14	-0.10
1963	377.44	693.86	-669.97	-947.16	0.15
1964	326.74	1028.70	-712.05	-1216.34	0.82
1965	281.16	1391.25	-842.14	-1446.51	1.89
1966	234.08	1675.91	-1017.00	-1638.89	3.22
1967	192.89	2041.16	-1389.01	-1807.92	4.64
1968	163.73	2478.87	-1691.08	-1956.29	6.04
1969	99.11	2899.51	-1923.86	-2059.92	7.42
1970	65.83	3276.78	-2035.71	-2156.40	8.63
1971	-31.11	3707.78	-2263.11	-2259.49	9.68
1972	-50.14	4281.96	-2557.46	-2360.27	10.54
1973	-20.90	4565.19	-2961.66	-2426.23	11.02
1974	13.00	4903.47	-2836.07	-2446.83	11.35
1975	-168.39	5543.27	-2329.34	-2407.37	11.91
1976	-368.71	6351.06	-1941.48	-2371.96	12.81
1977	-512.94	7313.27	-1926.78	-2346.05	13.97
1978	-622.21	8511.84	-2396.69	-2322.98	14.90
1979	-588.33	9500.19	-2919.67	-2283.31	15.41
1980	-685.58	10422.82	-3426.52	-2264.56	15.35
1981	-617.25	11355.39	-3259.88	-2242.58	15.08
1982	-498.34	12417.59	-3437.78	-2211.75	14.41
1983	-555.70	13038.08	-3026.80	-2183.50	13.64
1984	-580.16	14056.89	-2547.14	-2150.83	12.98
1985	-742.94	15172.16	-2343.55	-2114.06	12.35
1986	-749.11	16191.92	-2026.55	-2057.55	11.82
1987	-764.41	17039.59	-1836.28	-2007.03	11.39

It is evident from the simulation results that government consumption is crucial to neutralize the effects of loss of foreign transfers and fall in private investment. On the other hand exchange rate though not very effective in solving the problem has a little advantage with producing the effect relatively quickly. Different combinations of these two instruments were simulated. Combining two has not much changed the earlier results. It is still the government consumption which is dominant. Rupees 750 million cut in government consumption with 10% depreciation of nominal exchange rate stabilise the accumulation of debt though at slightly higher level compared to the cut in government consumption of Rs. 900 million in isolation. Full results for selected variables are reported in Table 6.5. As expected the results are in between the two simulations already discussed.

Figures 6.1, 6.2, and 6.3 compare the results graphically of four simulations discussed in this section for change in current account balance, accumulation of foreign debt and GDP deflator over base run. The abbreviations used in the graphs are explained below.

(1) SHOCK (shock without any response).

(2) GC = Cut in real government consumption by.

(3) E = Nominal exchange rate depreciation.

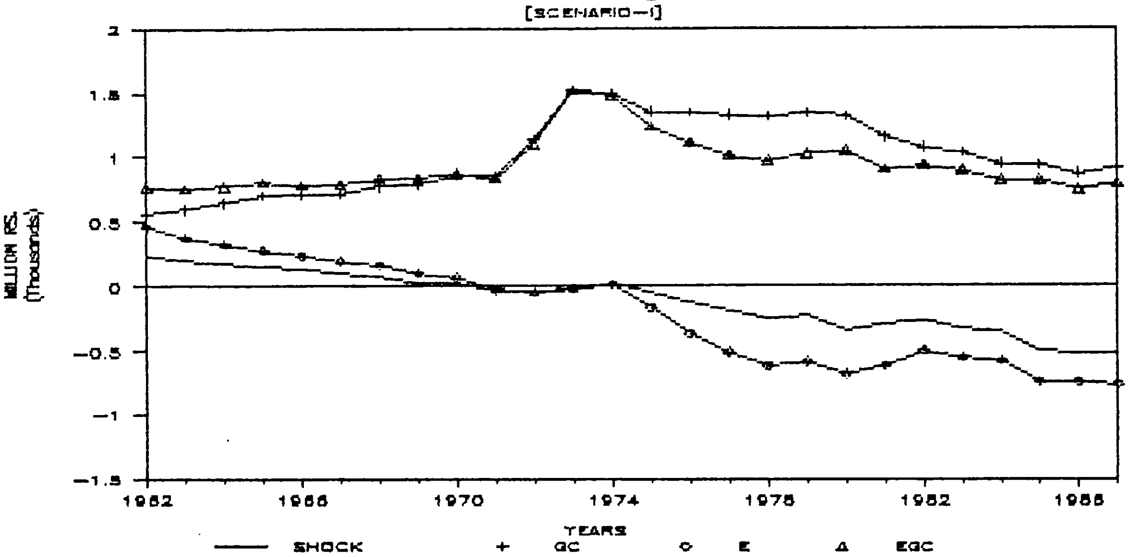
Table 6.5

Simulation of 1000 million Rs. loss of foreign transfers with an equal fall in private investment, 750 million Rs. cut in government consumption and 10 % depreciation of nominal exchange rate

