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Chapter 8

The Traditional Industries

Part Three presents detailed studies of the competitiveness of Egypt's major modern manufacturing industries in the fifties and sixties, particularly during the years around the devaluation of 1962. Evaluation is based primarily on estimates of effective rates of protection (ERPs) and domestic resource costs (DRCs) for each individual industry.

The details of the estimates have been published elsewhere.[1] Here we shall only point out that they are based upon detailed output and cost information for the individual industries and *not* upon input-output tables and input coefficients implied by such tables. Input-output tables for less developed countries are usually quite unreliable and may not always utilize all available data; moreover, in the case of Egypt, no adequate up to date input-output table has been available to the authors. Hence, only those industries for which sufficient information about inputs and outputs could be obtained are included here. They include ten manufacturing industries, of which four are traditional and six are new. Measured by value added, they cover 26.2 percent of manufacturing industry with over ten workers per establishment and 22.8 percent of all establishments (see Table 8-1). Measured by wages and salaries paid, the coverage is 29.3 percent, and by employment, 28.1 percent (in both cases for establishments of over ten workers). While the coverage of modern manufacturing is certainly higher, we clearly cannot claim that our sample is representative. In addition, the estimates of ERPs and DRCs are of widely differing quality, indicating, for some industries, orders of magnitude at best.

The years taken for study depend entirely upon availability of data. For seven industries, years before as well as after the devaluation of 1962 could

TABLE 8–1

Employment, Wages and Salaries, and Value Added in Manufacturing Industry, 1966–67

Code	Industry	Employment (thous.)		Wages and Salaries (mill. £E)		Net Value Added (mill. £E)	
		Total	Incl. in This Study	Total	Incl. in This Study	Total	Incl. in This Study
20	Food	78.8		12.9		36.5	
207	Sugar[a]		20.8		4.1		4.7
21	Beverages	5.7		1.3		3.4	
22	Tobacco	12.3		3.0		13.0	
23	Textiles	247.6		47.4		107.6	
231	Spinning and weaving, dyeing and finishing[b]		113.7		22.9		46.8
24	Footwear and apparel	9.9		1.7		3.6	
25	Wood cork	3.6		0.6		0.9	
26	Furniture	8.9		1.5		2.4	
27	Paper	13.5		2.4		7.3	
271	Paper and paper pulp[c]		1.4		0.3		0.7
28	Printing and publishing	13.5		3.5		5.6	
29	Leather	2.9		0.5		1.0	
30	Rubber products	4.1	1.6[d]	1.5	0.5[d]	2.6	2.3[d]
31	Chemicals	46.1		10.9		32.0	
311	Industrial chemicals and fertilizers[e]		7.3		1.6		9.1
32	Petroleum products	10.2		3.3		10.3	
33	Nonmetallic minerals	32.6		5.6		10.7	
334	Cement		5.0		1.3		3.7

Code	Industry						
34	Basic metals	23.0		6.6		9.6	
341	Iron and steel		8.8		2.5		2.5
35	Metal products	25.5		4.5		8.8	
36	Nonelectrical machinery	7.0		2.3		2.9	
37	Electrical machinery	11.2		2.7		8.8	
38	Transport equipment	19.1		4.5		4.9	
383	Automobiles		5.3		1.2		2.4
39	Miscellaneous	6.7		1.2		3.2	
	All establishments with 10 or more workers	584.3	163.9	117.3	34.4	275.1	72.2
	All establishments with fewer than 10 workers	285.1	n.a.	n.a.		56.4f	n.a.
	TOTAL	869.4		n.a.		n.a.	

SOURCES: *Industrial Census* (ten workers and over), and *Industrial Census for Small Enterprise, 1967*, Central Agency for General Mobilization and Statistics (CAGMS), Cairo, April 1971.

a. Average 1960 and 1969–70.
b. Cotton spinning: average 1960 and 1969–70; weaving: 1965–66.
c. 1962–63.
d. 1963–64.
e. 1964–65.
f. Gross value added.

be studied; for three industries, data were available for only one year after the devaluation. Comparability is, thus, quite limited for several reasons.

In regard to interpretation, we emphasize that the industries were subject to several kinds of government intervention during the fifties and sixties, of which foreign exchange control is only one (and perhaps not even the most important one). All large industries were nationalized in 1961 or 1963, and have been exposed to both price and trade controls. Their investment programs have been designed by the government, and interference with their production programs through allocation of foreign exchange, specification of the type and source of inputs to be used, as well as the direction of output has been frequent. In addition, they were forced to increase both employment and wages in 1961 and 1962. To separate the impact of these various forces is exceedingly difficult, if not impossible.

This chapter is devoted to the traditional industries—cotton textiles (spinning and weaving), sugar, and cement—which (except sugar) were established in the early days of the country's industrialization around the turn of the century. When free trade was the prevailing dogma, particularly under British rule, they all had to struggle—and survive—with little protection, even, at times, with negative protection. Partly because of their early strength and partly because of government support, they have grown to become the largest employers and foreign exchange earners in the modern manufacturing sector.

The position of some important new industries, largely established after World War II, will be examined in Chapter 9. They represent an attempt to broaden the industrial structure toward the manufacture of basic intermediate products for which a large domestic market exists. The industries in this group are: phosphate fertilizers, nitrate fertilizers, paper, rubber tires, iron and steel, and automobiles.

The results obtained in the individual industry studies will be used in Chapter 10 for a general evaluation of resource use in manufacturing.

THE COTTON SPINNING AND WEAVING INDUSTRY

Historical Development.

Modern cotton textile manufacture in Egypt dates back to the first decades of the nineteenth century, when Mohammed Ali monopolized weaving and trading in cotton textiles and introduced large-scale cotton spinning.[2] Between 1818 and 1820 a number of cotton spinning mills were set up with European machines, together with bleaching and dyeing establishments. They were not successful, but the introduction of long staple cotton cultivation gave further stimulus to government investment in the industry. By 1833 thirty

factories were in operation; at the peak of their activity in the late 1820s, they employed about 30,000 workers. Power was mostly provided by tread-mills propelled by mules and buffaloes, although in some cases steam engines were imported. Jennies and looms were largely manufactured domestically, by Egyptian carpenters working under the direction of French technicians.

Appraisals of Mohammed Ali's industrialization ventures differ widely. There are reports of gross inefficiency, to which the centralized administration of the cotton mills probably contributed, but it seems that the industry was able to hold its own in the production of coarse cloth. Nominal protection was virtually nil and imports were, in principle, free (from 1820), but the armed forces provided an assured market and Mohammed Ali had the power to interfere with the importation of goods and to force his subjects to purchase domestic products. Substantial exports of yarn to Europe and of fabrics to Arab areas took place, and Indian muslins were gradually replaced by domes-tic products.[3] Toward the end of Mohammed Ali's reign, the industry declined. After various military defeats and the treaty of 1838 between the Powers and the Sublime Porte, which effectively removed all trade obstacles (apart from low import and export taxes) by abolishing monopolies, he was no longer able to finance the factories (which were operating at big losses). A large increase in cotton goods imports—mostly of yarn and fine cloth—ensued, and weaving and dyeing of coarse cloth adapted to domestic tastes survived only at the handicraft level, particularly in Upper Egypt.

A second attempt to establish a modern textile industry was made toward the end of the century. A spinning mill with 20,000 spindles was built in Cairo by the Egyptian Cotton Mills Company (founded in 1899), while an inte-grated mill, the Anglo-Egyptian Spinning and Weaving Company, was built at Alexandria.[4] Both mills had some prospects for success since they oriented their operations toward a large domestic demand for coarse yarns spun from ordinary domestic cotton from Upper Egypt, which was replaced by low-grade Indian and Syrian cotton whenever the former was considered too expensive. Moreover, the mills were protected by relatively high transporta-tion costs and by the 8 percent customs duty applied to all imports. But no sooner had the first factory started operations in 1901 when a countervailing excise tax of 8 percent was imposed, nullifying the external tariff. The excise tax was pushed by Lord Cromer personally in the name of free trade, but probably also under pressure from the Lancashire industry. The fact that the excise tax was not imposed across the board on all import-competing indus-tries (cement, for example) lends force to this argument.[5] Since the cotton mills had to pay duty on all imports—raw cotton as well as coal, dyes, and machinery[6]—they suffered, in effect, a negative "protection." The two compa-nies had great difficulties to show profits and in 1907 the Egyptian Cotton Mills Company had to close down. The Anglo-Egyptian survived somewhat

longer, benefiting from a five-year suspension of the excise tax granted by Cromer's successor. Nonetheless, it had to be reorganized by a German group in 1912 as the Filature Nationale d'Egypte. Contemporary observers hint at taxation as the basic difficulty of the industry. But Egypt's cottage industry, too, had difficulties in surviving. A 1909 survey of the weaving industry in Assiout notes that all the cotton yarn used there came from Europe and, in particular, from Lancashire.[7] Cotton spinning seems to have been virtually nonexistent outside the two modern mills. Moreover, hand-weaving "was declining on account of the competition from Europe. The town had only 70 looms while a few years ago it had 300."[8] It is significant that the small town of Akhmin in Upper Egypt was considered to be "the cotton center" because it provided yarn to the surrounding villages for weaving and was the recipient of their cloth.[9]

The industry prospered temporarily when trade was disrupted during World War I,[10] but stagnation returned in the early 1920s (Table 8–2). Thus, the industrial census of 1927 lists only 27,184 people as occupied in the textile industry as a whole, and mostly in fibers other than cotton. Only sixty-four establishments in cotton spinning and weaving had more than ten employees and only two were considered modern.[11] A compilation of factories founded from 1884 to 1951 does not indicate the opening of a single new textile factory during the two decades between 1907 and 1927.[12]

In addition to taxation of the industry, a law was passed in 1916 prohibiting the importation of foreign raw cotton for domestic consumption,

TABLE 8–2

Cotton Consumption by Domestic Spinning Mills and Yarn Imports

(five-year averages)

Period	Cotton Consumption (000 kantars)	Yarn Imports (tons)
1900–04	20.4	—
1905–09	25.8	—
1910–14	26.8	690
1915–19	54.4	—
1920–24	55.8	—
1925–29	55.8	720
1930–34	176.8	600
1935–39	513.4	480
1940–44	868.0	—
1945–49	1171.0	50

SOURCE: *Economic Bulletin*, National Bank of Egypt, 1951, No. 2.

allegedly to protect domestic cotton from foreign plant diseases. Whether this motivation was only a pretext for a protectionist measure or not, it certainly served the interests of the big landlords—the major cotton growers—very well. On the other hand, it dealt a severe blow to the textile industry, the main natural advantage of which lay in satisfying the mass demand for cheap cloth, for which domestic cotton was of too high a quality and hence too expensive. As far back as 1898, Egyptian spinning mills had been importing Indian short staple cotton to produce coarse cloth at competitive prices. The impact of the 1916 measure was fully realized in 1925, when the excise tax on Egyptian cotton manufactures was finally abolished. Unable to compete in the foreign market for coarse products because of high raw material costs, the industry thus became restricted to a protected market, sheltered at first by the general 8 percent tariff and eventually by higher rates when Egypt obtained tariff autonomy in 1930. In the expectation of higher tariffs, the Bank Misr founded a small factory in 1927 that later grew into a giant, with over a quarter of a million spindles: the Misr Spinning and Weaving Company at Mahalla El Kubra. More spectacular at the time, however, was the expansion of the Filature Nationale from 20,000 spindles in 1917 to 60,000 spindles in 1931.

When tariff autonomy was obtained in 1930, Egypt immediately raised the tariff on yarn and cloth from 8 to 12 percent. It was raised again on several occasions, until it reached £E10 per 100 kg. on yarn of lower counts, that is, roughly 30 percent of the import price in 1949. As a result of the tariff measures, production trebled and imports declined (Table 8–2). Value added data do not extend back to the 1930s, but the 1937 census reveals that, second only to the tobacco industry, the textile industry as a whole surpassed all other manufacturing sectors (including food) in terms of value of assets.[13] Bearing in mind differences in capital intensity, it may very well have been the leading manufacturing activity in terms of value added (at the two-digit level) in 1937.

World War II led to a further expansion of the industry, together with an enormous improvement in its financial position. Most companies were able to write off their equipment within a short period of time (six years in the case of the Misr Spinning and Weaving Company), to accumulate large stocks of raw materials and manufactured goods, and to build up their financial reserves substantially.[14] Consequently, the industry was able not only to replace its old equipment completely after the war but also to finance further new investments.[15] Thus, imports of textile machinery rose from 1,100 tons in 1940 to an annual average of 11,500 tons during the period 1946–1950.[16]

Toward the end of the 1940s a number of smaller mills had difficulties in marketing their products, particularly coarse materials. The main reason given was the excessive cost of domestic cotton in the production of coarse yarns.[17] And as the demand from the Allied Forces in Egypt petered out after the war, the industry found itself saddled with excess capacity, protected by

relatively high tariffs, but unable to export. The problem raised by the high cost of producing coarse cloth on the basis of high quality domestic cotton was tackled by imposing an export tax in 1948 on all varieties of cotton. In addition, a subsidy was granted in 1949 to help local mills export their surplus production.[18]

To satisfy domestic demand for cheap cotton cloth, large spinning and weaving mills were, in addition, subjected to a system of government-fixed prices on low-grade cloth in 1950.[19] This measure, which became a permanent feature of the Egyptian economy, was one of the first direct, large-scale government interventions in the price mechanism for manufactured products after the war. The subsidy system was suspended in April 1950 on the assumption that the high export tax on raw cotton would provide sufficient protection. Textile exports fell, however, until August, but started rising again under the stimulus of the increasing world demand related to the Korean War.[20]

After the Korean boom, textile exports fell nearly to half the level reached in 1951 and concern was voiced again about the need to stimulate demand for the industry's output. In 1953 two protective measures were taken: customs duties on cotton textiles were increased, and a fund for the "consolidation of the spinning and weaving industry" was created. The fund, financed by export taxes on cotton, was aimed primarily at promoting exports by coordinating the marketing effort abroad, by reorienting production toward the specifications of foreign demand, and by granting subsidies to cotton textile exporters.[21] After the elimination of the export tax on raw cotton at the end of the fifties, the export subsidies for textiles were financed by an excise tax of 2.5 to 5 percent, later increased to 6 percent, on the value of the raw cotton consumed by the spinning mills.

