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Chapter 13

Static Allocational and Efficiency Impact on Growth

In principle, India's QR-regime, coupled with industrial licensing, could have diverse effects on the resource allocational system and on the efficiency of any given activity (e.g., the extent of capacity utilization). We have already noted many of these in Chapter 2. In this chapter, we supplement that analysis in two important respects. First, we analyze the impact on the *pattern* of resource utilization among different industries.[1] Next, we analyze the impact on capacity utilization *within* industries.

INEFFICIENCY IN THE PATTERN OF RESOURCE UTILIZATION

One would expect that an economic regime (as in India) that depends so critically on direct and detailed regulation of imports and the creation of industrial capacity would exhibit strikingly different social returns on different activities because the framework of economic policies governing industrialization does not induce or permit systematic attention to costs, as we have argued at some length in Chapter 2.

The index we have used to indicate the inter-industrial *disparities* that one would expect from our analysis of the economic policies governing trade and industrialization is the domestic resource cost (DRC) per unit of foreign exchange. This index is broadly indicative of the differences in the returns to deployment of domestic resources, using the approximation that observed unit export values measure true opportunity costs to society. Aside from the well-known limitations of this measure, we should note two things:

1. Wide differentials in DRCs among alternative activities do not *necessarily* mean commensurate losses to society because reallocation of resources intended to reduce these differentials may run into sharply increasing costs and diminishing returns (e.g., international prices would not be the same at increased levels of exportation). On the other hand, the potential for such "substitution" in production and trade should not be underestimated in an economy such as India's.[2] And even if one adds up the orders of magnitude involved in making pairwise, notional reallocations among activities, they often emerge high enough to indicate that the gains in sizable sectors of industry may be even 30 to 50 percent of the social returns earned from the resources utilized in these sectors.[3]

2. While we believe that the DRC measure is, in principle, superior to the effective rate of protection (ERP) measure, particularly insofar as the analyst is able to take into account *shadow* prices of domestic inputs and also *marginal* rather than average international prices, the DRC estimates we present for nearly the entire economy for 1963–65 and 1968 are *not* adjusted in this way and therefore are rigidly related to the ERP estimates (which we also present) by the fact that:

$$\text{DRC} = \frac{V_j}{V_j^*} \cdot r$$

$$\text{ERP} = \frac{V_j}{V_j^*} - 1$$

$$\text{DRC} = (\text{ERP} + 1)r$$

where V_j^* is value-added in Indian rupees in the process at international prices, V_j is value-added in Indian rupees in the process at domestic prices and r is the number of Indian rupees per unit dollar.

Table 13–1 presents the estimates of DRC for 1963–65 for 69 activities, based on the 77-sector input-output table for 1965.[4] The sectors which show negative value-added at international prices and hence negative numbers in their DRC estimates indicate that (on current techniques) these activities cause losses to the economy. The remaining activities show again a wide variation in their DRC estimates.[5]

Table 13–1 also presents DRC estimates for the same sixty-nine sectors for 1968–69, thus defining a comparable set of DRCs before and after the 1966 policy changes. Presumably because of the short-run period since 1966, the differentials in DRCs among the different activities continue in 1968 to be as large [if one takes the comparison of values in row (i) in Table 13–4 as one should, because the heavy impact of extreme values reflected in row (ii) is really misleading].[6] There is nonetheless a slight fall in the standard deviation and a more perceptible fall in the coefficient of variation. Also, the

TABLE 13–1

Estimates of Domestic Resource Cost and Protection in Indian Industries, 1963–65 and 1968–69

Sector Number and Description[a] (1)	Domestic Resource Cost[b] (rupees per dollar) 1963–65 (2)	1968–69 (3)	Implicit Tariff Rate (percent) 1963–65 (4)	1968–69 (5)	Effective Rate of Protection (percent) 1968–69 (6)
2. Electrical equipment	14.3	16.5	175	90	119.6
3. Non-electrical equipment	14.1	14.1	182	90	87.8
4. Transport equipment	11.4	12.1	137	70	61.2
5. Metal products	9.5	17.5	120	110	133.5
6. Iron and steel	18.2	18.9	206	127	151.9
8. Cement	10.6	10.8	83	50	43.8
9. Non-ferrous metals	17.4	10.3	144	40	37.9
10. Other minerals	6.1	10.4	30	40	38.7
11. Rubber	183.0	negative	29	67	250.7
12. Leather	4.7	17.1	15	120	127.6
13. Leather products	28.7	16.5	231	120	120.0
14. Leather footwear	9.7	16.9	50	120	124.0
15. Animal husbandry	7.3	negative	30	125	103.1
17. Sugar	11.9	25.1	40	75	235.1
18. Plantations	4.7	7.2	0	0	−4.0
19. Gur and khandsari	negative	259.2	40	50	3,354.0
20. Vegetable oils	13.7	18.0	55	80	139.5
21. Vanaspati	6.8	12.4	55	80	65.2
23. Starch	negative	negative	243	75	146.7

