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Chapter 8

Devaluation, the Price Level and Economic Activity[1]

One of the common arguments against devaluation in India has been that it would be inflationary. If indeed this were the case, any price advantage that devaluation might confer in export markets would be blunted and might even be completely neutralized.

There was price inflation in India, at any rate since 1962–63, and the pace of price rise indeed quickened in 1966–67. This led some uncritical observers to attribute this phenomenon to devaluation on a *post hoc ergo propter hoc* basis. Hence it is necessary to examine the issue of the endogenous impact of the devaluation package on the price level carefully and in depth. Indeed, as we show presently, meaningful analysis of this question must bring in the effect of the abnormal drought in two consecutive years on cereal and raw material prices and through these on the prices of other commodities; and when we have done this, and considered other pertinent factors, the judgment reached on the issue of the impact of the devaluation package changes drastically.

First, let us examine the few pertinent facts that we have collected in Table 8–1. The major features there are: (1) the impact of the two consecutive droughts as reflected in the fall in real income originating in agriculture in 1965–66 and 1966–67 as compared with 1964–65; (2) the continued rise in the wholesale price index, a process that began in a sustained fashion from 1962–63; (3) a rise in the relative price of food articles as compared with the prices of manufactures in general and prices of equipment in particular; (4) a shift away from investment toward consumption in public sector expenditure; (5) a drastic fall in non-food aid disbursements net of debt service payments

TABLE 8–1

Key Economic Indicators, 1964–68

	1964–65	1965–66	1966–67	1967–68
1. Index number of wholesale prices (1961–62 = 100)				
All commodities	122.3	131.6	149.9	167.3
Cereals	112.0	135.2	146.2	173.7
Food articles	135.4	144.6	171.1	207.8
Raw materials	115.9	132.8	158.4	156.4
Manufactures	109.0	118.1	127.5	131.1
Cotton manufactures	109.6	114.4	121.6	128.9
Equipment	108.3	111.8	117.7	126.5
2. Public sector[a] (Rs. billions)				
Tax receipts of central, state and local government	26.94	30.48	34.26	36.38
Subsidies	1.47	1.91	4.12	3.55
Public consumption	20.05	22.96	24.96	27.80
Gross public investment	20.10	21.22	21.86	20.01
Net defense expenditure	8.06	8.85	9.09	9.68
Overall deficit	1.52	3.31	2.26	2.57
3. Private sector (Rs. billions)				
Consumption	178.49	180.02	213.18	256.85
Gross investment	17.55	21.60	24.01	28.01
4. Foreign trade[b] (U.S. $ millions)				
Exports	1,714	1,692	1,542	1,598
Imports	2,833	2,958	2,771	2,677
Of which: food	592	676	868	691
maintenance	1,684	1,726	1,393	1,508
complete machinery	435	438	363	289
iron and steel	219	205	131	142
non-ferrous metals	123	144	114	119
5. External assistance (U.S. $ millions)				
Gross aid disbursements	1,519	1,623	1,494	1,575
Of which: food aid	446	476	538	447
project aid	701	684	497	380
non-project aid	352	421	424	672
non-food PL 480 aid	20	42	35	76
Debt service	255	315	365	444
Net aid other than food	818	832	591	684

TABLE 8–1 (concluded)

	1964–65	1965–66	1966–67	1967–68
6. National income[c] (Rs. billions)				
At current prices	200.61	206.21	239.03	283.74
At 1960–61 prices	159.17	150.21	152.43	166.60
Of which: agriculture	72.24	61.45	60.94	71.93
others	86.93	88.76	91.49	94.67
7. Changes in money supply with the public (Rs. billions)	3.35	4.43	3.80	4.51
Of which (a) Reserve Bank net credit to government	1.36	3.98	1.89	1.66
(b) Commercial Bank holdings of government securities	1.41	1.14	0.83	0.96
(c) Total net bank credit to government [=(a)+(b)]	2.77	5.12	2.73	2.61
8. Some percentages				
i) $\frac{\text{Gross public investment}}{\text{Gross public outlay}}$	50.0	48.0	46.7	41.9
ii) $\frac{\text{Tax receipts}}{\text{National income}}$	13.4	14.8	14.3	12.8
iii) $\frac{\text{Gross domestic savings}}{\text{Gross domestic product}}$	14.2	15.6	13.5	12.2

SOURCES: *Economic Survey, 1967–68* and *1968–69*, Government of India, Ministry of Finance, Department of Economic Affairs, New Delhi.

Estimates of National Product, 1960–61 to 1969–70 and *Index Numbers of Wholesale Prices in India*, annual numbers from 1962 to 1970, Government of India, New Delhi.

a. The total expenditure exceeds tax receipts plus the overall deficit because of non-tax revenue and capital receipts consisting of domestic and external borrowing.

b. Maintenance imports consist of intermediates, raw materials, spares and components of machinery. Therefore, they also include iron and steel as well as non-ferrous metals.

c. Provisional estimates, except for 1964–65.

after 1965–66; (6) a fall in exports as well as imports, particularly imports of complete machinery; and (7) a fall in the ratio of tax receipts to national income and gross domestic savings to gross domestic product. In analyzing this picture we shall attempt, to the extent possible, to separate the effect of the drought.