Significantly, voices were now raised once again to the effect that any long-run solution to the problems of the Egyptian cotton textiles industry had to be based on permitting imports of cheap short staple cotton.[22] Although moves in this direction were taken after 1965, as we shall see below, this issue has never been squarely faced by the government. The catastrophic consequences of this on the competitiveness of the industry will be discussed in the next two sections.

Cotton Yarn and Cloth: Production and Trade.

The production of cotton yarn experienced rapid growth between 1950 and 1971, with an average annual rate of 5.5 percent (Chart 8–1). Per capita apparent consumption (production plus imports minus exports) of textiles (cotton, wool, and synthetic fibers) increased by only 0.85 or 1.8 percent annually, depending on whether the prosperous post–World-War II period or the recession years 1952–1953 are taken as a base.[23] Exports of cotton fabrics,

which, supported by subsidies, began in 1948 after half a century of import substitution, provided the major stimulus for the growth in production, although the income redistribution that took place in the 1960–1971 period may have also played a role.[24]

The growth of cotton textile exports, particularly of yarn, was mainly due to the opening of a large market in Eastern Europe (Table 8–3). Yarns were exported to Romania as early as 1954, and large exports of fabrics to Eastern European countries began in 1964. Of the roughly 30,000-ton increase in yarn exports from 1957 to 1966, almost 24,000 tons went to bilateral trade

CHART 8–1

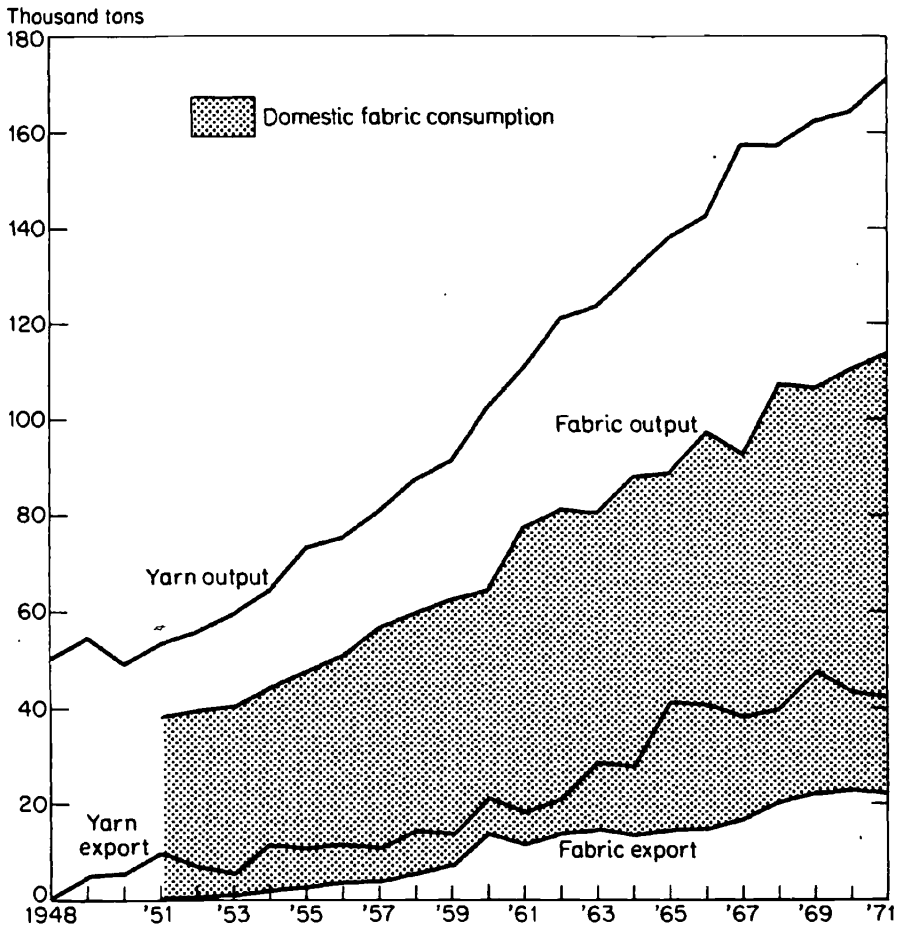**Cotton Textiles: Production and Exports, 1948–1971**

TABLE 8-3
Cotton Textile Exports

	Yarn				Cloth			
	Tonnage Exported (000 tons)		Unit Value (£E per ton, f.o.b.)		Tonnage Exported (000 tons)		Unit Value (£E per ton, f.o.b.)	
Year	Total	Convertible Currencies	OECD Countries[a]	Eastern Europe	Total	Convertible Currencies	OECD Countries[a]	Eastern Europe
1949	4.7	4.7	—	—	−0.1	—	—	—
1950	5.3	5.3	—	—	0.1	—	—	—
1951	9.8	9.8	—	—	0.1	0.1	—	—
1952	6.6	6.6	—	—	0.5	0.5	—	—
1953	5.4	5.4	—	—	0.6	0.6	837.0	—
1954	11.2	8.3	457.4	—	1.8	1.8	1,005.0	—
1955	10.5	5.4	443.5	—	2.5	2.5	1,429.0	—
1956	11.2	4.3	—	—	3.6	3.6	994.0	—
1957	10.7	6.6	—	—	3.7	3.5	954.0	—
1958	14.2	3.9	—	—	5.1	3.3	863.0	—
1959	13.4	5.3	463.0	—	7.0	6.6	747.0	—

Year								
1960	21.0	14.1	472.0	—	13.5	13.2	659.0	—
1961	18.1	12.4	474.0	—	11.5	11.4	637.0	—
1962	20.8	15.8	—	—	13.7	13.7	551.0	—
1963	28.7	15.3	—	—	14.7	14.5	—	—
1964	27.6 b	14.1	464.7	840.0	13.3	10.6	467.2	—
1965	41.1	15.5	469.2	—	14.5	11.0	499.6	—
1966	40.7	12.8	482.2	914.5	14.6	10.9	536.0	1,018.0
1967	38.0	11.1	473.9	925.1	16.9	11.4	496.4	1,110.0
1968	39.3	14.7	468.1	946.4	20.2	14.2	509.8	1,015.0
1969	47.7	23.3	511.5	1,014.9	22.0	16.0	530.2	1,117.0
1970	43.4	17.5	542.6	1,009.2	22.7	16.2	543.4	1,130.0
1971	42.1	16.7	—	1,015.8	22.4	17.0	—	—

SOURCES: *Monthly Bulletin of Foreign Trade*, CAGMS, Cairo, various issues. For c.i.f. unit values, *Supplement to the World Trade Annual*, Statistical Office of the United Nations, New York, 1968 to 1970 issues.

a. Beginning 1964, c.i.f. for OECD countries.

partners, who accounted for about 48 percent of Egypt's total exports of cotton yarn and fabrics in 1970–71. Moreover, Egypt was also able to double its exports to multilateral partners between 1957 and 1967. The growth rate of exports slackened somewhat after 1965, although a number of new markets, particularly among developing countries, were opened. From 1965 to 1971, exports to multilateral markets fluctuated strongly in response to the business cycles in the developed market economies.

While the volume of textile exports was steadily growing, unit values were at best stagnant, if not falling. In this regard, however, it is essential to distinguish between exports to multilateral and those to bilateral markets. In 1955, the unit values obtained in the two markets were virtually the same, but gradually a relative increase in prices of yarn and cloth exported to bilateral (mainly Eastern European) partners took place, particularly after the Soviet Union became a large-scale importer of Egyptian textiles in the early 1960s. Table 8–3 shows that during the period 1964 to 1970 prices obtained in the Eastern European markets for cotton yarn were almost double those in Western markets. The explanation may be quality differences. Unfortunately, we do not have a country-by-country distribution of yarn exports by count. It is reasonable to assume, however, that the Soviet Union, a major short staple cotton producer, would want to supplement its own coarse yarn production by finer yarns from Egypt, particularly because its lagging production of synthetic fibers compels it to use a relatively large proportion of long staple cotton in its textile industry. Granted that exports to the Eastern European countries are heavily weighted toward high count yarns, the trade statistics still point to artificially high prices for such imports. It seems likely that the bilateral trading arrangements have hiked the nominal Egyptian export prices, and that the real prices obtained are elusive because they depend upon the commodities (including weapons) received in exchange.[25]

Consequently, we shall take the unit values for multilateral yarn exports as representative of world prices. Table 8–3 illustrates that, while average export unit values of yarn in Egyptian currency were stagnant (or rose slightly) from the mid-1950s to 1969—with due adjustment for the 1962 devaluation and the gradual increase in quality[26]—world prices actually fell. This decline in world prices of cotton yarn is consistent with the virtual constancy of the price of short staple cotton—the usual raw material base for coarse yarns—between 1955–56 and 1970–71, with the large productivity increases achieved in major producing countries over the period and the competition from synthetic fibers. Hence, over time, Egypt has been receiving less and less per standardized unit of yarn exported.

We may note that the margin between the value of a ton of Ashmouni cotton (the main raw material used in spinning) and a ton of yarn at international prices is quite narrow, ranging between $250 and $300.[27] When the

yarn price is adjusted for cotton wasted in the process of spinning,[28] even this
narrow margin vanishes. Thus, the unit values received for cotton exported in
the form of yarn (deducting 17 percent for waste) during the years 1964 to
1970 were approximately the same as the unit value obtained for direct exports
of the raw cotton (Ashmouni) (see Chart 8–2).[29] In this sense, value added
in yarn production, evaluated at international prices, appears to be quite
small. This unfortunate circumstance, however, has much to do with the use of
medium-long staple cotton, such as Ashmouni, in the production of coarse
yarns. We shall return to this problem when the DRCs of the textile industry
are discussed.

CHART 8–2

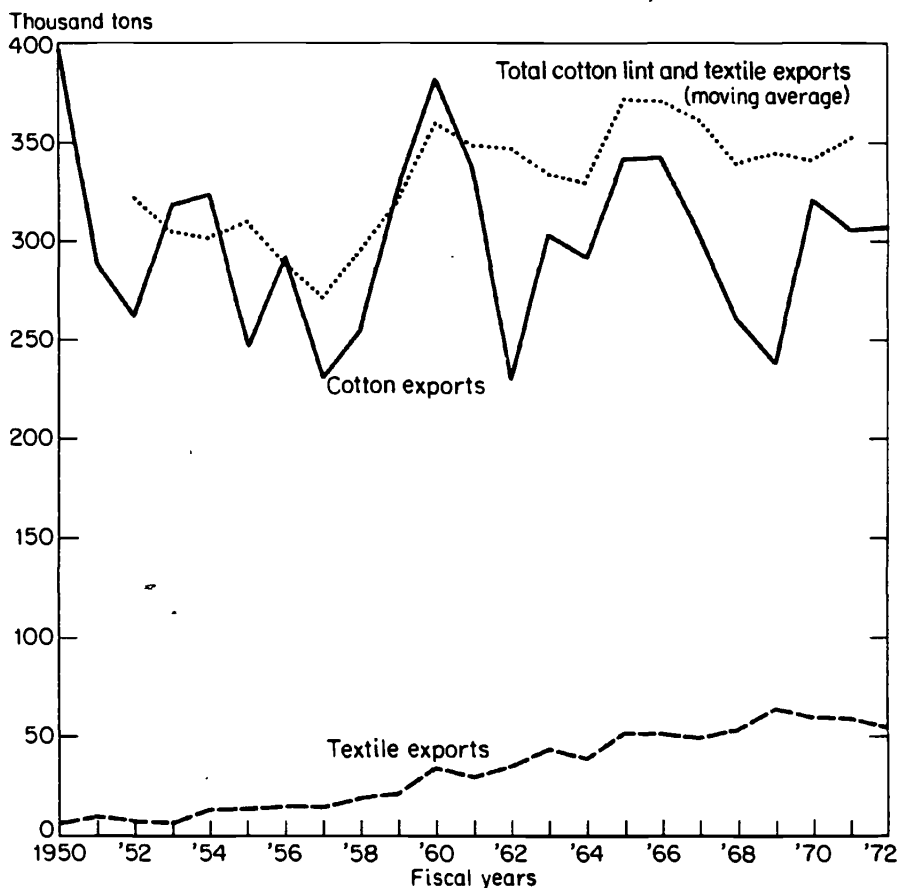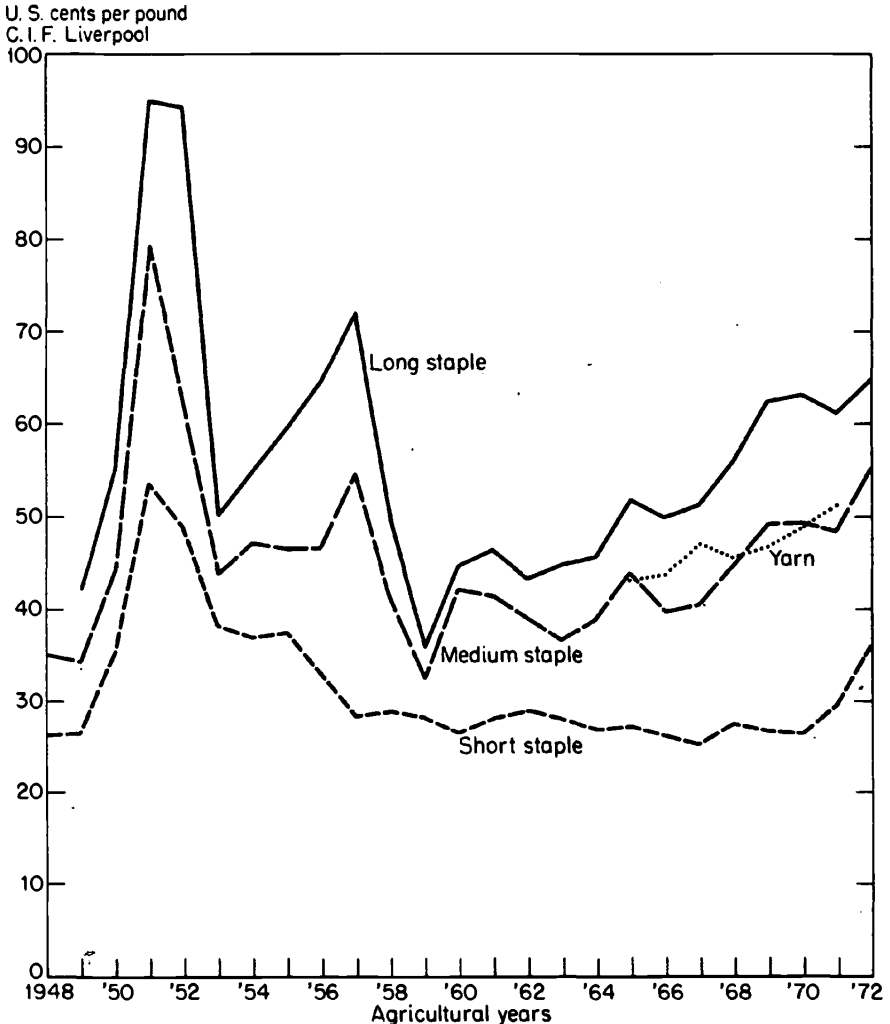**Exports of Raw Cotton and Cotton Textiles, 1950–1972**

