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Chapter 4

Protection Through the Price Mechanism

In the two preceding chapters, I surveyed and analyzed the system of quantitative restrictions, and pointed out the gradual transformation of Israel's trade policy from intervention through these restrictions to the use of the price mechanism. In the present chapter, the forms of discriminatory intervention through the price mechanism will be surveyed briefly, their quantitative significance will be estimated, and the major patterns of the system will be analyzed. I shall start with a description of the main instruments through which price intervention was exercised—whether or not such intervention was the function assigned to each instrument by the government.

i. METHODS OF PRICE INTERVENTION IN IMPORTS [1]

The major local determinant of the price of imported goods and services (i.e., of the effective exchange rate for imports) was generally the formal rate of exchange. As was mentioned earlier, a formal system of multiple exchange rates existed for about two and one-half years, from February 1952 to the summer of 1954. This involved—and was intended to involve—a considerable degree of discrimination among various uses of foreign exchange, as will be reflected later in the data.

The second most important element of price intervention was, naturally, the tariff system. It, too, as could be expected, involved a considerable degree of discrimination among various imported goods. As will be seen later, the

formal rate together with the tariff always constituted, for the aggregate of imports, the overwhelming component of the effective exchange rate. Yet for various individual goods and services, some other forms were quite often of quantitative significance. Since these forms are somewhat less self-explanatory than the formal exchange rate or the tariff, they will be mentioned here at greater length.

Special Levies.

Unlike customs duties, special levies on imports are not enacted into law by the Knesset (the Parliament), but by administrative decree (although subject to approval by the Knesset's Financial Committee), and are presumed to be temporary. Such levies have been important mainly in two periods.

In the first, from the mid-1950s to the early 1960s, levies of two kinds were mostly intended to replace QRs. The episode of 1956, in which imports of a few major raw materials were liberalized, was accompanied by the imposition of special levies on these imports. Likewise, when the scrip system (discussed in Chapter 2, section iii) was abolished, the importation of "luxury" foods was allowed through the use of a so-called parallel market, in which imports were subject to high, special levies (as well as high tariff duties).

The second episode of significant use of import levies—on a much wider scale—began in August 1970 and is still under way. On that date, a general import levy of 20 per cent of the c.i.f. value of imports was imposed. This levy was clearly considered a partial substitute for devaluation, for it was imposed at a time when external reserves became critically low. As with other tax increases which preceded it by a few months, this levy also was intended to improve the country's balance-of-payments position by reducing the government's excess demand. Although a few important categories are exempt,[2] and it is applied in any case only to the importation of *goods,* not services, this is a widely uniform levy, thus differing materially in nature as well as in size from the special levies of earlier periods.

Equalization Funds and the Commercial Account.

These two instruments served to perform rather similar functions; but the former pertained to private transactions, whereas the latter involved the government's trading activity.

Equalization funds—for food, agriculture, and oil imports—were inherited from the British mandatory government. Originally, they were intended to ensure that the local price of an imported good would be stable, regardless of the foreign price actually paid in each import transaction, by

paying compensation in cases of high foreign prices and appropriating the gain in instances of below-average foreign prices. Thus, the net income of the fund over a reasonable length of time was supposed to be approximately nil. With time, however, the funds became more an instrument of longer-term taxation or subsidization of the imports involved than a stabilizing device. This was particularly true of fuel imports, which were, in effect, taxed through the fuel equalization fund during the late 1950s and early 1960s, when a fall in foreign prices was not accompanied by a similar change in local prices, which remained stable. However, prices were also kept stable after the devaluation of February 1962 as well as after the devaluation of November 1967, thus converting the tax element in this arrangement to a subsidy. The 20 per cent levy of August 1970 again was not reflected in the local price of the product. Only in the spring of 1971 were local prices of fuel raised substantially, to an extent which still fell short of the total impact of the three devaluations, i.e., the formal devaluations of 1962 and 1967 and the general import levy of 1970.

