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CHAPTER III

Allocation of resources

The balance-of-payment difficulties of the 1960's called into play a wide range of instruments designed primarily to control the external balance. Yet these instruments inevitably created incentives which could, if allowed full play, profoundly alter the allocation of resources in the Ghanaian economy. The general direction of the incentives was largely one which favored the already existing import-substitution and industrialization strategy. Hence, the allocational effects of the exchange control and licencing system did not counter, but usually reinforced, protectionist policies. The overall effect of the combined policies was a substantial transformation of the composition of economic activity within a brief period of 15 years.

The purpose of this chapter is to consider the general reallocation of resources in the Ghanaian economy and to examine in more detail the allocative forces bearing on the favored industrial sector. We begin with an overview of the changing composition of economic activity (section 1) and then turn to an examination of the structure of industrial activities (section 2). The remainder of the chapter is devoted to detailed consideration of industrial protection (sections 3 and 4).

1. The changing structure of production, 1955–1969

Kwame Nkrumah had led Ghana to political independence in 1957, but a major objective which remained unfulfilled at that time was "economic independence, without which our political independence would be valueless."¹ Hence, a "constant, fundamental guide is the need for economic independence.... An important essential is to reduce our colonial-produced economic vulnerability...."² This was to be done in large part by promoting import-substituting industrialization for, he argued, "Every time we import goods that we could manufacture...we are continuing our economic dependence and delaying our industrial growth."³

A series of development plans, formulated in the 1950's, had been designed

1. Kwame Nkrumah, *Africa Must Unite*, first published 1963; new edition, International Publishers, New York, 1970, p. 107.

2. *Ibid.*, p. 108.

3. *Ibid.*, p. 112.

to provide infrastructure and social services to lay the foundation and to begin the process of industrialization.⁴ By the time of the Seven Year Development Plan (1963), the commitment to an import-substitution strategy of industrialization was strong.

To the largest degree possible domestic substitutes should be produced for those manufactured staples of consumer demand for whose supply Ghana is now entirely dependent upon foreign sources and expends large sums in foreign exchange each year.⁵

To a remarkable extent the actual results, in terms of the composition of economic activity, corresponded to the plans. Within a relatively short period there was a major shift in the composition of economic activity. The available national income estimates suggest that the turning point was in the early 1960's. The groundwork for this was laid in the last half of the 1950's, with the economy growing at a satisfactory real rate, and gradual shifts in the industrial origin of GDP.

To illustrate the changing composition of economic activity, let us consider the contrast between 1955 and 1960, as contained in Table III-1. Despite some difficulties with the data (discussed below) one can discern a number of major characteristics of the 1955-60 period. There was a relative shift from cocoa and local foods, whose shares declined by about 3 percentage points each, and a shift to the activities of forestry and sawmilling, manufacturing, other industries (mostly organized commercial transport, distribution and services), government enterprises and general government. In other words, the shift was from traditional agriculture towards "modern" activities. Nevertheless, many of these modern activities were still relatively small in 1960. Manufactures and government enterprises (including electricity), which were to grow substantially in the 1960's, together still accounted for less than 4 percent of GDP.

Turning to the 1960's, we are not as fortunate in the availability of national accounts estimates by industrial origin.⁶ Table III-2 is a very rough attempt to put together some of the available statistics to give an indication of the approximate proportions of GNP originating in a few of the important sectors. In these rough terms, what emerges is a continuing decline in the share of cocoa producer incomes to the point that by 1969 value-added at producer prices in manufacturing exceeded that in cocoa. Also declining relatively in the 1960's were the other two traditional export sectors, logging and sawmilling, and mining – the latter very rapidly. Construction's share also declined.

4. The plans of the 1950's were: First Development Plan (1951–1957), Consolidation Development Plan (1957–1959), and Second Development Plan (1959–1964).

5. Republic of Ghana, *Seven Year Development Plan*, Accra, 1963, p. 93.

6. Work on gathering GDP by industrial origin for the period 1965–1968 is in progress within the Central Bureau of Statistics. At the time of writing these were not yet publicly available.

Table III-1
Industrial origin of GDP, 1955 and 1960 at current market prices
(in millions of new cedis)

Sector	1955		1960		Annl. Comp. Gr. Rate (percent)
	Value	Percent	Value	Percent	
Cocoa - production	84	12.6	90	9.6	1.4
- marketing	46	6.9	60	6.4	5.5
Other agricultural exports	2	0.3	6	0.6	24.6
Local food prodn. and distribution	220	32.9	278	29.6	4.8
Forestry and sawmilling	28	4.2	52	5.5	13.2
Mining	30	4.5	42	4.5	7.0
Manufacturing	4	0.6	18	1.9	35.1
Construction, private	24	3.6	36	3.8	8.4
Industries, other private	60	9.0	114	12.2	13.7
Rent (net), pers. and hslid. serv.	56	8.4	86	9.2	9.0
Govt. enterprise and public corp.	6	0.9	18	1.9	24.6
General government	26	3.9	48	5.1	13.0
Residual	82	12.3	90	9.6	1.9
(1) GDP at mkt. prices(=expenditure)	668	100	938	100	7.0
(2) Indirect taxes	90		92		
(3) GDP at factor cost	578		846		
(4) Net factor income from abroad	-4		-10		
(5) Expenditure on GNP at market prices	664		928		

Note: The GDP estimate is derived from the expenditure side. These estimates of industrial origin, which do not cover the entire range of activities, are equated with GDP by inclusion of the residual item.

Source: Dorothy Walters, *Report on the National Accounts of Ghana, 1955-1961*, mimeograph, CBS, Accra, 1962, Tables I and II, pp. 2-3.

We should emphasize that the data of Tables III-1 and III-2 are subject to some severe limitations. First, there is the usual problem of double counting – value-added for a particular activity included in more than one sector – which limits our confidence in any absolute size comparison between sectors. Second, the components of Tables III-1 and III-2 are based on 1960 benchmark ratios of value-added to gross output. To the extent that substantial structural change occurred between, say, 1955 and 1969, comparisons of relative sectoral growth are open to doubt. Further, the total GDP estimates – which are made from the expenditure side – are also based on 1960 benchmarks. The most serious shortcoming of this approach is undoubtedly in the largest single element of consumption expenditure – local foods. This

Table III-2
 GNP and rough estimates of value-added at current producer prices in selected activities, 1955, 1960, 1965, 1969, 1955-1969

	Values, millions of NQ				Percentage of GNP						Average compound growth rates			
	1955	1960	1965	1969	1955	1960	1965	1969	1955-1960	1960-1965	1965-1969	1955-1969		
GNP	664	946	1,589	2,284	100	100	100	100	7.3	10.9	9.5	9.2		
Electricity	N.A.	2.2	6.4	21.1	N.A.	0.2	0.4	0.9	N.A.	23.8	34.8	N.A.		
Timber and saw- milling exports	16	20.6	25.4	39.4	2.4	2.2	1.6	1.7	5.2	4.3	11.6	6.6		
Manufacturing	4	16.4	54.7	121.1	0.6	1.7	3.4	5.3	32.6	27.0	22.0	27.6		
Mining	29	41.2	32.6	39.3	4.4	4.4	2.1	1.7	7.3	-3.9	4.8	2.2		
Cocoa	67	91.8	78.4	112.1	10.1	9.7	4.9	4.9	6.5	-2.8	9.4	4.3		
Construction	50	85.2	112.4	104.1	7.5	9.0	7.1	4.6	11.2	5.7	-1.8	5.4		
Public consumption	27	47.8	106.3	117.2	4.1	5.1	6.7	5.1	5.3	17.3	2.5	8.6		
Total of activities listed	193	305.2	416.2	554.3	29.1	32.3	26.2	24.3	9.6	6.4	7.4	7.8		

Sources: See next page.

Sources to Table III-2

- Sources:
1. GNP at market prices, computed from expenditure side only. Sources: 1955, D. Walters, *op. cit.*; others, *Economic Survey*, 1969.
 2. Value-added in electricity generation and distribution. Sources: 1960, R. Szereszewski, "The Inter-sectoral Accounts," Table 3.1., in Birmingham *et al.*; 1965 and 1969, *Economic Survey*, 1969.
 3. Timber and sawmilling exports includes exports of logs, lumber and plywood, less export duties on logs and lumber. Sources: 1955 and 1960, CBS, *Annual Report on External Trade of Ghana*, 1958, and 1959-1960; 1965 and 1969, CBS, *Quarterly Digest of Statistics*, June 1968 and December 1969.
 4. Manufacturing value-added excluding sawmilling and plywood. Sources: 1955, Walters; 1960, Szereszewski; 1965 and 1969, *Economic Survey*, 1969.
 5. Mining value-added. Sources: 1955 and 1960, Walters - less mineral export duties from *Annual Report on External Trade of Ghana*, 1958, and 1959-1960; 1965 and 1969, *Economic Survey*, 1969. The mines' own production of electricity is included in the value-added computation for 1955 and 1960, excluded in 1965 and 1969. This accounted for 36.3 percent of total national kilowatt hours in 1965 and 0.8 percent in 1969.
 6. Cocoa value-added consists of purchases by the Marketing Board at the cash price received by producers less purchases of insecticides. Sources: 1960, Szereszewski; for 1955 and 1965, producer receipts recorded in CMB *Annual Report*, 1962/63 and 1964/65 provided figures on weekly purchases, which were converted to calendar-year figures, and producer prices. 1969 data obtained directly from CMB. The Szereszewski ratio of value-added to gross output of 99.35 percent is applied to yield the results in our table.
 7. Construction value-added. 1960 from Szereszewski; gross output for 1955 from Walters, "Gross Domestic Fixed Capital Formation in Buildings and Other Construction and Works"; and 1965 and 1969 from *Economic Survey*, 1969, "Gross Domestic Fixed Capital Formation in Building and Construction." The Szereszewski ratio of value-added to gross output of 64.64 percent applied to 1955, 1965 and 1969 data to yield the results in our table.
 8. Public consumption value-added. 1960 from Szereszewski; 1955, from Walters, "General Government Consumption Expenditure"; 1965 and 1969, "General Government Consumption Expenditure," in *Economic Survey*, 1969. The Szereszewski ratio of value-added to total expenditure of 51.84 percent is applied to 1955, 1965 and 1969 data to yield the results in our table.
 9. Total probably overstates extent of coverage due to possibilities of double counting between activities listed.

is assumed to grow at the same real rate as estimated population growth, and is converted to current values by the local foods price index. Third, the data of Tables III-1 and III-2 are in current prices because constant price data for the details are unavailable. Thus, the changing sectoral shares of national income we observe involve both changes in volume and changes in prices. The data do tell us how the distribution of income between sectors has changed, but they do not tell us the extent to which quantities of factors have shifted between sectors. This is particularly important in the largely import-substituting manufacturing sector, whose growth in the 1960's was due to substantial protection.