CHART 8–3
Cotton Prices, 1948–1972

U. S. cents per pound
C. I. F. Liverpool

Agricultural years

It is not possible to pursue a similar analysis of volume and unit value for fabrics because of the large price differences between various degrees of finish (gray cloth, bleached, dyed, and printed fabrics) and quality. Suffice it to mention that Egyptian exports of cotton cloth in the mid-1950s were mainly in the form of printed fabrics destined for Arab countries, where they benefited from a taste preference. Hence, they fetched a relatively high price—about $2,500 per ton. Broadening of the market with a shift toward semifinished

cloth resulted in a gradual decline in unit values to an average of $1,658 in 1968–69: $1,850 in Arab countries, $2,200 in Eastern Europe, and $1,150 in other countries. Note that for fabrics, too, the price obtained in trade with Eastern Europe is remarkably high.

Since 1966 exports of cloth to bilateral trade partners has been stabilized at about 5,500 tons annually; all growth has been in the direction of other trading partners, particularly the Arab countries, North America, and members of the EFTA. But in all these markets, Egyptian textiles face stiff competition, and inability to meet specifications—however temporary—in a rapidly changing pattern of demand easily results in loss of markets. The EEC countries and African countries can be cited as examples.

Within the framework of the GATT Long-Term Agreement on Textiles, a quota of 3,600 tons for cotton cloth exports to the EEC countries in 1970–71 was set for Egypt. A quota set a few years earlier had been increasing by 4 percent annually. By 1969 only two-thirds of the quota was used, and during the following two years Egyptian exports to the EEC region were falling slightly.[30] In the markets opened by the GATT agreement (within the quota limits), lack of competitiveness must have played a part in the Egyptian lag. Also, Egypt has been unable to use up its quota in the United States, but it is not clear to what extent this may be related to the somewhat strained relations between the two countries. In any case, the GATT agreement has not served effectively as a brake on Egyptian textile exports. In this regard Egypt is in a position similar to that of India: lack of competitiveness is the basic obstacle. In Africa, which accounted for most of the exports to non-Arab developing countries, competing printed fabrics with "African" designs from Eastern Europe reduced the Egyptian share of the market substantially in such countries as Nigeria, Niger, Dahomey, and the Ivory Coast.[31]

Costs and Revenues, 1956 to 1969–70.

Evaluation of the competitiveness of the textile industry is always fraught with difficulties related to the diversity of both outputs and material inputs. The increasing integration of spinning and weaving activities makes independent evaluations of these activities more and more problematic, and, finally, the export mix may differ substantially from the general product mix. In Egypt the problems are compounded by the aggregation of cost and revenue data for all plants employing more than ten workers. At best we can obtain a picture of the average performance in the industry, but wide differences among establishments are known to exist in respect to productivity and efficiency; we have not been able to evaluate separately the profitability and competitiveness of those technologically advanced enterprises that specialize in exports and would therefore be particularly interesting from our point of view.

The available data permit us to estimate ERPs and DRCs for the joint production of yarn and cloth in 1956 and 1960, for the production of cloth in 1965–66, and for that of yarn in 1969–70. The 1956 and 1960 data are comparable. Included are establishments with more than fifty workers, primarily engaged in the production of yarn. The establishments processed about half their production of yarn into cloth in 1956 and 44 percent in 1960. For 1969–70, the same types of establishments were studied, but their number was reduced to sixteen through mergers and liquidation, and they all belonged to the public sector. The cost data published for 1969–70 claim to pertain to spinning only, and this, indeed, seems to be the case for the material inputs costs, but not for labor and capital costs. Estimating that 30 percent of labor had been occupied in weaving and other activities related to the production of fabrics, we reduced both wage and capital costs on that crude basis by 30 percent.[32] It follows that the estimates of ERPs and DRCs for 1969–70 are not fully comparable to those for 1956 and 1960, and that the estimates for the 1969–70 year are more shaky than those for the earlier two years.

For 1965–66, the data cover weaving establishments only. They include eighteen large establishments in the public sector and 223 private establishments, most of the latter having fewer than fifty workers.

On the revenue side, the main problem was to find export prices that corresponded to the product mix for the establishments included in the four years. Exported yarns do not differ significantly from those for domestic consumption in regard to degree of finish but usually have higher counts. As already mentioned, f.o.b. unit values for yarn exported to multilateral markets have been used as international prices for yarn, but they had to be adjusted for differences in average counts. Fabric prices vary widely according to degree of finish and quality, and the product mix sold for domestic consumption differs substantially from the export mix. Domestic consumption consists mainly of dyed and printed fabrics, while exports include large quantities of gray cloth in bulk. Exports to Arab countries, however, consist largely of finished fabrics similar to those marketed domestically. Hence, unit values for fabrics sold in the Arab countries may be used as an approximation for the prices that domestically marketed fabrics could obtain in multilateral exports.

It should be emphasized, therefore, that the available data do not permit accurate calculations of ERPs and DRCs; the results presented in Table 8–4 at best indicate broad orders of magnitude. The calculations for this industry are less reliable than those for the industries discussed later.

The Competitiveness of the Cotton Textile Industry.

The immediate impression from Table 8–4 is that of an industry with a low and declining competitiveness. We shall argue, however, that this im-

TABLE 8-4

Rates of Return, ERPs, and DRCs in the Cotton Textile Industry

	Textile Industry				Cotton Cultivation and Spinning as an Integrated Activity		Cotton Cultivation as a Separate Activity	
	Primarily Yarn with Some Fabric		Fabrics	Yarn				
	1956	1960	1965–66	1969–70	1960	1969–70	1960	1969–70
Actual Domestic Raw Cotton Basis:								
Rate of return, percent { at actual domestic prices	12.6	9.0	13.0	20.3	—	—	—	—
{ at international prices	4.9	0.9	−15.0	−10.2	—	—	—	—
Effective rate of protection, ERP, percent	31	62	68	213	—	—	—	—
Domestic resource costs, DRC, piasters per U.S. $, at rate of return: 5 percent	38.8	46.9	64.5	70.7	34.2	50.5	—	—
10 percent	46.8	55.9	69.7	85.9	36.6	55.5	—	—
15 percent	54.8	63.9	75.0	101.0	39.0	58.1	—	—
Hypothetical Foreign Raw Cotton Basis:								
Domestic resource costs, DRC, piasters per U.S. $, at rate of return: 10 percent	35.5	37.8	—	54.4	—	—	—	
Direct Export of Raw Cotton:								
Domestic resource costs, DRC, in cultivation, "normal" returns, piasters per U.S. $:								
a) average for varieties exported	—	—	—	—	—	—	26.7	35.5
b) average for varieties consumed by textile mills	—	—	—	—	—	—	30.8	45.0
Official exchange rate, piasters per U.S. $	35.2	35.2	43.5	43.5	35.2	43.5	35.2	43.5

SOURCE: B. Hansen and K. Nashashibi, "Protection and Competitiveness in Egyptian Agriculture and Industry," NBER Working Paper No. 48, New York, 1975, Table 18.

pression may be misleading as a guide to the future—provided the government is prepared to permit imports of short staple cotton.

The effective rate of protection was 31 percent in 1956 and increased to 62 percent before the devaluation of 1962.[33] In 1965–66 ERP was 68 percent for fabrics and in 1969–70 213 percent for yarn. Since changes in foreign prices and productivity were relatively small between these two years, it seems clear that effective protection was much higher for yarn than for fabrics, a phenomenon that is closely related to the relatively high prices obtained for Egyptian fabrics in Arab countries. It also seems clear that a product mix similar to that underlying the ERPs for 1956 and 1960 must have enjoyed a much higher degree of effective protection after the devaluation than before.

Domestic resource costs show a similar picture. At 10 percent return to capital, DRC in 1956 was already considerably higher than the official exchange rate, 46.8 piasters for the U.S. dollar against 35.2 piasters, and in 1960 it increased to 55.9 piasters (but see footnote 33). The DRC for fabrics in 1965–66 was 69.7 piasters, and for yarn in 1969–70, 85.9 piasters. For a comparable product mix it would seem that the DRC had increased from about 55 piasters before the devaluation of 1962 to around 80 piasters in the mid-sixties. While the official devaluation in 1962 amounted to 24 percent and the effective devaluation was lower, DRC increased by 40 to 50 percent. The industry was, thus, far from competitive, even at the "realistic" rate of 61 piasters, suggested by the IMF in 1966, and its competitiveness shows deterioration.

This gloomy picture of the leading Egyptian manufacturing industry rests, of course, on the assumption that the raw material basis of the industry is domestic cotton. We have already pointed out that the competitiveness of the industry is impaired by the ban on cotton imports: the industry is forced to use expensive, high-quality cotton for producing coarse qualities of yarn and fabrics that could equally well be made with cheaper, low-quality cotton such as American Middling 15/16 or Indian cotton. To quantify the impact of this trade restriction, we include in Table 8–4 DRCs calculated on the assumption of a shift in the raw material base to foreign cotton purchased at international prices about 20 percent below those of the Egyptian varieties actually used. The improvement in the competitive position is striking: DRC in 1956 would have been about the same as the official exchange rate at that time, and only slightly higher in 1960. In 1969–70, DRC for yarn would have been considerably higher than the official exchange rate (54.4 piasters against 43.5) but considerably lower than the "realistic' rate of 61 piasters.

We note that not only would the level of the DRCs be much lower if production were based on imported cotton, but also their increase during the sixties would have been lower—44 percent against the actual increase of 54 percent. This is related to the fact that long-staple prices increased in relation

to short-staple prices during the sixties, which by itself makes the substitution of short for long-staple cotton as an input more attractive. But this price trend may be reversed in the future.

It should be added that our calculations at this point are particularly crude and that they do not take into account the possible external costs that originally were the motivation (or pretext) for the ban on foreign cotton, i.e., the risk of importing new plant diseases. We are not in a position to judge how serious that risk really is, and we do not want to belittle the problem. However, the fact that the government has permitted some importation of cheap Indian and Chinese cotton as well as low-grade yarn in recent years shows a growing awareness of the possible gains from such a policy and perhaps also indicates that the risks may have been exaggerated.

If the textile industry were to base its production on foreign cotton, the domestic cotton now consumed by the industry at home would have to be exported. On that basis, in 1960 the industry would have been producing at a DRC of 37.8 piasters, with the replaced cotton produced at a DRC of 30.8 piasters (Table 8–4, col. 7); a devaluation of less than 10 percent would have sufficed to make the textile industry competitive. For 1969–70 the corresponding DRCs were 54.4 and 45.0 piasters. Even the replaced cotton would here require a slight devaluation (beyond that of 1962) to be competitive, but both textiles and replaced cotton would be highly competitive at the realistic rate of 61 piasters.

Table 8–4, finally, contains an estimate of the DRCs for cotton cultivation and spinning considered as an integrated activity. One reason for making this calculation is that there are great difficulties in gauging the international price for the low grade, medium staple varieties actually consumed by the textile industry. Were Egypt faced with a downward-sloping foreign demand curve for cotton lint, an attempt to export the cotton now used by the textile mills would result in a marginal revenue correspondingly lower than its current export price. In that case there might be an advantage in selling it in the form of textiles, if demand is more elastic for the latter than for the former. In treating cultivation and spinning as an integrated activity, we sidestep the problem of the international price of cotton. The DRCs thus obtained fall, as they should, in between the DRCs for the industry and cotton cultivation considered as separate activities. For 1960 (at a 10 percent return), the DRC was 36.6 piasters for the integrated activity and 55.9 and 30.8 piasters, respectively, for the independent activities. Hence, the integrated activity was almost competitive at the official rate.