The Commercial Account was a bookkeeping device through which the government's trading operations were reflected. As will be recalled, imports of major food materials (mainly wheat, sugar, edible oil materials, and milk products) have been handled exclusively by the government itself (through the Ministry of Commerce and Industry). Local prices of these goods are not necessarily equal to the foreign price multiplied by the formal rate of exchange and are, as a rule, kept stable for long stretches of time. Surpluses and deficits in the Commercial Account are thus created. A surplus amounts to a tax on imports; and a deficit, to a subsidy. While the aggregate surplus or deficit in the Commercial Account was not substantial in any given year, it reflected on occasion rather significant, albeit offsetting surpluses and deficits in the accounts for individual goods.

Other Subsidies.

Most import subsidies were handled through equalization funds and the Commercial Account. The most important exception was a subsidy for "rate differentials," which existed on a significant scale for about two years—from August 1954 to late 1956. In August 1954, it will be recalled, the higher formal rate of IL 1.80 per dollar was established for all imports. It was decided, however, that imposition of the higher rate would be only nominal for the imports of a few essential goods, which had been previously imported at one of the lower rates. This was done by granting these imports special subsidies, "rate differentials," which served to offset the higher formal rate. These subsidies gradually declined until by the end of 1956 they had practically disappeared.

ii. METHODS OF PRICE INTERVENTION IN EXPORTS

Although, as will be seen later, price intervention in exports had a lower impact on the economy than did the intervention in imports, in the former the devices were more varied and their explanation less obvious. They will therefore be described at somewhat greater length.

Besides the formal exchange rate, there were four categories of devices which affected export revenues: premiums on output, premiums on inputs, subsidies for exports through import entitlement programs, and "branch funds," which to an extent combine elements of the three other measures.[3]

Premiums on Output.

In one form or another, output premiums on exports have existed throughout almost the entire period with the exception, perhaps, of the years 1962–65, when they were confined to a few individual cases.

Until 1956, export premiums were given in a largely haphazard and varying manner. Starting in December 1949, premiums were granted on many export goods, mostly at a rate of 10 to 12 per cent of the total value of exports. In May 1950, this was changed so that premiums were granted on value added in exports, rather than on the total value. With the formal devaluation of February 1952, these premiums were discontinued; some special premiums granted from then until 1955 were usually intended to solve specific problems involved in the process of transition from lower to higher formal rates of exchange.[4]

In the period 1956–61 premium arrangements reached an apogee, and a nearly "classic" use of this device was demonstrated. This era started in February 1956, when a premium of IL 0.50 per dollar of value added in exports was introduced. The distinctive features of this arrangement were, first, its widespread application: it was presumably universal and uniform, although it excluded the two largest "traditional" export industries, citrus fruits and polished diamonds[5] (as well as exports of services); and second, its determination on the basis of *value added,* rather than total value. Under this plan, an exporter would be granted a rate of IL 1.80 per dollar (the formal rate) plus the premium (that is, a total of IL 2.30 per dollar when the plan was introduced) for the *net* value added in the economy, whether it was value added by his own production or in other local firms. The import component, on the other hand—again, whether it was inputs imported directly for his own production (the direct component) or imports involved in inputs bought from other local firms (the indirect import component)—would be granted only

the formal rate of IL 1.80 per dollar. This was the rate at which the exporter also bought imported inputs, after taking into account the "drawback" plan, which freed imports for exports from import duties (although the indirect import component introduced a few complications on this score). While in principle the value added under this plan was supposedly calculated for each individual exporter, it was, in effect, calculated only for export industries as a whole, and was recalculated for each industry, if at all, only at long intervals.

Besides the general premium plan outlined above, a few other premium arrangements existed during the period 1956–61. Some of these were in effect confined to specific export industries and did not amount, in the aggregate, to any substantial sum. In addition, however, a general plan of specific premium rates for "marginal" exports went into effect in early 1959. The intent of the plan was to raise premiums without adding a rent element by paying higher premiums only for increases of exports. Generally, this meant an increase over the 1958 level of exports of a whole industry;[6] but the committee that determined premium rates for each industry interpreted this principle in a variety of other ways. Most often, the "marginal" premium rate was IL 1.20 per dollar of value added, instead of the general premium rate of IL 0.85 per dollar effective at that time, that is, there was an added premium of IL 0.35 per dollar above the general premium rate.