Despite these limitations of the data, a strong impression remains that the distribution of economic activity was substantially altered in the 1960's. The favored modern sectors, particularly manufacturing, now received important shares of national income. In this redistributive sense the objective of industrialization was being successfully attained. Yet when we recognize that a substantial price element was contained in the growth of manufacturing (see section 2, following) and, as we shall see in Chapter IV, that the economy as a whole failed to provide significant overall growth of per capita incomes in the 1960's, the strategy of industrialization to induce real growth was clearly far less than a success.

2. Growth of the industrial sector

We turn now to a more detailed examination of the industrial sector, considering first a variety of aggregate indicators for the whole sector (mining, manufacturing, electricity), as contained in Table III-3. Unfortunately, our period of coverage is limited. Industrial surveys were conducted for 1958 and 1959, but not resumed until 1962. Further, the detailed reports beyond 1968 are not yet published. As a result, much of the important detail, such as constant price data and value-added per person engaged, is available for less than the full period of this study. Despite these limitations, a number of important aspects of Ghanaian industrial development are clear.

The price element in the growth of industrial output and value-added was substantial. In current prices, value-added grew by about 143 percent between 1962 and 1969, while at constant prices the growth was 50 percent. One will further note that the constant price series probably overstates real values because of the major structural change over this brief period. New entrants typically required greater protection than was enjoyed by the early entrants. However, the higher prices for the former have a low or negligible weight in the price index used to deflate the current price data.

Growth of employment in industry was markedly slower than growth of

Table III-3
Selected industrial statistics, 1958, 1962, and 1966-1969

	1958	1962	1966	1967	1968	1969
1. Gross output (in millions of N¢)						
1a. current prices	86.6	122.3	208.3	241.1	295.8	337.0
1b. constant (1962) prices	N.A.	122.3	173.0	179.9	204.0	217.6
2. Value-added (in millions of N¢)						
2a. current prices	57.0	81.2	142.1	158.4	176.7	197.7
2b. constant (1962) prices	N.A.	81.2	120.1	119.7	124.4	121.7
3. Persons engaged (thousands)	N.A.	60.9	69.9	69.5	77.6	N.A.
4. V.-a. per person engaged (in thousands of N¢)						
4a. current prices	N.A.	1.33	2.03	2.28	2.28	N.A.
4b. constant (1962) prices		1.33	1.72	1.72	1.61	N.A.
5. Wages and salaries (in millions of N¢)	N.A.	24.3	34.4	36.6	44.3	N.A.
6. Wages and salaries per person engaged (N¢)						
6a. current prices	N.A.	399.2	492.1	526.8	570.3	N.A.
6b. constant (1962) consumer prices	N.A.	399.2	287.1	335.8	336.1	N.A.
7. Distribution of v.-a. by nationality of ownership (percent)- Ghanaian	N.A.	26.8	26.9	27.5	29.3	N.A.
- Non-Ghanaian	N.A.	67.0	59.2	58.5	51.5	N.A.
- Mixed	N.A.	6.2	13.2	14.0	19.2	N.A.
8. Distribution of v.-a. by type of ownership (percent)- State	N.A.	22.9	22.1	23.5	24.7	N.A.
- Joint-State-Priv.	N.A.	4.2	8.1	9.0	11.7	N.A.
- Co-op	N.A.	0.1	0.1	0.1	0.0	N.A.
- Private	N.A.	72.9	69.7	67.4	63.6	N.A.
9. Distribution of v.-a. by region manufg. only (percent)- Western	N.A.	42.3	33.2	30.8	25.9	N.A.
- Accra Cap. Dist.	N.A.	31.0	45.8	51.5	53.3	N.A.
- Ashanti	N.A.	17.1	17.6	13.5	16.9	N.A.
- Other	N.A.	9.6	3.4	4.3	3.9	N.A.

- Notes: 1. 1958 entry under gross output refers to sales, not gross output.
2. The deflator used to obtain the constant price wage and salary series is the consumer price index.
3. Regional distribution of value-added refers to manufacturing only.

Sources: 1969, CBS, *Economic Survey*, 1969; 1966-1968, CBS, *Industrial Statistics*, 1966-1968; 1962, CBS *Industrial Statistics*, 1962-1964; 1958, CBS, *Industrial Statistics*, 1958-1959.

output or value-added. The rate of growth of constant price value-added between 1962 and 1968 was twice the rate of growth of employment. At the same time, employees do not appear to have captured a larger share of value-added. Looking at current price data, the share of wages and salaries in value-added fell from 30 percent in 1962 to 25 percent in 1968. To put it another way, value-added grew at a rate two-thirds greater than the rate of growth of wages and salaries. And, the wages and salaries per employee, when deflated by the consumer price index, declined by about 16 percent between 1962 and 1968. The industrial sector thus does not appear to have proven a dynamic source of growth for either employment or income of employees over the period.

The distribution of ownership of the industrial sector indicates the dominance of private foreign owners followed by Ghanaian state-owned activity. Since by definition state-owned enterprises are Ghanaian, we can see that the privately-owned Ghanaian enterprises account for a small portion of value-added. The foreign private owners have had a decreasing share, but this is largely due to increasing use of the joint state-foreign private form of enterprise, and is not the result of growth by private Ghanaian firms.

The distribution of manufacturing value-added by region series indicates a shift of the center of manufacturing activity from the Western Region to the Accra Capital District. (We cite only the manufacturing data, because the location of mining activity is determined largely by deposits, while electricity is, from 1966, almost entirely from the Volta Dam.) A variety of reasons is undoubtedly responsible for the increasing dominance of the Accra district in manufacturing activity. Since nearly all of the sector produces for the domestic market, location in the largest single high money income market is undoubtedly important. Added to this are the advantages of the modern port of Tema for imports of materials and equipment, and the network of transport and communication facilities that radiate from Accra. Finally, Accra has the major advantage of being located close to the grantors of import licences and other discretionary favors.

Turning from the aggregate picture of the industrial sector, consider now the growth of output and value-added in individual activities outlined in Table III-4. The patterns of growth were far from uniform. In 1958 the strong dominance of the traditional activities of mining and sawmilling, plus the "easy" import-substitution activities of beverages and tobacco, are clearly evident. Only one "modern" activity, transport equipment, had a value-added exceeding ₵ 1 million. In 1962 the picture is much the same, except for the emergence of a significant edible oils and chemicals manufacturing activity. It is at this point that the beginning of major change in the structural shares of industrial production becomes evident. By 1965 two new industries, metal products and petroleum refining, emerged as important contributors to indus-

Table III-4
Industrial sector, value-added and gross output, 1958, 1959, and 1962-1968 at current prices (in millions of new cedis)

ISIC Digit Code	Description	Value-added					
		1958	1959	1962	1963	1964	1965
Div. 1, Mining							
12	Metal mining	29.3	24.3	25.4	24.7	23.3	22.4
19	Other mining	5.9	6.1	9.1	8.4	10.1	10.8
Div. 2, 3, Manufacturing							
20	Food manufacturing	0.9	0.8	1.6	1.7	2.1	3.1
21	Beverages	7.3	8.2	6.5	8.3	8.7	11.1
22	Tobacco manufactures			9.9	11.7	13.1	14.6
23	Textile manufactures	0.1	0.1	0.1	0.9	0.6	2.0
24	Footwear, apparel and textile goods	-	-	0.5	1.4	2.0	1.8
25	Sawmilling and plywood	8.0	9.5	12.3	12.1	13.0	14.9
26	Furniture manufactures	0.2	0.4	1.6	1.6	0.9	1.6
27	Paper and paper production	-	-	0.1	0.5	0.6	0.7
28	Printing and publishing	1.3	0.9	1.5	2.8	2.2	2.0
29	Travel goods manufactures	-	-	0.3	0.2	0.2	0.2
30	Manufactures of raw rubber	0.2	0.2	0.3	0.4	0.6	1.2
31	Chemicals and oils manufactures	0.5	0.9	2.9	4.2	5.5	5.4
32	Petroleum refining	-	-	-	1.9	4.5	4.2
33	Non-metal mineral production	0.3	0.4	0.5	0.6	0.5	0.8
34	Iron and steel manufactures	-	-	0.3	0.3	0.1	0.1
35	Metal products	0.1	0.2	1.6	1.8	2.5	2.5
37	Electrical appliances and appar.	-	-	-	-	-	-
38	Transport equipment manufactures	1.4	2.0	0.9	1.2	1.1	2.4
39	Miscellaneous manufacturing	-	-	0.1	0.5	0.9	0.8
Div. 5, Electr. and gas							
51	Electricity	1.5	2.1	5.8	7.3	8.8	13.1
Total		56.9	56.1	81.2	92.4	101.4	116.0