In Table 8–5 we present the implicit tariff rates for cotton yarn, dyed and printed fabrics, and rayon yarn, calculated as the percentage difference between actual domestic and international prices. They show the nominal protection and, at the same time, give an impression of the government's domestic price policy for textiles.

TABLE 8–5

Implicit Tariff Rates for Textiles

(percent)

Commodity	1956	1960	1965–66
Cotton yarn	7.5	20.6	39.3
Dyed and printed cotton fabrics	12.2	13.0	48.5
Rayon yarn	18.2	19.8	80.2

SOURCE: Hansen and Nashashibi, NBER Working Paper No. 48, New York, 1975.

In 1956 the implicit tariff rates were quite low; at that time protection was largely provided through the export taxes on cotton. By 1960 the level of implicit tariff rates was on the rise, despite the abolition or reduction of export taxes on various varieties of cotton. By 1965–66 a very substantial increase in nominal protection had taken place, the implicit tariff rate having doubled for yarn, more than trebled for fabrics, and quadrupled for rayon yarn. This development is also reflected in the official wholesale price index, which shows a rise in the textiles subindex of 4 percent from 1955 to 1960 and of another 24 percent from 1960 to 1965. The domestic price rise was strong enough to permit an increase in the actual rate of return on capital for the industry from 12.6 percent in 1956 to 13.0 percent in 1965–66 and 20.3 percent in 1969–70 (Table 8–4).

Productivity Developments.

A look at productivity trends may throw some light on the causes which may have led to the declining competitiveness of Egypt's cotton textile industry. During the last two decades, productivity in textile manufacturing has increased rapidly throughout the world. Apart from technological developments, which have heightened the speed of ring spinning frames and looms and integrated a number of functions,[34] productivity has increased in many countries as a result of rationalizing the industry by scrapping old plants and replacing them with modern ones. Moreover, the high capital intensity associated with the new technology has meant a much higher rate of plant utilization and hence a shorter lifetime.[35] Consequently, technical innovations embodied in new equipment have been disseminated rapidly in developed Western countries and Japan, with per capita output more than doubled in the last fifteen years and operating costs drastically reduced.[36] The labor-saving innovations (such as the shuttle-less loom) may not have been to the advantage of developing countries, but they certainly improved the competitiveness of the developed countries.

In Table 8–6 we have attempted to illuminate productivity developments for labor and capital in the cotton spinning and weaving industries of Egypt. Ideally, capital productivity should be measured by output per hour of operating machines (rings). This information is not available, and since output per spindle-hour is available only as the product of capacity utilization and number of spindles installed, we prefer to simply reproduce these series. Capacity utilization in spinning has been quite high and, if the data are reliable, it exceeds that of most countries surveyed by GATT.[37] During the 1950s capacity expanded steadily, with the number of spindles doubling from 1953 to 1960 at a high rate of utilization. During the first five-year plan (1960–61 to 1964–65) and up to 1967, the industry seems to have been somewhat neglected. Capacity utilization rose to the upper limits of feasibility—in 1967 it must have actually hit the ceiling. This very high degree of capacity utilization was detrimental to efficiency, partly because obsolete machinery had to be put into operation. After 1967 a large increase in the number of spindles helped to improve the situation.

A comparison of capacity utilization and output per spindle installed indicates the impact of the introduction of new high-speed machinery. From 1966 to 1969–70, capacity utilization fell by 7 percent while output per spindle installed rose by 5 percent. This development is consistent with the increase in capital per employee.[38]

Such a development, however, implies that the industry has failed to adjust its labor requirement to the new level of machinery performance. Actually, there is evidence of substantial overstaffing, particularly during the 1960s. While labor productivity rose rapidly from 1956 to 1960, the increase seems to have been quite slow from 1960 to 1969–70. Shortcomings in the data may be partly responsible for these results, but generally the situation is similar to that in other industries with respect to overstaffing. In measuring labor productivity, the long-term trend toward production of finer yarn has not been taken into account, a circumstance that might explain the apparent slowdown of productivity growth.[39] However, in an interview with one of the authors, a high official in the Ministry of the Economy affirmed that the industry had an excess of workers amounting to 20 percent of its labor force, a situation that could not be remedied because of the resulting unemployment with all its related problems. It has been suggested publicly that wages and salaries of excess workers be shown separately in the accounts of an enterprise to reveal its true performance and possibly entitle it to compensation.

With respect to weaving, productivity trends are much more difficult to measure because of the large variety of products with different degrees of finish and quality. Measured simply as output in tons per loom installed, productivity growth has been rapid, well above that in spinning. To some extent the increase in output per loom installed was due to higher capacity utilization.

TABLE 8-6

Productivity Indicators in Egyptian Cotton Spinning and Weaving

Spinning

Year	Spindles Installed (000)	Capacity Utilization (%) [a]	Output per Spindle Installed (kgs.)	Output per Man-Hour (kgs.) [b]	Capital per Employee (£E) [b]	Average Yarn Count (English)
1953	593	80.8	100.1	—	—	17.7
1956	768	—	97.6	0.722	223.3	18.8
1958	1,054	—	82.6	0.754	195.7	21.2
1960	1,185	83.1	86.1	0.820	202.0	21.2
1964	1,366	90.1	93.3	—	—	23.3
1965	1,416	96.5	96.4	—	—	23.7
1966	1,477	97.0	95.0	—	—	23.7
1967	1,484	99.8	104.9	—	—	24.2
1968–69	1,545	96.9	102.0	0.841	289.2	24.6
1969–70	1,614	90.3	100.6	0.862	313.5	24.9
1971	1,762	—	97.0	—	—	25.1

TABLE 8-6 (concluded)

Year	Looms Installed (000)	Capacity Utilization (%)[a]	Output per Loom Installed (tons)	Output per Employee (000 meters)[b]	Capital per Employee (£ E)[b]
			Weaving		
1953	13.7	—	1.99	—	—
1956	17.2	—	2.93	6.49	104.4
1958	19.5	—	3.20	8.97	113.0
1960	21.7	70.0	2.96	9.12	—
1964	22.8	82.0	3.85	—	—
1965	24.8	79.5	3.58	—	—
1966	25.2	81.1	3.85	12.30	231.4
1967	25.5	87.6	3.63	—	—
1968–69	25.6	—	4.06	—	—
1969–70	27.2	—	3.97	—	—
1971	29.1[c]	—	3.90	—	—

SOURCES: Rows 1, 3, 6, 7, 8, and 9: Federation of Industries, *Yearbook*, several issues, and GATT COT/W/115, Add. 1, Table III–1; rows 4 and 5: *The Cotton Spinning Industry*, CAGMS, March 1970; rows 10 and 11: *The Cotton Weaving Industry*, CAGMS, March 1968.

a. Defined as actual weight of yarn and cloth, respectively, produced in 24 hours compared to the maximum weight of yarn and cloth which could be produced. For yarn this maximum appears to be on the order of 7890 hours per spindle per year.

b. Capital is defined as the machinery in operation evaluated at historical costs.

c. In addition, there are some 22,242 hand looms spread over villages and workshops.

This certainly was the case between 1960 and 1967. But, the rise in the proportion of automatic looms (from 53 percent in 1960 to 59 percent in 1967) must also have contributed to raising output per employee and output per loom. The higher level of mechanization is evidenced by the sharp increase in the capital-labor ratio.

Public versus Private Sector.

For the weaving industry some interesting information is available that may throw some light on the retardation of productivity growth that characterized the 1960s. Data on the structure of ownership show that about 30 percent of all mechanical looms (automatic and nonautomatic) in 1971 were owned privately, mostly by 177 smaller establishments with fewer than fifty workers. At the same time, some of those with over fifty workers—representing slightly less than one-fourth of the private firms—are quite large. To be sure, the larger private establishments are tied to the public firms by permanent contracts and operate under tight supervision and with fixed prices. Comparative data for public and private enterprises have been published on the distribution of equipment, labor, and inventories in the weaving industry for the year 1965–66. Unfortunately, no information is available on the distribution of output and value of production in the two sectors. Nevertheless, the data shown in Table 8–7 suffice to reveal interesting differences between the two sectors and to give some insight into the operations of the public firms. The distribution of equipment is included mainly for descriptive purposes; we have no way of knowing which technique is optimal, given the type of cloth to be produced, levels of wages and skills, and capital costs. If the prevailing institutional constraints mean constant overstaffing in the public sector, then, it could be argued, the lower the proportion of automatic looms the better!

The breakdown of employees shows a much higher proportion of operatives in the private firms than in the public sector, which seems to be saddled with an army of administrators and service employees. Although the higher degree of mechanization in the public sector, with a higher proportion of automatic looms, may require more maintenance work, this still does not account for the large difference observed.

Finally, average monthly wages in the public sector are double those in the private sector, where the average yearly man-hours are greater. This may be justified, to some extent, by the greater skills necessary for the technological sophistication of the public sector but, again, the large difference between the two suggests higher compensation of labor in the public sector.

Inventories in the public sector were enormous: finished and semifinished goods accounted for 30 percent of total annual output in the industry. This

TABLE 8–7

Public versus Private Sectors in the Cotton Weaving Industry, 1965–66

	Public	Private
Structure of Equipment		
Hand looms	22	4,930
Mechanical looms	3,143	4,550
Automatic looms	13,157	1,153
Total	16,322	10,633
Labor		
Number of employees	36,038	10,813
Percentage of employees		
Operatives	62.1	80.7
Service employees		
(maintenance)	27.5 ⎫ 37.0	14.1 ⎫ 16.5
Administrators	9.5 ⎭	2.4 ⎭
Owners, directors, and experts	0.8	2.8
Average man-hour per employee per year	1,842	2,170
Average monthly wage (£E)	20.79	9.07
Fringe benefits (£E)	0.98	0.14
Inventories (000 £E)		
Finished goods	15,529.6	117.9
Semifinished goods	12,861.1	4.4
Raw materials	7,586.8	134.9
Total	35,977.4	257.2
As percentage of total fixed assets	67.3	14.5

SOURCE: *The Cotton Weaving Industry,* CAGMS, March 1968.

fact is consistent with the general inventory growth in public firms noted for 1965–66 in the follow-up and appraisal of the first five-year plan. It is true that for weaving this occurred in a period of slack demand (see Chapter 5), and private subcontractors simply had to execute orders and deliver goods to the public sector without bearing any responsibility for the marketing. Nevertheless, it reflects a failure in adjusting supply to demand: it should not be forgotten that demand was cut back deliberately to stop overheating the economy and the pressures on the balance of payments, and, under such circumstances, public enterprises should not keep production going at all cost.

To sum up, in the weaving industry, the effects of nationalization have not been beneficial, and have probably been detrimental, to productivity and general efficiency.

THE SUGAR INDUSTRY

The modern sugar industry in Egypt dates back to the last century. The collapse of cotton prices after the cotton famine of the 1860s prompted the Khedive Ismail to look for other commercial crops for the khedival domains. Cane cultivation appeared to be an appropriate alternative, since it was particularly well suited to the soil and irrigation of Upper Egypt. Under the basin irrigation system prevalent there at that time, only one (winter) crop could be planted, and where perennial irrigation existed, cotton yields were generally lower than in the North, all of which made cane cultivation attractive. However, winter temperatures in Upper Egypt are too low for the use of common high-yielding cane varieties. Hence, the sugar yield in Egypt is usually lower than that in the major growing countries.[40] Directed and financed (via foreign loans) by the Khedive, cane cultivation was expanded and a number of sugar factories were established in Upper Egypt. It was a very large investment at the time—£E6 million. When the Khedive went bankrupt and was deposed, the factories were taken over by Egyptian and French capitalists.[41]

Up to 1880 only raw or brown sugar was produced locally, and it had to be exported to Marseilles for refining. In 1881 a Franco-Belgian company built a refinery at Hawamdieh, near Cairo—the largest of its kind in the world at that time—the capacity of which exceeded local production of raw sugar and thus required imports from abroad. In 1892 it merged with the company that had taken over the sugar factories originally built by the Khedive, and in this form maintained a private monopoly on sugar production until 1961.

In 1905 the sugar company went bankrupt as a result of low prices and the absence of any kind of protection. The industry was reorganized on a smaller scale to be able to compete with imports of refined sugar; by 1910 cane acreage was reduced to 40,000 feddan from a maximum of 88,000 feddan in 1901–1902. During World War I, with sugar imports difficult to secure, the industry was revitalized, but it was threatened again during the Depression, when prices of sugar from Cuba and Java reached a low point. Consequently, the government intervened in February 1931, imposing (variable) import duties on sugar at a level sufficient to shelter domestic production. The government was also authorized to fix the sugar cane acreage, the prices to be paid by the company to cultivators, the quota of raw sugar to be imported for refining, the quantity to be exported, and, finally, the price at which the refined sugar was to be sold to consumers. "The price was to be such that after making allowance for reserves and excise duty a minimum dividend of 5 percent was guaranteed to shareholders and bondholders. Any surplus profits were to revert in part to the government on a progressive scale."[42] Ever since that time,

the government has maintained its support of and close control over the sugar industry. In 1956 it was "Egyptianized" and in 1961, of course, it was nationalized.

Within the framework of the first five-year plan (1959–60 to 1964–65) and the projected expansion of cane cultivation related to the construction of the Aswan High Dam, a new government-owned sugar company was formed to undertake the construction of a factory at Edfu. Four more factories were constructed later and the old refinery at Hawamdieh was expanded. The industry branched into the production of cane and sugar derivatives—paper pulp, grain board, vinegar, acetic acid, dry yeast, and cosmetics. Altogether, £E48 million were invested in the sugar-based industry during the 1960s.