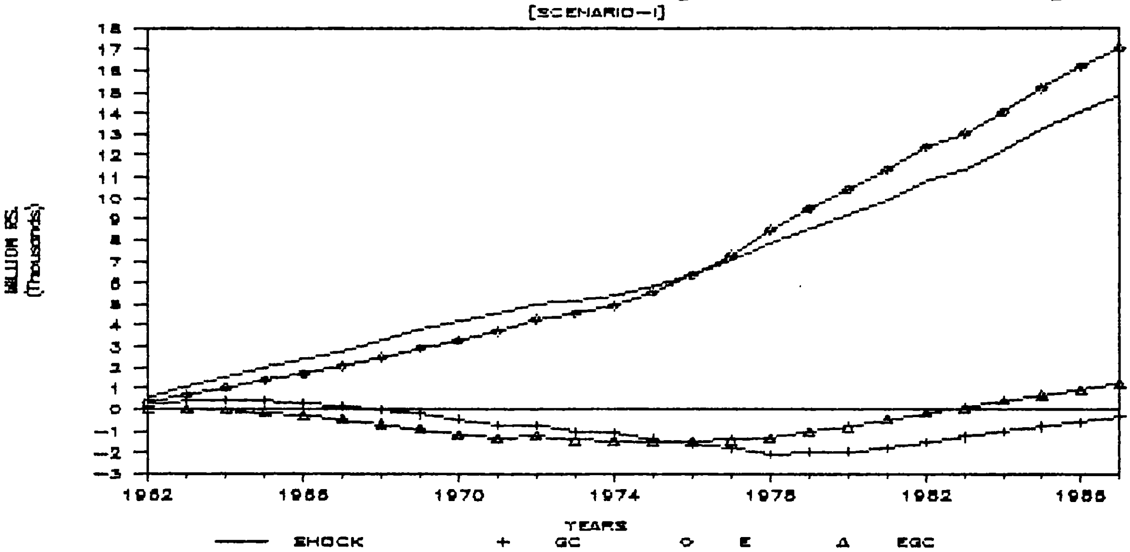
Change over Base Run

Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	764.52	1.10	-1677.55	-561.14	-2.02
1963	755.96	22.30	-1717.05	-947.16	-4.33
1964	773.71	-43.73	-1486.91	-1216.34	-6.49
1965	802.09	-172.97	-1228.45	-1446.51	-8.21
1966	780.63	-302.52	-934.77	-1638.89	-9.34
1967	789.01	-474.49	-700.77	-1807.92	-9.65
1968	834.91	-705.13	-510.59	-1956.29	-9.13
1969	839.97	-932.05	-460.34	-2059.92	-7.84
1970	873.81	-1186.13	-843.35	-2156.40	-6.24
1971	831.30	-1364.62	-1757.23	-2259.49	-4.88
1972	1100.65	-1246.88	-2652.65	-2360.27	-4.00
1973	1508.46	-1424.81	-2063.66	-2426.23	-2.61
1974	1472.67	-1455.89	-2272.19	-2446.83	-1.26
1975	1230.50	-1529.44	-2266.70	-2407.37	0.13
1976	1109.36	-1518.39	-2356.85	-2371.96	1.46
1977	1008.50	-1428.41	-2462.83	-2346.05	2.80
1978	970.73	-1365.99	-2697.81	-2322.98	3.91
1979	1026.99	-1055.77	-2923.66	-2283.31	4.77
1980	1045.64	-833.29	-2789.72	-2264.56	5.55
1981	906.94	-487.82	-2820.61	-2242.58	6.19
1982	932.14	-189.34	-3018.75	-2211.75	6.57
1983	895.69	82.82	-2847.56	-2183.50	6.84
1984	821.30	412.85	-2772.06	-2150.83	7.04
1985	820.17	643.48	-2563.67	-2114.06	7.22
1986	750.84	911.27	-2539.83	-2057.55	7.30
1987	791.61	1213.45	-2395.56	-2007.03	7.36

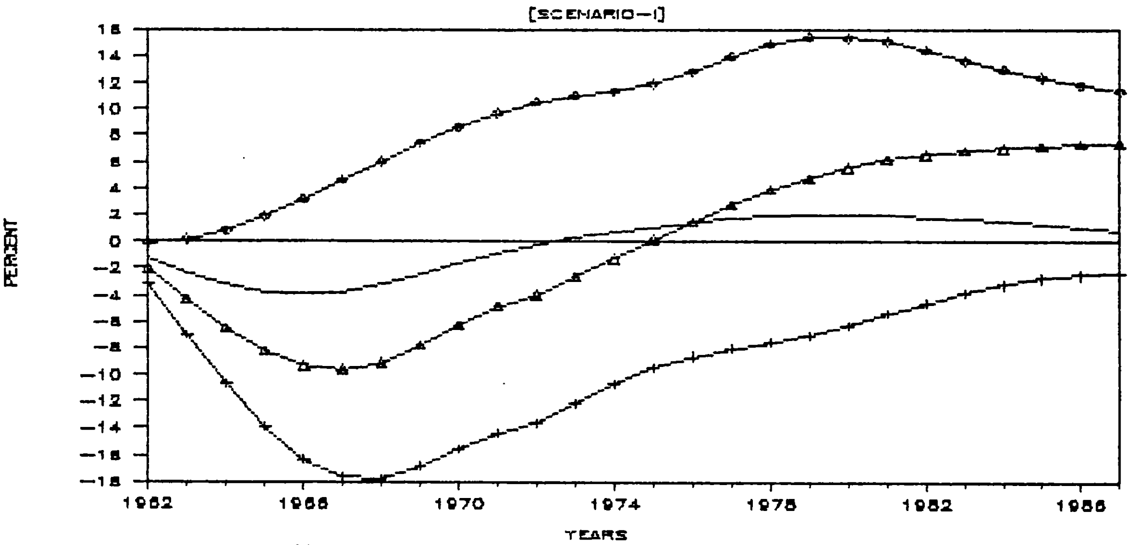
F-6.1 CHANGE IN CAB [1975-76 PRICES]



F-6.2 CHANGE IN F-DEBT[1975-76 PRICES]



F-6.3 CHANGE IN GDP DEFLATOR



(4) EGC= Cut in government consumption/depreciation of exchange rate.

(These abbreviations have the same meaning everywhere unless otherwise explained)

6.4.2 Fall in Government Investment

The implications of a fall in government investment as a result of foreign transfers loss are significantly different from loss in private investment. Government investment directly adds to financial assets which is an important explanatory variable for private consumption. Thus a reduction of Rs. 1000 million in real government investment simultaneously reduces the private financial assets by the same magnitude. This additional dampening effect over aggregate demand makes it more or less self correcting as for as current account balance and debt problem are concerned. The simulation results with cut in government investment (without any other response) are in Table-6.6.

It is quite obvious that under this option there is a relatively less pressure to use any of the two instruments for adjustment. The reduction of Rs. 1000 million in government investment has in itself brought enough improvement in the current account balance which has more or less stabilised the accumulation of debt. A permanent fall in aggregate demand which is higher than the fall in potential GDP has kept price level below the base run values.

Table 6.6 Simulation of 1000 million Rs.
loss of foreign transfers
with an equal fall in government investment

Change over Base Run

Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	321.43	444.19	-1492.34	-561.14	-1.70
1963	363.41	848.25	-1717.84	-947.16	-3.86
1964	412.12	1087.11	-1751.91	-1216.34	-6.25
1965	462.87	1266.36	-1653.41	-1446.51	-8.55
1966	491.76	1303.90	-1422.34	-1638.89	-10.56
1967	507.29	1365.83	-1162.94	-1807.92	-11.98
1968	563.33	1404.69	-869.80	-1956.29	-12.68
1969	587.90	1368.02	-694.55	-2059.92	-12.68
1970	672.98	1208.74	-916.83	-2156.40	-12.38
1971	675.59	1050.24	-1602.86	-2259.49	-12.13
1972	940.57	997.49	-2176.86	-2360.27	-12.01
1973	1271.57	622.82	-1268.79	-2426.23	-11.00
1974	1243.38	448.31	-1541.31	-2446.83	-9.77
1975	1132.55	267.44	-2044.63	-2407.37	-8.63
1976	1140.95	73.80	-2567.22	-2371.96	-7.80
1977	1139.40	-98.47	-2817.53	-2346.05	-7.14
1978	1117.17	-251.98	-2755.86	-2322.98	-6.61
1979	1144.92	-165.38	-2589.34	-2283.31	-6.08
1980	1118.93	-103.15	-2130.61	-2264.56	-5.33
1981	987.65	100.81	-2282.56	-2242.58	-4.60
1982	919.05	379.25	-2350.91	-2211.75	-3.90
1983	884.34	613.00	-2453.50	-2183.50	-3.27
1984	819.23	915.93	-2736.95	-2150.83	-2.79
1985	809.30	1132.41	-2751.23	-2114.06	-2.42
1986	747.57	1378.29	-2911.97	-2057.55	-2.24
1987	798.91	1642.30	-2847.52	-2007.03	-2.20