- Notes: 1. Entries may not add to total due to rounding.
 2. [-] = no value recorded.
 3. Coverage includes only those establishments with 30 or more employees.
 4. Major items contained in broadly-defined 2-digit groups are:
- | | |
|-------|---|
| Group | Major subgroups included |
| 12 | gold, bauxite, and manganese |
| 19 | salt, diamonds |
| 20 | meat, fruit squash, fruit and vegetable processing, flour, biscuits, bread, cocoa butter, misc. food preparations |
| 21 | spirits, beer, soft drinks |
| 23 | spinning, weaving and knitting |
| 24 | shoes, apparel, jute bags, mattresses, sheets, blankets |

				Gross output											
1966	1967	1968	1969	1958	1959	1962	1963	1964	1965	1966	1967	1968	1969		
23.8	26.9	30.0	39.3	39.5	36.2	33.5	32.6	31.0	31.3	30.8	35.5	39.4	37.2		
17.2	18.0	13.5		7.4	7.5	10.3	9.7	11.8	12.4	18.0	18.8	14.9	15.3		
2.3	4.1	6.6	12.9	2.9	3.3	4.2	4.3	4.7	9.6	10.8	18.5	23.3	33.9		
15.3	13.7	18.1	17.9	11.5	13.2	10.3	13.9	14.3	17.7	21.5	18.5	24.4	25.3		
18.0	17.7	21.6	21.7			12.7	14.6	16.5	18.0	20.5	21.0	25.9	25.7		
3.8	9.0	11.9	13.2	0.3	0.5	0.3	1.7	2.6	4.0	7.0	15.3	25.9	33.9		
3.2	6.7	10.7	9.1	-	-	1.7	3.3	4.4	5.8	8.3	12.7	21.6	19.5		
14.7	13.0	8.9	16.1	14.6	15.9	20.4	20.2	21.6	23.4	22.7	23.7	24.1	30.5		
1.7	1.3	1.3	1.3	0.5	0.7	2.5	2.8	3.5	3.1	2.9	2.3	2.4	2.4		
1.4	2.7	3.3	4.9	-	-	0.2	0.8	1.0	1.4	2.8	5.0	6.2	9.1		
4.0	4.4	5.2	4.2	2.3	1.8	2.4	4.1	3.1	3.4	5.4	5.6	6.7	7.0		
0.2	0.2	0.3	0.4	-	-	0.5	0.4	0.5	0.4	0.4	0.5	0.7	0.8		
0.2	0.2	0.2	0.4	0.4	0.5	0.5	0.5	1.4	2.0	0.3	0.3	0.3	0.6		
7.8	8.5	8.1	11.4	0.8	2.0	5.7	10.1	13.5	11.5	16.5	20.0	21.5	28.0		
4.4	5.4	5.3	6.0	-	-	-	2.0	4.9	5.1	5.2	6.1	6.4	6.5		
1.5	1.7	3.8	5.5	0.4	0.6	1.0	1.3	1.1	1.4	3.0	3.4	9.8	12.8		
0.3	0.9	0.5	0.4	-	-	0.5	0.5	0.2	0.9	0.9	1.5	1.1	1.2		
3.0	3.5	4.2	5.0	0.3	0.8	5.7	7.2	8.3	6.5	7.0	8.4	9.9	11.1		
0.3	0.6	1.2	1.6	-	-	-	-	-	-	0.7	1.5	3.0	3.5		
2.2	3.9	3.2	2.7	3.0	3.8	2.1	4.2	3.8	4.3	4.8	5.4	7.6	7.4		
0.7	0.7	1.0	2.6	-	-	0.4	1.0	1.8	1.6	1.4	1.3	2.3	3.8		
16.0	15.6	18.0	21.1	2.7	3.8	7.2	9.1	11.0	15.0	17.4	16.0	18.6	21.7		
142.2	158.5	176.7	197.7	86.5	90.6	122.4	144.5	160.8	178.8	208.3	241.1	295.8	337.0		

31 - industrial chemicals, copra oil, groundnut oil, palm kernel oil, other oil fats, paints, soap, matches, perfume, pharmaceuticals, detergents, candles

33 - bricks and tiles, glass and products, cement, concrete blocks

35 - aluminum ware, nails, misc. other

38 - boat building and repair, railway equipment, motor vehicle assembly

39 - plastics

Sources: Computed from CBS, *Industrial Statistics*, 1958-1959, 1962-1964, 1965-1966, 1966--1968; and from CBS, *Economic Survey*, 1969.

trial value-added. Between 1965 and 1969 a substantial alteration in the industrial structure took place. In the latter year several nontraditional activities, including food manufacturing, footwear and apparel, paper products, non-metal mineral products, and metal products, had also emerged as important segments of the industrial sector. In addition, new activities such as travel goods, iron and steel, electrical appliances and apparatus, and plastics had become smaller, but undoubtedly permanent, parts of the Ghanaian industrial scene.

The growth of some activities was in part due to the "normal" course of events in which they became relatively more profitable due to forces such as larger markets, cheaper inputs (e.g., electricity), and the availability of low-cost specialized factors. Growth of specific activities was also in part due to a set of deliberate import-substitution policies involving a variety of incentives to favored activities. It is to these incentives that we now turn.

3. Protection of industry

A great variety of incentive policies was employed to stimulate domestic production in import-substituting industries. In this section we focus on the protection of domestic production *vis-à-vis* the world market.⁷ We begin with a review of the major devices used to protect local industry.

(a) The protective system

The Ghanaian system of protection revolved largely around the system of tariffs and indirect taxes together with import licencing. Our earlier discussion (Chapter II) of these instruments focused attention on their broad application, passing over their detailed use to discriminate between domestic and imported commodities at a very fine level of detail. Yet the issue facing a local producer concerns the extent to which those specific imports that compete directly with his lines are permitted and at what price, together with the availability and price of his required inputs, including importable inputs. The various instruments used in the protective system are generally capable of discriminating in favor of an individual producer at the necessary level of detail.⁸

7. In the process of providing protection against foreign products there will also be discrimination among domestic producers. This aspect, together with other devices used specifically to discriminate among domestic activities, is taken up in Chapter IV below.

8. However, because some producers may use inputs produced by others, it is not always possible in practice to provide the desired discrimination in favor of all import-competing producers.

Consider each of the major elements in the protective system which prevailed in the period 1968–1970. First, the Ghanaian customs tariff frequently discriminated at the level of detail corresponding to the SITC 6-digit level, and on occasion at an even finer level of detail. Typically the tariff escalated by “stage” of production, with low rates on materials and higher rates on finished products, particularly those produced locally.⁹ In addition to the rate of differentiation by degree of product processing, there were concessionary rates on materials of any type which were specifically destined for use in the manufacture of numerous particular products.¹⁰

Added to the customs tariff was a set of domestic indirect taxes designed largely to raise revenue. However, because there was rate differentiation between domestic and foreign sources on some commodities, the indirect tax system affected the level of nominal protection. The major indirect taxes were the sales tax, the excise tax, and the purchase tax. The sales tax was administered at the manufacturer and customs house level, and was applied equally to most imported and domestic goods for final use at the standard rate of $11\frac{1}{2}$ percent. Exemptions included producer goods, “essential” consumer goods, corporations enjoying tax concessions,¹¹ and sales for export. The excise tax was levied on the traditional objects of alcoholic beverages and tobacco, plus a set of specified “luxuries” at rates ranging from 5 percent to 15 percent and a few specific rates. Exemptions in practice were the same as for the sales tax. The excise tax applied only to domestic output, but the sales tax was reduced on excisable items to $7\frac{1}{2}$ percent or 5 percent, depending on the item. Coverage did not yet include a number of recent import-substitution luxuries such as electrical appliances. The purchase tax applied to motor vehicles only, at rates on a rising step scale. Locally assembled commercial vehicles enjoyed a lower rate.

The combined protective effect of the tariffs and domestic indirect tax system was complex and often difficult to evaluate for an individual product line. Further, a change in one element without a compensating change in another often resulted in unintended changes in protection. Despite the complexity and frequent changes in individual rates, there was no continuing and

9. For example, in the BTN Chapters 50 through 56 dealing with fibers and products thereof, cotton, flax, and man-made fibers are subject to a 10 percent duty while woven fabrics are subject to a minimum 75 percent rate (NLC *Decree, 185*, (1967).

10. These are specified in Part B of the import tariff schedule, Republic of Ghana, *Customs and Excise Tariff*, Accra, 1966.

11. While apparently the Volta Aluminum Company (VALCO) is the only firm legally entitled to exemption on its purchases, others employing tax concessions believe themselves to be exempt and do not pay.

systematic evaluation of the protective effects by a "tariff board" type of agency.

In early 1969 an additional tax on imports was introduced in the form of a "temporary surcharge" on OGL imports. Initially the rate was 5 percent of c.i.f. value and applied only to what was at the time a limited list of OGL items. The budget presented in mid-1970 contained a substantial extension of the OGL list together with a differentiated set of surcharges at rates ranging from 5 percent to 150 percent of c.i.f. value on most OGL imports.¹² In one swift stroke the protective structure was greatly altered, yet there is no evidence that the protective consequences of this new complex addition to the protective system received detailed advance consideration.