(continued)

TABLE 13–1 (concluded)

Sector Number and Description[a] (1)	Domestic Resource Cost[b] (rupees per dollar) 1963–65 (2)	1968–69 (3)	Implicit Tariff Rate (percent) 1963–65 (4)	1968–69 (5)	Effective Rate of Protection (percent) 1968–69 (6)
24. Milk products	negative	46.6	277	225	521.8
25. Breweries and soft drinks	15.0	13.6	160	100	81.6
26. Biscuits, confectionery	29.6	55.8	176	200	644.1
27. Cigarettes and cigars	61.1	16.0	393	110	113.5
28. Bidi	4.1	6.6	0	0	−12.4
29. Other tobacco products	4.7	16.0	393	110	113.0
30. Fruits and vegetable products	30.6	21.0	150	150	179.8
31. Cashew nut processing	negative	14.0	145	150	86.2
32. Food grains	4.8	7.5	0	0	−1.0
33. Cotton	6.2	11.5	30	50	53.2
34. Cotton yarn	4.4	15.6	10	70	107.8
35. Cotton textiles	53.5	24.3	61	100	223.7
36. Jute	5.2	11.6	10	50	54.9
37. Jute textiles	22.6	41.8	66	110	457.3
38. Woolen yarn	7.2	9.5	40	70	26.6
39. Woolen textiles	17.0	24.8	100	110	230.2
40. Raw silk	negative	15.2	609	40	102.1
41. Silk textiles	33.7	65.8	609	100	776.8
42. Man-made fibers	1,048.7	negative	609	590	105.2
43. Artificial silk fibers	41.4	11.7	609	110	55.5
44. Other textiles	14.1	16.1	136	110	114.4
45. Oil seeds	6.8	13.4	40	70	78.3
46. Sugar cane	4.6	7.5	0	0	−0.25
47. Tobacco	10.0	16.6	100	110	120.7

48. Fruits and vegetables	7.2	23.9	50	201	218.7
49. Other crops	4.8	7.5	0	0	0.0
50. Fertilizers	4.2	42.1	0	201	461.8
51. Ceramics and bricks	32.3	12.2	308	60	62.5
52. Glass and glasswares	31.8	11.1	83	60	47.7
53. Wood products	6.6	14.2	40	80	89.3
54. Timber	6.7	10.7	40	60	43.1
55. Chinaware, pottery	9.5	17.5	83	110	125.9
56. Wood (others)	6.2	13.5	30	80	80.0
57. Other forest products	5.7	13.5	20	80	80.0
59. Petroleum products	negative	47.6	65	75	535.1
61. Rubber footwear	6.8	18.4	50	110	144.9
62. Tires and tubes	5.3	12.7	35	75	59.7
63. Other rubber products	6.0	17.7	40	110	135.6
64. Paper and paper products	22.2	20.4	198	125	171.3
65. Plastics	12.8	20.0	161	150	166.2
66. Dyestuffs	13.2	17.0	170	113	126.1
67. Paints and varnishes	29.0	18.1	190	113	141.0
68. Insecticides and pesticides	12.0	12.4	150	70	65.0
69. Drugs and pharmaceuticals	11.8	12.7	140	70	68.8
70. Soap and glycerine	2.7	19.9	20	110	165.8
71. Perfumes and cosmetics	19.5	10.8	155	100	44.3
72. Miscellaneous chemicals	20.3	15.3	180	89	104.1
75. Coal and coke	4.7	10.9	0	50	44.9
76. Matches	10.1	16.9	100	110	124.8
77. Printing and publishing	3.6	5.9	0	0	−21.0

SOURCES and METHODS: See Appendix to this chapter.

a. As given in 1964–65 inter-industry table for India, *Sankhya*, 1968.

b. Per unit of foreign exchange earned or saved.

level and variations in import premia did fall significantly during the period between mid-1966 and 1968–69 owing to import liberalization and the recession (as indicated earlier in this volume), so that the extremes in the DRC results of 1963–65 are not so evident in the DRC results of 1968–69.[7] Note also that (as is evident from Table 13–4), the average DRC (when we compare rows (ii) again) rose only slightly between 1963–65 and 1968–69 despite the shift in the exchange rate from Rs. 4.75 to Rs. 7.50 per dollar. This is, however, attributable to the fact that value-added, while going up in domestic prices, increased significantly at international prices: implicit tariffs had fallen, in general, more sharply for outputs than for inputs in 1968–69 compared with 1963–65, the fall in import premia thus exhibiting a negative escalation with respect to processing. The latter phenomenon may well have to be explained by reference to the recession which led to serious pressures on domestic output prices and on continuing import controls, despite import liberalization, which implied not so serious pressure on domestic input prices.

We also include for 1968–69 an estimate of ERPs in Column (6) of Table 13–1.[8] As is to be expected, these also show great differentials among the different activities.[9] It is also interesting to note that, for most of the activities, the implicit (nominal) tariffs in Column (5) are below the effective tariffs.