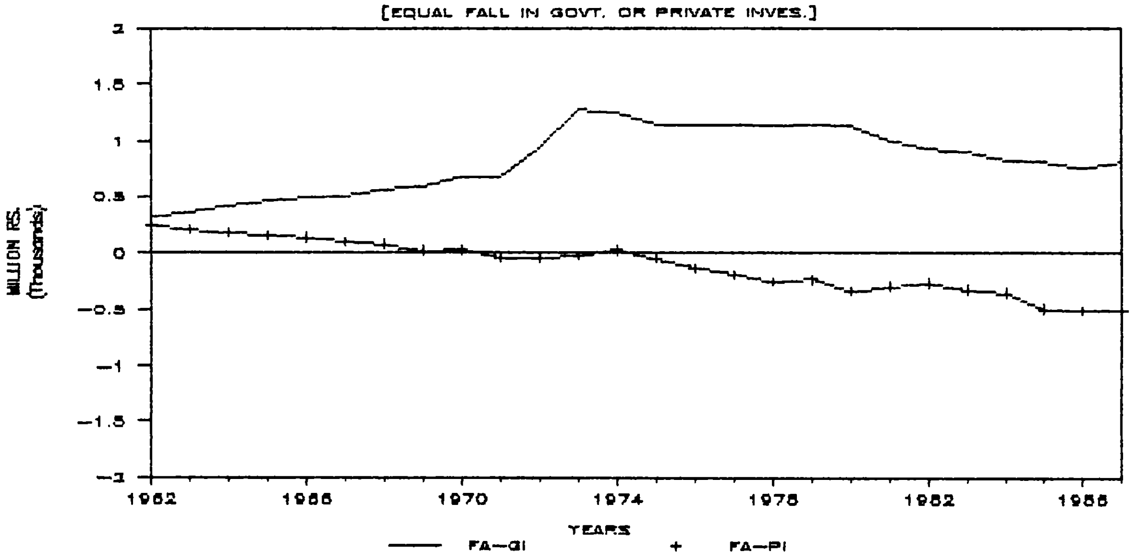
even in the long run which has helped to bring down imports and increase exports. How the impact on current account balance/foreign debt differs from the fall in private investment are compared in Figures 6.4 and 6.5. (FA-GI and FA-PI are for government investment and private investment respectively).

The improvement in current account balance has not only gradually neutralized the initial impact of loss of foreign transfers but has reduced the debt burden even below the base run debt. As the improvement in current account balance adds to the financial assets, fall in price level appreciates the financial assets in real terms, imports fall and exports rise, the initial dampening effect on aggregate demand is gradually reduced and the state of current account balance is reversed. It appears as if the fall in government investment creates a kind of cycle. However, it would be observed that prices in the long run stabilise around 2% below the base run values which is an indication of overall stability in the long run.

The cut in real government consumption of 100 million rupees further deepen the kinds of effects discussed above. It takes relatively less time to neutralise fully the initial foreign debt impact and there is very little increase in debt over base run values towards the end of simulation period. Table 6.7 provides full details of the simulation.

F—6.4 CHANGE IN CURRENT ACCOUNT BALANCE

[EQUAL FALL IN GOVT. OR PRIVATE INVES.]



F—6.5 CHANGE IN FOREIGN DEBT

[EQUAL FALL IN GOVT. OR PRIVATE INVES.]

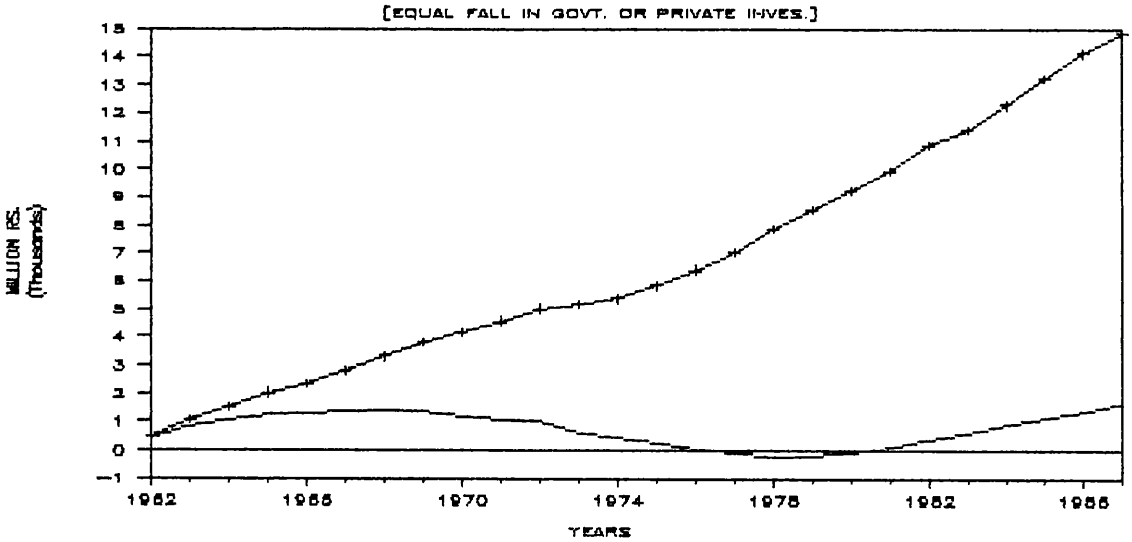


Table 6.7 Simulation of 1000 million Rs. loss of foreign transfers with an equal fall in government investment and 100 million Rs. cut in government consumption

Change over Base Run

Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	356.69	408.92	-1622.84	-561.14	-1.93
1963	407.63	769.54	-1841.28	-947.16	-4.38
1964	464.27	961.66	-1843.88	-1216.34	-7.09
1965	523.87	1083.31	-1699.29	-1446.51	-9.68
1966	555.96	1072.14	-1411.11	-1638.89	-11.93
1967	577.18	1071.07	-1075.37	-1807.92	-13.49
1968	641.74	1031.86	-720.02	-1956.29	-14.24
1969	673.96	920.06	-510.16	-2059.92	-14.22
1970	766.37	688.04	-769.35	-2156.40	-13.84
1971	774.57	460.07	-1541.21	-2259.49	-13.53
1972	1071.04	357.65	-2176.66	-2360.27	-13.37
1973	1437.48	-59.31	-1156.34	-2426.23	-12.25
1974	1397.43	-263.71	-1474.11	-2446.83	-10.90
1975	1279.05	-514.32	-2046.47	-2407.37	-9.67
1976	1294.43	-786.14	-2628.31	-2371.96	-8.77
1977	1295.07	-1043.14	-2890.34	-2346.05	-8.08
1978	1277.56	-1307.68	-2798.89	-2322.98	-7.52
1979	1304.77	-1280.77	-2593.78	-2283.31	-6.94
1980	1286.08	-1276.75	-2070.55	-2264.56	-6.12
1981	1132.75	-1120.18	-2244.34	-2242.58	-5.30
1982	1053.41	-907.36	-2319.83	-2211.75	-4.51
1983	1019.41	-696.11	-2451.89	-2183.50	-3.80
1984	949.88	-451.81	-2776.72	-2150.83	-3.24
1985	953.56	-311.56	-2792.05	-2114.06	-2.81
1986	887.04	-130.83	-2978.41	-2057.55	-2.59
1987	944.29	87.60	-2914.70	-2007.03	-2.51

A 10 percent depreciation of nominal exchange rate has an immediate positive impact but as we noted earlier this impact on current account balance of payments is ultimately eroded by price rise and produces no improvement in the long run. The price fall is now relatively small and flattens quickly rather than deepening. The change in current account balance over base run is still positive over the whole simulation period under the influence of fall in government investment but long run price effect of exchange rate depreciation brings the resurgence of debt problem relatively quickly and sharply. Table 6.8 has the full simulation results for the selected variables.