A second major element in the protective system was import licencing. In principle the licencing system was expected to limit or prevent imports competing with domestic products; it was also expected to ensure that local producers receive adequate supplies of imported materials.¹³ In practice the restricted lists for which "no application will be entertained except under special circumstances,"¹⁴ allowed a substantial volume of imports.¹⁵ And as we have noted (Chapter II), in the late Nkrumah period shortages of inputs were frequent. As a source of protection for domestic producers the licencing system was uncertain and erratic.

In addition to the specifically protective devices listed, the Capital Investments Board had at its disposal a variety of concessions which it could grant to foreign investors with substantial protective consequences. Of particular interest in the context of protection, a producer of goods for export or import-substitution could be exempted from the payment of duties and indirect taxes on imported inputs, and apparently from the payment of excise taxes on output, for a period of 5 years.¹⁶ Beyond the number of projects approved, which has averaged about 15 per year since 1965, with a typical investment of about N¢ 2 million,¹⁷ no details on the concessions granted

12. See Chapter V/section 4, for general discussion of the surcharges in the context of the liberalization.

13. See Chapter II, section 5.

14. This, the typical phrase used to indicate the meaning of the restricted list, appeared in the *Commercial and Industrial Bulletin*, 18 August, 1967.

15. For example, the restricted items listed in *ibid.* for 1968 were imported during 1968 to a total of at least N¢ 16 million, or 5.1 percent of total imports (our tabulation). This does not include restricted items defined more narrowly than the SITC 6-digit trade data contained in the CBS, *External Trade Statistics*, December, 1968.

16. In addition, the Capital Investments Act, 1963 (Act 172) authorized the Board to guarantee repatriation of funds, grant exemption from company income tax for up to 10 years, grant accelerated depreciation allowances, and grant exemptions from property taxes.

17. Capital Investments Board, *Annual Report and Accounts*, various years.

are publicly available. We understand, however, that there was considerable variation in the concessions granted investors until 1971, largely because an ever-changing Board made decisions on an individual basis.¹⁸ It is thus quite possible for three different domestic producers of the same commodity to face substantially different situations: a domestically-owned enterprise with no concessions, a foreign-owned enterprise with one or two concessions, and a second foreign-owned enterprise with the full basket of concessions.

Altogether, then, several instruments were used to grant protection, with levels of individual instruments for particular establishments and industries determined independently by different agencies.¹⁹ It is important to note that one agency did not play a significant part in the detailed assignment of protection to individual activities. This was the planning agency. While, as we noted above, the development plan charted the general course of import-substituting industrialization, planning was largely divorced from the administration of the protective system. Thus, the magnitudes of the incentives were not determined by the detailed priorities of the plan, but rather by a haphazard system of protection which conferred vastly different stimuli on individual activities in the industrial sector. To measure these stimuli is our next task. We begin with a brief outline of the method of measurement.

(b) Method of measuring protection

The magnitude of the protective stimuli afforded each domestic industrial activity depends on the structure of price divergencies between domestic and international markets created by the various protective instruments. The subsidy effect arising from protection of output and the taxing effect of higher

18. Recently an augmented staff has attempted to apply uniform criteria and concessions.
19. To illustrate, consider a hypothetical potential foreign investor who in 1968 had been promised a set of CIB concessions involving duty-free entry of machinery and spare parts (but not materials) plus a company tax holiday. He would be the sole producer of the item in the domestic market. He had a great variety of ways open to him to increase the potential protection. He might have tried to convince the Minister (or Commissioner) of Finance to increase the tariff on competing imports, or to establish a special concessionary rate for imports of his inputs. He could have tried to persuade Customs and Excise to reduce the excise tax on domestic production to a lower bracket. He could have attempted to convince the Trade Division of the Ministry of Trade and Industries to limit the licences issued for competing imports, and simultaneously dealt with the Industries Division of the same Ministry to ensure adequate licences for his imported materials. And, he could have attempted to obtain further concessions from the CIB. The degree of protection received thus depended on the policies of several agencies, each capable of acting independently of the others.

input costs are well known.²⁰ Our purpose here is to apply the general principles, using standard definitions, to the Ghanaian case. We have taken into account the major devices that create a measurable divergence between international and domestic prices.

To illustrate the relationships involved, consider the effect of each instrument. First, import tariffs raise domestic prices above world prices. Second, indirect taxes are sometimes applied to imports and/or domestic production, possibly at different rates.²¹ Third, and often most important, licences give rise to quota premia that raise domestic prices above the tariff and tax-laden prices. Finally, various devices such as licence fees and the system of compulsory credit purchasing of imports add to the price of importables. The first three elements are illustrated in Figure III-1. The domestic supply curve at free-trade prices is S , and the domestic demand curve is D , yielding free-trade imports of Q_0Q_6 at the free-trade price of P_w . The effect of a tariff on competing imports of the product at the rate t is to raise the domestic price to $P_w(1+t)$, assuming infinitely elastic supply of imports. Tariffs on intermediate importable inputs result in a parallel upward shift in the supply curve to S' . The net result of the tariffs alone would be an expansion of output to Q_1 in response to the net stimulus provided by the tariff-protecting output less the higher input costs.

If we add indirect taxes to the set of tariffs, we find that indirect taxes on imports raise the domestic price to $P_w(1+t)(1+sm)$, where sm is the indirect tax rate on imports. At the same time indirect taxes on domestic output shift the supply curve proportionately upward to $S'(1+sd)$, where sd is the indirect tax rate on domestic output. (We have drawn Figure III-1 such that sm exceeds sd .) The net result of the set of tariffs plus the set of indirect taxes is a stimulus to output, yielding an expansion to Q_2 .

Finally, if the domestic market is competitive and we impose on this situation a binding quota on imports of the competing product, setting the quota at Q_3Q_4 quantity, which is less than Q_2Q_5 , the domestic price rises to P_d . In other words, the domestic price rises above the world price by the rate qr , and domestic output expands to Q_3 .

20. The literature on this topic is far too large for a single footnote. Two major seminal pieces are: W.M. Corden, "The Structure of a Tariff System and the Effective Protective Rate," *Journal of Political Economy*, Vol. LXXIV, No. 3, June 1966, pp. 221-37; and H.G. Johnson, "The Theory of Tariff Structure with Special Reference to World Trade and Development," *Trade and Development*, Institut Universitaire de Hautes Etudes Internationales, Geneva, 1965.
21. See J. Clark Leith, "Tariffs, Indirect Taxes and Protection," in H.G. Grubel and H.G. Johnson, eds., *Effective Tariff Protection*, GATT and Graduate Institute of International Studies, Geneva, 1971.

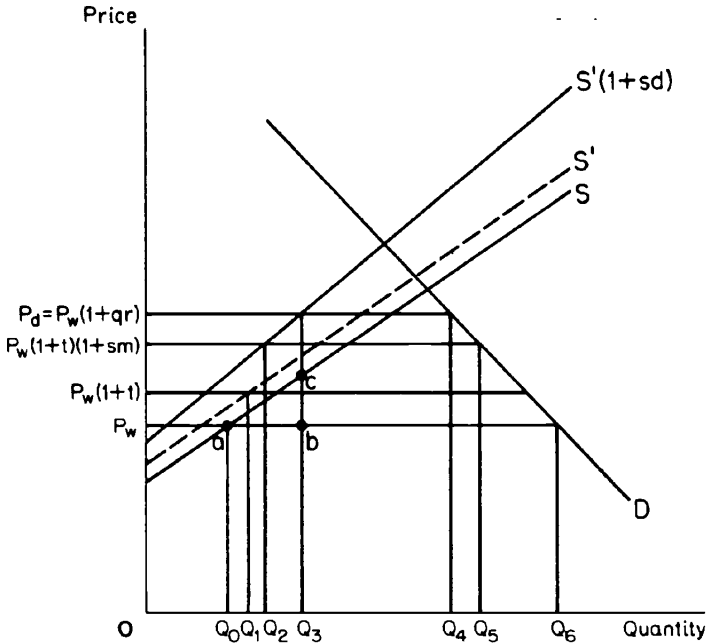


Fig. III-1. Protection of domestic market.

The net effect of the various protective devices illustrated in Figure III-1 is a stimulus to output amounting to bc per unit. This has resulted in an expansion of output along the original supply curve from point a to point c , for a change in output quantity of Q_0Q_3 . If our interest is in matters involving the product market such as the extent of import-substitution or restriction of imports, the net stimulus of bc is expressed as a rate with respect to the free trade price P_w : the net rate of protection of output. If however we are interested in the process by which value is added by primary factors, the net stimulus is more appropriately considered with respect to free-trade per unit value-added: the effective rate of protection of value-added.²²

In cases where the quota is the binding constraint on imports, such as the competitive case illustrated in Figure III-1, it may be important to know how much of the protection is attributable to the quota and how much due to the

22. For further discussion of the net and effective rates of protection, as well as the assumptions underlying the analysis, see J. Clark Leith, "The Effect of Tariffs on Production, Consumption and Trade: A Revised Analysis," *American Economic Review*, Vol. LXI, No. 1, March 1971.

other devices such as tariffs and indirect taxes. For example, if the quota restriction on competing imports were to be lifted by placing an item on OGL, we would want to know what would happen to protection of domestic activities. When there is a monopoly in domestic production (but the quota is not held monopolistically), use of a quota instead of a tariff enables the domestic monopolist to exercise his monopoly power. Hence if the quota is set at the same level of imports as would prevail under a tariff, the quota premium exceeds the tariff and domestic production is less than under a tariff.²³ In either case – monopoly or competition in the domestic market – it is useful to calculate both the premium due to the binding quota restriction and the latent premium due to tariffs and indirect taxes which would pertain in the absence of the quota. The difference then tells us how much premium the licence system provides over and above the tariff and indirect tax system.