Sugar Production and Trade.

The development of raw sugar production from 1939 to 1971 is depicted in Chart 8–4. Its fluctuations depend essentially on cane area planted and yield per acre.[43] The area planted is constrained by the water supply; cane requires three times more water per acre than such alternative crops as cotton or wheat. The sugar output series (with a one-year lag) is correlated with the annual discharge of the Nile at Aswan.[44]

For almost four decades, from 1931, when sugar began receiving protection, until 1968, the sugar cane area remained roughly constant, fluctuating between 80,000 and 100,000 feddan. The government attempted to maintain the area within this range via the price mechanisms, increasing the price of cane as costs of production rose.

A significant expansion of output occurred between 1952 and 1955, which requires some explanation. Until the fall of 1952, sugar was rationed both for consumer and industrial use. The government maintained a foreign trade monopoly by imposing virtually prohibitive tariffs and taxes (exceeding 200 percent) on privately imported sugar.[45] In September 1952 it liberalized the consumption of sugar, setting a free market price that exceeded that of rationed sugar by some 50 percent. There was no incentive for domestic supply to meet the increase in demand, with prices remaining unchanged. Alarmed by the sharp rise in imports, the government increased producer prices in 1953, and the cane area was expanded by 12 percent.[46]

More significant, however, was an increase in yield by 20 percent. This was partly due to the application of more labor and greater care for the crop made possible by the higher prices. Over the whole period from 1952 onward, most progress was realized after the cane was cut; greater efficiency in sugar extraction in the factories and a shorter time span between harvesting and cane crushing had much to do with this phenomenon. A more accurate assessment of cane maturity and the treatment of cane seeds with hot water, increas-

CHART 8-4

Sugar: Production and Consumption, 1939–1971

Thousand tons
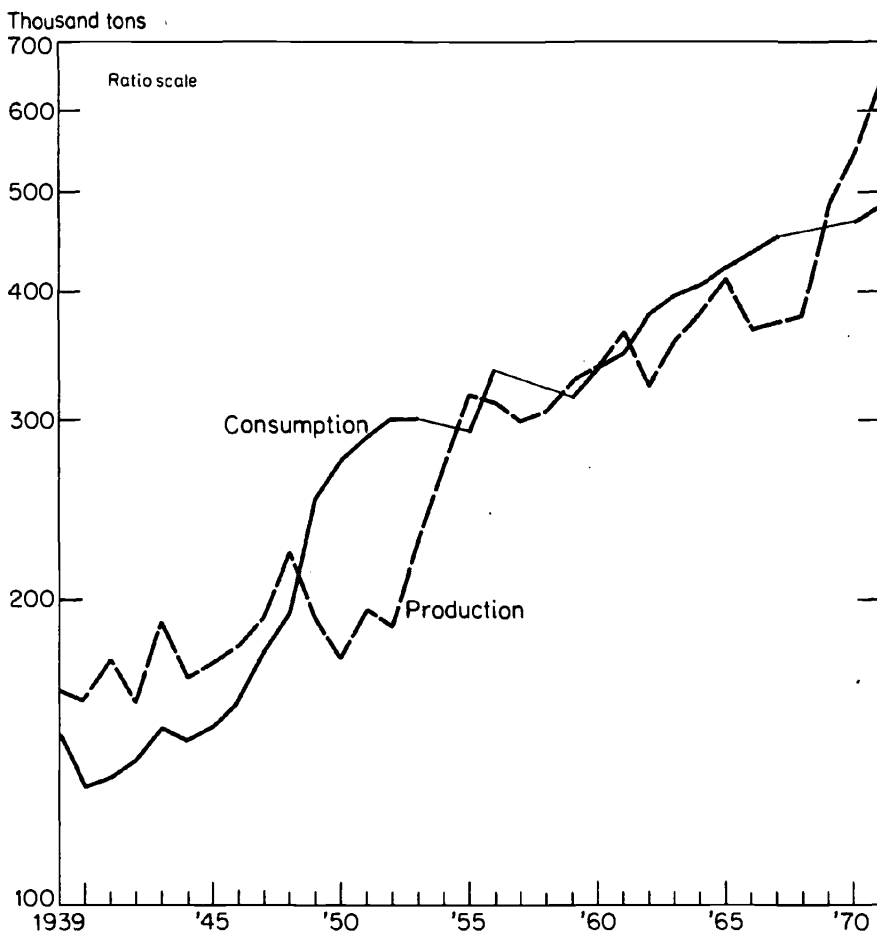
ing resistance against viruses, also contributed to increasing the average sugar content of cane from 9.29 percent in 1954 to 10.18 percent in 1960 and 11.33 percent in 1969. The completion of the Aswan Dam enabled the sugar cane area to expand in 1969 and 1970 to almost 130,000 feddan without a fall in yield.

The government's foreign trade policy in regard to sugar served two purposes: it stabilized consumption and occasionally earned foreign exchange. Fluctuations in the production of refined sugar were offset by imports of raw sugar in case of a shortfall in domestic output or by exports of refined sugar

in case of overproduction. In general, imports and exports occurred at the same time, with imports consisting in raw sugar and exports, in refined sugar. The latter was sold at a premium abroad, particularly to other Arab countries, where it is in strong demand because of its higher level of sweetness than that of other sugar varieties available in the world market. This fact also explains the normally higher unit values for exports than for imports of refined sugar (Table 8–8).[47] Imported sugar was mixed (after refining) with domestic varieties and used for local consumption.

Because of the water constraint on supply and a rising population and consumption, Egypt gradually shifted its position during the fifties and sixties from net exporter of sugar to that of net importer (Chart 8–4). By 1966 net imports had reached 137,000 tons, or 24 percent of domestic consumption. However, with water supply increased as a consequence of the High Dam, sugar production rose 73 percent from 1966 to 1971, utilizing the new refining capacity created since 1964 and once again turning Egypt into a net exporter.

Sugar Prices and Costs of Production.

Prices in the world sugar market are characterized by strong fluctuations. Unless some long-term price is defined, at least within a certain range, profitability calculations, particularly for planning purposes, become intractable. Fortunately, the fluctuations shown in Table 8–8 seem to follow a cyclical pattern around a constant level. Starting in 1954, an upward movement of raw sugar prices can be discerned, with a peak in 1957. A trough occurs in 1961, with a new peak in 1963, and so on. The first two cycles are roughly of a six-year duration, although the cycle beginning in 1967 seems somewhat longer with what appears to be a peak in 1973. The average price was 3.58 U.S. cents per pound for 1955–1960, 4.03 U.S. cents for 1961–1966, and 3.76 U.S. cents for the period 1967–1972. These averages are quite similar and enable us to define a long-term price over the past eighteen years in the range of 3.5 to 4.0 U.S. cents per pound.

For purposes of profitability calculations, we chose an average of three cycle averages—3.79 U.S. cents per pound—as the world price to be measured against domestic costs of sugar production for both 1960 and 1970, the two years for which detailed information about domestic costs in processing is available. This price corresponds to £E36.73 and £E45.87 per ton, c.i.f. Alexandria, at the official rates prevailing before and after the 1962 devaluation.[48] Adding an average refining margin of $18.03 per ton,[49] we obtain the "long term" c.i.f. import prices for refined sugar of £E42.19 and £E52.00, respectively, before and after 1962. We also calculated "short term" world prices—three-year averages—confronting the industry around 1960 and 1970. These short-term world prices are £E37.45 for 1960 and £E53.12 in 1970.

TABLE 8-8
Price Series for Raw and Refined Sugar

Year	Raw Sugar				Refined Sugar		
	Price at Caribbean Ports (f.o.b., U.S. cents per lb.) (1)	Hypothetical Long-Term Import Price (c.i.f., £E per ton)[a] (2)	Import Unit Value (c.i.f., £E per ton) (3)	Domestic Unit Value (£E per ton) (4)	Hypothetical Long-Term Import Price (c.i.f., £E per ton)[b] (5)	Import Unit Value (c.i.f., £E per ton) (6)	Export Unit Value (f.o.b., £E per ton) (7)
1954	3.26		—[c]	—[d]		—[c]	—[d]
1955	3.24	34.44	—[c]	28.95	44.79	42.15	39.20
1956	3.48		—[c]	31.31		44.32	39.19
1957	5.15		38.78	30.76		56.40	—[d]
1958	3.50		33.97	30.75		41.09	44.19
1959	2.97		33.31	31.95		—[c]	30.04
1960	3.17		26.85	32.63		34.20	34.46
1961	2.91	46.84	29.89	32.21	54.68	34.15	35.62
1962	2.98		25.26	—[d]		32.49	31.54
1963	8.50		88.56	—[d]		74.75	50.99
1964	5.87		80.20	—[d]		170.27	107.52
1965	2.11		79.86	—[d]		83.09	38.58
1966	1.86		42.69	—[d]		43.49	39.14

Year						
1967	1.99		26.25		32.02	39.12
1968	1.98		38.55		32.35	35.17
1969	3.37	44.28	—c	37.06	29.57	33.14
1970	3.71		—c	—d	27.62	45.87
1971	4.49		—c	—d	—c	59.02
1972	7.04		—d	—d	—d	—d

| | 52.12 | |

SOURCES: Col. (1): FAO, *Production Yearbook*, various issues, and *Monthly Bulletin of Agricultural Economics and Statistics*, various issues; col. (3): Federation of Industries, *Yearbook*, various issues; col. (4): CAGMS, *The Sugar Industry*, May 1963 and, for 1969, *Industrial Statistics by Commodity, 1969*; cols. (6) and (7): Federation of Industries, *Yearbook*, various issues.

a. Average unit value over corresponding years in col. 1 *plus* freight margin at $18.90 per ton converted at official rates of exchange.

b. Plus refining margins of $18.03 per ton.

c. No imports.

d. Not available.

Unlike the long-term world price, which has shown no clear trend over the cycles during this period, domestic costs of sugar production in Egypt have tended to rise both for cane cultivation and for processing. Since cane has no international price, we have treated the sugar industry as an integrated activity from cane cultivation to sugar refining.

Cost of Land, Capital, and Depreciation.

The competitiveness of the integrated sugar industry, from cane cultivation to refining, is gauged on the basis of effective rates of protection and domestic resource costs per U.S. dollar. In calculating the DRCs, certain problems arise in connection with costs of land and capital services that are worth noting.

To make comparisons among alternative uses of land, rents must be evaluated as if they were not subject to control (see Chapter 7, p. 196). In Chapter 7 the assumption was made that, without controls, rents would have increased in proportion to output value since 1949. On that basis, the imputed rent for cane in 1961 was calculated to be £E32.78 per feddan, compared with the official average maximum rent of £E24.28, and on the same grounds the imputed rent should be about £E32.00 for 1960. In 1967, the last year for which cost data are available, average official rent for cane land was £E23.00, that is, slightly lower than in 1960,[50] and, in line with the policy of keeping land rentals unchanged, must have remained at about that level till 1970, when actual (official) rent per feddan may be assumed to have been £E24.00. The assumption that market rents follow output value cannot be upheld for such long periods, however, for in the long run rents do not fully rise in proportion to agricultural value added. Total agricultural value added increased by 85 percent from 1960–61 to 1969–70. Assuming the share of rents to run along its historical trend,[51] we could expect an increase in rent by about 60 percent over the same period in the absence of controls. On that basis, we are working with an imputed rent of £E51.00 per feddan for 1970. Summarizing, we thus assume:

	1960	1970
Average actual (official) rent per feddan (£E)	23.85	24.00
Imputed market rent per feddan (£E)	32.00	51.00

In regard to returns to management and capital, the problem is to choose "normal" returns for both 1960 and 1970. In the processing stage we work alternatively, as elsewhere, with 5, 10, and 15 percent on capital invested. For 1960 cultivation we use Chapter 7's assumption of a "normal" return of

£E12.00 per feddan per year, and for 1970 we assume, somewhat arbitrarily, a rise to £E18.00 per feddan per year. It must be emphasized that this assumption implies some double counting because plowing and other operations are often carried out with the assistance of factory-owned equipment that is counted as capital in the processing stage.

The evaluation of the industry's fixed assets consists in adjusting the highly understated investment at historical cost for 1960 and adding to it the value of the fixed assets created between 1960 and 1970 (which actually went into production), yielding capital figures of £E22.3 million and £E56.6 million for 1960 and 1970, respectively. We suspect that these estimates understate the value of the industry's capital at replacement cost and hence should be viewed with caution.

Depreciation charges, also estimated for 1970 on the order of £E5 million, substantially exceeded the actual capital replacement funds appropriated by the Ministry of Industry to the sugar industry. In this respect it is interesting to note that, while the Ministry of Industry was expanding the capacity of the sugar industry by the addition of new plants in the second half of the 1960s, it was seriously neglecting the capital replacement and modernization needs of the industry's older factories.

Appropriations actually disbursed by the Ministry of Industry to the sugar sector (including paper pulp and all sugar derivative industries) for capital replacement were as follows:

	Domestic Currency (000 £E)	Foreign Currency (000 £E)	Total (000 £E)
1967–68	0	0	0
1968–69	384	0	384
1969–70	548	221	769
1970–71	70	0	70
1971–72	150	322	473
1973	50	381	431

In none of the years shown did the actual allocation even approach our estimated requirement. The 1967 war eliminated replacements altogether for 1967–68, and significant appropriation in foreign exchange only occurred after 1969. Moreover, while roughly two-thirds of depreciation charges should be allocated to imported replacement equipment (since the import content of depreciation expenditures is equivalent to two-thirds) and hence requires foreign exchange, only one-third of the appropriations was made in foreign exchange. The impression is clearly conveyed that capital replacement commands a low priority in the Ministry of Industry's overall exchange allocations and hence is subject to the vagaries of foreign exchange availability after the re-

quirements for current production and new investments have been met. Comparable information obtained on other sectors of production (see Chapter 10) suggests that the treatment of capital replacement in the sugar industry may be quite typical.