A combination of Rs 100 million cut in government consumption with 10% depreciation has a quick neutralizing effect on rising debt but foreign debt again starts rising towards the end of the simulation period. In the long run prices stabilise at about 2.5% above the base run values as compared to permanent fall when there is only a cut in government consumption or there is no response. Full simulations results are in Table 6.9.

Figures 6.6, 6.7, and 6.8 compare the changes for current account balance, accumulation of foreign debt and GDP deflator over base run values.

Table 6.8

Simulation or 1000 million Rs. loss of foreign transfers with an equal fall in government investment and 10 % depreciation of nominal exchange rate

Change over Base Run

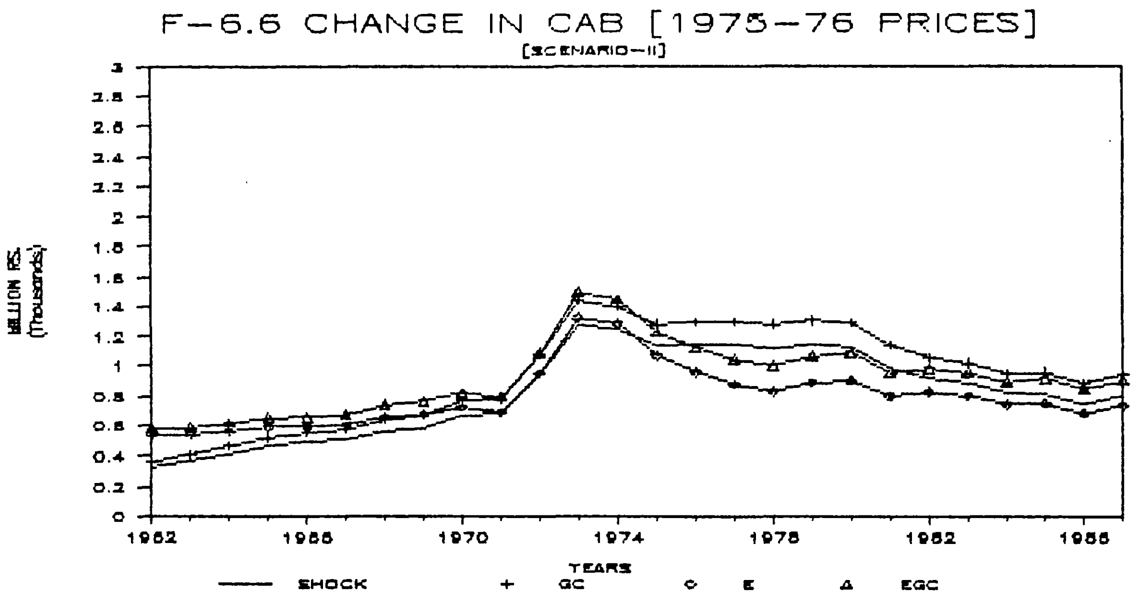
Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	544.45	221.17	-858.95	-561.14	-0.61
1963	542.05	451.48	-1187.11	-947.16	-1.43
1964	563.76	565.94	-1325.72	-1216.34	-2.32
1965	590.85	631.37	-1410.00	-1446.51	-3.15
1966	590.13	624.26	-1398.05	-1638.89	-3.85
1967	602.47	611.24	-1415.05	-1807.92	-4.27
1968	656.25	558.04	-1346.80	-1956.29	-4.31
1969	673.50	460.58	-1270.08	-2059.92	-3.91
1970	724.27	291.84	-1371.73	-2156.40	-3.33
1971	692.48	168.42	-1897.21	-2259.49	-2.89
1972	949.41	227.55	-2455.89	-2360.27	-2.69
1973	1320.05	-46.85	-1712.03	-2426.23	-1.77
1974	1283.09	-139.17	-1785.44	-2446.83	-0.63
1975	1065.70	-189.86	-1822.98	-2407.37	0.69
1976	957.35	-155.85	-2011.02	-2371.96	2.07
1977	875.75	-45.53	-2271.31	-2346.05	3.45
1978	828.07	87.29	-2575.42	-2322.98	4.63
1979	886.73	399.89	-2896.69	-2283.31	5.52
1980	901.76	624.08	-2870.67	-2264.56	6.26
1981	794.99	960.17	-2930.80	-2242.58	6.83
1982	826.62	1282.65	-3102.02	-2211.75	7.12
1983	800.43	1521.28	-2925.98	-2183.50	7.28
1984	742.77	1850.70	-2827.47	-2150.83	7.36
1985	748.81	2081.20	-2599.44	-2114.06	7.41
1986	686.58	2339.23	-2500.70	-2057.55	7.40
1987	734.00	2604.59	-2314.63	-2007.03	7.39