Changes in the magnitudes of the various components of the protective structure can also be considered. For example, the introduction of extensive surcharges in 1970, which simultaneously placed many items on OGL, can be considered by recalculating the protection under the new situation.

For empirical application, the relationships among the various protective devices are expressed precisely in algebraic form. The derivations and the formulas are contained in Appendix C. To apply the formulas we required an extensive body of data for each of the wide range of industrial activities covered: inputs and outputs, together with data on the magnitudes of the protective devices employed.

Our primary data source was the Central Bureau of Statistics' (CBS) annual survey of industrial establishments employing over 30 persons. With the cooperation of the CBS Industrial Statistics Section we were able to obtain detailed extracts from the returns of inputs, outputs, and indirect taxes, all at the establishment level. Confidentiality of individual returns was maintained by use of an identification code showing only industry, region, and establishment number.

The establishment data all refer to 1968, which was the latest year for which reasonably complete returns were available when we began this work. The results thus provide a picture of the situation in a period of relative economic stability. Liberalization, following the devaluation in mid-1967, was beginning, but the OGL list was largely confined to industrial materials,

23. For a discussion of the differences between a tariff and a quota when competitive conditions do not hold, see Jagdish Bhagwati, "On the Equivalence of Tariffs and Quotas," in R.E. Baldwin, *et al.*, eds., *Trade, Growth and the Balance of Payments – Essays in Honor of Gottfried Haberler*, Rand-McNally, Chicago, 1965. Bhagwati also analyses cases where there is monopoly holding of quotas, which is not of major interest in the Ghanaian case.

spare parts, and a few essential consumer items. The licencing system was running about as smoothly as in any year, and few tariff changes were instituted during the year.

Additional information not provided in the industrial statistics data had to be obtained from other sources. Our first step in this regard was to match each of the outputs and inputs listed by an establishment with the appropriate SITC 6-digit import item. For the quota premium rate on output we calculated the rate of excess of unit value of domestic output over the 1968 c.i.f. unit value of the competing 6-digit import item. We then calculated a weighted average quota premium (using domestic production at c.i.f. unit values as weights) for the establishment. For the tariff rate on output we calculated the ratio of 1968 duty collections for the matching SITC 6-digit item to the 1968 c.i.f. import values, and similarly for the sales tax rate on imports. The weighted average for the establishment also used weights at tax-free prices. We chose to use the collections rate rather than the scheduled rate because there are large discrepancies between the two due to numerous exemptions of duties granted various importers.²⁴ The difference between the scheduled and the collections rates is not trivial. Scheduled tariff collections on all imports would have yielded a tariff rate of 47.6 percent for 1968, whereas the actual collections rate for the same year was 20.1 percent.²⁵ On the grounds that it is virtually impossible to segment the duty-free and duty-paid markets in Ghana, we assumed that the tariff component of the domestic manufacturers' protection is only the average rate of duties and indirect taxes on competing imports, not the maximum.

Our approach to estimating the quota premium rate is subject to the usual shortcoming of unit value comparisons. In addition, it does not allow for real or imagined qualitative differences between the domestic and foreign goods, and hence does not tell us the extent to which the restrictive system allows the price of the domestic good to rise above what the price of that same good would be under free trade. Rather, it simply tells us how much the price of the domestic good exceeds the price of the foreign good. Ideally it is the former comparison that is of interest in considering the protection of domestic production: a with-versus-without comparison. At a minimum, the increase in the price of the domestic product due to the quota restriction is covered by the increase in the price of the foreign product due to tariffs and

24. As far as we could determine, the imports and duty collections (including sales tax on imports) are recorded at the same time. Hence a timing problem does not arise.

25. The scheduled rate was computed by determining the scheduled import duties (but not sales tax) for each SITC 6-digit item in the CBS, *External Trade Statistics*, December 1968, on the assumption that all imports of the item attracted full duty. The actual collections rate is from Table II-1 above.

indirect taxes. Hence whenever the nominal protection due to tariffs and indirect taxes exceeds the calculated quota premium (and the tariff is not redundant), or when we are unable to calculate a quota premium, we use the tariffs and indirect taxes on imports as our nominal rate of protection.

Turning to the input side, there are three types of inputs distinguished in our establishment data: materials, fuels and lubricants, and electricity. For materials, due to a general absence of quantity information, we were forced to settle for the inflation of costs due to tariffs and taxes, which is a minimum inflation that does not take into account the possibility of quota premia on these inputs. However, because most inputs were on OGL in 1968, this is not a serious shortcoming.²⁶ The inflation of material input costs that we did take into account are of two types:

- (1) duties and indirect taxes paid on directly imported inputs; and
- (2) in the limited number of instances where it occurred, higher cost importable inputs purchased locally.

For the first, we computed the rate by taking the ratio of duties paid to purchases of imported materials. For the second, we relied on the duty and sales tax collections on the matching SITC 6-digit imports as a proportion of the c.i.f. value of these imports, hence treating the importable inputs purchased locally as if they had been imported and duties paid on them. An average for each establishment was calculated, using weights at free-trade prices.

Petroleum fuels and lubricants constitute a relatively small proportion of most establishments' inputs, so we did not attempt a detailed disaggregation, but simply used the proportion of duties plus indirect taxes to total supply of fuels and lubricants to deflate use of petroleum fuels and lubricants.

Electricity comes largely from the Volta Dam, and is not directly subject to any trade distortion; consequently, we did not adjust use of electricity in our calculations.²⁷

From what we have indicated so far, it is clear that our data and methods will subject our results to a number of qualifications. Specifically, we should note the following. First, our matching of domestic production and use of importable materials that are not directly imported with imports at the SITC 6-digit level was done to avoid the well known downward bias resulting from weighting tariff and quantitative premia rates by imports when items subject

26. To the extent that there were still quota premia on inputs, this procedure implicitly includes the input premia as part of the protection of value-added and output received by the producers. And in most cases producers do in fact receive the premia because licences for industrial materials go to actual users rather than intermediaries.

27. Additional data problems and methods are discussed in Appendix C.

to different rates are grouped. However, the result of this is the possibility of some arbitrarily narrow definitions of competing imports.

Second, our coverage is confined to an arbitrary selection of "large" establishments — these known to CBS and completing the 1968 annual detailed return less those whose returns we omitted because of inconsistent or incomplete data. Consequently, our results must be treated with some caution in drawing conclusions about the overall degree of protection of Ghanaian industrial activities. Rather, they are simply indicators of the wide range of protection enjoyed by Ghanaian industrial activities.

Third, we have no way of confirming the accuracy of our input-output data. There is the very basic problem of accurate accounting records. While we have eliminated some establishments because of incomplete or inconsistent returns, there probably remain others who had the foresight to enter any set of consistent numbers just to complete the form and avoid a call-back from a CBS official. This problem could have been minimized by undertaking the primary data collection ourselves, but only at the cost of a much more limited coverage. Beyond this, there is the problem of deliberately faked returns. Although the CBS assures the reporting firms that the return is confidential and will not be used for taxation or similar purposes, we are skeptical of the extent to which firms do report accurately. If a firm is keeping a double set of books, it is highly unlikely that it would use its private set to complete the questionnaire for the CBS, or anyone else. This possibility introduces a number of potential biases into our data. It means that we can generally expect the returns not to omit payment of duties on inputs and sales and excise taxes on output if they are liable for them. Hence, on the whole there is unlikely to be much understatement of these items. There is, however, the general incentive to overstate costs of inputs and understate the value of the output. This tends to reduce reported value-added, and where the effective rate exceeds the nominal rate this inflates the computed effective rate of protection.²⁸ At the same time, value-added at world prices is understated proportionately more than the effective rate of protection is overstated and as a consequence the computed net rate of protection is slightly understated.

The second major bias in our calculations arises from our inability to take into account possible quantitative premia on material inputs. This tends to reduce the computed value-added at world prices and hence inflate the computed effective rate of protection, where the effective rate exceeds the nominal rate. For the net rate of protection the overstatement of the effective rate

28. This is readily seen from equation (C.5), where V_j^i is understated by the net amount of the understatement of X_j^i and overstatement of $\Sigma_i X_{ij}^i$.

of protection more than offsets the understatement of value-added at world prices. As a result, the net rate of protection is also overstated.

Finally, we have not taken into account the possibility that the structure of protection might have caused substitution in the input-output relationships.²⁹ For the industries considered we do not have enough observations or reasonably homogeneous inputs and outputs to estimate the substitution elasticities between inputs, and hence are not in a position to make the appropriate empirical adjustments of our estimates. If there is in fact a positive elasticity of substitution, the zero elasticity of substitution (i.e., fixed coefficient) assumption means that our estimates overstate the actual rates of protection.³⁰

Putting these three biases together, we can unambiguously say that our computed effective rates of protection overstate the true picture where the effective rate exceeds the nominal rate. Our computed net rates of protection, however, are subject to offsetting influences which prevent an unambiguous statement concerning the bias, although our general presumption is that they are also overstated.

(c) Estimated rates of protection

We prepared estimates of protection for a broad range of industrial activities (Table III-5). For each activity there is an estimated rate of effective, net, and nominal protection. Each rate of protection is estimated initially on the basis of the quota restrictions (QR's). Then we estimated the element of protection due to the combined influence of tariffs, indirect taxes, and other non-quota elements (the tariff-tax system). The difference between the two indicates how much additional protection the licensing system provided over and above the protection due to the tariff-tax system. These estimates all refer to 1968.