The Competitiveness of the Integrated Sugar Industry, 1960 and 1970.

Considering first the long-term position, Table 8–9 shows some negative protection (−5 percent) for 1960, but positive protection (14 percent) for 1970. The ERPs estimated in Chapter 7, Table 7–1 on the basis of current prices for the years 1961, 1963, and 1964 average out at −19.6 percent.

At a 10 percent return to capital in the industry, the 1960 DRC was 34.1 piasters per U.S. dollar against the official exchange rate of 35.2. The average for 1961, 1963, and 1964 (Table 7–1) was 40.0 piasters. Our calculations, however, as already emphasized, may contain some double counting of resource costs. Disregarding capital costs in cultivation completely (which, on the other hand, means an underestimation of total capital costs), the DRC in 1960 was considerably lower than the official exchange rate (at a 10 percent return), and may have been lower even at a 15 percent return. We can conclude that the sugar industry was competitive in the long term at the official exchange rate before the dèvaluation of 1962.

In 1970, at 10 percent return, the DRC had increased to 53.6 piasters per U.S. dollar. The official rate was then 43.5, and thus sugar was no longer competitive in the long term at the official rate, even when allowance is made for some double counting of resource costs. It was the sharp rise in wage costs that was largely responsible for the deterioration of the competitive position of sugar. While both total (imputed) land rent and capital costs increased by 130 percent from 1960 to 1970, total wage costs rose by 217 percent. The relatively strong wage increase is related to the rural location of the sugar factories. Rural wages increased much more than urban industrial wages during the 1960s.

Thus, the industry was in good shape in 1960. From a long-term point of view, it was competitive at the official exchange rate. Without the inflation and wage increases, the heavy investments made in the industry during the 1960s would have been fully justified at the exchange rate in effect after the devaluation of 1962. We note also that at the exchange rate of 61 piasters per U.S. dollar the industry would, ceteris paribus, have been highly competitive in the long term in 1970, despite the wage increases.

The position in the short term was different. On the basis of the three-year averages of the world prices for refined sugar, the ERP was 17.4 percent in 1960 and slightly lower, at 12.2 percent, in 1970. In Chapter 7 we found an ERP of 37 percent for 1961 (Table 7–1), when the international price

TABLE 8–9
ERPs and DRCs in the Integrated Sugar Industry

| Year | ERP (%) | DRC | | | Official Exchange Rate (piasters per U.S. $) |
		At 5% Rate of Return (%)	At 10% Rate of Return (%)	At 15% Rate of Return (%)	
1960					
At long-term average price of refined sugar	−4.7	30.4	34.1	37.7	35.2
At three-year average price of refined sugar	17.4	36.6	40.9	45.3	35.2
1970					
At long-term average price of refined sugar	14.0	48.4	53.6	58.8	43.5
At three-year average price of refined sugar	12.2	47.0	52.1	57.2	43.5

SOURCE: Hansen and Nashashibi, NBER Working Paper No. 48, New York, 1975, Table 19.

was somewhat lower. The DRC (at a 10 percent return) was 40.9 piasters per U.S. dollar in 1960, and sugar was clearly noncompetitive at the actually ruling exchange rate. In Chapter 7 (Table 7–1) the DRC for 1961 was found to be 60 piasters. It should be emphasized, however, that the short-term non-competitiveness in 1960, according to this calculation, does not justify shifting away from sugar, even from a short-term point of view. For in the short term, the opportunity costs of capital in processing are zero, and at a 0 percent rate of return, the short-term DRC would have been much lower than the official exchange rate. By 1970, despite a substantial increase in the short-term international price, the DRCs increased, too, and a slight deterioration occurred in the industry's competitive position (relative to the new exchange rate) compared to 1960.

Domestic sugar prices lagged behind the uptrend in short-term interna-tional prices between 1960 and 1970. Most of the domestic price increase to the consumer took the form of higher excise taxes. Consequently, the industry incurred consecutive losses during that period, averaging £E2 million per year. In 1970–71 the industry disbursed £E43.6 million to the Treasury in various excise taxes. Since it also received a number of "compensation" pay-ments, its net contribution was somewhat lower. Hence the industry's consecu-tive losses should have little meaning as an allocative criteria. On the other hand, by reducing the capital reserves available to it, they have certainly ham-pered the company's capital replacement program.[52]

Here again we run into the problem of centrally prescribed prices and the distortive effects they have on the distribution of production and, indirectly, of investments. To take the sugar industry as an example, the ex-factory price has hardly been changed in twenty years, while the costs of all inputs have naturally risen. In addition, the retail sale of sugar operates on two price levels: a free market price and a lower price for rationed sugar. Consequently, the sugar industry is paying four different excise taxes and sales taxes to the Treasury and is receiving five kinds of subsidies.[53] The net result is that the sugar industry is incurring losses on its sugar operations but making profits on the sugar derivatives. A similar situation prevails in the case of steel, textiles, and paper, among others.

In view of the important role of rising wage costs in the deterioration of competitiveness, it would be important to evaluate labor productivity and its development in the factories during this period, but attempts in this direction have been frustrating. Scanty reliable information on employment is available other than the total number of workers employed in 1960 and 1970, and it is not clear what categories of seasonal labor are included. Moreover, it is uncertain to what extent the shorter working hours in industry after 1961 were applied to this rural industry, with its 150-day working season. Assum-ing shorter hours worked and comparability of data for the two years involved,

labor productivity measured by tons of sugar per man-year (the number of workers employed in a year) increased by 37 percent from 1960 to 1970, compared with an increase of only 17 percent with an assumption of unchanged hours. In any case, the growth in productivity was small relative to the rise in wage rates.

Sugar versus Other Crops.

Even if it were competitive in the long run at the official rate, sugar does not necessarily have a comparative advantage vis-à-vis crops that could alternatively be grown on the same land. Actually, these might conceivably be more competitive. This is the problem we are examining in the following pages.

In Chapter 7 (see Chart 7–11) an ambitious attempt was made to predict the optimal cane acreage for the years 1962 to 1968. The optimum was defined as the hypothetical long-term response of cane cultivators to current international f.o.b. prices, with fluctuations in the predicted optimal area due to fluctuations in international prices for sugar and other crops. For the period 1962 to 1968, the average predicted optimum was about 70,000 feddan, but the average international sugar price was 3.6 U.S. cents per pound f.o.b., while the long-term f.o.b. price is here assumed to be 3.8 cents, or 5.3 percent higher. At a 5 percent higher F-value for sugar (see Appendix A, Table A–4), the optimal acreage would be about 73,000 feddan. In addition, we have to allow for the difference between c.i.f. and f.o.b. prices—on average about 15 percent (see above). At c.i.f. prices, the optimal acreage would be about 82,000 feddan. This acreage should be compared with total actual cane acreage, including land planted with cane for delivery to private molasses production. The average total acreage was 115,000 feddan for these years, and the average optimum at the long-term price should have been about 61 percent of the actual acreage. Carried over to the area cultivated under contract with the factories, this would imply an optimal area of about 58,000 feddan, as compared with an actual average of about 95,000 feddan. In terms of sugar production, this means a reduction to about two-thirds of actual production.

The analysis in Chapter 7, however, was based on national aggregates and assumed that all crops competed equally against each other. This assumption conceals the fact that cane is grown almost exclusively in the southernmost part of the valley, where cotton is less profitable (yield is lower and only lower-priced medium staple varieties can be grown) than in the Delta and the northern part of the valley, and where rice is not grown at all. We thus have to compare with a feasible alternative crop rotation, and this comparison will probably show sugar in a more favorable light.

One of the most profitable rotations in Upper Egypt (according to a special survey made by the Ministry of Agriculture) is shown in Table 8–10. It

TABLE 8–10

Full Three-Year Rotations: Sugar and Alternative Rotation
(£E per feddan)

Year	Crop (1)	Alternative Rotation, 1961			Sugar, Three Years			
		Income to Owner-Cultivator without Hired Labor, at Domestic Prices (2)	DRC (3)	Domestic Value Added at International Prices (4)	Income to Owner-Cultivator without Hired Labor, 1961, at Domestic Prices (5)	DRC, Cultivation and Processing at 10% Return, 1960 (6)	Domestic Value Added at International Prices Refined Sugar, 1960, Based on Long-Term Average Price (7)	Three-Year Average Price (1959–61) (8)
1	Clover	n.a.	n.a.	n.a.	58.6	119.4	124.5	103.6
	Cotton[a]	56.7	65.2	70.7				
2	Wheat	26.7	26.1	18.2	58.6	119.4	124.5	103.6
	Millet	27.6	28.5	24.8				
3	Onions	66.6	53.7	103.3	58.6	119.4	124.5	103.6
	Millet	27.6	28.5	24.8				
Years 1–3, Total		205.2	202.0	241.8	175.8	358.2	373.5	310.8
DRC in piasters per U.S. $[b]				29.4			34.1	40.9

SOURCES: Cols. (2) and (5), Table 7–1. All others, B. Hansen and K. Nashashibi, NBER Working Paper No. 48, New York, 1975.

a. Based on normal crop.

b. Calculated by dividing DRC by domestic value added at international prices and multiplying by the official exchange rate of 35.2 piasters per U.S. dollar.

assumes perennial irrigation. In the third year of this rotation, lentils or beans might be substituted for onions, but while either of these two crops may be more profitable in terms of domestic prices, onions have by far the lowest DRC in terms of international prices, at least for the period 1961 to 1964 studied in Chapter 7 (see Table 7–1). Hence, we have chosen to compare sugar with a rotation that includes one crop of onions.

Columns 2 and 5 compare income going to owner-cultivators with no hired labor and at actual domestic prices under the two systems. Accordingly, cane growing was almost as attractive as the alternative rotation; indeed, the government fixed domestic cane prices so as to achieve competitiveness domestically. It is true that the alternative rotation shows a somewhat higher income than that from cane growing—£E205.2 as against £E175.8 over three years—but this figure exaggerates income, despite the exclusion of clover, insofar as cotton yields a much lower income per feddan in the southern parts of the valley than the national average on which Table 8–10 is based. Moreover, the calculation of income from cane does not consider that, as mentioned before, part of the costs of plowing and irrigation is carried by the factories. Finally, it should be recalled that the alternative rotation in question is the best possible one we could find. It can be concluded, therefore, that at domestic prices, cane and the alternative rotation were approximately equally attractive from the farmers' point of view.

The DRC for the alternative rotation in 1961 was 29.4 piasters per U.S. dollar, against the official rate of 35.2. At the long-term average world price for refined sugar, the DRC for sugar (at a 10 percent return) including cultivation was 34.1 in 1960. But, in view of the double counting of resource costs for sugar (which brings the sugar DRC further down) and the exaggeration of income from cotton (which may bring the DRC for the alternative rotation further up), we have no clear answer to our question about the comparative advantage of sugar versus the alternative rotation. The two may have been about equal.

It should not be overlooked, either, that we are making a comparison between DRCs at an (allegedly) long-term international price for sugar and at the actual international price for the alternative crops in 1961; short-term fluctuations in the latter could, of course, change the picture. We have not found it feasible, however, to calculate long-term prices for the alternative crops, but their international prices (in foreign currency) generally did not increase from 1962 to 1968. Finally, we should also take into account that the alternative rotation becomes more profitable the further north in Upper Egypt the cultivation is located. It might therefore be argued that, at best, it is only in the southernmost parts of the valley, at Aswan and Qena, that cane may have a long-term comparative advantage over the alternative rotation. Most of the expansion in the 1960s did take place in Aswan and Qena, but the

government also built two new raw sugar factories further to the north, in Sohag, and it is doubtful whether this particular investment was justified.

If, therefore, we conclude that the major part of cane cultivation was economically justified in 1960 but that some of it should have been eliminated, we are quite in line with the predictions made in Chapter 7.

Employment and Other Aspects.

An assessment of the sugar industry must also take employment effects into account. All our calculations assume that opportunity costs for labor are equal to actual wages, with the implicit assumption that labor employed in the sugar industry could find alternative employment at these wages over the long term. If this assumption is not substantiated, the DRC of sugar falls in relation to that of the alternative rotation, because sugar (including processing) is much more labor-intensive than the other rotation.

The sugar industry (processing) is the second largest industrial employer, textiles being the largest. It employs approximately 26,000 regular workers in its factories and refineries and a much larger working force during the short cane-crushing season, drawn mainly from rural areas and partly during slack agricultural seasons (December to May). Thus it combines a number of advantages often emphasized in development strategies: a high rate of labor absorption per unit of capital invested and income created mainly in rural areas—even in the least developed ones in Egypt—during slack seasons.

Another circumstance is the increasing demand for the by-products of the industry, related to the development of manufacturing industry in general. Products such as acetic acid, alcohol, carbon dioxide, and yeast can be derived from molasses. In addition, the cane residual, or bagasse, can be used for manufacturing grain board and paper pulp, where it has a large potential if other cellulosic raw materials become scarcer, unless oil becomes dearer as a substitute in the factory furnaces. Calculations of the maximum price the paper industry could pay for bagasse reveal a net gain to the sugar industry over and above its fuel opportunity cost of £E1.82 per ton of bagasse used for paper pulp. If 300,000 tons of bagasse were taken up by the paper industry (roughly representing its potential demand), it would reduce the sugar industry's DRC by approximately 1 piaster per U.S. dollar.[54]

THE CEMENT INDUSTRY

The manufacture of cement was started in Egypt in 1900, when the Société Anonyme des Ciments d'Egypte (a Belgian venture) built a factory near Cairo. Based on large deposits of raw materials in the vicinity of the major consuming center, the new industry was induced by the demand for cement

from the first Aswan Dam. Up until World War II, its major source of energy was imported Cardiff or German coal; World War II forced a shift to liquid fuel.