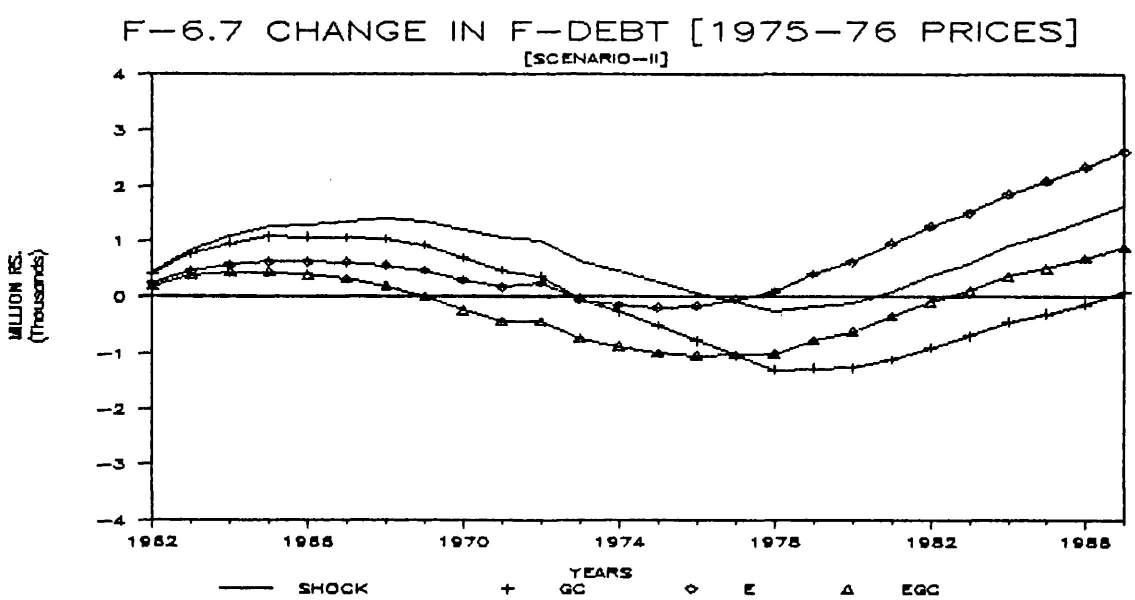
Table 6.9

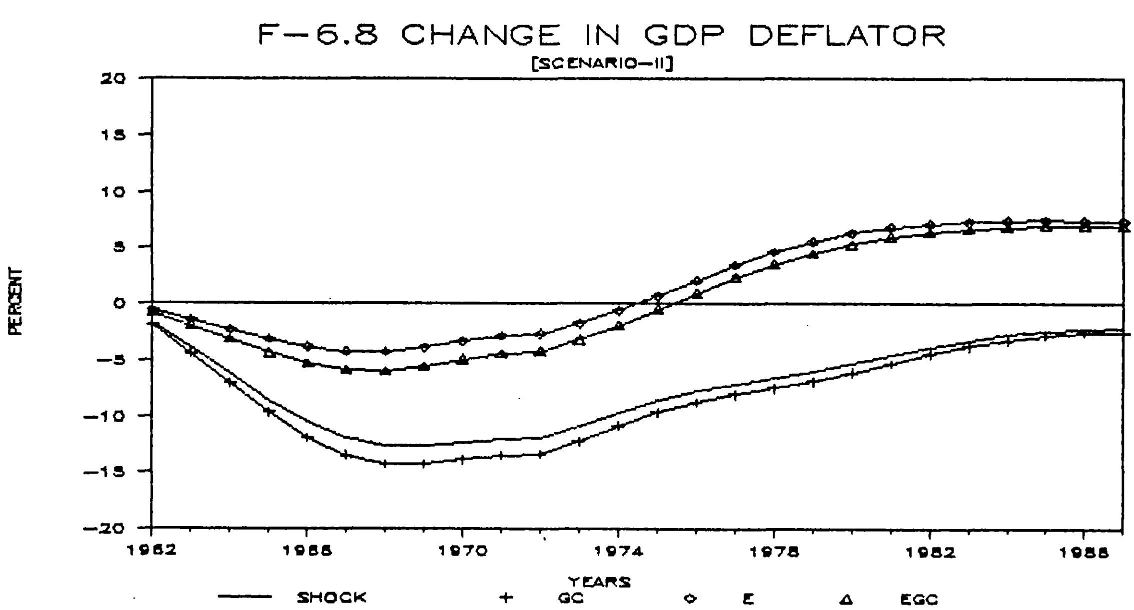
Simulation or 1000 million Rs. loss of foreign transfers with an equal fall in government investment, 100 million Rs. cut in government consumption and 10 depreciation of nominal exchange rate

Change over Base Run

Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	579.58	186.04	-989.75	-561.14	-0.84
1963	586.46	372.70	-1310.40	-947.16	-1.95
1964	616.41	439.92	-1417.79	-1216.34	-3.18
1965	652.49	447.13	-1457.05	-1446.51	-4.33
1966	655.08	390.67	-1389.59	-1638.89	-5.31
1967	673.51	313.56	-1332.96	-1807.92	-5.91
1968	736.18	180.77	-1203.95	-1956.29	-6.04
1969	761.49	6.37	-1091.58	-2059.92	-5.62
1970	819.86	-237.02	-1226.27	-2156.40	-4.98
1971	793.89	-431.88	-1834.55	-2259.49	-4.48
1972	1084.28	-425.45	-2456.78	-2360.27	-4.25
1973	1493.79	-747.42	-1598.86	-2426.23	-3.21
1974	1446.00	-875.13	-1715.93	-2446.83	-1.95
1975	1220.74	-1001.53	-1818.70	-2407.37	-0.52
1976	1119.84	-1051.81	-2065.96	-2371.96	0.92
1977	1041.52	-1033.34	-2341.61	-2346.05	2.33
1978	1000.35	-1021.19	-2619.14	-2322.98	3.53
1979	1060.45	-777.14	-2904.70	-2283.31	4.46
1980	1085.93	-622.16	-2810.08	-2264.56	5.29
1981	956.45	-343.78	-2890.83	-2242.58	5.95
1982	977.68	-98.95	-3065.06	-2211.75	6.35
1983	953.09	107.90	-2915.97	-2183.50	6.60
1984	890.61	367.23	-2859.52	-2150.83	6.77
1985	913.32	506.99	-2630.22	-2114.06	6.90
1986	845.38	687.25	-2560.52	-2057.55	6.94
1987	899.36	896.52	-2377.56	-2007.03	6.97


F-6.6 CHANGE IN CAB [1975-76 PRICES]
[SCENARIO-II]
MILLION RS. (Thousands)
YEARS
SHOCK
+ GC
◇ E
Δ EGC


F-6.7 CHANGE IN F-DEBT [1975-76 PRICES]
[SCENARIO-II]
MILLION RS. (Thousands)
YEARS
SHOCK
+ GC
◇ E
Δ EGC


F-6.8 CHANGE IN GDP DEFLATOR
[SCENARIO-II]
PERCENT
YEARS
SHOCK
+ GC
◇ E
Δ EGC

6.2.3 No Fall in Investment

A loss of foreign transfers with no implication for domestic investment is the easiest scenario. The rationale of such a possibility has already been explained. The immediate impact of loss of foreign transfers is only in terms of increase in foreign debt. Table 6.10 provides the yearly details of impact of shock with no response.

A little fall in aggregate demand pushes the prices down. Depreciation of the real exchange rate then positively affect the current account balance. However, over the whole simulation period there is no significant change in current account balance. The foreign debt accumulation is therefore continuously on the rise.

The simulation exercise suggests that it will require 750 million rupees cut in real government consumption to hold the rising trend of debt. The cut in government consumption is 17 % less compared to the scenario when there is a fall in private investment. Full simulation results for selected variables are in Table 6.11.

The impact of exchange rate depreciation is in conformity with other results. A ten percent depreciation shows some improvements only initially. There is a permanent rise in current account deficit over base run values as a result of

Table 6.10

Simulation of 1000 million Rs. loss of foreign transfers with no fall in investment Change over Base Run

Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	0.00	765.62	0.00	0.00	0.00
1963	-23.79	1549.86	-33.38	0.00	-0.05
1964	-29.43	2182.11	-65.44	0.00	-0.17
1965	-39.06	2833.54	-74.67	0.00	-0.35
1966	-34.68	3264.91	-66.03	0.00	-0.56
1967	-42.97	3818.71	-57.11	0.00	-0.80
1968	-36.71	4454.86	0.78	0.00	-1.00
1969	-65.00	4981.71	63.38	0.00	-1.13
1970	-41.95	5370.78	55.61	0.00	-1.24
1971	-47.75	5699.76	30.27	0.00	-1.35
1972	20.47	5930.65	98.98	0.00	-1.38
1973	31.53	5842.91	203.59	0.00	-1.28
1974	29.96	5931.66	162.21	0.00	-1.13
1975	9.66	6282.57	47.81	0.00	-1.01
1976	19.56	6630.88	-44.72	0.00	-0.94
1977	16.59	7040.48	-90.80	0.00	-0.93
1978	11.09	7619.99	-100.88	0.00	-0.95
1979	4.98	8099.65	-74.45	0.00	-0.99
1980	-45.19	8518.69	-11.72	0.00	-1.00
1981	-17.78	9010.32	16.02	0.00	-1.01
1982	-0.10	9706.31	76.20	0.00	-0.98
1983	-27.34	10035.66	52.05	0.00	-0.94
1984	-51.05	10690.54	-6.75	0.00	-0.92
1985	-24.03	11254.30	0.97	0.00	-0.89
1986	-38.91	11765.55	-52.69	0.00	-0.89
1987	-34.39	12175.92	-73.44	0.00	-0.91

Table 6.11

Simulation of 1000 million Rs. loss of of foreign transfers, with no fall in investment and 750 million cut in government consumption Change over Base Run

Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	264.60	501.02	-981.77	0.00	-1.67
1963	309.25	958.00	-971.36	0.00	-3.97
1964	365.01	1236.44	-779.46	0.00	-6.58
1965	423.59	1450.92	-456.53	0.00	-9.16
1966	454.23	1510.37	-29.63	0.00	-11.42
1967	492.90	1580.53	543.26	0.00	-13.03
1968	569.43	1613.07	1077.91	0.00	-13.83
1969	606.00	1552.19	1429.01	0.00	-13.87
1970	693.03	1364.37	1183.65	0.00	-13.50
1971	737.70	1134.95	539.54	0.00	-13.18
1972	1057.08	954.10	108.70	0.00	-13.01
1973	1381.93	477.45	1154.20	0.00	-11.99
1974	1291.97	280.82	765.55	0.00	-10.82
1975	1211.26	39.29	114.96	0.00	-9.86
1976	1279.30	-270.72	-456.16	0.00	-9.26
1977	1296.46	-571.63	-616.72	0.00	-8.91
1978	1329.00	-912.25	-399.72	0.00	-8.61
1979	1316.38	-934.46	-81.52	0.00	-8.23
1980	1326.81	-1005.01	500.23	0.00	-7.53
1981	1168.52	-906.82	340.28	0.00	-6.79
1982	1092.12	-744.74	342.03	0.00	-5.96
1983	1064.77	-593.07	74.16	0.00	-5.17
1984	997.65	-402.22	-327.22	0.00	-4.55
1985	1124.73	-435.61	-338.73	0.00	-3.99
1986	1062.16	-423.59	-604.48	0.00	-3.60
1987	1104.30	-345.81	-639.53	0.00	-3.34

extra interest payments for accumulated debt. This however tends to get stabilised when prices stabilise at a level close to the exchange rate depreciation. Table 6.12 provides full details of simulation for the selected variables.

A combination of 750 million rupees cut in government consumption and 10 percent depreciation of exchange rate has the outcome in the middle when these two instruments were applied in isolation. There is a significant improvement in current account balance for a number of years exceeding the level of shock. The foreign debt changes in terms of long cycles because of cyclical change in price level. Full results for selected variables are given in Table 6.13.

Figures 6.9, 6.10, 6,11 compare the results of different simulation for change in current account balance, foreign debt and GDP deflator over base run.

6.5 Conclusion

The external imbalance is primarily caused by excess of demand over aggregate supply and ,therefore, any attempt to restore the external balance by squeezing investment, further reduces the aggregate supply (though aggregate demand is also reduced) because of its direct implication for capacity output which influence exports (positively) and prices (negatively).

Table 6.12

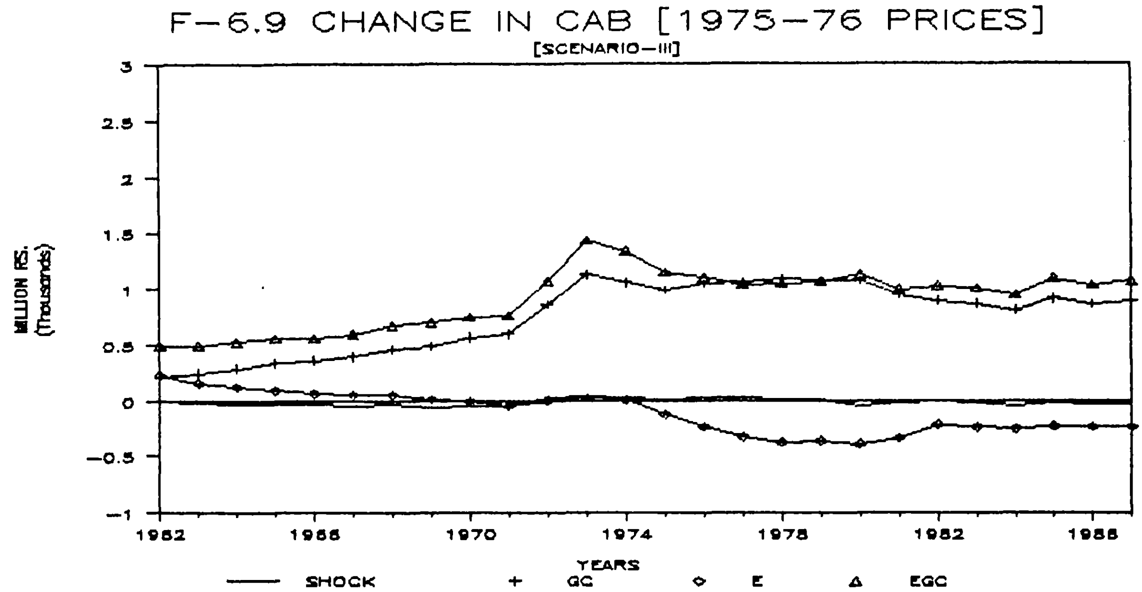
Simulation of 1000 million Rs. loss of of foreign transfers, with no fall in investment and exchange rate depreciation of 10 %
Change over Base Run

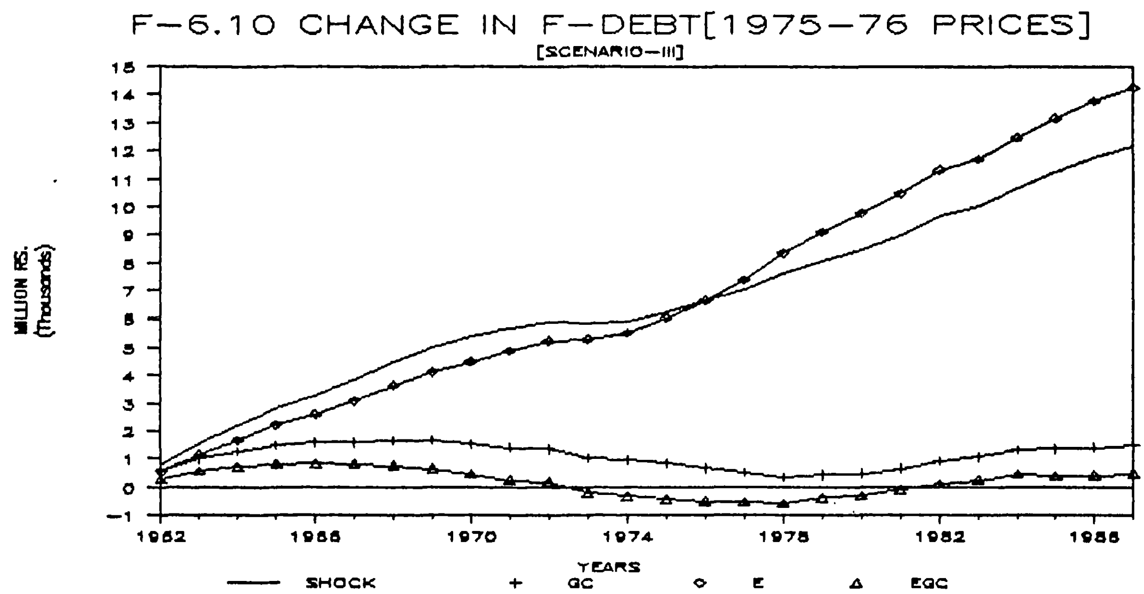
Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	226.49	539.12	639.84	0.00	1.09
1963	155.77	1148.75	504.57	0.00	2.44
1964	121.34	1657.76	370.84	0.00	3.96
1965	86.62	2197.75	183.70	0.00	5.48
1966	60.12	2588.13	-20.36	0.00	6.86
1967	46.61	3072.49	-276.37	0.00	7.90
1968	47.28	3625.50	-439.13	0.00	8.58
1969	8.44	4103.21	-483.80	0.00	8.99
1970	-5.23	4496.05	-395.32	0.00	9.22
1971	-47.56	4874.40	-280.36	0.00	9.37
1972	0.00	5238.75	-180.77	0.00	9.48
1973	23.63	5292.59	-248.05	0.00	9.45
1974	4.15	5507.32	-95.50	0.00	9.45
1975	-122.73	6036.36	239.36	0.00	9.71
1976	-236.42	6664.36	482.23	0.00	10.30
1977	-328.19	7415.98	439.94	0.00	11.04
1978	-371.92	8358.89	73.61	0.00	11.65
1979	-360.63	9134.05	-374.69	0.00	11.96
1980	-391.74	9798.61	-781.09	0.00	11.86
1981	-334.44	10500.34	-662.41	0.00	11.60
1982	-216.67	11329.02	-731.70	0.00	11.11
1983	-241.51	11730.57	-485.50	0.00	10.56
1984	-254.38	12495.53	-148.14	0.00	10.07
1985	-231.28	13176.78	84.84	0.00	9.67
1986	-237.58	13787.73	314.83	0.00	9.40
1987	-239.28	14269.27	432.00	0.00	9.24