The estimates contained in Table III-5 are industry averages where data from more than one establishment were available. The average is a weighted average, using the share of value-added at world prices for the effective rates of protection and the share of output at world prices for the net and nominal rates of protection. This, of course, is not the same as calculating rates of protection from aggregated data, which implicitly weights by protected shares.

29. See J. Clark Leith, "Substitution and Supply Elasticities in Calculating the Effective Protective Rate," *Quarterly Journal of Economics*, Vol. LXXXII, No. 4, November 1968; and "The Effect of Tariffs on Production, Consumption and Trade: A Revised Analysis," *op. cit.*

30. See "Substitution....," *op. cit.*

Table III-5
Protection of Ghanaian industries, 1968 and 1970 (rates and standard deviations of rates
in percentages, ranks in ascending order)

(1)	(2)	(3)	(4)			
Industry			Effective rates of protection			
No.	Description	Notes	No. of estb.	Quota restrictions (QR's)		
				Rate	S.D.	(Rank)
1221	Gold mining	(9)	3	-12	6	(2)
1222	Bauxite mining	(9)	1	-3		(6)
1223	Manganese mining	(9)	1	-3		(7)
2010	Meat processing	(6)	3	35	92	(21)
2031	Fruit squash	(9)	1	-13		(1)
2039	Fruit and veg. processing	(5, 7)	1	498		(37)
2055	Coffee hulling	(7)	1	106		(27)
2061	Biscuits	(2, 7)	2	247	**	(33)
2082	Cocoa butter	(9)	1	-107*		(44)
2089	Confectionery	(7)	2	385	29668	(35)
2111	Distillery	(1, 7)	2	-312*	**	(46)
2131	Brewery	(3, 4, 7)	2	56	32	(25)
2140	Soft drinks	(2, 7)	4	20	17	(17)
2201	Processing raw tobacco	(7)	2	1803		(42)
2311	Kente	(9)	2	-3	6	(5)
2320	Knitting	(3, 6)	1	927		(40)
2411	Wearing apparel	(6)	13	749	521	(39)
2430	Shoes	(6)	20	1633	1507	(41)
2443	Mattresses	(1, 7)	1	2		(8)
2444	Towels, bedsheets, etc.	(1, 8)	2	23	70	(18)
2449	Blankets	(1, 3, 7)	1	53		(24)
2511	Sawn timber and lumber	(9)	34	-10	6	(3)
2601	Furniture	(1, 7)	17	24	136	(19)
2609	Fixtures	(1, 7)	1	548		(38)
2720	Misc. paper	(1, 6)	4	11	35	(11)
2912	Handbags and luggage	(3, 7)	7	-192*	**	(45)
3003	Rubber processing	(7)	2	16	0	(13)
3119	Ind. chem.	(1, 8)	1	4		(9)
3121	Copra oil	(3, 7)	1	19		(16)
3122	Groundnut oil	(7)	1	108		(28)
3123	Palm oil	(3, 7)	1	14		(12)
3130	Paints	(6)	1	-653*		(47)
3193	Perfumes	(1, 6)	3	174	143	(32)
3194	Pharmaceut.	(1, 4, 7)	4	45	6	(23)
3195	Insecticides	(4, 6)	1	165		(31)
3196	Cosmetics	(1, 3, 6)	3	78374	78204	(43)
3197	Candles	(3, 7)	1	-7		(4)
3199	Misc. chemicals	(1, 6)	1	19		(14)
3412	Nails	(8)	1	19		(15)
3501	Al. ware	(2, 8)	3	30	67	(20)
3701	St. batteries	(6)	1	158		(30)
3703	Radio, etc.	(2, 8)	2	449		(36)
3709	Refrig.	(1, 6)	1	41		(22)
3920	Optical	(1, 7)	1	123		(29)
3949	Jewelry	(1, 7)	2	7	4	(10)
3959	Records	(7)	1	347		(34)
3990	Misc. plastics	(1, 8)	8	70	247	(26)

Table III-5 (continued)

(5)			(6)	(7)	(8)		
Tariffs			QR-	Tar. + surchg.			Tar. + surchg.
Rate	S.D.	(Rank)	Tar.	Rate	S.D.	(Rank)	- QR
-12	6	(4)	0	-13	7	(2)	-1
-3		(8)	0	-3		(8)	-0
-3		(9)	0	-3		(7)	-0
10	122	(13)	25	63	73	(25)	28
-13		(2)	0	-15		(1)	-3
498		(40)	0	478		(37)	-20
58		(28)	48	57		(23)	-49
247	**	(36)	0	246	**	(33)	-1
-107*		(46)	0	-105*		(44)	+2
385	29668	(38)	0	379	29197	(36)	-5
-312*	**	(47)	0	-277*	**	(46)	36
43	21	(25)	13	42	21	(20)	-14
20	17	(20)	0	19	17	(18)	-1
1803		(43)	0	1800		(39)	-3
-3*	6	(7)	0	-4	5	(6)	-1
927		(42)	0	1992		(40)	1065
389	252	(39)	361	926	589	(38)	176
36	96	(23)	1597	2045	1674	(41)	411
-4		(6)	5	-8		(4)	-10
23	70	(21)	0	188	592	(28)	165
53		(27)	0	52		(22)	-1
-12	7	(3)	2	-10	6	(3)	0
24	136	(22)	0	9	140	(12)	-15
548		(39)	0	-246		(45)	-794
11	36	(14)	1	14	37	(14)	3
-56*	**	(45)	-136	-30*	**	(43)	162
16	0	(16)	0	15	0	(15)	-1
4		(10)	0	-3		(9)	-7
19		(19)	0	9		(11)	-11
58		(29)	50	57		(24)	-51
14		(15)	0	12		(13)	-2
117		(1)	-770	-391*		(47)	262
174	143	(34)	0	340	272	(34)	226
45	6	(26)	0	42	8	(21)	-2
165		(33)	0	195		(30)	30
78374	78204	(44)	0	116993	116741	(42)	38619
-7		(5)	0	-8		(5)	-1
19		(17)	0	35		(17)	16
19		(18)	0	38		(18)	19
9	101	(12)	21	40	149	(19)	10
158		(32)	0	199		(32)	41
321		(37)	128	371		(35)	-79
41		(24)	0	189		(29)	+148
123		(31)	0	123		(27)	0
5	6	(11)	2	4	6	(10)	-3
198		(35)	149	196		(31)	-151
70	629	(30)	0	81	629	(26)	11

Table III-5 (continued)

		(9)			(10)			(11)
		Net rate of protection						
No.	Description	QR's			Tariffs			QR-Tar.
		Rate	S.D.	(Rank)	Rate	S.D.	(Rank)	
1221	Gold mining	-6	3	(3)	-6	3	(4)	0
1222	Bauxite mining	-3		(4)	-3		(6)	0
1223	Manganese mining	2		(6)	-2		(8)	0
2010	Meat processing	5	16	(12)	2	20	(13)	3
2031	Fruit squash	-7		(1)	-7		(3)	0
2039	Fruit and veg. processing	82		(41)	62		(42)	0
2055	Coffee hulling	17		(26)	9		(23)	8
2061	Biscuits	92		(44)	92		(45)	0
2082	Cocoa butter	8		(18)	8		(20)	0
2089	Confectionery	81	13	(42)	81	13	(43)	0
2111	Distillery	28		(33)	28		(36)	0
2131	Brewery	46	31	(36)	35	21	(38)	11
2140	Soft drinks	6	13	(13)	6	13	(14)	0
2201	Processing raw tobacco	55		(40)	55		(41)	0
2311	Kente	0	5	(7)	0	5	(10)	0
2320	Knitting	112		(46)	112		(47)	0
2411	Wearing apparel	52	31	(39)	42	22	(39)	10
2430	Shoes	25	25	(31)	8	29	(18)	17
2443	Mattresses	1		(10)	-2		(9)	3
2444	Towels, bedsheets, etc.	1	10	(8)	1	10	(11)	0
2449	Blankets	25		(32)	25		(34)	0
2511	Sawn timber and lumber	-6	2	(2)	-8	3	(2)	2
2601	Furniture	6	10	(15)	6	10	(16)	0
2609	Fixtures	10		(21)	10		(24)	0
2720	Misc. paper	12	17	(23)	12	17	(26)	0
2912	Handbags and luggage	90	35	(43)	51	35	(40)	39
3003	Rubber processing	15	0.04	(25)	15	0.04	(28)	0
3119	Ind. chem.	1		(9)	1		(12)	0
3121	Copra oil	7		(16)	7		(17)	0
3122	Groundnut oil	46		(37)	25		(33)	21
3123	Palm oil	14		(24)	14		(27)	0
3130	Paints	47		(38)	-8		(1)	56
3193	Perfumes	29	29	(34)	29	29	(37)	0
3194	Pharmaceut.	19	6	(27)	19	6	(29)	0
3195	Insecticides	8		(17)	8		(19)	0
3196	Cosmetics	103	18	(45)	103	18	(46)	0
3197	Candles	-2		(5)	-2		(7)	0
3199	Misc. chemicals	6		(14)	6		(15)	0
3412	Nails	11		(22)	11		(25)	0
3501	Al. ware	4	14	(11)	-4	18	(5)	8
3701	St. batteries	21		(28)	21		(30)	0
3703	Radio, etc.	32		(35)	28		(35)	5
3709	Refrig.	9		(19)	9		(21)	0
3920	Optical	25		(30)	25		(32)	0
3949	Jewelry	9	5	(20)	9	7	(22)	0
3959	Records	155		(47)	88		(44)	67
3990	Misc. plastics	23	31	(29)	23	58	(31)	0