EFFECT OF THE DROUGHT ON PRICES

It appears that the prices of manufactures are determined by cost considerations since they are very closely related to the prices of industrial raw materials. However, the element of the cost-push mechanism that operates through the presumed relationship between *wages* and prices of food articles appears to be weak. This is seen from the following relationship:

$$(M_f)_t = \underset{(24.2922)}{56.6215} + \underset{(0.6332)}{0.0267} f_{t-1} + \underset{(10.2962)}{0.5050} R_t - \underset{(-4.5728)}{8.1552} D_t \qquad (8\text{–}1)$$

$\bar{R}^2 = 0.9778$; D.W. = 1.15; period 1951–1952 to 1960–61 and 1962–63 to 1970–71,

where $(M_f)_t$ is the index of wholesale prices of manufactures with base 1950–51 up to 1960–61 and with base 1961–62 beyond 1960–61, f_t is the index of wholesale prices of food articles with an identical shift in base, R_t is the index of wholesale prices of raw materials again with shift of base beyond 1960–61, and D_t is a dummy variable which takes the value zero up to and including 1960–61 and the value 1 beyond (the dummy having been introduced to reflect the change in the base of the price index in 1961–62). Only the coefficients of R_t and the dummy are significant. Replacing f_{t-1} by f_t in the above relationship yielded the same results—namely, that only the coefficients of prices of raw materials and the dummy were significant. This is not surprising, since the prices of raw materials are closely correlated with those of food articles, a relationship which is the consequence of the fact that a large proportion of the raw materials is agriculture-based and factors that affect agriculture in general affect both the availability of raw materials and food articles similarly. This relationship is as follows:

$$R_t = \underset{(1.22)}{11.9317} + \underset{(2.56)}{0.6422} f_t + \underset{(0.75)}{0.1789} f_{t-1} - \underset{(-0.97)}{0.8396} D_t \qquad (8\text{–}2)$$

$\bar{R}^2 = 0.9097$; D.W. = 1.57; period 1952–53 to 1960–61, 1962–63 to 1970–71.

Thus an explanation of the behavior of prices in the Indian economy has to be sought in an explanation of the behavior of the prices of food articles. Since foodgrains in general, and cereals in particular, form an overwhelming proportion of the consumer budget, cereals have a large weight in the index of prices of food articles.

We now turn to a simple simultaneous equation model to explain the prices of cereals. In a poor peasant economy such as India's, the bulk of the output of food crops gets consumed on the farm and never gets to the market.

But for explaining the behavior of food prices, the marketed portion of the output is relevant. Unfortunately, there is no time series available on marketed surplus. Some data on market arrivals in selected markets are available but the number of markets on which these are based have varied over time. However, Pranab and Kalpana Bardhan have constructed a time series of marketed surplus of cereals based on the National Sample Survey data on consumption expenditure.[2] Their series runs only up to 1964–65. We have extended it to later years by assuming that the marketed surplus changed in the same proportion as market arrivals of major cereals (fortunately, the number of markets on which the arrivals data are based has remained the same since 1964–65).

The behavioral model we have estimated is the following:

$$y_t = \alpha_0 + \alpha_1 Y_{At} + \alpha_2 P_t + u_t \qquad (8\text{–}3)$$

$$y_t + z_t = \rho_0 + \rho_1 Y_{NAt} + \rho_2 P_t + v_t \qquad (8\text{–}4)$$

where the endogenous variables are y_t, the marketed surplus of cereals, and P_t the wholesale price of cereals relative to that of cotton manufactures.[3] The exogenous variables are Y_{At}, the real income originating in agriculture; Y_{NAt}, the real non-agricultural income (both incomes being measured in units of 1 billion rupees); and z_t, the imports of foodgrains (in million tons). In the first equation, which is the supply equation, we postulate that marketed surplus is related to real agricultural income and the relative price of cereals. In the second equation—the demand equation—demand is related to relative prices of cereals and real non-agricultural income. The reduced form equation for P_t was estimated as:

$$P_t = \underset{}{0.9030} + \underset{(3.26)}{0.0135}Y_{NAt} - \underset{(4.18)}{0.0133}Y_{At} - \underset{(-1.99)}{0.0193}z_t \qquad (8\text{–}5)$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad (-1.31)$$

$$\bar{R}^2 = 0.6154; \text{ period } 1952\text{–}53 \text{ to } 1969\text{–}70.$$

The two-stage least squares estimates of the two structural equations are:

$$y_t = \underset{}{5.6380} + \underset{(1.40)}{0.3707}P_t + \underset{(0.10)}{0.1828}Y_{At}, \quad \bar{R}^2 = 0.2939 \qquad (8\text{–}6)$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad (2.40) \qquad \text{D.W.} = 1.91$$

$$y_t + z_t = \underset{}{16.8539} - \underset{(7.01)}{12.4023}P_t + \underset{(-2.49)}{0.2341}Y_{NAt}, \quad \bar{R}^2 = 0.8383 \qquad (8\text{–}7)$$
$$\qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad\quad (5.84) \qquad \text{D.W.} = 2.30$$

In the supply equation, the relative price variable is not significant while the income variable is. In the demand equation, both the relative price and income variables are significant.