Table 13–2 gives the simple and weighted average estimates of ERPs and DRCs for 1968–69, grouped by the following major categories: (1) consumer goods, (2) intermediate goods (primary), (3) intermediate goods (semi-finished and finished) and (4) capital goods. Within each of these major groups, we have further distinguished among different subgroups with different interactions with international trade, essentially separating the agro-based industries from the others in each group. The weighted average rates have been derived by using the value-added at international prices as the weights.[10]

The ERPs for primary consumer goods are the lowest, and those for the non-food consumer goods are the highest. Agro-based intermediate goods of semi-finished/finished type receive much higher effective protection than the other intermediate goods. Capital goods receive lower effective protection than intermediate goods (except the agro-based primary type) and consumer goods (except the primary type). The domestic resource cost is 8.38 for primary goods; 19.93 for non-food, semi-finished and finished consumer goods; 18.21 for agro-based, semi-finished and finished intermediate goods; and 13.36 for capital goods. The rather steep protection of the (non-primary) consumer goods and (to a lesser extent) of certain intermediates and many capital goods, which appear to have been among the major beneficiaries of the industrialization process, and their attendant high domestic resource cost, would appear to conform to the notions one has from more casual knowledge of the economy and the planning strategy.

The DRC estimates given above are necessarily approximate, particularly in relying on market premium rates which can be very unreliable and which had to be applied to a large range of industries, and in having to cope with literally thousands of items at a highly aggregated level in such calculations. They are nonetheless adequate for pointing out the high coefficient of variation in the returns on different activities.

It is useful, however, to know that even detailed estimates for the automobile ancillary industry, based on personal interviews and data collection, corroborate these conclusions in "microcosm." Thus, in Table 13–3, we have Anne Krueger's estimated thirty-four DRCs for products/firms. Taking only the positive DRCs into account, they range from 7.87 to 184.27.[11]

It seems reasonable, therefore, to conclude that in ignoring costs—an indifference amply documented by an analysis of the actual allocational policies toward import and industrial licensing—the economic policies of the government have not merely made it likely that the resulting allocations would be inefficient but have, in actuality, led to such an outcome. We should point out that we would be rather more skeptical in reaching this conclusion if we merely had available to us the statistical results on the variance in the DRCs among activities, for it is arguable that the data base of these estimates is not so firm as one would wish. Thus, even in an economy in which the government paid attention to costs and refrained from massive intervention in resource allocation, one could well find, on taking a cross-section measurement of DRCs, a fairly wide spread and variance among them because the economy would be in a perpetual state of disequilibrium and flux resulting from factors such as changing international prices, technologies, availability of information, and so on. But our inference that the wide variance observed does indicate that the system is sub-optimally organized is considerably reinforced by our detailed observation (see Chapter 2) that the system is indeed designed to ignore opportunity costs in making allocational decisions. It is therefore the *conjunction* of this rather institutional but extremely vital evidence on the method of allocation of imports and licensed capacities, with the observed pattern of DRC spread among different activities, that makes our inference of an inefficient allocation mechanism that much more plausible than it would otherwise be.

INDUSTRIAL CAPACITY UTILIZATION AND THE QR-REGIME

Indian manufacturing has been characterized by great excess capacity in a number of industries. The official data on capacity utilization are quite hopeless in that they compound inevitable conceptual difficulties with several statistical drawbacks.[12] Principal among these drawbacks is the fact that the

TABLE 13–2

Sectoral Average Tariff Rates, Effective Rates of Protection and Domestic Resource Cost Estimates, 1968–69

Sector Description (1)	Sector Numbers (2)	Simple Average: Implicit Tariff (3)	Simple Average: Effective Rate of Protection (4)	Simple Average: Domestic Resource Cost per Unit of Foreign Exchange Earned or Saved (5)	Weighted Average: Effective Rate of Protection (6)	Weighted Average: Domestic Resource Cost per Unit of Foreign Exchange Earned or Saved (7)
A. *Consumer goods*						
A.1 Primary	15,32,48,49	81.5	80.2	13.0	11.75	8.4
A.2 Semi-finished and finished						
A.2.1 Food and beverages	17,19,21,23,24,25, 26,27,28,29,30,31	110.4	201.7	21.6	90.8	14.1
A.2.2 Non-food	14,61,35,39,41,44, 52,55,65,71,70,76	107.5	190.8	21.9	165.1	19.9
B. *Intermediate goods* (primary)						
B.1 Agro-based	11,18,33,36,40,45, 46,47	48.4	77.2	11.9	33.1	10.1
B.2 Others	7,10,12,54,56,57, 60,75	71.7	62.8	12.7	47.1	11.4

C. *Intermediate goods* (semi-finished and finished)						
C.1 Agro-based	20,34,37,38	82.5	182.8	21.2	142.5	18.2
C.2 Others	5,6,8,9,13,42,43, 50,51,53,59,62,63, 64,66,67,68,69,72	122.5	140.4	18.2	106.0	15.5
D. Capital goods	2,3,4	83.3	89.5	14.2	77.9	13.4

NOTES: 1. Negative DRCs have been omitted in making the calculations presented in the table.