Table III-5 (continued)

(12)		(13)	(14)			(15)			(16)	
Nominal rate of protection***										
Tar. + surchg.			T+S- QR	QR's			Tariffs			QR- Tar.
Rate	S.D.	(Rank)		Rate	S.D.	(Rank)	Rate	S.D.	(Rank)	
-6	4	(3)	-0	0	0	(1)	0	0	(1)	0
-3		(8)	-0	0		(1)	0		(1)	0
-3		(9)	-0	0		(1)	0		(1)	0
11	12	(21)	7	22	13	(20)	19	15	(21)	3
-8		(1)	-1	0		(1)	0		(1)	0
60		(39)	-2	88		(40)	88		(41)	0
9		(18)	-8	24		(22)	17		(20)	8
92		(44)	-0	103		(42)	103		(44)	0
8		(17)	-0	0		(1)	0		(1)	0
79	13	(41)	-1	105	20	(43)	105	20	(45)	0
26		(31)	-2	89		(41)	89		(42)	0
34	21	(36)	-12	54	23	(34)	43	13	(36)	11
5	12	(15)	-1	12	12	(12)	12	12	(12)	0
55		(38)	-0	64		(38)	64		(39)	0
-1	4	(11)	-1	7	5	(9)	7	5	(9)	0
241		(47)	129	124		(46)	124		(47)	0
106	38	(45)	54	63	31	(37)	53	23	(38)	10
87	43	(42)	63	58	21	(35)	41	11	(35)	17
-5		(4)	-6	5		(7)	2		(7)	3
2	82	(13)	2	9	20	(10)	9	20	(10)	0
25		(29)	-0	35		(30)	35		(32)	0
-6	2	(2)	0	0	0	(1)	0	0	(1)	0
-3	14	(6)	-9	15	9	(15)	15	9	(16)	0
-4		(5)	-14	16		(17)	16		(18)	0
13	18	(23)	2	21	13	(19)	21	13	(22)	0
29	50	(34)	-61	119	48	(45)	80	33	(40)	39
14	0.08	(24)	-1	17	0	(18)	17	0	(19)	0
-0		(12)	-1	29		(24)	29		(26)	0
3		(14)	-4	16		(16)	16		(17)	0
24		(27)	-22	58		(36)	37		(33)	21
11		(22)	-2	15		(14)	15		(15)	0
28		(33)	-19	69		(39)	3		(13)	56
76	46	(40)	47	49	31	(33)	49	31	(37)	0
18	6	(25)	-1	29	7	(25)	29	7	(27)	0
10		(19)	1	27		(23)	27		(25)	0
152	28	(46)	49	113	31	(44)	113	31	(46)	0
-3		(7)	-0	7		(8)	7		(8)	0
11		(20)	5	14		(13)	14		(14)	0
21		(26)	11	22		(21)	22		(24)	0
-1	19	(10)	-5	28	15	(26)	22	16	(23)	8
26		(30)	5	39		(31)	39		(34)	0
32		(35)	-0	40		(32)	35		(31)	5
42		(37)	33	31		(27)	31		(28)	0
25		(28)	0	32		(28)	32		(29)	0
8	7	(16)	-1	10	3	(11)	9	6	(11)	0
87		(43)	67	164		(47)	97		(43)	67
28	60	(32)	5	33	31	(29)	33	53	(30)	0

Table III-5 (continued)

		(17)			(18)
		Nominal rate of protection***			T+S
No.	Description	Rate	S.D.	(Rank)	-QR
1221	Gold mining	0	6	(1)	0
1222	Bauxite mining	0		(1)	0
1223	Manganese mining	0		(1)	0
2010	Meat processing	34	11	(28)	12
2031	Fruit squash	0		(1)	0
2039	Fruit and veg. processing	87		(38)	-1
2055	Coffee hulling	16		(18)	-9
2061	Biscuits	102		(42)	-1
2082	Cocoa butter	8		(1)	0
2089	Confectionery	104	20	(43)	-1
2111	Distillery	88		(39)	-1
2131	Brewery	42	13	(32)	-12
2140	Soft drinks	11	12	(12)	-1
2201	Processing raw tobacco	63		(34)	-1
2311	Kente	6	4	(9)	-1
2320	Knitting	252		(47)	128
2411	Wearing apparel	133	45	(44)	70
2430	Shoes	154	14	(45)	96
2443	Mattresses	1		(7)	-4
2444	Towels, bedsheets, etc.	11	95	(11)	1
2449	Blankets	34		(27)	-1
2511	Sawn timber and lumber	0	0	(1)	0
2601	Furniture	14	9	(13)	-1
2609	Fixtures	15		(16)	-1
2720	Misc. paper	25	14	(21)	4
2912	Handbags and luggage	82	29	(37)	-37
3003	Rubber processing	16	0	(17)	-1
3119	Ind. chem.	29		(23)	1
3121	Copra oil	15		(15)	-1
3122	Groundnut oil	36		(29)	-22
3123	Palm oil	14		(14)	-1
3130	Paints	40		(33)	-20
3193	Perfumes	96	50	(40)	47
3194	Pharmaceut.	28	7	(22)	-1
3195	Insecticides	33		(26)	5
3196	Cosmetics	168	29	(46)	55
3197	Candles	6		(8)	-1
3199	Misc. chemicals	18		(19)	4
3412	Nails	33		(25)	10
3501	Al. ware	24	10	(20)	-6
3701	St. batteries	80		(36)	41
3703	Radio, etc.	39		(30)	-1
3709	Refrig.	64		(35)	33
3920	Optical	32		(24)	-1
3949	Jewelry	3	6	(10)	-1
3959	Records	96		(41)	-67
3990	Misc. plastics	42	55	(31)	9

Notes and Sources: See next page.

Notes and Sources to Table III-5

- Notes:
- * Negative value-added at world prices.
 - ** Negative value-added in one or more establishments of industry.
 - *** Nominal rate of protection is the net effect of deflators on the left-hand side of (C-4), (C-11) and (C-14) assuming $l = 1$ percent, $rb = 5$ percent, $r = 3$ percent.
1. No data on quota premia for all establishments.
 2. No data on quota premia for one or more establishments.
 3. Domestic production exceeds 90 percent of total domestic use, valued at domestic prices.
 4. 90 percent or more domestic production under price control.
 5. Less than 10 percent domestic production under price control.
 6. More than 90 percent domestic output competing with items covered by surcharges.
 7. Less than 5 percent domestic output competing with items covered by surcharges.
 8. Between 5 percent and 90 percent domestic output competing with items covered by surcharges.
 9. Export industries, with zero nominal protection, or negative if subject to an export tax.

Source: See text and Appendix C.

Consider the initial situation of protection due to the QR's. There are several negative or near-zero rates of protection which reflect the effects of the protective structure in levying a taxing effect on inputs that exceed the subsidy effect on outputs. The most obvious cases are the export industries that cannot obtain any protection of output via the protective structure but are subject to the taxing effect of higher-cost inputs: gold, bauxite, manganese, mining, fruit squash, kente weaving, and sawmilling. In addition, there is one "import-substitution" industry, candles, that has negative protection, which means there is a negative import-substitution effect.

In the positive range of protection, there are a few cases of negligible protection to four cases of negative value-added at world prices. At the low end of the scale (less than 10 percent Effective Rate of Protection — ERP) are industries producing mattresses, industrial chemicals, and jewelry. Moderate levels are enjoyed by industries such as beer, blankets, and pharmaceuticals. High to very high effective protection is received by a long list ranging from groundnut oil and coffee hulling (just over 100 percent), through records (over 300 percent), radio and TV assembly (over 400 percent) to apparel (over 700 percent), and shoes and cosmetics (over 1000 percent).

There are four cases of negative value-added at world prices (indicated in the table by *). This simply means that the value of output deflated to world prices is less than the value of inputs, again at world prices. These are industries producing cocoa butter, distillery products, handbags and luggage, and

paints. In the case of cocoa butter, which is an export industry, the cocoa beans are purchased at a subsidized price *vis-à-vis* the world market in order to receive protection.

Comparing the protection due to the QR's with that attributable to tariffs alone, there were 20 for which we do not have QR premia. Of the remainder, 13 had nominal protection due to QR's in excess of that due to tariffs and indirect taxes. In those cases where the QR premium we calculated was less than the nominal protection due to tariffs and indirect taxes, we assumed that at a minimum the establishment received the nominal protection due to the latter. This procedure implicitly assumes that the tariff is not redundant. In the seven cases where redundancy may be relevant (those where domestic production exceeds 90 percent of domestic use), there are two cases (brewery and travel goods) in which the nominal QR protection exceeds the nominal tariff protection. In the five other cases (knitting, blankets, copra oil, palm oil, and cosmetics) we do not have QR for two, while for the remaining three (knitting, copra oil, and palm oil) the nominal protection is probably overstated.

Our industry and protection data can also provide useful information on the protective effects of the surcharges introduced in August 1970. An important feature of the surcharges was that an item subject to surcharge was also placed under OGL. As a consequence the nominal protection granted an industry competing with surcharge-laden imports is equal to (or less than) the tariff and surcharge nominal protection: the QR was no longer binding. Hence the comparison between the QR protection and the tariffs-plus-surcharges protection indicates the changes in protection due to this liberalizing measure.³¹

Given the way the surcharges operated, it was possible for the surcharges either to increase or decrease the protection of output. And, of course, surcharges on importable inputs decreased protection. Assuming that the surcharges were fully applied,³² we computed surcharge rates protecting outputs, and chargeable on importable inputs. We then recalculated surcharge inclusive of rates of protection. For completeness we also allowed for the elimination of the 1 percent import license fee, which was abandoned at the end of 1968.