The reduced form equation for P_t can be used to assess the effect of the drought on the prices of cereals. This we do as follows. First, we get an estimate of the expected value of P_t under the assumption that real income originating in agriculture *maintained* the level attained in 1964–65 both in

TABLE 8–2
Index of Cereal Prices, 1964–67

Year (1)	Observed Value (2)	With Actual Values of Y_{At} (3)	With 1964–65 Values of Y_{At} for 1965–66 and 1966–67 (4)	With Trend Values of Y_{At} (5)
1964–65	139.3	133.6	133.6	135.3
1965–66	148.0	153.4	133.1	131.3
1966–67	175.8	175.0	152.3	146.3

SOURCE: Equations 8–5, 8–6 and 8–7.

1966–67 and 1967–68 as contrasted with the fall of 14.9 and 15.7 percent, respectively, in these two years. We convert these expected values of P_t to an expected value of index of cereal prices by multiplying by the observed value of the index of prices of cotton manufactures in these two years. (As mentioned earlier, the prices of manufactures in general and prices of cotton manufactures in particular are mainly influenced by the prices of raw materials. In the case of cotton manufactures, the basic raw material is cotton and raw cotton prices did rise, particularly in 1966–67, in response to lower output due to the drought. Thus, by using the observed prices of cotton manufactures in obtaining the expected values of index of cereal prices, we *are* understating the effect of drought somewhat since we are not removing the influence of drought on the prices of cotton manufactures.)[4] The picture that emerges is highlighted in Table 8–2.

Thus the expected prices of cereals should have been lower by approximately 10 percent in 1965–66 and 1966–67 had the drought not lowered real agricultural income (and hence the marketed surplus) in these years as compared with 1964–65. The above analysis suggests, therefore, that in the behavior of prices immediately after devaluation the effect of the two consecutive droughts of unprecedented proportion was the dominant one.[5]

ROLE OF MONETARY AND FISCAL POLICY

Not merely was a significant part of the post-devaluation price rise due to the exogenous fact of the droughts; in addition, the government's monetary and fiscal policies appear to have been designed to decelerate rather than accelerate the trend rise in expenditures and in money supply (which, in turn, largely reflects government spending as in many other LDCs). As will be evident from our discussion below, India was to experience an industrial recession together

with a wage-goods price inflation brought about by the drought. And monetary and fiscal policy decisions were largely motivated by the fear of adding to the price rises resulting from the drought, rather than by considerations of the 1966 trade-and-exchange-rate policy package. In fact, the contractionary fiscal and monetary policy, so motivated, contributed significantly to the onset of the industrial recession, along with the shift in the *composition* (as distinct from the level) of government outlays away from investment to current expenditures (which resulted in reduced demand for the output of the capital goods sector).

1. The overall budgetary deficit of the Central and State governments *fell* from a level of Rs. 3.34 billion in the pre-devaluation year of 1965–66 to Rs. 2.26 billion and Rs. 2.57 billion, respectively, in the subsequent two years (Table 8–1). Though these are *ex-post* magnitudes, the budgeted or *ex-ante* deficits for 1966–67 and 1967–68 were even lower at Rs. .52 billion and Rs. .89 billion, respectively.

2. Furthermore, the money supply with the public increased by Rs. 3.8 billion and Rs. 4.51 billion, respectively, in the two post-devaluation years as compared with a rise of Rs. 4.44 billion in the pre-devaluation year of 1965–66. Further, a major element in the expansion of money in India as in other less developed countries—namely, increase in net bank credit to government—*fell* from Rs. 5.12 billion in 1965–66 to Rs. 2.73 billion and Rs. 2.61 billion in the subsequent two years.

It is, of course, of interest to note also that the effect of the fiscal and monetary contraction was accentuated by an accompanying shift in the *composition* of government outlays. As is clear from Table 8–1, the pattern of outlays shifted in favor of current expenditure and among the significant reductions in government outlays was a cutback on railway expansion. This accentuated the deflationary impact of the fiscal policy because, on balance, it must have implied that expenditure was shifting from items such as capital goods where output fell in consequence (as we shall discuss in greater depth) to items such as food where output could not increase owing to short-run production constraints. Thus, investment in the industrial sector decelerated on an accelerator-type mechanism whereas there was no offsetting impact through incremental outlays in agriculture. On balance, therefore, the effect of the shift in the composition of outlays must have been to accentuate the deflationary effect of decelerating government total outlays on production and investment.