With the formal devaluation of February 1962, both the general premium arrangement and most of the specific ones were abolished. The most important exceptions were premiums for exports of the textile industry, a branch which had also enjoyed favorable treatment prior to the devaluation. In this industry, a substantial premium, partly carried out through a "branch fund," remained in effect. In a few other export industries, too, "branch funds"—which will be described later—provided subsidies, although on a smaller scale. But for the large majority of Israel's exports, premium elements after the devaluation became nil or insignificant. This remained true for over four years. Only in early 1966 was a premium plan reintroduced, in a manner which has remained in force ever since.

This plan, which was established in April 1966, has been disguised by the name "rebates of indirect taxes" but has nothing to do with those or any other taxes. Unlike in the premium plan of 1956–61, premiums in the current one are specified for the *total* rather than the *added* value of exports. The premium rate varies, however, according to the ratio of value added in the industry, with all industries grouped into particular classes according to average value-added ratios: the lower the value-added ratio of the class, the lower the premium rate granted to exports of industries in that class. It will be recalled that under the premium-for-value-added plan of 1956–61, ratios of value added were also ordinarily calculated for a whole industry, and usually

not recalculated periodically. The difference between the two plans is thus not as radical as it may seem, and consists mainly in a reduction of the number of "classes" of industry from several hundred to just a few, thus discriminating in favor of the low-value-added industry and against the high-value-added industry within each class.

The premium rates involved in the plan were changed several times. Of the six changes until the end of 1971, four were upward; the two downward changes accompanied the episodes of formal devaluations in November 1967 and August 1971. The premium rates were lowered to offset part of the increase in export rewards emerging from the devaluation.

The premium rates under the plan of 1956–61 and under the one operating since 1966 are presented in Tables 4-1 and 4-2.

TABLE 4-1

Rates of Export Premiums, 1956–61

(Israeli pounds per dollar of value added)

Year	General Plan	Citrus Fruit[a]	Shipping	Aviation
1956[b]	.50–.70	—	—	—
1957		—	—	—
1958		.25	—	—
1959	.85	.36	.12	
1960		.50	.36	.85
1961		.70		

SOURCE: Michael Michaely, *Israel's Foreign Exchange Rate System* (Jerusalem: Falk Institute, 1971; in English), Table 2-5.

a. For the citrus industry, rates refer to agricultural years (October to September).

b. From February to July 1956, IL 0.50; from then on until January 1957, IL 0.70.

Premiums on Inputs.

Most premiums in this category were relatively unimportant. The only instance of a significant subsidy on a specific input was for fuel used in the cement industry, where it is an important cost element. Once in a while, transportation costs, either local (by train) or on international routes (by sea) were subsidized, usually through low rate quotations by government-owned shipping companies. Another instance of a transportation subsidy is the exemption of export shipments from the major part of port dues: these shipments are charged only one-fourth of 1 per cent of the value of the shipment, whereas import shipments are charged 2 per cent, the actual cost of producing

TABLE 4-2

Rates of Export Premiums, 1966–71

(Israeli pounds per dollar of total value)

	Export Class		
Value-added ratio of export class (per cent)[a]	26–45	46–65	65+
Apr. 1966–Oct. 1966	.05	.08	0.11
Nov. 1966–Feb. 1967	.11	.18	0.26
Mar. 1967–Oct. 1967	.18	.26	0.36–0.45
Nov. 1967[b]–Jan. 1970	.10	.20	0.35
Feb. 1970–July 1970	.20	.35	0.55
Aug. 1970–Dec. 1970[c]			
Gross	.80	.90	1.05
Net	.27–.41	.51–.65	0.80–1.05
Jan. 1971–July 1971[c]			
Gross	.83	.95	1.12
Net	.30–.44	.56–.61	0.87–1.12
Aug. 1971[d]–date[c]			
Gross	.85	.87	0.89
Net	.22–.39	.43–.58	0.60–0.89

SOURCE: Based on information from Ministry of Commerce and Industry.

a. Industries with value added of 25 per cent of total value of product or less were in principle not entitled to export premiums. Exceptions on an ad hoc basis may, however, be found.

b. Date of change in formal rate from IL 3.00 to IL 3.50 per dollar.

c. The net rate is exclusive of the import levy of 20 per cent imposed in August 1970, for which exports were not entitled to a rebate under the "drawback" arrangement.

d. Date of change in formal rate to IL 4.20 per dollar.

the services for which dues are levied lying probably somewhere between the two rates.