2. The weighted averages have been derived by using the value-added at international prices as weights. Where value-added at international prices was negative, value-added at domestic prices was used. In these cases the ERP index was also calculated with value-added at domestic prices in the denominator of the formula for ERP, which puts the increment in value-added (due to protection) in the numerator.

SOURCE: Calculated from Table 13–1.

TABLE 13–3

Price Ratios and Domestic Resource Costs in the Auto Ancillary Industry, 1970

(1)	$\frac{\text{Indian Price}}{\text{Foreign Price}} \times 100$ (2)	Domestic Resource Cost (rupees per dollar) (3)
Assembler 1	137	8.25
Assembler 2	139	8.62
Assembler 3	125	7.87
Assembler 4	197	34.95
Assembler 5	140	10.91*
Assembler 6	118	8.85
Metal fabricator 1	128	19.95
Metal fabricator 2	236	27.80
Metal fabricator 3a	161	83.92
Metal fabricator 3b	149	17.85
Metal fabricator 4	260	negative
Metal fabricator 5	175	14.62
Metal fabricator 6	137	9.45
Metal fabricator 7	180	26.47
Metal fabricator 8a	180	11.17*
Metal fabricator 8b	181	20.41*
Metal fabricator 9a	167	20.10*
Metal fabricator 9b	167	8.67*
Metal fabricator 9c	167	21.45*
Chemical 1a	227	17.47
Chemical 1b	202	11.55*
Chemical 2	133	10.95*
Chemical 3	173	33.75
Chemical 4a	244	33.15*
Chemical 4b	309	negative
Chemical 4c	278	184.27
Chemical 5	175	12.07
Chemical 6	286	180.60**
Miscellaneous product 1a	192	44.47*
Miscellaneous product 1b	158	12.81
Miscellaneous product 2	183	17.53*
Miscellaneous product 3	156	18.15
Miscellaneous product 4	167	17.25
Miscellaneous product 5	262	49.05*

NOTE: All price data are based on ex-factory domestic price and Indian f.o.b. export price except where denoted by an asterisk. One asterisk indicates that the relevant foreign price is the United Kingdom ex-factory price; two asterisks indicate that the foreign price employed is a c.i.f. Bombay price.

SOURCE: Krueger, *Import Substitution*.

TABLE 13–4

Means, Standard Deviations and Coefficients of Variation among Alternative *Estimates of DRCs and Implicit Tariffs in Tables 13–1 through 13–3;* 1963–65, 1968–69 and 1970

Item (1)		Number of Observations (2)	Mean (unweighted) (3)	Standard Deviation (4)	Coefficient of Variation (5)
1963–1965					
DRC	(i)	63 (excluding all negative DRCs: 6 items)	33.21	131.22	3.95
	(ii)	61 (excluding *also* Nos. 11 and 42)	14.11	12.08	0.86
Implicit tariffs	(i)	69 (including items with zero values)	128.93	149.68	1.16
	(ii)	61 (excluding 8 items with zero values)	145.84	151.25	1.04
1968–1969					
DRC	(i)	65 (excluding negative DRCs: 4 items)	21.67	31.79	1.47
	(ii)	64 (excluding *also* No.19)	17.96	11.46	0.64
Implicit tariffs	(i)	69 (including zero values)	96.61	75.86	0.79
	(ii)	63 (excluding zero values)	105.81	73.00	0.69
1970					
DRC	(i)	32 (excluding 2 negative values)	31.39	41.87	1.33
	(ii)	30 (excluding *also* 2 extremely large values for *Chemicals* 4c and 6)	21.32	15.47	0.74

NOTE: For DRCs, the figures in the second row do not include certain extreme values, whereas for implicit tariffs they exclude zero values. All DRCs are calculated, excluding negative values.

SOURCE: Tables 13–1 through 13–3.

DGTD, which compiles the data, also regulates AU allocations and therefore the capacity estimates have tended to lie anywhere within the range defined by entrepreneurs who wish to exaggerate capacity in order to get more AU licenses, and by DGTD officials who will refuse to "recognize" capacity augmentation because this would increase their apparent obligation to provide AU licenses.[13]

We have therefore refrained from including here any analysis based on the statistical tables containing these unreliable, and almost meaningless, estimates of excess capacity in India. On the other hand, we note that interviews, chairmen's annual reports to their companies and studies of individual firms and industries uniformly indicate that the incidence of under-utilization of capacity has been particularly severe in the "new" industries, i.e., in engineering goods and chemicals, both of which have depended significantly on imports of materials for their production.[14] And we also include one set of recent estimates of under-utilized industrial capacity for 1961 to 1964 for selected industries, in Table 13–5.[15]

Under-utilization of capacity, even in the import-intensive industries, cannot be charged entirely to the QR-regime and to licensing policies although, as we argue below, they do have important effects in that direction. Labor problems resulting in strikes and lockouts, electricity breakdowns and interruptions in transportation are generally held to have accounted for considerable under-utilization.