Both the deceleration in total outlays and the compositional shift which we have just discussed were to be traced to two causes: one exogenous and major, and the other endogenous and only *minor* and possibly contributory, to the June 1966 policy package. The exogenous and principal factor was again the agricultural drought. It is clear from policy pronouncements (e.g., in the annual *Economic Survey* following the devaluation) that the government was afraid that any sustenance of the trend expansion in outlays would accentuate the rise in food prices that followed from the drought; and the same fears

clearly dictated that, while current outlays could not be reduced (e.g., wages in the bureaucracy could not be controlled in a situation of risen prices without serious unrest), capital outlays could be axed without serious difficulty.

But the deflationary policy *may,* to a very small degree, have been inspired by the devaluation decision itself. There is some (though not considerable) evidence, in the writings of both the relevant Ministries and of outside economists, that the devaluation was thought to be necessarily inflationary. This belief, of course, stems from thinking in terms of the standard model of devaluation analysis, beginning with Alexander, Tinbergen and Meade's work, that devaluation is likely to switch expenditure from foreign to domestic goods and that, for this policy to lead to improvement in the balance of payments, an offsetting deflationary policy is necessary. This view ignores one critical element in LDC devaluations—namely, that the inflow of aid implies that the immediate effect of the devaluation is likely to be significantly deflationary because imports often exceed exports by a factor of even two. Also, the fact that the net, as distinct from the gross, devaluation was not quite as great as was commonly believed, as our estimates in Chapter 6 have shown, implied that any need for such a compensatory deflationary policy was correspondingly less, *ceteris paribus.*

On balance, we conclude that government decisions with respect to monetary and fiscal policy were quite naturally motivated by fear of inflation, prompted almost exclusively by the effects of the (exogenous factor of the) drought.

RECESSION AND INFLATION

We thus had the curious combination of a recessionary situation, with production and investment at reduced levels in the two years following the June 1966 change, along with an accelerated price increase. The latter was, as we have argued, very much the result of the droughts. And the former, as we have briefly indicated above and argue more substantively below, was equally so. Indeed, if anything, we argue presently that the June 1966 policy package mildly improved the level of industrial production and, in the same fashion, may have had a favorable (even if negligible) impact on investment. To this analysis we now turn.

EFFECT ON PRODUCTION

The (short-run) effect of the devaluation-cum-liberalization package of June 1966 on overall production can be analyzed by distinguishing four areas of activity.

TABLE 8–3
Index of Production (1949–50 = 100): Actual and Estimated Trend Values for 1965–66 and 1966–67

Crop (1)	1965–66 Trend Value (2)	1965–66 Actual Value (3)	1965–66 Shortfall (percent) (4)	1966–67 Trend Value (5)	1966–67 Actual Value (6)	1966–67 Shortfall (percent) (7)
Foodgrains	153.0	120.9	21.0	157.6	123.3	21.4
Cotton	230.4	183.0	20.6	240.9	191.1	20.7
Jute	183.6	135.5	26.2	190.0	162.4	14.5
Oilseeds	157.7	125.4	20.5	163.0	125.7	22.9

SOURCES: *Area, Production and Yield of Principal Crops in India, 1949–50 to 1967–68* and *Indian Agriculture in Brief*, 11th ed., 1971, Government of India, Ministry of Food and Agriculture, Directorate of Economics and Statistics, New Delhi.

Effect on Agricultural Output.

The behavior of agricultural production in the period immediately following the devaluation in June 1966 must be regarded as exogenous to the devaluation-cum-liberalization package. Indeed, the second consecutive drought in 1966–67 dominated agricultural performance as well as the performance of other sectors closely related to agriculture. The two droughts in the years 1965–66 and 1966–67 were no ordinary droughts, as the foregoing comparison (Table 8–3) of expected production (on the basis of observed exponential trends during the period 1949–50 to 1964–65) and actual values shows. These shortfalls, except in the case of jute in 1966–67, were statistically significant.

Effect on Agriculture-Based Industrial Outputs.

The index (with 1960 as base) of output of agro-based industries in the organized sector fell from a peak of 121.2 in 1965 successively to 120.0 and 114.7 in 1966 and 1967 and recovered to 118.3 in 1968. The impact of the drought on two of the major agro-based industries—namely, cotton textiles and jute textiles—can be estimated from the following two regressions:

Cotton textiles:

$$Q_{Tt} = 3289.7946 + 4.573I_{Ct} - 0.9692M_{Ct} + 21.6809Y_t \quad (8\text{–}8)$$
$$(11.22) \quad (1.79) \quad (-0.79) \quad (8.01)$$

$\bar{R}^2 = 0.93$ Period 1952–53 to 1969–70
D.W. = 2.05

Jute textiles:

$$Q_{Jt} = \underset{(2.71)}{604.7262} + \underset{(1.68)}{1.5320}I_{Jt} + \underset{(2.33)}{1.9524}I_{Jt-1} - \underset{(-0.59)}{0.2168}M_{Jt} \quad (8\text{–}9)$$

$\bar{R}^2 = 0.41$ Period 1952–53 to 1969–70
D.W. = 1.07

where Q_{Tt}: Output of cotton textiles (mill and decentralized sectors), million meters