The only important widespread subsidy of an input was the plan for providing cheap short-term financing for exports; that is, providing a subsidy to help defray the cost of interest on short-term capital loans.[7] Facilities of one kind or another existed during the 1950s; but a general, almost universal, plan was established in 1962, and with only minor modifications has remained in effect to this day. In this setup, short-term financing for industrial exports is provided (from funds to which both the Bank of Israel and the commercial banks contribute) under three headings: for value added; for the import component; and for the time lag between shipment and receipt of money (that is, short-term credits provided by the Israeli exporter to his customers). Financing for value added is quoted in Israeli currency; whereas financing for the other two purposes is quoted in foreign currency. The rate of interest

charged on this credit has been mostly 6 per cent. For credit quoted in foreign exchange, this amounted on the average to only a small subsidy, since the borrower (i.e., the exporter) has to carry the risk of a devaluation. Indeed, the extent to which exporters have availed themselves of this part of the credit scheme has fluctuated widely in accordance with the state of expectations of devaluation. Financing of value added, on the other hand, which is denominated in local currency, has amounted to a very substantial subsidy on the use of capital. The charge of 6 per cent being constant, the rate of this subsidization varies, of course, with changes in the market rate of interest, which is closely associated with changes in the rate of price increases. On the average, it may be assumed that the 6 per cent rate of interest represents a subsidy of about 10 per cent per annum of the credit used.[8]

The amount of credit from this source to which an exporter is entitled depends not only, of course, on the size of his exports but also on the length of the "production cycle," which is determined separately for each industry. It may well be the case that production cycles are generally longer in these calculations than is actually warranted by the production process. Moreover, financing is provided in a lump sum for the whole length of the cycle as calculated even though costs actually accumulate during the cycle rather than being all incurred at its inception. It may thus be assumed that short-term financing from the export fund covers more than the full extent of credit actually required and probably very often by a considerable margin; the excess credit is used, of course, in the exporter's other operations, namely, for production for the local market. The combination of the ample size of this credit and the highly favorable interest rate on it makes the subsidy element involved in this scheme a significant factor. From 1962 to 1966, when no general premium arrangement was in force, this was actually the main subsidization element granted to exports, although its size was obviously much lower than that which was provided by the direct premium schemes for output. It has been estimated—albeit, by the use of arbitrary assumptions about interest rate differentials—that subsidies provided through credit from export funds amounted in 1966, for instance, to roughly 8 per cent of the effective rate of exchange for value added (that is, about IL 0.3 per dollar) in exports of diamonds, and 3 per cent in other industrial exports. In later years, these rates have risen, since (with accelerated price rises in the economy) nonsubsidized interest rates increased. Such figures, it should be stressed, are only tentative illustrations; but they do point out that subsidization of exports through cheap credit facilities was of some importance during the 1960s and later as well.

Import Entitlement.

Subsidies through import entitlements were instituted in one form or another starting in the late 1940s. At first, however, they were sporadic, non-

uniform, and relatively unimportant. This may be explained, perhaps, by the predominance of exports of citrus fruit and polished diamonds, Israel's two traditional export items in those earlier years. Since almost all the arrangements of this nature confined import entitlements to inputs which were "in the line of production" of the export industry, these two branches did not stand to gain by such arrangements. Since these were strictly export industries, their inputs were never restricted.