During its first two decades the cement industry had great difficulties to survive. Up to World War I it had to compete with foreign cement without special protection (apart from the high cost of transport, of course), and during the war fuel supplies were cut off. Although still without special protection during the 1920s, the industry captured a significant share of the domestic market in competition with imported cement. At that time two of the four cement companies in existence today were founded.[55] Yet, until the Great Depression, the industry's share of the domestic market did not exceed 20 percent.

In 1930 a 15 percent import tariff was imposed on cement; it led to the disappearance of cement imports during the thirties. At the outbreak of World War II, an excise tax of £E0.70 per ton (43 percent of the domestic ex-factory price) was imposed on cement. The excise tax remained in force after the war, but by that time the industry had obtained a definite comparative advantage. Despite the fact that the excise tax—imposed only on domestic production—exceeded the import tariff and that the currency was probably overvalued (see Chapter 3, pp. 67–68), the domestic ex-factory price was low enough to eliminate imports. With the exemption of exported cement from the excise tax in 1952, exports rapidly increased and had already reached a level of 500,000 tons by 1958.

The expanded capacity was not enough to meet both domestic and foreign demand during the years of the first Five-Year Plan, 1960–61 to 1964–65, when large construction projects (particularly the Aswan High Dam) temporarily diverted exported cement to domestic consumption (see Chart 8–5 and Table 8–11) and cement imports became necessary. With the reduction of investments after 1965 (see Chapter 5), the situation changed again and the industry is now an important foreign exchange earner, second only to cotton textiles among manufactured exports. Its net foreign exchange earnings increased when two of its major imported inputs (fuel oil and paper) were replaced by domestic products, increasing the proportion of domestically produced inputs in cement from 20 percent in 1954 to 88 percent in 1965–66. At the same time, the industry diversified into the production of special varieties of cement, first as import substitutes and later, as in the case of white cement, as exports.

Costs, Revenues, and Competitiveness, 1954 to 1965–66.

Data on the industry's revenue and cost structure have been compiled for 1954, 1957, 1960, and 1965–66 from the consolidated accounts of the exist-

CHART 8–5

Cement: Production and Trade, 1925–1970

Thousand tons
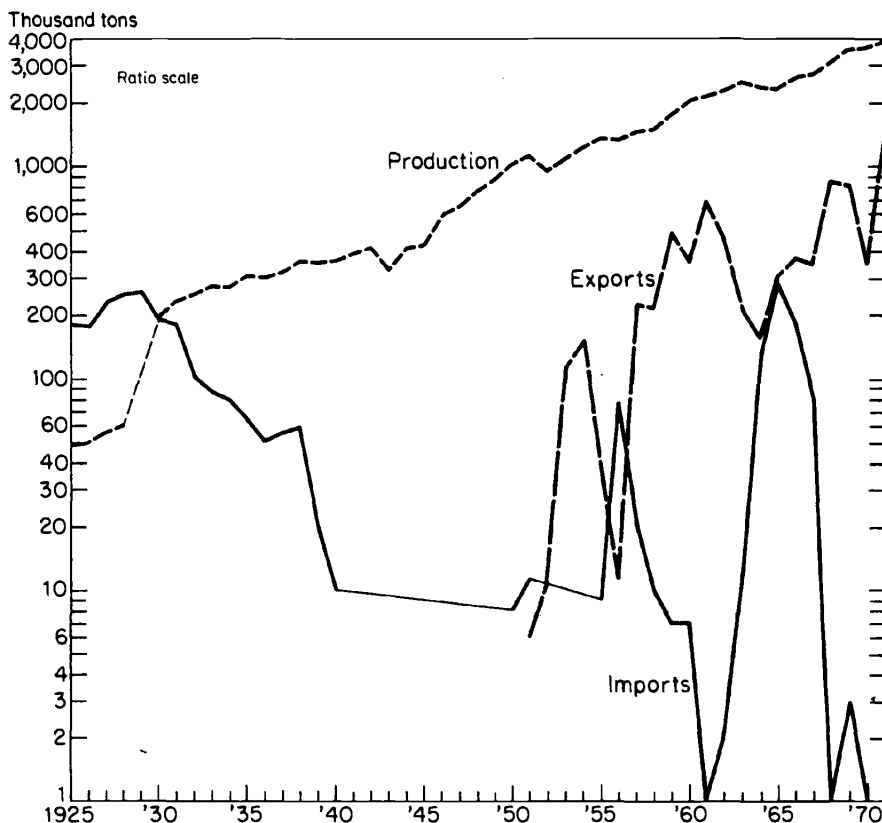
ing four cement companies.[56] On the basis of these data, estimates of the industry's effective rate of protection and resource costs per dollar were made at current and constant international prices (see Table 8–12, where indices of variable input costs and productivity of labor and capital are also shown).

We have chosen to use the average export prices f.o.b. in all revenue estimates at international prices. As Table 8–11 indicates, the average export price tended to fall as the quantity exported increased, while the unit value obtained from neighboring countries, represented by Saudi Arabia, remained roughly constant over the entire period. Since the increase in exports was achieved mostly through expansion to more remote areas (such as West African countries), the f.o.b. price had to be lowered to absorb freight costs and to assure competitiveness on a c.i.f. basis with alternative suppliers.

TABLE 8–11

Exports of Egyptian Cement: Tonnage and Prices

(three-year averages)

	Quantity (000 MT)	All Exports, Unit Value (f.o.b., £E)	(f.o.b., U.S. $)	Exports to Saudi Arabia, Unit Value (f.o.b., U.S. $)	Effective Exchange Rate (piasters per U.S. $)
1953	118	5.4	14.3	14.2	36.5
1957	228	5.9	15.5	—	38.2
1961	689	4.1	10.7	12.2	38.3
1964	157	6.4	14.7	11.8	43.5
1971	1,340	4.2	9.7	13.4	43.5

SOURCE: Federation of Industries, *Yearbook*, various issues.

TABLE 8–12

**Cement Industry: ERPs, DRCs, Return to Capital, and
Performance Indicators**

	Rate of Return to Capital			DRC at Current International Prices, f.o.b. (piasters per U.S. $)		
	At Actual Domestic Prices (%)	At International Prices (%)	ERP (%)	5% Rate of Return	10% Rate of Return	15% Rate of Return
1954	18.0	34.7	−30.8	16.4	19.8	23.2
1957	10.2	35.6	−45.5	17.3	20.7	24.2
1960	7.6	19.6	−34.6	22.2	27.7	33.2
1965–66	10.9	22.5	−27.6	26.5	31.3	36.2

Indexes of Performance
(1954 = 100)

	Labor Productivity (per hour)		Capital Productivity (per £E of equipment)		
	Value Added at Constant Internatl. Prices	Output (tons of cement)	Value Added at Constant Internatl. Prices	Output (tons of cement)	Output (unit value)
1954	100	100	100	100	100
1957	102	104	57	55	91
	(122a)		(68a)		
1960	138	137	60	60	93
1965–66	117	114	88	90	132

SOURCE: Hansen and Nashashibi, NBER Working Paper No. 48, New York, 1975, and official statistics.

a. Adjusted to 90% capacity utilization.

b. The definition of maximum capacity assumes a certain number of days per year set aside for repair and maintenance.

During the period under review here, the profitability of the cement industry suffered from a gradual erosion through adverse price developments for outputs and inputs. The unit value of total output at domestic prices fell in 1957 and recovered only slightly by 1960. Quantifiable material input prices remained constant, but other inputs, such as services and spare parts, probably increased in price. The price squeeze was accentuated in 1962 because of the devaluation, and even more so during the period of price increases in 1965 and 1966. By 1966, ex-factory cement unit values had risen by only 16 percent over 1954, against a 40 percent increase in the prices of major inputs.

TABLE 8–12 (concluded)

DRC at Constant International Prices, f.o.b. (piasters per U.S. $)			Exchange Rates (piasters per U.S. $)		
5% Rate of Return	10% Rate of Return	15% Rate of Return	Official Buying Rate	Effective Rate	Capacity Utilization (%)
16.4	19.8	23.2	34.9	36.5	89
19.0[a]	22.4[a]	25.7[a]	34.9	38.3	75
16.4	20.7	25.2	34.9	38.3	91
21.9	26.8	31.9	43.5	43.5	107[b]

Indexes of Performance
(1954 = 100)

Material Inputs (unit value)					Total
at Domestic Prices	at Current Internatl. Prices	Hourly Wages	Total Output Volume	Total Number of Employees	Number of Hours Worked
100	100	100	100	100	100
102	102	131	116	111	110
100	100	146	167	124	122
140	137	142	211	200	185

(The unit price of total output was, however, 32 percent higher than in 1954.) The price increase in inputs was particularly notable for limestone and clay, packing materials, and fuel oil. Hourly wages increased sharply from 1954 to 1960, but then, remarkably enough, seem to have fallen slightly between 1960 and 1966 (had we included pension and social insurance contributions, a slight increase in wages would have been found). The cement industry thus follows a pattern found in other Egyptian industries (see Chapter 4, p. 95): the government's control over prices and its concern about keeping domestic prices low despite rising input prices (particularly for imported inputs) has lowered profits.

The industry's net value added evaluated at international prices is much higher than at actual domestic prices. Export prices exceed domestic prices, and tariff rates and premiums were gradually increased on imported materials like spare parts and kraft paper bags. Two important traded inputs, fuel oil

and packing materials, were replaced by domestic substitutes during the period under review. For packing materials, domestic prices exceeded import prices. Domestic production of fuel oil was expanding rapidly, and what had been an import item until 1960 became an export item by 1965–66; in our calculations we had to shift from c.i.f. prices to f.o.b. prices for fuel oil. This circumstance partly explains the drop in fuel oil costs at international prices, and was a factor in preserving the competitiveness of the cement industry.

Profitability—net profit (before income taxes) as a percentage of capital[57]—was also much higher when calculated at international prices during the whole period. At actual domestic prices, profitability fell from 18.0 percent in 1954 to 7.6 percent in 1960, after which it recovered to 10.9 percent in 1965–66 (13 percent, if interest and rent payments are included in net profits). At current international prices, profitability was 34.3 percent in 1954, fell to 19.6 percent in 1960, and rose again to 22.5 percent in 1965–66. We must add that, when exports were vigorously expanded in 1969 at a considerable decline in export prices due to longer transports, profitability at international prices still remained at 11.6 percent (and somewhat higher if interest and rent payments were included in net profits). It would thus seem that the industry during the whole period was socially profitable, although profitability shows a downward trend.

The highly "taxed" position of the cement industry as compared with a free trade situation is reflected in the negative ERPs shown in Table 8–12. The ERPs fluctuated between −28 and −45 percent. Similarly, the DRCs were much lower than both the official and the effective exchange rates, even at an imputed rate of return to capital of 15 percent. After a more than 50 percent rise from 1954 to 1965–66, DRC still did not exceed the level of the effective rate of exchange in 1954.

Thus, during the whole period, the industry was highly competitive (even at an overvalued exchange rate) and it is one of the failings of Egyptian investment policies during the first Five-Year Plan (1960–1965) to have permitted cement exports to slip back from almost 700,000 MT in 1961 to slightly above 150,000 MT in 1964. Expansion of capacity could have anticipated the High Dam requirements, and reduced domestic demand after the Dam's completion would have been offset by larger exports. In fact, the level of exports attained in 1971 was almost twice as high as the peak reached in 1961.

Productivity.

To appraise productivity of factors, Table 8–12 shows index numbers (1954 = 100) of physical output and net value added at constant 1954 international prices, both per unit of factor input (labor and capital).

Labor productivity increased slightly, from 100 to 102, between 1954 and 1957, when the industry was expanding its capacity. The capacity expansion was accompanied by a decline in capacity utilization and a sharp drop, from 100 to 57, in productivity of capital by 1957. Note that, with value added in 1957 adjusted to the level of capacity utilization prevailing in 1954 and 1960, labor productivity increases from 102 to 122 and capital productivity, from 57 to 68. Between 1957 and 1960, labor productivity rose further to 138 (in terms of value added), with capital productivity remaining at 60. These opposite changes are, of course, perfectly natural in an industry that relies on a standard technology with little technical progress; it simply indicates that capital intensity has increased and has served to increase productivity of labor. The increase in labor productivity (over 6 percent per year) is noteworthy; it exceeded the average of 4 percent rate of increase achieved for all industry during that period.[58] Nonetheless, it was outstripped by an even steeper rise in wages, which exceeded the average for all industry. The cement industry seems to have experienced an improving quality of labor through a relative increase of professional staff and qualified workers. The proportion of employees holding academic degrees grew from 1.4 percent in 1954 to 2.4 percent in 1960, that of middle management and technical staff, from 2.3 percent to 4.2 percent, while that of unskilled workers fell over the same period.

During the period 1960 to 1965–66, the trend was reversed. Labor productivity fell by 17 percent, while capital productivity rose by 50 percent. In this connection, we must remember that after the nationalization of the industry in 1961 a general employment drive took place, with increased employment and reduced working hours per week. This employment drive did not spare the cement industry, causing labor productivity to decline. While output increased by over 26 percent from 1960 to 1965–66, the number of employees increased by 64 percent and man-hours, by 52 percent. Alongside the decline in labor productivity, an increase in capacity utilization beyond its optimal theoretical maximum (the definition of maximum capacity assumes a certain number of days per year set aside for repair and maintenance) contributed to the productivity growth of capital and may have negatively affected labor productivity.