Y_t: Real national income (1960–61 prices), Rs. billion
I_{Ct}: Index of output of raw cotton (1949–50 = 100)
M_{Ct}: Imports of raw cotton, thousand tons
Q_{Jt}: Output of jute textiles, thousand tons
I_{Jt}: Index of output of raw jute (1949–50 = 100)
M_{Jt}: Imports of raw jute, thousand tons

The domestic raw material availability variables have the expected sign and are statistically significant (at 10 percent level or less) in both regressions.[6] One can conclude from these regressions that, *ceteris paribus,* had the outputs of raw cotton and raw jute been at their trend values in 1965–66 and 1966–67, the expected output would have been higher by 3.0 and 3.1 percent in the case of cotton textiles and by 6.4 and 12.3 percent in the case of jute textiles in the two years. In addition to this downward pressure on the output of these two industries on the supply side, there was a downward pressure on the demand side, particularly in the case of cotton textiles because of the drought-induced fall in per capita income (at 1960–61 prices) by 7.6 and 9.2 percent, respectively, in 1965–66 and 1966–67 as compared with 1964–65. Had there been no fall in income compared with 1964–65, the output of cotton textiles would have been higher by 2.7 and 2.0 percent, respectively, in 1965–66 and 1966–67, respectively. Thus the effect of the drought was to reduce the expected output of cotton textiles by at least 5.7 and 5.1 percent in these two years. We should further note that the effect of the drought on the output of jute textiles was reflected significantly in the export performance of this major traditional item.[7]

Effect on the Output of "Import-Intensive" Industries, Other than Capital Goods.

These industries include mainly chemical-based industries, some metal-based industries, and art silk manufactures. Production in all these industries should have, in principle, profited from the 1966 policy package, both because of the liberalized maintenance imports as promised in the package and because

export subsidization was resumed soon after 1966. However, it turned out that maintenance imports (other than metals, components and parts of machinery) *fell* from a level Rs. 3,699 million (pre-devaluation) in 1965–66 to Rs. 3,488 million in 1966–67 and rose to Rs. 4,052 million and Rs. 4,189 million in 1967–68 and 1968–69, respectively. Further, there was a downward pressure on the domestic demand side since real income did not attain the levels reached in 1964–65 until 1967–68. Thus the following picture emerges:

TABLE 8–4

Percentage Change from Preceding Year in Production in Selected Import-Intensive Industries, 1965–66 to 1969–70

(including capital goods)

	Weight[a]	1965–66	1966–67	1967–68	1968–69	1969–70
1. Metal-based of which:	16.55	+22.11	−10.58	−2.82	+5.71	+5.78
i. electrical machinery	3.05	+17.30	+10.10	+8.10	+14.00	+16.20
ii. non-electrical machinery	3.38	+46.50	−7.90	+2.80	+9.10	+6.90
iii. others	10.12	+15.41	−17.71	−7.99	+2.08	+2.27
2. Chemical-based	8.94	+5.57	+11.41	+5.33	+14.22	+10.31
3. Art silk fabrics	0.08	n.a.	−1.8	+6.4	+10.2	−14.6

SOURCE: Government of India, Department of Statistics, Central Statistical Organization, New Delhi.

a. In industrial production index.

Table 8–4 shows that the chemical-based industries, constituting a weight of 8.94 (out of a total of 100 in the industrial production index) managed to experience an increase of 11.41 percent in production in the year following the devaluation. This strongly suggests that the improved imported-input supply position and export incentive resumption since June 1966 helped bring about this outcome.[8] The output of metal-based industries (other than machinery), on the other hand, fell by 17.71 percent and the liberalization package does not seem to have helped this group. This result, however, may well be explained by an "over-expansion" during 1965–66 at 15.41 percent and by the fact (to be discussed in the next section) that the near decline in the output of the capital goods industries may well have had an indirect impact on the production performance of this group. The performance of art silk fabrics, whose weight in the industrial production index is less than 1 percent, also was one of absolute decline during 1966. The downward shift in real income caused by the drought and the diminished export incentives of the 1966 policy package must have offset improvements in the supply position that resulted from import liberalization for inputs.

On balance, therefore, we may conclude that the effect of the June 1966 policy package itself on production was favorable for chemicals and for metal-based industries other than machinery and perhaps mildly adverse for (the relatively insignificant) art silk fabrics, but that an improvement in production performance was registered only for chemicals and was offset by exogenous factors for the metal-based industries other than machinery.

Effect on the Output of Capital Goods (i.e., Machinery) Industries.