The results of the surcharges ranged from substantial increases in protection to the imposition of negative protection on a previously positively pro-

31. We are assuming away major structural change within the industries between 1968 and 1970.

32. Because of the limited experience with the surcharge this was the only option open to us. In theory this is appropriate, as the surcharges are applicable to virtually all importers, including manufacturers exempt from regular duties. In practice, exceptions or evasions may be extensive.

tected industry. Of the twelve industries which had 90 percent or more of their output competing with imports subject to surcharge, only one had its protection reduced due to surcharges. Most of the industries which did not compete with surcharged imports were negatively affected via increased input costs, although some had small increases in their protection. Of the 35 industries not competing with surcharged imports, 27 had their protection reduced due to surcharges. This very mixed and discriminatory result is in sharp contrast with the equal treatment that would have been accorded all industries via an equal proportionate across-the-board tariff and export subsidy (or, of course, a devaluation).³³

At the industry level it is clear that the 1968 protective structure in the Ghanaian industrial sector instituted vastly different stimuli between industries. And the changes instituted by the 1970 surcharges resulted in additional discriminatory changes in the protective structure, retaining the major differences between the protection enjoyed by the various industries.

The picture of substantial and apparently random variation is also found at the establishment level. The variation is evident when we consider the standard deviations of protective rates for individual establishments in the cases of multi-establishment industries. The industries with a large number of establishments such as apparel, shoes, sawmilling, furniture, and plastics all have standard deviations at least two-thirds the size of the average rate of effective protection. This is true for the basic protection due to tariffs as well as that due to QR's. Note also that the standard deviations of these industries did not decline with the introduction of the 1970 surcharges. The randomness is suggested by the lack of any significant relationship between the effective rate of protection and several potential explanatory variables. To test the possibility that differences in the rates of effective protection might be associated with certain establishment characteristics, we regressed the effective rate of protection under the quota restriction (QRERP) on: the number of years since production started (YSPS); a dummy for type of ownership (TOWNND) set equal to unity for state and joint ownership and equal to zero for other types; a dummy for nationality of ownership (NOWND) set equal to unity for non-Ghanaian and mixed enterprises and equal to zero for Ghanaian; and finally a regional dummy (REGD) set equal to unity for the Accra-Tema capital district and equal to zero for all other regions. Our sample consists of 101 establishments with positive value-added at world prices, and for which the data were complete. The regression yielded the following result:

33. See J. Clark Leith, "Across-the-Board Nominal Tariff Changes and the Effective Rate of Protection," *Economic Journal*, Vol. LXXVIII, No. 312, December 1968.

$$\text{QRERP} = 2.4 \text{ YSPS} - 244.0 \text{ TOWN} + 414.8 \text{ NOWND} + 784.7 \text{ REGD}$$

$$(0.05) \quad (-0.21) \quad (0.49) \quad (0.94)$$

$$R^2 = 0.0178$$

None of the coefficients is significantly different from zero (t values in parentheses) and the explanatory power of the equation is very low.³⁴ These establishment characteristics thus do not offer an explanation of the variation in effective rates of protection.

The protection of Ghanaian industrial establishments appears to be largely random. When set against the declared policy of simply promoting industrialization *per se*, the rationale for this apparently random dissemination of protection is not at all obvious. Yet when we recognize that this protective structure developed over several years, with protective instruments frequently brought into play to achieve other objectives, and with a complexity that both researchers and policy-makers would find difficult to sort out, we conclude that the variability and randomness of the protection of Ghanaian industrial activities was largely unintended.

4. Domestic resource costs in manufacturing

The effective rates of protection we reported in section 3 demonstrate that the trade regime instituted resource pulls that differ substantially between activities of the industrial sector. The purpose of this section is to cite a similar piece of evidence, using a slightly different measure, which also shows wide variation in the stimuli afforded Ghanaian manufacturing activities.

William F. Steel's study of Ghana's import-substitution policies³⁵ contains a set of domestic resource cost (DRC) estimates for a sample of 41 Ghanaian manufacturing establishments. His data were collected directly from the firms, and cover the period mid-1967 through mid-1968. The scope of coverage is somewhat more limited than our ERP estimates, but by relying on direct collection he was able to check data more thoroughly and obtain more detailed information than we were able to.

The concept of domestic resource costs is closely related to both the effective exchange rate and the effective rate of protection. At the same time it is designed to take into account social opportunity costs which neither of

34. An identical regression, omitting the 2511 group (sawmilling) yielded similar coefficients and t values.

35. See W.F. Steel, "Import Substitution and Excess Capacity in Ghana." *Oxford Economic Papers*, New Series, Vol. 24, No. 2, July 1972, based on his unpublished Ph.D. thesis, M.I.T., 1970.

the other measures does directly. The DRC refers to the number of units of local currency required to earn (or save) a unit of foreign exchange. Hence it is denominated in new cedis per dollar just as the effective exchange rate. The similarity with the ERP is that it focuses on value-added in domestic production and takes into account the effect of the price distortions on both output and inputs. At the simplest level of similarity the ERP may be translated into the DRC in the same way as the nominal tariff is translated into the effective exchange rate (see Chapter II, section 3). Thus:

$$\text{DRC} = (1 + \text{ERP})r \quad (3.1)$$

where

DRC = domestic resource cost, N¢ per \$, ERP = effective rate of protection, and r = official exchange rate, N¢ per \$.

Typically, DRC estimates take into account not only the trade regime which the ERP focuses on, but also allow for the appropriate "shadow prices" or social opportunity costs of the primary factors, capital and labor.³⁶ When these are included, the relationship of equation (III.1) does not strictly hold. Differences of definition aside, the DRC estimate for a local activity is an indicator of the extent to which the distortions taken into account provide a stimulus to that activity relative to, say, the official exchange rate or some (usually higher) social opportunity cost of foreign exchange.

Steel's estimates of DRC's in the 41 firms he covered point to the same general conclusion about randomness of outcomes as our ERP estimates: there is wide variation in the economic returns to Ghanaian import-substitution industries: The DRC estimates (Table III-6) range from N¢ 0.29 per dollar to N¢ 30.55 per dollar and beyond into the range of negative value-added at world prices. Further, substantial differences between firms persist within industry groups. For example, in the textile industry the range is N¢ 0.44 per dollar to negative value-added at world prices. (The official exchange rate at the time was N¢ 1.02 per dollar.) In sum, using a different set of data and a different measure, Steel's DRC work and our ERP estimates suggest the same sort of conclusion: the resource pulls instituted by the restrictive system exhibited substantial and apparently random variation.

Steel also considered the extent to which DRC's were related to various characteristics of the firms. He found that the DRC was related: positively

36. Because capital costs are not consistently available from the CBS survey, we did not attempt to use the data collected for the ERP estimates to compute DRC rates.

Table III-6
Steel's domestic resource cost estimates, 1967-1968 (DRC in new cedis per dollar, ranks in ascending order)

Industry group	DRC	Rank
11. Rice milling	1.15	7 (tie)
20. Food manufacturing	4.45	26
21. Beverages	0.71	5
22. Tobacco	1.15	7 (tie)
23. Textiles	(a) 0.44	2 (tie)
	(b) 1.69	11 (tie)
	(c) 1.87	13
	(d) -17.19*	33
	(e) -12.27*	34
24. Footwear and clothing	(a) 1.40	9
	(b) 1.96	14
	(c) 3.08	19
	(d) -25.55*	32
	(e) -7.15*	36
	(f) -1.65*	39
25. Wood and sawmills	(a) 0.67	4
	(b) 1.53	10
	(c) 2.69	18
27. Paper	-7.82*	35
30. Rubber products	4.05	23
31. Chemicals	(a) 0.29	1
	(b) 0.44	2 (tie)
	(c) 1.69	11 (tie)
	(d) 6.97	27
	(e) -1.93*	38
	(f) 3.39	20
33. Non-metallic	(a) 1.00	6
	(b) 4.18	24
	(c) 30.55	31
	(d) -2.93*	37
34. Basic metals	8.59	28
35. Metal products	(a) 2.24	15
	(b) 2.26	16
	(c) 2.57	17
	(d) 3.59	22
37. Electrical machinery	(a) 3.50	21
	(b) 10.94	29
38. Transport equipment	4.40	25
39. Plastics, miscellaneous	23.96	30

Note: * = negative value-added at world prices.

Source: W.F. Steel, "Import Substitution and Excess Capacity in Ghana," *op. cit.*, Table A-1.

with size of firm, the capital/labor ratio, and assembly type operations; and negatively with capacity utilization.³⁷ He concluded that

Inefficiency was found to be related to incentives established by foreign exchange policies. High effective protection resulting from restrictive tariffs on "non-essential" final goods encouraged final-stage assembly, which was significantly less efficient in utilizing resources than more integrated production. Large-size and relatively capital-intensive techniques similarly were associated with relatively inefficient production and were stimulated by licencing procedures, special concessions for capital, and minimum wages for labour.³⁸

This did not augur well for the success of import-substituting industrialization as a dynamic source of growth.

37. See W.F. Steel, *op. cit.*, Table VIII. Nationality of ownership and state ownership were not significant.

38. *Ibid.*, p. 235.