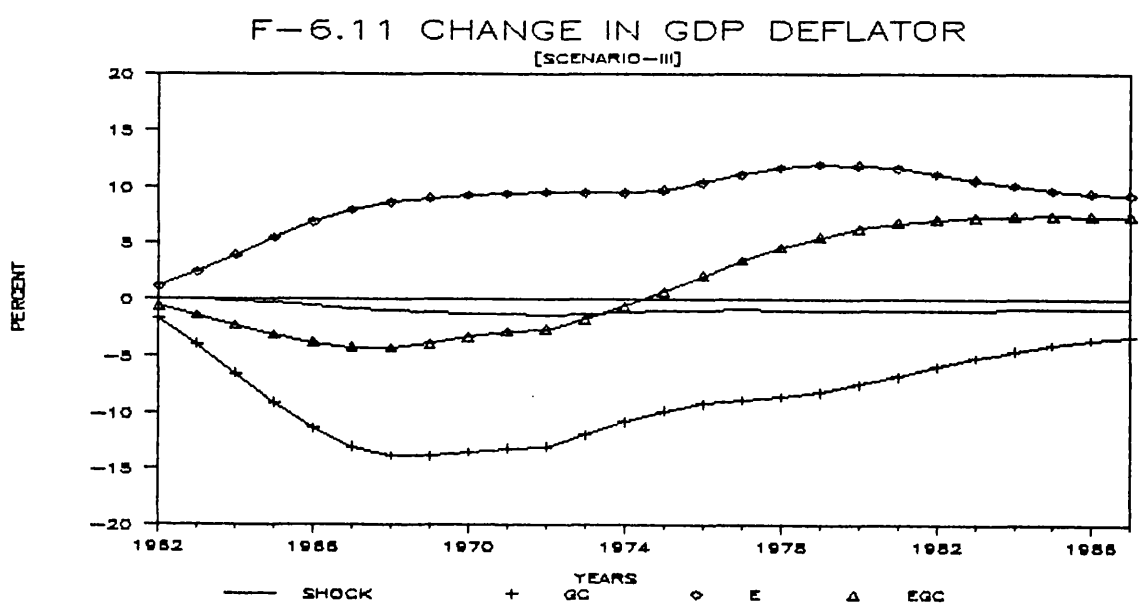
Table 6.13

Simulation of 1000 million Rs. loss of of foreign transfers, with no fall in investment, and 750 million cut in government consumption and 10 % depreciation of exchange rate Change over Base Run

Year	CAB	Foreign Debt	GDP	Capacity output	GDP Deflator
	[millions Rupees]				(Percent)
1962	489.92	275.69	-342.60	0.00	-0.58
1963	490.36	556.49	-431.91	0.00	-1.54
1964	519.11	708.39	-343.98	0.00	-2.65
1965	553.74	807.07	-206.39	0.00	-3.78
1966	554.17	821.06	-3.98	0.00	-4.76
1967	589.59	815.05	284.37	0.00	-5.40
1968	663.52	754.36	586.70	0.00	-5.55
1969	692.54	632.10	835.81	0.00	-5.20
1970	744.45	435.28	714.71	0.00	-4.56
1971	754.25	241.96	234.90	0.00	-4.04
1972	1066.45	173.98	-183.19	0.00	-3.80
1973	1433.04	-203.06	694.61	0.00	-2.88
1974	1334.95	-318.81	514.45	0.00	-1.81
1975	1146.31	-430.75	343.52	0.00	-0.68
1976	1096.72	-512.90	112.82	0.00	0.42
1977	1034.51	-531.88	-62.81	0.00	1.44
1978	1044.22	-589.79	-224.56	0.00	2.33
1979	1066.18	-392.40	-405.64	0.00	3.03
1980	1123.15	-312.22	-257.05	0.00	3.70
1981	990.41	-93.61	-316.70	0.00	4.27
1982	1017.61	97.21	-411.06	0.00	4.71
1983	1001.11	238.88	-387.30	0.00	5.05
1984	941.57	440.05	-399.98	0.00	5.29
1985	1091.82	397.68	-165.56	0.00	5.56
1986	1029.52	399.44	-176.55	0.00	5.79
1987	1070.55	456.53	-93.53	0.00	6.02


F-6.9 CHANGE IN CAB [1975-76 PRICES]
[SCENARIO-III]
MILLION RS. (Thousands)
3
2.5
2
1.5
1
0.5
0
-0.5
-1
1962
1966
1970
1974
1978
1982
1986
YEARS
SHOCK
GC
E
EGC


F-6.10 CHANGE IN F-DEBT[1975-76 PRICES]
[SCENARIO-III]
MILLION RS. (Thousands)
15
14
13
12
11
10
9
8
7
6
5
4
3
2
1
0
-1
1962
1966
1970
1974
1978
1982
1986
YEARS
SHOCK
GC
E
EGC


F-6.11 CHANGE IN GDP DEFLATOR
[SCENARIO-III]
PERCENT
20
15
10
5
0
-5
-10
-15
-20
1962
1966
1970
1974
1978
1982
1986
YEARS
SHOCK
GC
E
EGC

In Chapter 1 we have discussed that government investment is little influenced by the foreign capital inflow and a cut in foreign capital primarily affects the private sector investment. Our analysis, however, suggests that a smaller volume of other adjustment measures are needed where there is a cut in government investment (because that also depresses private wealth and, therefore, private consumption) rather than private investment.

Though it is neither advisable nor possible for Pakistan to discontinue meeting its foreign exchange requirements from abroad, a policy of heavy reliance on foreign capital to finance domestic investment is a risky proposition. In view of difficulties in getting soft loans and credits in future, it is imperative to mobilize domestic resources in order to achieve the target levels of investment. If it could not be done for any reason then there is no quick-fix solution to the problem and a cut in domestic expenditure becomes necessary. Keeping in view the difficulties in cutting government spending and further squeezing the private consumption from the existing low level, the private investment is likely to be most vulnerable.