In addition, the ready availability of project as against maintenance aid in the pre-1966 period of India's industrialization is generally believed to have resulted in the creation of more capacity (to use up project aid) in the face of existing excess capacity. However, this hardly seems plausible. One finds it difficult to understand why firms should want to add to capacity, or why new firms should seek to enter an industry already troubled by excess capacity, just because they can import the necessary capital goods. It is rather the QR-(and industrial licensing) regime that appears to have led to the utilization of available project aid in areas where capacity utilization was already inadequate. Let us turn now to the arguments linking the QR-regime to excess capacity.

1. The tendency to relate equity in the allocation of AU licenses to installed capacity led to an incentive to create capacity by linking the availability of premia-fetching imports with creation of more capacity. Thus, as Bhagwati and Desai have argued, an entrepreneur, with a given capacity that was underutilized for lack of imported inputs, could not (under the Indian QR-regime) expand output through additional utilization of capacity.[16] The only way he could increase production was by getting more capacity installed and having some import quota allotted to him on the basis of it. But even if the entrepreneur were allowed access to more imports at market prices[17] so that he could

TABLE 13–5

Estimates of Underutilization of Capacity for Selected Groups of Industries, 1961–64

Industry group	Underutilization (percent)				
	1961	1962	1963	1964	Average (1961–64)
Food products	9.9	9.3	24.4	16.9	15.1
	(7.5)	(6.5)	(21.6)	(15.2)	(12.7)
Tobacco products[a]	10.6	4.4	5.2	12.7	8.2
Textile products	7.0	7.9	9.1	6.3	7.6
	(6.3)	(7.3)	(8.2)	(5.8)	(6.9)
Wood and cork products[a]	35.1	27.1	16.9	16.0	23.8
Paper and paper products[b]	11.2	10.5	7.8	11.7	10.3
Leather and leather products	59.9	57.8	54.4	56.0	57.0
	(27.6)	(24.4)	(17.9)	(21.5)	(22.8)
Rubber and rubber products	16.1	23.1	25.6	26.7	22.9
	(5.7)	(7.1)	(11.2)	(10.6)	(8.7)
Chemicals and chemical products	53.5	56.8	59.3	55.3	56.2
	(29.0)	(23.9)	(21.2)	(30.0)	(26.0)
Non-metallic—mineral products	36.2	34.7	33.0	35.3	34.8
	(22.1)	(20.7)	(19.0)	(21.4)	(20.8)
Basic metals	21.1	11.3	8.8	11.1	13.1
	(13.3)	(4.5)	(5.3)	(7.9)	(7.8)
Metal products	53.9	56.2	54.8	54.2	54.8
	(23.0)	(22.2)	(17.4)	(17.3)	(20.0)
Machinery except electrical machines	26.1	32.1	26.6	37.2	30.5
	(12.7)	(11.4)	(7.3)	(21.1)	(13.1)
Electrical machinery and appliances	39.7	43.6	45.4	41.8	42.6
	(8.3)	(11.7)	(11.7)	(10.6)	(8.1)
Transport equipment	49.3	42.2	41.8	35.7	42.4
	(22.5)	(18.2)	(16.3)	(10.7)	(16.9)

NOTE: This table is based on both present and desirable working conditions. Figures in parentheses are for present working conditions.

SOURCE: *Underutilisation of Industrial Capacity* (New Delhi: National Council of Applied Economic Research, 1966), Table 2.

a. For present working conditions, these industries show overutilization.

b. The number of shifts working at present and the number considered desirable are the same for industries of this group.

expand utilization of existing capacity, he would have to purchase inputs at import-premia-inclusive market prices, whereas expansion of capacity would enable him to expand output by access to premia-exclusive import allocations. This would then certainly bias, *ceteris paribus,* his choice between these two courses of action toward creating more capacity.

Furthermore, the artificial cheapening of CG imports under an overvalued exchange rate system based on direct allocations could lead to suboptimally increased capital intensity in relation to the primary factor, labor.

Even more important in practice than these two arguments is the fact that (for most industries, until 1966 at least) licensing constrained the creation of capacity and QR policy guaranteed domestic sales at high enough prices to let licensed firms make large profits even at low levels of capacity utilization. Thus, even when there was excess capacity, it would pay a new firm to enter an industry, provided it could get the license to do so, then get its pro-rata-to-capacity share of scarce AU imports, and still earn a large profit. On the other hand, with free entry and competition for imported materials in the market, such a venture would have been untenable.