With the growing importance of exports of assorted manufacturing industries, the retention-quota plans grew in significance. In May 1953, the Pamaz[9] plan—the major form of the retention-quota system—was established in its full-fledged form. In this plan, all exporters (except those of citrus fruit and diamonds) were entitled to use *all* their export proceeds to buy imports of materials in their "line of production." Partly—in proportion to the import component in exports—these imports would be used for further production of another "cycle" of exports.[10] The other part, equivalent to the value added in exports, would thus be left for the purchase of imported inputs for production for the local market. Since at that time such imports were mostly restricted, whereas prices of the finished goods in the local market were already largely free, this import entitlement generated a quota profit. Since the imports of each exporter were confined to his "line of production" and Pamaz rights could not be transferred, the rates of extra profits differed, of course, from one industry to another.[11]

The Pamaz arrangement reached its peak around 1956 and then declined until it disappeared in 1959. This decline was partly by design and partly due to changing circumstances. The first factor which contributed to diminish the importance of the system was the introduction, in 1956, of general premiums. An exporter wishing to avail himself of the premium payment had to sell his foreign-exchange proceeds to the Treasury, thus forgoing his Pamaz rights. Given this alternative, many exporters opted for the premium rather than the Pamaz right.[12] Another important influence in the same direction was the process of gradual liberalization of imports of raw materials: obviously, Pamaz rights are of no significance when the needed inputs can be freely imported.[13] In addition, from 1956 on, the government took a number of measures limiting the extent of Pamaz rights.[14] At the end of 1959, the program was abolished altogether.

Besides the general Pamaz plan, a few other import-entitlement arrangements existed, mainly during the late 1950s. These "linkage" rights were sporadic and confined to a few specific industries. Exporters in those industries would be granted an import right in a specified ratio to the size of their exports (a ratio of one-to-one was quite common). Besides their sporadic nature, linkage arrangements differed from the Pamaz plan in two important aspects. First, it will be recalled that the owner of a Pamaz right had to

use part of this right to purchase imported inputs for his exports; the excess profits from sales on the local market would be derived, therefore, only from the value added in exports. The owner of a linkage right, on the other hand, would finance his imported inputs by buying foreign exchange from the Treasury, at the official rate, thus deriving excess profits from the *total* value of his exports. Second, the user of a Pamaz right had to forgo the government's direct export premium, whereas exporters who entered into a linkage agreement could sell their export proceeds to the government at the premium rate, thus enjoying both the premium and the excess profits derived from imports.

Branch Funds.

Starting in 1959, and mainly since the early 1960s, a number of so-called branch funds were established in a form designed primarily to encourage exports. The number of such funds was limited to about seven or eight, but they related to quantitatively significant export industries (mainly in textiles). During the first half of the 1960s, before the reintroduction of general premiums, branch funds were the main source of export subsidies, although they were applied to only certain segments of exports. Each branch fund had its own unique structure and method of operation. In general the method of export subsidization through the funds was a combination of governmental premium and compensation through sales of restricted imports in the local market. But to some extent, the funds were merely cartel arrangements, backed by the government, which allocated sales among the local and foreign markets.

iii. EXCHANGE RATES AND PROTECTIVE RATES IN IMPORTS AND EXPORTS

For an analysis of the effect of intervention on the economy through the price mechanism, the various components of intervention have to be added and transformed into estimates of effective exchange rates and effective protective rates. The most comprehensive data available for the Israeli economy relate to effective exchange rates for imports and exports of goods. For the aggregates, as well as for large categories, data constructed by approximately consistent methods and definitions are available for the period from 1949 through 1971 (at this writing). Data by detailed commodity classification have been constructed for a large part of this period, namely, for the years 1949–62. The effective-exchange-rate data for exports relate to *value added* but for imports, they related to gross value, i.e., to final values of each imported good.[15] Thus, while for exports these data easily yield protective rates,

this is not the case for imports. Estimates of protective rates for imports are thus much less abundant, as are also estimates of domestic resource costs (DRCs) in various industries.

Appendix B contains a discussion of the concepts and methods involved in the estimates of effective exchange rates and their relationship to effective protective rates. The data for the aggregates of imports and of value added in exports are presented in Table 4-3. As is explained in Appendix B, the transformation of export rates into effective protective rates for exports is straightforward, and will be presented shortly. On the other hand, estimates of protective rates for import substitution cannot be derived with the same ease. Likewise, estimates of DRCs in Israel are, unfortunately, sparse and often not very reliable. Although the concept of "the price of value added" (or, as it has been usually termed in Israel when applied to import substitution, "the value saved") has been in use as a policy guide in Israel as far back as the mid-1950s, consistent, universal estimates are lacking. Usually, such estimates were made for particular industries or firms, and most often, these were ex-ante estimates, designed to serve as a criterion for judging the advisability of undertaking a contemplated investment. The most complete set of data on DRCs is probably that which was prepared for the deliberations of the Public Commission in the process of the post-1962 liberalization; but, as was mentioned in the last chapter, these data are most probably gross underestimates, due to the purpose for which they were intended, and cannot be relied upon.