The capital goods industries, essentially a subgroup of the engineering industries group, were also part of the import-intensive industry group we have just analyzed, and therefore subject to the same influences. But the favorable effect on their production was heavily swamped by the fact of decelerating real investment which (as we have argued earlier) was again a factor virtually exogenous to the June 1966 policy package. This is seen readily by noting that Q_{It}, the index of capital goods production, has a strong and expected relationship with I_t, gross real investment, and with M_t, imports of complete machinery:

$$Q_{It} = \underset{}{-141.5980} + \underset{(10.94)}{0.1277 I_t} - \underset{(-2.79)}{0.0592 M_{It}} \qquad (8\text{–}10)$$
$$\qquad\qquad (-4.03)$$

$$\bar{R}^2 = 0.91; \text{D.W.} = 2.20$$

for the period 1960–61 to 1970–71, where Q_{It} = index of production of capital goods (1960–61 = 100); I_t = gross real investment, in Rs. 10 million at 1960–61 prices; and M_{It} = imports of capital goods in million U.S. dollars. If we use gross *fixed* real investment rather than gross real investment (inclusive of inventory changes), rewriting the variable as FI_t we get:

$$Q_{It} = \underset{}{-81.6576} + \underset{(12.96)}{0.1150 FI_t} - \underset{(-2.70)}{0.0484 M_{It}} \qquad (8\text{–}11)$$
$$\qquad\qquad (-3.17)$$

$$\bar{R}^2 = 0.9392; \text{D.W.} = 2.89$$

and it is evident that both regressions, (8–10) and (8–11), lead to similar conclusions. Thus it is clear that had gross investment been maintained at the value reached in 1965–66 rather than been allowed to drop by over 10 percent from that level during 1966–67 and 1967–68, the expected value of the index of capital goods production should have been significantly higher in these two years. In fact, we have calculated it, using both the above regressions (8–10) and (8–11), and have tabulated the results in Table 8–5. We see there that, if the investment levels had been maintained during 1966–67 and 1967–68 at the 1965–66 level, we should have had substantially im-

TABLE 8–5

Capital Goods Production Index under Alternative Investment Estimates, 1966–68

		Expected Value of Index of Capital Goods Production		
Regression (1)	Year (2)	With observed values of the investment variables (3)	With the 1965–66 values of the investment variable for 1966–67 and 1967–68 (4)	Percentage increase of (4) over (3) (5)
(8–10)	1966–67	205.09	250.86	22.36
	1967–68	211.80	256.89	21.29
(8–11)	1966–67	196.82	251.92	27.99
	1967–68	221.53	256.84	15.94

NOTE: The investment estimates for 1965–66, 1966–67 and 1967–68, which we used for the computations reported in Table 8–5, are as follows:

Year	Gross Real Total Investment (Rs. millions at 1960–61 Prices)	Gross Real Fixed Investment (Rs. millions at 1960–61 Prices)
1965–66	34,400	32,330
1966–67	30,810	27,540
1967–68	30,870	27,260

SOURCE: Equations 8–10 and 8–11.

proved production of capital goods in the order of an average of over 25 and 18 percent increment in the capital goods production index, respectively.[9]

While, therefore, the output of the capital goods industries registered a decline induced by factors exogenous to the June 1966 policy changes, these policy changes themselves must have exercised a favorable impact on production. It will be recalled that the parity change and the resumption of export incentives as well as the easing of imported supplies of inputs very likely had an impact on the export of engineering goods, of which capital goods are a part.

EFFECT ON INVESTMENT

While, therefore, the effect of the June 1966 policy package (relating, of course, to trade and payments policies as distinct from the government's expenditure policy, consistent with our definitions in Chapter 5) on production

appears to have been mildly favorable, though not anywhere near enough to offset the adverse effect of the drought, the effect on *investment* behavior is far more difficult to disentangle. This is because of two major difficulties: (1) the data on investment are very tenuous, and are not available by inter-industrial sectoral breakdown; and (2) the overall estimates of real investment, both total and as a percentage of national as well as industrial income, show a decline from pre-1966 levels *right through* to 1969–70, suggesting that there might be underestimation of investment and/or a trend decline which has probably nothing to do with the 1966 policy package as such. We begin by examining the probable causes of this decline in total, as well as in industrial, investment.

1. The decline in government capital outlays, reflecting both the deceleration in government total outlays and the shift away from capital expenditures, led (as we have seen) to a decline in the output of capital goods industries; it is likely also to have led to a decline in the investments in these industries. But this mechanism was triggered by the exogenous factor of the droughts and cannot be charged to the June 1966 policy package.

2. Another factor discussed in India to explain the decline in total and industrial investment, has been the so-called "Eastern Region" problem. It appears to be clear from the data on private, organized sector investment that the relatively anarchic character of West Bengal's politics (where there was, for a long time, neither a stable left-wing nor a stable alternative government) has led to a decline in private sector investments without an offsetting increase in government investments. This problem, arising from "anarchy in one state" (and one which could arise also if there was a stable "socialism in one state") is admittedly an important issue; but it is doubtful whether it can explain a significant decline in *total* investments, for many investments could have gone to other states, if not profitable in the Eastern region.

3. Another explanation could be that total investment did not decline quite as much in non-industrial activities as is indicated by the present estimates. Rather, it may represent underestimation of rural construction plus rural investments by farmers on their own farms. There are reasons to believe that the methods by which the Central Statistical Organization constructs its investment index would lead it to underestimate these two types of investment which apparently have, according to other indications, been the principal types of investments in rural areas, especially in light of the investment opportunities arising from the Green Revolution since 1964–65.