2. In addition to the consequences of licensing intermediates and capital goods in this fashion, there was another mechanism that accentuated excess capacity in the system *via* import licensing. In an economic regime where efficient firms can bid intermediates away from the inefficient, the former will achieve greater utilization of their capacity whereas the latter will be forced out. This process, which is also efficient because not all capacity is desirable and the undesirable must be scrapped to avoid larger losses, necessarily leads to higher overall rates of capacity utilization than in the current, Indian-type regime where inefficient firms automatically get "squatters' rights" to AU allocations.[18]

3. Another way in which the QR-regime must have affected capacity utilization was the bottlenecks it created. Undoubtedly, bottlenecks would arise in *any* regime; but the ability to correct them was severely constrained, for a number of firms, by the difficulty of effecting remedial imports. There is substantial evidence of this phenomenon in the *Redbooks* on Import Policy where occasional notices of special dispensation can be found in cases where action was finally taken to ease a particularly glaring bottleneck. Interviews with industrialists have confirmed this picture.[19] These bottlenecks add to excess capacity in two ways: (1) by preventing speedy availability of inputs into a process, and (2) by holding up the importation of critical spares and balancing equipment which would enable the existing capacity to be exploited more effectively. The former set of bottlenecks came from the restrictions built into the AU licensing system; the latter related to both CG and industrial licensing procedures.

4. Yet another way in which the import-control regime in India affected capacity utilization was by inhibiting the utilization of excess capacity for export markets. While, as we have argued in Chapters 8 and 9, there is evidence that firms with substantial excess capacity did manage to improve capacity utilization through exports after the June 1966 liberalization policy changes, we also note there that the export effort was badly compromised by the inabil-

ity of the firms to exploit the intended liberalization of imports meaningfully. The liberalization permitted the firms to renew their "normal" AU quotas only *after* evidence of substantial utilization of the initial AU license. This resulted in a substantial lag in the utilization of the augmented foreign credits for maintenance imports and prevented quicker export sales. The severe restrictions on transfers of licenses and on permissible imports also continued, preventing quick adjustments in production and capacity to respond to international orders. In effect, the substantial inflexibility of the import control regime has made it difficult for firms, when presented with export opportunities to reduce capacity under-utilization at low marginal costs, to exploit these opportunities. If we are to reckon on the full impact on capacity utilization from this cause, we should take the primary effect just discussed and add to it the secondary effect which is implied by the fact that additional export earnings would ease the import situation and make more maintenance imports available for further capacity utilization.

It is not possible to quantify meaningfully and accurately the extent of production and value-added lost to society by the effects of the (trade and industrial) direct-allocational regime, arising from the kinds of mechanisms that we have analyzed. Since, however, there is little reason otherwise to expect serious under-utilization to have emerged and persisted (except for reasons such as strikes, electricity breakdowns and the post-1966 recession) in sectors such as engineering goods where the phenomenon has been acute for a long time, it would not be unreasonable to conclude that their production would have increased significantly under a different economic regime.[20]

OVERALL EFFECTS

It would thus seem reasonable to conclude that the foreign trade regime led to a wasteful misallocation of investible resources among alternative industries and also accentuated the under-utilization of investments within these industries. If we also recall from Chapter 2 that the regime greatly reduced the degree of competition to which the firms in these industries were subject, and thus practically eliminated the incentives that such competition normally provides for reducing costs, the regime can be regarded as being wasteful in a threefold fashion. Needless to say, when we also add to these inefficiencies the several other adverse effects which we discussed in Chapter 2, there is little doubt that returns on Indian investments must have been substantially reduced by the regime. Hence, we would be justified in saying that the analysis in this Chapter and in Chapter 2 shows rather persuasively that, by reducing the productivity of investment, India's foreign trade regime adversely influenced the economy's growth performance as well.

Appendix:

Sources and Methods

1. For the DRC and ERP estimates in Tables 13–1 and 13–2, for 1963–65 and 1968–69, we have used the 1964–65 input-output table (at 1960–61 prices) prepared by M. R. Saluja and published in *Sankhya,* 1968. For the 1968–69 estimates, the sectoral price indices for 1968–69 (with 1965 as the base) are derived from the volumes of "Wholesale Prices in India" and these are used to convert the input and output values in 1965 prices into those in 1968–69 prices. The implicit tariffs for 1968–69 are derived from various sources: for some sectors, the method of direct price comparison is adopted, whereas for some others the data on premium rates on import licenses and the nominal tariff rates are used to derive the implicit tariffs. The ratio of domestic price to international price is given by (1 + implicit tariff rate). These ratios are used to derive the input-values and output-values, and hence the value-added, in international prices. The ERP estimates are thus based on these implicit tariffs.

2. For the analysis of 1963–65, the input-output coefficients of the 1964–65 table are used. The ratios of the domestic price to international price, for the period 1963–65, are derived from the following sources: (1) The unit values (producer's prices) are computed from the ASI Volumes of 1963 and 1965; (2) the corresponding c.i.f. unit values are obtained from trade data in several sectors whereas, in others (3) we have used market-interviews-based average premium rates during 1963–65 and price comparisons from various other sources and studies. Note that while the a_{ij}'s used are the *average* for 1963, 1964 and 1965, based on ASI information, in nearly all industries, the premium rates used to derive the international prices are taken anywhere from the period 1963 to 1965, as available.