Direct estimates of rates of protection for import-substituting industries are also not generally available. But from the set of data of effective exchange rates for the final (total) value of each good, exchange rates for value added in import substitutes may be obtained by using the effective exchange rates for imported inputs for these industries. Such a set of data has been constructed. The calculations are based on detailed estimates of an 80 × 80 input-output matrix of imported inputs.[16] Such a matrix is available for the year 1958.[17] On the assumption that the production structure of each industry was close enough to that of 1958 in each of the two preceding and two following years, the 1958 coefficients were used to construct effective-rate estimates for the five years 1956–60. Effective exchange rates for value added in exports and import substitutes are presented by commodity group in Table 4-4, and their comparison is summarized in Table 4-5.[18]

In evaluating the meaning of the import rates, and in particular in comparing them with export rates, it should be realized that the former suffer—on the average, of course—from two deficiencies, both probably leading to gross underestimation.

First, in interpreting such data, it should be recalled that the estimates of effective exchange rates refer to *price* measures, but not to the QR system;

TABLE 4-3

Effective Exchange Rates for Imports and Exports of Goods, 1949–71

(Israeli pounds per dollar)

Year	Import Rate (1)	Export Rate (2)	Percentage Change of Col. 1 (3)	Percentage Change of Col. 2 (4)
1949	0.39	0.35		
1950	0.40	0.39	4.1	9.4
1951	0.39	0.41	−1.7	5.7
1952	0.81	0.81	103.8	98.3
1953	1.17	1.28	45.0	58.1
1954	1.80	1.73	54.2	35.3
1955	2.21	1.83	22.9	5.8
1956	2.26	2.05	2.3	12.1
1957	2.33	2.21	3.2	7.8
1958	2.35	2.37	0.7	7.2
1959	2.50	2.49	6.5	5.0
1960	2.57	2.58	2.5	3.6
1961	2.60	2.66	1.4	3.1
1962[a]	3.57	3.00	37.1	13.0
	3.47	3.02		
1963	3.49	3.04	0.6	0.7
1964	3.47	3.06	−0.6	0.7
1965	3.55	3.08	2.3	0.7
1966	3.59	3.27	1.1	6.1
1967	3.68	3.57	2.5	9.1
1968	4.13	4.04	11.6	13.1
1969	4.22	4.05	2.2	0.2
1970[b]	4.42	4.49	4.8	10.7
1971[b]	5.09	5.04	15.2	12.2

NOTE: Deviations of columns 3 and 4 from the corresponding percentage changes in columns 1 and 2 are due to rounding of the underlying data.

SOURCE: 1949–62—Michaely, *Foreign Exchange System*, Table 4-1; 1962–71—Valery D. Amiel, "Effective Rates of Exchange in Israel's Foreign Trade, 1962–70," Bank of Israel *Economic Review* 39 (August 1972; in English), pp. 28–53.

a. Due to the shift from one source of data to another in 1962 (see Source note, above), and slight differences between the two sources, two sets of data are presented for that year. The percentage change from 1961 to 1962 is based on the first set; from 1962 to 1963, on the second set.

b. Preliminary.

TABLE 4-4

Effective Exchange Rates for Value Added in Exports and in Import Substitutes, by Individual Industry, 1956–60

(Israeli pounds per dollar)