4. It is also conceivable, though not probable, that an increasing part of the rural incomes has gone into gold hoarding, implying acceleration in gold smuggling. The differential between the external and internal gold prices has not widened particularly. On the other hand, it is possible that this has been the result of increased diversion of remittances and funds from faked invoices to this channel of illegal entry into India.

5. An important contributory role appears to have been played by the effect of import liberalization in the period immediately following devaluation. As we note later at some length in Chapter 13, an important consequence of the import licensing mechanism was the creation of an incentive to add capacity in the face of under-utilized capacity in an industry. This was because the only way to get more imports of inputs (legally) was to add to (licensed) capacity. This incentive was largely eliminated as imports of raw materials were increased for many industries with the policy of import liberalization after the June 1966 devaluation and remained so for over two years before tightening began and *de jure* import liberalization became overlaid by *de facto* import deliberalization. Hence it was to be expected that plans to add to capacity (i.e., to invest) would receive a setback during this period.

6. The effect of the increased availability of imported raw materials and intermediates is likely to have been to depress the inducement to invest in some industries in yet another way. Increased production from under-utilized capacity, now feasible, could well lead to reduced prices, increased competition and lower profits. Jean Baneth has pointed out an extreme illustration in the case of the copper wire industry. All firms in it had been operating well below desired capacity utilization levels, but all of them were quite profitable. The devaluation, along with a coincidental sharp rise in world copper prices, more than doubled the cost of their main input. The firms, which had initially been happy to find that they could get as much copper as they wished, soon found that, given the existing vast under-utilization of capacity, a major over-supply situation developed which prevented these firms from substantially raising copper wire prices and greatly depressed their profit margins. The result was that some firms folded up (and others were pushed into exporting, a favorable effect which we shall note in Chapter 9 and the Appendix thereto). The net effect was clearly to depress the incentive to invest in this and other industries in a similar situation.

7. We may finally note here an additional factor which, while not particularly significant in the years immediately following the June 1966 policy package, possibly explains the continuing slack in industrial investment in the private sector beyond 1968–69. This factor relates to the industrial licensing policy of the government. With perfectly good intentions, the government loosened up the industrial licensing system, as we have discussed earlier, for a number of industries around June 1966. However, there were two major qualifications to this change, one of which appears to have affected the expansion of industrial investment in the country in the post-1966 period. (1) Industrial de-licensing was partly negated by the continuation of import licensing; thus the import licensing authorities became, *de facto,* industrial licensing authorities through their allocation of the imports necessary to production. (2) At the same time, the government, feeling that increasing concentration of economic power in the Large Industrial Houses should finally

be checked, was to combine these moves toward industrial de-licensing with greater restriction on the ability of the Large Houses to invest since 1968–69. These firms, which had provided earlier the major thrust of private investment (thus naturally attracting the criticisms that led to the restrictions just mentioned), were to be restricted to the so-called "core sector" of heavy and complex industries and to investment in the backward areas. At the same time, the establishment of the Monopolies and Restrictive Practices Commission in 1969 provided a further check on their expansion. Thus, the net result appears to have been to inhibit the investment by the Large Industrial Houses either by preventing it or by confining it to less lucrative areas such as heavy industry (where, as we have discussed, profitability was declining due to a shift of government outlays toward current expenditures) and backward regions. The nationalization of the principal banks in 1969, and the active pursuit of policy since then to encourage smaller business, should have compensated for this inhibition of Large House investments; clearly, however, it did not. It appears that the absolutely desirable policy of attempting to curb the social effects of Large Industrial House control of economic power was wrongly premised on restricting their investments when they alone seemed to have the necessary organization and skill to carry through investment on a sufficiently large scale. Instead the government would have been better advised to permit their investment programs, treating their investing ability as a national asset at the present time, and curbing the adverse social effects of their expansion by instruments such as a capital levy, stiffer wealth and inheritance taxes, the appointment of public interest directors to their boards, by the steady build-up of institutions to promote truly small-scale entrepreneurship, and by strengthening of the ability of the public sector to invest, save and run efficiently as definite objectives of a socio-economic policy.[10]

8. The decline in government savings and hence investment, in itself, constitutes a major part of the estimated decline in post-1966 savings, in addition to the seven possible reasons discussed above for decline in the private investment figures. This phenomenon seems to be attributable to the decline in foreign aid inflow, as well as to the inability to decrease the growth in defense and current outlays and the continuing failure of the public sector enterprises to generate profits.[11]

In short, there are several factors, none of them connected with the June 1966 policy package, which appear to have accounted for the stagnation in investment since 1966–67; and the role of the 1966 reforms in this unfortunate development in the economy appears to be almost nil. If anything, we might again argue that the net expansion in the post-1966 exports of the new manufactures, which our analysis picks up in Chapter 9, and which can be attributed in large part to the policy changes which were initiated (inclusive of the new export subsidies discussed in Chapter 7), may have encouraged some invest-

ment in these industries. However, we have no evidence on investments by industry breakdown to check this hypothesis.