3. The precise methodology consists in starting with the 1964–65 input-output table (at 1960–61 prices). In the first instance this has been upgraded to 1968–69 prices by using sectoral price indices for 1968–69 with 1960–61 as the base. These price indices are derived from the wholesale price index numbers published by commodity groups. Care is taken in building up correspondence between sectoral classification and the commodity groups of the price indices. In fact, price indices for the financial year are derived by using detailed monthly price statistics as published price indices refer to calendar years. However, it cannot be denied that correspondence between sectors and commodity groups may not be perfect and some imputations have been inevitable. Sectoral indices have been built by using the weights of the commodity groups as given in the published sources.

4. To the data thus derived in 1968–69 prices, ratios have been applied to get the values in international prices. These price-ratios for 1968–69, and 1963–65 are separately derived, from several sources. Those for 1963–65 are, for example, based on (1) published premium data (Vyapar), (2) tariff rates and (3) direct price comparisons (from ASI and trade statistics), etc. Since these are averages of 2 to 3 years of 1963–65, the results are described as 1963–65 results. The price-ratios of 1963–65 are applied directly to the original input and output values of the 1964–65 input-output table, i.e., the values in 1960–61 prices. Hence the estimates of 1963–65 are all in 1960–61 prices, though they are derived from 1963–65 price-ratios of domestic to international prices.

5. In deriving DRCs, value-added inclusive of non-traded inputs (railways, electricity and margin) is computed as the domestic resources. The official exchange rate used for 1968–69 is Rs. 7.50 per dollar and that used for 1963–65 is Rs. 4.75 per dollar.

6. In assessing the extreme variations in the DRC estimates in Tables 13–1 to 13–3, the reader must bear in mind the fact of variations in premia: these have to be personally observed to be readily believed. Also, in noting the rather dramatic shifts in DRCs between 1963–65 and 1968–69 in Table 13–1, for identical industries, remember that these can arise from changes in (1) the relative domestic prices of inputs and outputs, (2) the ratio of domestic to international prices of inputs and of outputs and (3) the exchange rate. These factors, for example, account for the drastic increase in DRC for gur and khandsari (sugar) from a negative figure in 1963–65 to the large figure of 259.2 in 1968–69. In particular, the exchange rate had increased from 4.75 to 7.50 and the ratio of domestic to international prices had fallen from 2.80 to 1.89 for one input while rising for the output in this industry, accounting for the dramatic shift in its DRC. For details on each industry's DRC calculation, refer to Dr. V. R. Panchamukhi, *Reader in Econometrics,* University of Bombay, Bombay, India.

7. It may be contended that, in reality, our DRC estimates are ERP estimates rather than (shadow-price-adjusted) DRC estimates. On the other hand, note two points. (1) An appropriate methodology is necessary to derive shadow prices of capital, labor, etc. Thus, *any* adjustment of factor prices by numbers which are asserted to be shadow prices is little more than "sensitivity analysis" and does not really elevate the resulting DRC estimates to a greater claim of legitimacy. Nor can one claim, for example, that pushing up interest rates from lows of 3–4 percent annually to 10–15 percent must necessarily be good as it is a move in the "right direction": the theory of second-best does not validate the claim that a move in the direction of the optimal solution is welfare-improving. To put it another way, nearly all the DRCs, adjusted for so-called shadow prices, suffer *in practice* from very much the same defects (as regards their worth as measures of social returns) as ERPs. For a detailed critique of the two concepts, and their relationship to more sophisticated cost-benefit analysis, see I. M. D. Little and James Mirrlees, *Project Appraisal and Planning for Developing Countries,* Heinemann Educational Books: London, 1974, especially Chapter 18, pp. 363–366. Thus our stress in the text that the ERP/DRC estimates in this chapter are only "broadly" indicative of the differential returns from different activities, thanks to India's QR-regime, has a sound basis. (2) Further, while the text emphasizes only the "returns" aspect of these estimates, it may occur to the reader to interpret the ERP estimates as showing, in the usual manner, the "resource-allocational" or "pull" effects (among different activities) of the tariff structure so measured. This is not so, however, and not merely for the theoretical reasons spelled out in recent contributions to the general equilibrium theory of effective protection and resource allocation (e.g., see the *Symposium* on this topic in the *Journal of International Economics,* May 1973, with particular reference to the contributions by Bruno, Bhagwati and Srinivasan, and Khang). Among the other reasons, we may particularly mention that, in a QR-regime where producers have access to part of their imported inputs *via* AU licenses and part *via* the market, and the former access implies getting imports at premium-exclusive prices while the latter implies getting them at premium-inclusive prices, the calculation of ERPs from an incentive viewpoint should also take into account this differential effect on input protection. In the estimates of ERPs in Bhagwati and Desai, *op. cit.,* calculated again by Dr. V. R. Panchamukhi, this distinction was indeed taken into account, using estimates of the fraction of imported-inputs requirements which were met by AU licenses in each activity. This has *not* been done in the ERP estimates in the text here because the focus there is not on the incentive effects but rather on the cost-benefit interpretation of the DRC variety.