Code	Product Group	1956		1957		1958		1959		1960	
		Exports	Import Substitutes	Exports	Import Substitutes	Exports	Import Substitutes	Exports	Import Substitutes	Exports	Import Substitutes
801	Cereals and pulses	—	1.94	—	1.97	2.68	2.44	2.92	2.21	2.65	2.28
802	Roughage	—	1.90	—	1.98	—	2.28	—	2.14	—	2.08
803	Cotton	—	1.79	2.66	1.78	2.64	2.22	2.64	1.78	2.71	2.18
804	Other field crops	2.35	1.65	2.73	1.86	2.81	2.19	3.12	2.28	3.01	2.23
805	Vegetables and melons	2.12	2.78	2.52	2.83	2.62	2.20	2.56	3.71	2.61	3.39
806	Cattle	—	1.93	—	4.03	—	2.01	—	2.33	—	3.40
807	Poultry	2.69	1.80	2.88	1.96	2.55	1.85	2.88	4.38	2.89	1.54
808	Other livestock	2.39	1.84	2.59	1.90	2.67	2.49	2.49	2.96	2.63	2.72
809	Citrus fruit	1.80	—	1.80	—	2.05	—	2.16	—	2.30	—
810	Fruit other than citrus	2.08	8.79	2.62	5.38	2.62	4.31	2.61	10.35	2.82	6.92
811	Other agricultural products	2.44	2.97	2.56	2.77	2.66	3.42	2.69	3.37	2.85	5.38
812	Gravel and scrap metal	2.35	1.83	2.70	1.88	2.68	1.85	2.84	1.88	2.88	2.24
814	Nonmetallic minerals	2.35	1.81	2.72	1.98	2.08	1.78	2.48	1.81	2.70	1.80
815	Meat and fish products	2.30	2.04	2.58	3.81	2.61	2.21	2.66	3.08	2.65	2.31
816	Dairy products	2.61	1.77	4.55	1.86	2.64	1.40	2.73	2.94	2.75	1.87
817	Edible oils and fats	2.35	—	2.70	—	2.68	—	2.65	—	2.65	—
818	Vegetable and fruit preserves, spices, and coffee	2.18	3.77	2.59	2.24	2.51	4.95	2.62	3.80	2.73	15.11
819	Flour-mill and bakery products	2.35	1.18	3.96	1.86	3.18	5.57	3.02	3.26	2.66	9.86
820	Sugar and confectionery	2.35	8.13	2.70	5.33	2.68	5.04	2.73	4.36	2.68	7.82
821	Beverages and ice	2.86	7.37	2.96	4.78	2.89	2.23	2.63	5.16	2.55	8.43

822	Tobacco products	2.35	64.19	2.63	15.99	2.68	23.19	2.66	—	2.75	—
823	Cotton spinning	2.35	2.15	2.70	2.19	2.72	2.14	2.91	2.30	3.54	2.31
824	Wool spinning	2.35	1.78	2.70	1.78	2.29	1.73	3.08	1.66	2.80	1.84
825	Fabrics: weaving and finishing	2.26	2.63	2.63	2.52	2.63	2.62	3.05	3.27	2.66	3.48
826	Knitting, twine, and textiles n.e.s.	2.35	2.34	2.61	1.77	2.62	1.76	2.54	2.04	2.69	2.87
827	Clothing	2.44	2.08	2.65	2.02	2.65	2.44	2.76	2.51	2.77	2.36
828	Basic wood products	2.16	2.04	4.32	1.96	4.28	1.55	2.84	1.83	2.71	0.89
829	Carpentry and joinery	2.36	1.80	2.53	1.97	2.68	2.65	2.14	2.04	2.83	2.07
830	Paper and paper products	2.69	2.34	3.38	2.18	3.38	2.30	2.69	2.92	3.19	2.81
831	Printing and publishing	2.43	1.04	2.60	1.79	2.70	1.66	2.77	1.68	2.62	1.76
832	Leather and leather products	2.97	2.49	2.72	2.29	2.67	2.58	2.80	2.43	3.28	2.74
833	Rubber products	2.68	1.85	2.70	2.98	2.65	2.15	2.47	2.62	2.60	2.35
834	Manufacture and repair of tires	2.35	1.94	2.70	2.28	2.68	2.10	2.73	2.19	2.75	1.74
835	Plastic products	2.58	2.87	2.70	3.76	2.95	3.23	2.88	4.39	2.67	2.09
836	Basic chemicals	2.31	1.72	2.58	1.86	2.67	2.82	2.68	2.44	2.78	2.71
837	Oil, soap, and detergents	2.06	2.16	2.14	1.98	2.29	2.04	2.42	—	2.18	2.10
838	Paints	2.35	1.88	2.70	1.94	2.68	1.83	2.56	2.20	2.61	1.76
839	Oil refining	2.63	—	3.14	—	2.50	—	2.64	—	2.59	—
840	Pharmaceuticals, insecticides, and other chemicals	2.28	1.40	2.43	2.17	2.64	1.63	2.60	2.08	2.58	1.99
841	Glass and ceramics	2.30	2.31	2.22	2.38	2.26	2.59	2.67	3.21	2.63	2.86
842	Cement	2.61	35.36	2.40	37.16	3.08	—	2.74	—	2.72	24.85
843	Cement and lime products	2.37	1.86	2.70	2.00	2.68	1.81	2.73	2.11	2.66	1.97
844	Asbestos and nonmetallic mineral products n.e.s.	2.32	2.31	2.51	3.00	2.54	2.32	2.70	2.48	2.90	2.81
845	Diamonds	2.40	1.85	2.65	1.47	2.65	1.86	2.65	3.57	2.65	1.79
846	Basic iron and steel	3.33	1.93	2.70	1.79	2.47	2.12	2.36	1.81	2.50	2.43
847	Basic nonferrous metals	2.35	1.82	2.70	1.88	2.82	1.81	2.90	1.84	2.65	1.82
848	Metal pipes	2.49	2.14	2.73	1.77	2.61	2.01	2.54	1.92	2.54	1.85