As labor productivity fell, wages per worker also declined. This fact is difficult to explain, considering the general rise in wages and the improvement in skill distribution during that period. It is possible that the industry was able to reduce the average earnings of unskilled workers through a cut in overtime work. There seems to have been an attempt to bring the level of wages into line with productivity, and with the increased capacity utilization the industry succeeded in preventing the profit rate from shrinking further.

Clearly, the cement industry's performance during the period 1960 to

1965–66 was inferior to that of the preceding period. It is not obvious how much this had to do with the change from private to public ownership. The cause was, rather, the misconceived employment policy imposed on all big industries. Had the cement industry remained in private hands, it probably would have had to conform to the employment policy. There is nothing to indicate that the industry suffered from shortages related to foreign exchange controls. Production did suffer (see Chart 8–5), but this can be explained by the falling off in the cement requirements of the Aswan High Dam construction, as well as the deflation that took place in 1965–66. (See Chapter 5, pp. 112–121).

In a more indirect way, the industry seems to have been adversely affected by the centralization of investment decisions into the ministry and away from company managers. Capacity seems to have been better geared to domestic *and* foreign demand during the 1950s than during the 1960s. Net exports reached a peak in 1961 and declined thereafter until 1964. Central planning failed, but it is not clear why. It is true that a decision to speed up construction of the Aswan High Dam, and thus increase domestic demand, was taken after the first Five-Year Plan had been worked out, but there should have been sufficient time to revise the investment plans for the cement industry accordingly. Did the planners deliberately sacrifice exports? Or was the whole problem simply ignored? With free trade, decentralized investment decisions, and profit maximization, this would probably not have happened; it would not have been overlooked that exports were more profitable than sales to the domestic market. It would seem that the planners ignored, or were ignorant of, this basic fact.

But when viewed over a longer term—the period between 1950 and 1971, for example—the overall performance of the industry is quite satisfactory. The increase in the DRCs between 1954 and 1965–66 at constant prices was relatively small considering the organizational changes that took place after 1961 and the labor policy adopted by the government. The productivity of capital increased rapidly between 1957 and 1965–66 (even after adjustment for capacity utilization) and the industry remained highly competitive and profitable. Its major strength, as revealed by intercountry comparisons of the relative cost components in this industry, derives from a higher quality of labor available to it—for a given level of wages and capital stock—than to some of its competitors.[59] And while its competitiveness may have declined somewhat from 1960 to 1965, the tighter organizational controls that followed the 1967 war and the greater cost-consciousness of the government may have reversed the situation.

NOTES

1. Bent Hansen and Karim Nashashibi, *Protection and Competitiveness in Egyptian Agriculture and Industry*, NBER Working Paper No. 48, New York, 1975.

2. This and the following paragraph are based on E. R. J. Owen, *Cotton and the Egyptian Economy, 1820–1914*, Oxford, 1969. See also H. A. B. Rivlin, *The Agricultural Policy of Muhammad Ali in Egypt*, Cambridge, Mass., 1961, and Moustafa Fahmy, *La Révolution de l'industrie en Egypte et ses conséquences sociales au 19e siècle, 1800–1850*, Leiden, 1954.

3. Owen, op. cit., pp. 46–47, and Fahmy, op. cit., pp. 26–27.

4. By 1906 the Anglo-Egyptian had 20,000 spindles with 400 looms. See Owen, op. cit., p. 224.

5. Owen, op. cit., pp. 302–303 and 383–385; and R. L. Tignor, *Modernization and British Colonial Rule in Egypt, 1882–1914*, Princeton, 1966, pp. 364–365, particularly notes 11 and 12. The only other domestically produced commodities to bear the tax were sugar and salt. See also E. R. J. Owen, "Lord Cromer and the Development of Egyptian Industry, 1883–1970," *Middle Eastern Studies*, London, Vol. II, No. 4, July 1966, pp. 282–301.

6. Either directly for metal machinery imported or indirectly on the wooden machinery produced domestically. Insofar as the import duty exceeded the price differential between ordinary Egyptian cotton and Indian cotton, it may have shifted the domestic consumption of cotton toward local varieties.

7. W. V. Shearer, "The Weaving Industry in Asyout," *L'Egypte contemporaine*, Cairo, No. 1, 1910, p. 184.

8. Ibid., p. 185.

9. Hand-weaving after Mohammed Ali took place mainly in Upper Egypt, where basin irrigation imposed a long idle period on the peasantry, which it used in textile handicrafts to supplement its meager one-crop income. Before Mohammed Ali there was a flourishing weaving industry in the Delta. It was killed off by Mohammed Ali's monopoly and was never revived after its abolition because the concurrent change to perennial irrigation in the Delta led to a strong increase in labor demand for agriculture during the previously idle summer season that weaving could not compete with.

10. El-Gritly notes that the Filature Nationale was able to treble its capital by plowing back the profits of the financial year 1917–1918. See A. I. El-Gritly, "The Structure of Modern Industry in Egypt," *L'Egypte contemporaine*, November-December 1947.

11. 1927 was the year of the first industrial census; it covered all establishments without lower limits as to the number of employees. Unfortunately, its objectives were misinterpreted by the press, which circulated rumors about the establishment of an income tax in the country. Consequently, all details reported on inputs, wages, and value added were considered totally misleading and left unpublished. *Industrial Census*, March 1927, Cairo, Government Press, 1931.

12. K. M. Barbour, *Growth, Location, and Structure of Industry in Egypt*, New York, 1972, pp. 59–69.

13. *Industrial and Commercial Census*, 1937, Cairo, Government Press, 1942, p. 338.

14. Misr Spinning and Weaving Co. was able to increase its reserves tenfold. The other big company, Filature Nationale, increased its dividends from 45 piasters per share in 1938 to 130 piasters in the postwar years. See *Economic Bulletin*, National Bank of Egypt, 1951, p. 100.

15. In our DRC calculations, therefore, we have considered the postwar years as the starting point in the life of capital equipment.

16. *Economic Bulletin*, N.B.E., 1951, p. 98.

17. Ibid., pp. 100–101.

18. The subsidy was based on the current price difference between Ashmouni G/FG and Indian and American cotton. It amounted to 21 percent of the cost of Egyptian cotton in 1949. Applying this percentage to the respective shares of cotton costs in yarn and cloth, we obtain the ad valorem subsidy on yarn and cloth exported. See Federation of Industries, *Yearbook*, Cairo, 1950–1951, p. 36, and *Economic Bulletin*, ibid., pp. 101–102.

19. The fixed price did not apply to small establishments. One reason might be their higher cost of production, but most probably the exemption was related to difficulties in controlling small establishments.

20. Federation of Industries, *Yearbook*, Cairo, 1950–1951, p. 37.

21. Federation of Industries, *Yearbook*, Cairo, 1953–1954. See also GATT document L/1816, pp. 46–47. On the supply side, a series of measures, mostly compulsory, were directed to assure an adequate supply of domestic cotton to the textile mills. In the 1949–50 season the government decided to restrict the acreage planted under long staple cotton to expand medium staple varieties (*Economic Bulletin*, N.B.E., 1949, p. 214). During the Korean boom (the 1950–51 season) the government first entered the market as a buyer of medium staples, Ashmouni, Giza 30, and Zagora, of low grades, to meet the requirements of local spinners. Then, in December, it issued a decree requisitioning cotton at fixed prices. (*Economic Bulletin*, N.B.E., 1950, p. 261). In 1953–54 an outright ban on exports of Ashmouni and Żagora (up to grade "Good" + 1/4) was decreed. (*Economic Bulletin*, N.B.E., 1954, p. 27). This was the case again in 1959 for all medium staples (including Denderah and Giza 47). And when export taxes for other varieties were abandoned in 1958 and 1959, they were maintained for Ashmouni. In 1960 Ashmouni became subject to an export quota of 800,000 kantars. (*Economic Bulletin*, N.B.E., 1960, No. 1, p. 26). Finally, after the cotton trade monopolization by the government in 1961, exports were treated as a residual after the local mills had determined their requirements. Gradually, exports of medium staple cotton declined and the production of Ashmouni and Giza 66, which amounted to 2 million kantars in 1969, was totally absorbed by domestic spinning mills.

22. *Economic Bulletin*, N.B.E., 1951, pp. 100–102.

23. Cotton fabric consumption accounts for 87 percent of the total, with 12 percent for artificial fiber and 1 percent for wool.

24. Per capita consumption grew at a rate of 1.6 percent during the years 1958 to 1971.

25. K. Nashashibi, "Bilateral Trade as a Development Instrument under Global Trade Restrictions," NBER Working Paper 54, New York, 1975.

26. The average count of yarn exported went up from 17.7 in 1956 to 27.3 in 1962–63 and to 30.5 in 1970–71. While the Consolidation Fund attempted to adjust Egyptian export prices to those prevailing in European markets, Egyptian yarns, nonetheless, often failed to compete with Japanese and Polish products on the German, Dutch, and Belgian markets. GATT document L/1816, pp. 47–49.

27. The margin between gray yarn and gray cloth is even narrower—it averages $57 per ton, or roughly 5 percent of the price of yarn.

28. See footnote 29.

29. Part of the waste is recovered at a much lower unit value and reused. However, this cost reduction is probably more than offset by the use of finer varieties than Ashmouni in the cotton exported.

30. In 1966 the quota must have been around 3,000 tons. Exports to the Common Market amounted to 1,500 tons. See Federation of Industries, *Yearbook*, 1970, 1971, and 1972 issues.

31. Federation of Industries, *Yearbook*, 1972, p. 62.

32. Estimates were derived from separate data on weaving operations in 1960.

33. Our calculation may exaggerate competitiveness in 1956 and underestimate it for 1960. Thus, the decline in competitiveness from 1956 to 1960 may be more apparent than real.

34. Direct feeding of the cards from the bale-opening machinery and direct spinning from the drawing-frames (ultra high drafting system, for example). See *The Textile Industry*, United Nations Industrial Development Organization, New York, 1969.

35. *Modern Cotton Industry*, OECD, Paris, 1965.

36. *The Textile Industry*, UNIDO, New York, 1971, pp. 13–24. Also *Modern Cotton Industry*, op. cit., pp. 95–107.

37. GATT, *A Study in Cotton Textiles*, Geneva, 1966, and the follow-up report *Cotton Textiles, 1962–1963*, UNIDO, COT/W/115, Tables I and IV.

38. Here again we are faced with consistency problems, since the data collected in the 1968–1970 period differed in method and coverage from the data collected in 1956–1960.

39. Thus, yarns up to count 30 may only be carded, while yarns with higher counts have to be combed.

40. "La culture de la canne à sucre en Egypte," Société d'Entreprises Commerciales en Egypte, 1952, pp. 25–27.

41. *Economic Bulletin*, N.B.E., 1950, p. 11.

42. Ibid., p. 12.

43. As mentioned in Chapter 6, cane is also planted for sale to small private molasses factories. In the following, "area" refers to area planted under contract with the sugar factories and does not include areas planted for other sales.

44. Sugar cane is harvested in December and sugar factories are at work over a 150-day season from January to May. For the discharge of the Nile at Aswan, see Hansen and Nashashibi, NBER Working Paper No. 48, Table 14.

45. Federation of Industries, *Yearbook*, 1952–1953, p. 75.

46. Federation of Industries, *Yearbook*, 1953–1954, p. 63.

47. Since the price response of exports to world price developments seems to lag behind imports, periods of sharp price fluctuations (1962–1966) may reverse this relationship.

48. Food imports were not subjected to any premiums prior to the devaluation of 1962. Hence the official rate of exchange was used to convert U.S. dollar sugar prices to Egyptian currency. To the f.o.b. price at Caribbean ports a freight margin covering transportation to the Mediterranean was added. FAO, *Production Yearbook*, several issues.

49. Obtained by taking the difference between export prices of raw and refined sugar at Caribbean ports. FAO, ibid.

50. *Agricultural Economics* [*El iqtisad el zirai*], Ministry of Agriculture, Cairo, April 1969, p. 186.

51. Bent Hansen, "The Distributive Shares in Egyptian Agriculture, 1897–1961," *International Economic Review*, Vol. 9, No. 2, June 1968.

52. *Al Talia*, August 1973, pp. 52–60.

53. "Report of the Committee on Planning and Balance on the Egyptian Sugar and Refining Company," *Al Talia*, Cairo, August 1973, pp. 55–56. The subsidies are illustrative of the problems encountered in attempting to stabilize prices and influence income

distribution: (1) When in July 1959 the government reduced the price of rationed sugar, it committed itself to compensate the sugar company for the price difference. (2) When the government raised the purchase price of cane from the farmers (February 1965) it disbursed to the sugar company the difference in price. (3) The increase in the import price of jute bags was partially compensated by the government. (4) It was decided in July 1967 to grant a subsidy to the sugar company of £E3.956 per ton of sugar to compensate it for a general increase in input costs. (5) When the Egyptian railroad abolished the preferential rates it had granted the sugar company, the government compensated it for the difference in rates. Needless to say, each subsidy entailed the creation of a number of committees, investigations, and reports.

54. Hansen and Nashashibi, op. cit.

55. The Société Egyptienne de Ciment (1927), which absorbed the Helwan Portland Cement Co. (1929) and the Société Anonyme de Ciment (1931). In addition, two other companies were founded after World War II.

56. Hansen and Nashashibi, op. cit.

57. Capital is here taken at actual historical value, which presumably implies an exaggeration of the increase in the rate of return from 1960 to 1965–66.

58. B. Hansen and G. A. Marzouk, *Development and Economic Policy in the U.A.R. (Egypt)*, Amsterdam, 1965, p. 133.

59. Hansen and Nashashibi, op. cit.