Hence, if we wished to get our ERP estimates closer to the "true" incentive-oriented measure, we would have to adjust them for the direct access

to imports under AU licenses. And, if we wished to get our DRC estimates closer to the "true" cost-benefit-oriented measure, we would need to compute systematically a set of appropriate shadow prices—a major analytical and empirical enterprise in itself—and utilize these instead of the actual market prices.

NOTES

1. This work was carried out entirely, and with great care and skill, by Dr. V. R. Panchamukhi of Bombay University, India. He has co-authored this chapter.

2. Thus for example, Asit Banerjee, in a forthcoming paper in *Sankhya* (1974), has estimated the elasticity of substitution for cotton textiles, jute textiles, sugar, paper and the bicycle industries, indicating that this may well be close to unity (if we use the SMAC method of estimation) for all except paper.

3. This is clearly evident from Anne Krueger's recent, detailed study of the auto ancillary industry in India where, utilizing data gathered at the firm level, she has shown differences in DRCs among different activities of over 100 percent. Clearly, instead of permitting indiscriminate growth of nearly all ancillaries, by furnishing automatic protection to them, if the structure and degree of protection had been devised rationally, the net result could have been more social returns from the same resource utilization. See Krueger, *The Benefits and Costs of Import Substitution in India: A Microeconomic Study*, USAID, October 1970.

4. The methodology by which DRCs were calculated is the standard one and is therefore not spelled out here. However, see the Appendix at the end of the chapter for important details.

5. The coefficients of variation are included in Table 13–4.

6. The coefficients of variation are still high (though lower than in 1968–69) and are included in Table 13–4.

7. The enormous variations in import premia can result in "implausible" DRCs, given our methodology of computing DRCs by deducting the international value-added from domestic value-added. Thus, for example, for animal husbandry, in 1968–69, the implicit tariff rate for output was 125 percent and significantly larger than for the major inputs (where it was in the range of 50 to 80 percent). The net result was to make value-added negative at international prices during 1968–69. However, in 1963–65, the implicit tariff rate (determined by the import premium) was smaller on output than on the inputs, resulting in positive value-added at international prices. In this connection, it may be noted that very large variations in DRCs have been calculated also by Krueger, *op. cit.*, within the auto ancillary industry, even though international value-added was estimated by direct inquiries on c.i.f. and f.o.b. prices of inputs and outputs.

8. The DRCs are related to the ERP estimates as noted earlier in this chapter. Note also that our calculations of ERPs treat non-traded goods as part of value-added—the so-called Corden method.

9. The coefficients of variation are included in Table 13–4.

10. For negative value-added industries, the value-added in domestic prices is used as the weight because the ERP index is then calculated with the value-added in domestic prices in the denominator, when the formula is written as the incremental value-added divided by value-added at domestic prices.

11. The coefficient of variation is included in Table 13–4.

12. The conceptual and statistical difficulties surrounding the capacity statistics in

India have been discussed in numerous sources. See J. Bhagwati, "The Measurement of Excess Capacity," ISI Working Paper, 1962; and Nancy Slocum, *Underutilized Industrial Capacity in India: Exploration of Measures and Causes,* USAID, New Delhi, 1970.

13. Cf. Frankena, *op. cit.,* and Slocum, *op. cit.,* in particular.

14. The DGTD data on capacity utilization are also consistent with this picture.

15. These estimates are largely based on the official estimates but have been adjusted slightly. Also, estimates are based on "desirable" working conditions; i.e., using multiple-shift assumptions.

16. *Op cit.,* pp. 326–327.

17. This could happen through illegal purchases in the black market. It also became possible when the import entitlements, under the Export Promotion schemes, were made legally transferable since 1965.

18. In the paints and varnishes industry, reviewed in detail by Nancy Slocum, it is clear that the governmental allocational policies have enabled a number of units to survive, while excess capacity and shortage of materials persist. In fact, she even refers to "the black market sales which many of the small units engage in in lieu of production" (p. 57, *op. cit.*). This is known to have been a phenomenon prevalent in several industries.

19. Aside from interviews by us, the study by V. K. Ramaswami and D. G. Pfoutz, *Utilization of Industrial Capacity,* 1965, conducted jointly by the Ministry of Finance and USAID, confirmed the existence of serious bottlenecks in the system. The continuation of such difficulties as late as 1970 was confirmed by Nancy Slocum, in her *Underutilized Industrial Capacity in India: Exploration of Measures and Causes,* a study commissioned by USAID.

20. Cf. Nancy Slocum, *op. cit.,* on the railway wagons industry in particular.