Notes

(1) Lack of knowledge of policy makers objective functions poses serious difficulties when applying to theory of economic policy .{See for example (i)Ben.(1990) and (ii) Arestis and Hadjimatheou (1982, pp200-210)}.

CHAPTER 7

SUMMARY AND CONCLUSIONS

Foreign capital as an important agent for economic growth has been widely relied upon in Pakistan over the past four decades. This policy was designed with a clear target to eliminate the dependence on foreign capital by the end of 1985. The overview of past growth strategies (Chapter 1) suggests that foreign capital has been relied upon as an easy option for a very long period in order to achieve the planned growth targets. The strategies of economic growth in Pakistan have been influenced mostly by the fashionable ideas of the time.

The economic performance during the past four decades has been remarkable and Pakistan has been amongst the leading developing countries in terms of economic growth. But this record has been built on an increasingly unstable foundation. The economy is now experiencing the problem of a continuous rising external debt and as a result the debt service liabilities are utilising about two third of the gross inflow of new capital from abroad. Lack of sufficient balance of payments margin to cushion the economy from the unexpected shocks has rendered the economy at risk of an economic crisis and any further acceleration in the build-up of foreign debt might increase the debt service to an unmanageable proportion.

After a detailed evaluation, we have arrived at the conclusion that the balance of payments problem of Pakistan is not of a temporary nature and it can be corrected only with an appropriate policy measures. Such a policy formulation requires an implicit macroeconomic model which could link the policy instruments with the balance of payments. Having arrived at this conclusion, we proceeded with our study further in following three broad stages:-

(a) We built an empirical macroeconomic model for Pakistan in which we combined the aggregate demand, inflation, balance of payments, financial and capital assets accumulation and foreign debt. This is a significant improvement over the "two gap model" which see the balance of payments in the context of a developing country like Pakistan only as a structural problem. Similarly our model goes well beyond the traditional Keynesian type demand determined models because it not only includes supply side of the economy but also allows the financial assets to change with a change in government spending and current account balance.

(b) We simulated our model under various exogenous and policy induced shocks in order to analyse their impact on key economic variables such as GDP, prices, imports, exports, current account balance and foreign debt.

(c) Our final simulation of Chapter 6 is of particular importance where we have explicitly examined different possible implications for the domestic investment when the economy is subjected to an external shock which reduces the net availability of foreign resources. In the light of our findings of Chapter 1 that fall in foreign resources which reduces private investment, we have simulated a shock of cut in the net foreign resource availability with an equal cut in the private investment or government investment. Working through these two scenarios has helped us in understanding different kinds of implications of a cut in private versus government investment. The simulation exercise has been further extended using policy instruments of cut in government consumption or exchange rate depreciation (and a suitable combination of the two) so as to regain the pre-shock stability in foreign debt and current account balance.

The results, we obtained, from the simulation exercise were found to be broadly consistent with widely held priori views. We have arrived at following important conclusions.

(i) Typically, a current account deficit of the balance of payments that creates a need for adjustment results from expansion of aggregate demand while aggregate supply remains unchanged. Such an expansion is mostly associated with excessive public sector expenditure. The same is true for Pakistan where excess of government expenditure over revenue is considered to be one of the principle reasons for balance of payments and foreign debt problem. {see World Bank Report (1988, p9)}. The corrective action should, therefore, include measures to reduce government spending in real terms. Our simulation results also, very strongly, support this view. In fact, in order to achieve a visible and quick improvement in the balance of payments (and therefore foreign debt) a significant restraint on government spending has to be exercised. The reason is that a cut in government consumption reduces aggregate demand directly (being a part of aggregate demand) and also through fall in private consumption (because of its assets creation affect). Thus a cut in government consumption in our model improves the balance of payments deficit in two ways:

(a) reduction in aggregate demand reduces the demand for imports to the extent of strength of marginal propensity to import; and

(b) fall in aggregate demand depresses the domestic price level which depreciates the real exchange rate and thus further reduces imports and promotes exports. However, it may be noted that in a dynamic system where we allow all the chain of effects, a gradual fall in imports and rise in exports will again push up the aggregate demand. Similarly improved current account balance of payment adds to financial assets boosting private consumption and, therefore, aggregate demand. In this way the initial improvement in current account balance of payments gradually declines (1).

(ii) Competitive exchange rates are equally important and crucial for any successful future balance of payments policy. Overvalued currency (in real terms) discourages exports and increases demand for imports and ultimately generates pressure for import protection. This appears to be what has happened in Pakistan. While the protection of import substitute industry in Pakistan is very high compared to many developing countries the exports for the most of period have been promoted by various ad hoc administrative measures. Such a policy has been perhaps adopted under the influence of the "two gap" model which assigns no role to the relative price change in promoting exports and reducing imports. However, we have found that both exports and imports do respond to relative price changes brought in by exchange rate depreciation. But in order to maintain the real competitive exchange rate a regular adjustment in nominal exchange rate has to be made according to relative rates of inflation at home and abroad. Any nominal exchange rate depreciation in isolation ultimately causes the prices to rise by the same margin and the initial real exchange rate depreciation is neutralized. Thus, unless the nominal exchange rate depreciation is supported with appropriate other policy measures, so that domestic prices do not rise faster than prices abroad, maintaining a competitive exchange rate will need a regular depreciation. Such a policy, however, might be difficult to manage for too long a period unless supported with measures like cut in government budget deficit and expanding the capacity of the economy for a short run and medium/long run management of the external balance respectively.

(iii) We have noted in (i) above that the external imbalance is primarily caused by excess of demand over aggregate supply. Any attempt to restore the external balance by squeezing investment would further reduce the aggregate supply (though aggregate demand is also reduced) and in view of its direct implication for capacity output {which influence exports (positively) and prices (negatively)} ultimately outweigh any initial improvement in the balance of payments. The difficulty is that in case of Pakistan, as we have observed in chapter 1, the government investment is little influenced by the change in foreign capital inflow. A short fall of foreign capital reduces the private sector investment. The simulation results clearly demonstrate that adjustment is stronger with reduction in government investment because that also depresses private wealth and therefore private consumption. Thus the same level of adjustment can be achieved with a smaller cut in government investment than in private investment.

(iv) The economic structure of Pakistan has been supported and sustained for a very long time with the help of concessionary capital from abroad. Inspite of the fact that Pakistan has successfully avoided expensive borrowing at a very large scale from abroad, yet it is quite obvious that the continuous shift from grants and grants like soft loans/credits to hard commercial kind of loans is exposing the economy of Pakistan under increasing danger of debt rise. The simulations done in terms of raising interest and cut in grants have powerfully supported this view. Under these circumstances, though it is not advisable to discontinue borrowing from abroad yet a policy of heavy reliance on foreign capital as an integral part of high growth strategy has to be adopted with greater care. A policy to mobilize domestic resources and earn foreign exchange in order to support domestic investment activity at a target level has to be pursued rigorously. If such measures are not taken then it seems increasingly difficult to sustain a high growth strategy for such a long period as has been done in the past.

NOTES

(1) In order to see the impact of government consumption on other economic variables we have simulated a permanent increase in real government consumption in Chapter 5. We have explained in the beginning of Chapter 4 that these simulations provide us a kind of "policy multipliers" or "ready-reckoners" and hence the results can be safely interpreted for a cut in government consumption.

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