OVERALL CONCLUSIONS

It would appear, therefore, that the basic developments in the price level, production and investment that dominated the economic scene in the two years following the June 1966 liberalization package (and indeed over the four years since the devaluation, in investment), were the product of factors that were substantially exogenous to the policy changes. In the main, the price rises were caused by the drought; the recession in production was also induced by the drought (in the sense we have discussed) and was not, as has sometimes been the case with LDC devaluations, the result of a concomitant "stabilization" policy aimed at an excessive deflation; and the investment decline was largely the result of complex factors interacting on the Indian economic scene.

NOTES

1. This chapter and the next were completed in December 1971 with the data *then* available. This is particularly relevant to our discussion of investment behavior and our statistical analysis of it. The regression results presented as part of our analysis are based on data obtained from the following branches of the Government of India, New Delhi:

Basic Statistics Relating to the Indian Economy, 1950–51 to 1966–67, 1950–51 to 1968–69, 1950–51 to 1970, Department of Statistics.

Economic Survey, annual issues, 1963–64 and 1972–73, Ministry of Finance, Department of Economic Affairs.

Estimates of National Product, 1948–49 to 1962–63, Department of Statistics, Central Statistical Organization.

Index Number of Wholesale Prices, various issues, Office of the Economics Adviser.

2. P. K. and K. Bardhan, "Price Response of Marketed Surplus of Foodgrains," *Oxford Economic Papers*, N. S. 23, no. 2 (July 1971).

3. In defining the relative price P_t, the price of cotton manufactures was used because cotton manufactures are a major consumer item and their price is highly correlated with the price index of manufactures in general.

4. The reason for not incorporating the effect of drought on prices of cotton textile manufactures through its effect on raw cotton prices is only that, for doing it satisfactorily, we need a more elaborate simultaneous equation model. In such a model raw-cotton prices will influence cotton manufacture prices and the latter will enter *non-linearly* in the relative price P_t used by us since it is the denominator of P_t.

5. We may emphasize the fact that in evaluating the effect of drought, the relevant comparison is between column (3) and either of columns (4) and (5). Take the comparison of columns (3) and (4). From column (3) we see that, given the actual values of real agricultural and non-agricultural incomes as well as imports of foodgrains, the results

derived from our model imply an increase in cereal prices in 1965–66 over 1964–65 and a more substantial increase in 1966–67 over 1965–66. Had there been no drought (in the sense that agricultural incomes in 1965–66 and 1966–67 were at their 1964–65 values), column (4) based on our model suggests very little price change in 1965–66 and an increase in 1966–67 over 1965–66 of the same order in percentage terms as in column (3). The price stability in 1965–66 and the substantial rise in 1966–67 in column (4) are due to the fact that while the urban demand for foodgrains increased because of the increase in real non-agricultural income Y_{NAt} in both years compared to 1964–65 (more so in 1966–67 because of a larger increase in Y_{NAt}), the imports of foodgrains which *increased* by 2 million tons in 1965–66 as compared with the previous year, *fell* by 1.50 million tons in 1966–67. Note also that column (5) shows the impact of the drought to be larger than that shown by column (4). The reason is of course the fact that the trend values of real agricultural income Y_{At} in 1965–66 and 1966–67 were higher than the actual value of Y_{At} in 1964–65 (which was itself *higher* than the trend value for that year). The fall in cereal prices in 1965–66 as compared to 1964–65 in column (5) is due to larger imports of foodgrains in 1965–66 (mentioned earlier).

6. The coefficients of the import variables M_{Ct} and M_{Jt} have the wrong signs in regressions (8–8) and (8–9) but are statistically insignificant and hence can be ignored.

7. The reader should refer, in this instance, to our discussion of jute exports in the next chapter.

8. The favorable impact of the liberalization package on exports of chemicals is discussed at length in Chapter 9.

9. It may be pertinent also to note here that if, instead of using the capital goods production index, we use as our dependent variable the index of capital goods *plus* consumer durables, the broad results mentioned above for capital goods alone are still valid. However, we consider it more economically meaningful to consider capital goods alone.

10. For further discussion of these policy changes, see J. Bhagwati, *India in the International Economy: A Policy Framework for a Progressive Society,* Lal Bahadur Shastri Memorial Lectures, 1973 (Hyderabad: Osmania University Press, 1973).

11. The decline in foreign aid seems, at least for maintenance imports, to have been partly a reflection of the internal recession itself. As we have noted, it was expected that external assistance, particularly non-project assistance, would be stepped up substantially after devaluation. Instead, there was a steep fall in disbursement of project assistance from $684 million in 1965–66 to $497 million in 1966–67 and to $380 million in 1967–68. Disbursement of non-project assistance was on the order of $421 million, $424 million and $672 million, respectively, in the three years. At the same time, project and non-project aid, taken together, *fell* in the year after devaluation (see Table 8–1) and recovered, though not to the level attained in the pre-devaluation year of 1965–66, in 1967–68.