(*continued*)

TABLE 4-4 (*concluded*)

Code	Product Group	1956 Exports	1956 Import Substitutes	1957 Exports	1957 Import Substitutes	1958 Exports	1958 Import Substitutes	1959 Exports	1959 Import Substitutes	1960 Exports	1960 Import Substitutes
849	Plumbing fixtures	2.35	1.81	2.79	1.98	2.32	1.78	2.72	1.87	2.57	2.87
850	Structural metal products	2.35	1.76	2.70	1.79	2.68	—	2.74	2.20	3.32	1.64
851	Tin products	2.35	1.92	2.70	1.79	2.92	1.90	2.67	2.03	2.78	1.72
852	Wire products	2.35	2.42	2.70	1.98	2.72	2.46	2.66	1.93	2.53	2.62
853	Kitchen utensils, tools, and galvanizing products	2.32	1.92	2.70	2.89	3.00	4.80	2.79	4.84	2.95	2.46
854	Other metal products	2.75	2.43	2.54	2.59	2.34	2.21	2.66	1.82	2.64	2.01
855	Industrial and agricultural machinery	2.48	1.81	2.63	1.84	2.62	1.96	2.69	1.95	2.70	1.82
856	Household equipment	2.45	2.65	3.26	2.63	2.68	3.28	2.67	6.22	2.66	1.79
857	Electric motors and transformers	2.44	1.75	2.70	1.80	2.65	1.96	2.80	1.81	2.58	1.63
858	Electric fixtures, batteries, and accumulators	2.35	2.61	2.70	2.15	2.68	2.56	2.50	2.57	2.53	3.27
859	Domestic electric appliances, radio, and communications equipment	2.45	2.46	2.75	2.49	2.74	2.49	2.78	4.00	2.77	3.75
860	Manufacture of motor vehicles	—	2.17	2.70	2.58	2.68	2.52	2.84	2.38	2.98	2.69
861	Repair of motor vehicles	—	1.87	—	1.78	—	1.75	—	1.86	—	1.76
862	Manufacture and repair of ships and aircraft	—	1.80	2.70	1.80	2.68	1.78	—	1.80	—	1.78
863	Precision instruments and manufactures n.e.s.	2.40	2.43	2.64	2.25	2.52	4.92	2.84	2.70	2.69	2.53
879	Miscellaneous, repairs, etc.	2.35	2.31	2.70	1.17	2.68	2.50	—	1.91	—	2.20
880	Fuel: extraction and refining	—	—	—	3.05	—	—	—	2.09	—	2.84

SOURCE: Michaely, *Foreign Exchange System*, Tables A-1 and A-5.

TABLE 4-5

Effective Exchange Rates for Value Added in Exports and in Import Substitutes, 1956–60: Summary Comparison

	1956	1957	1958	1959	1960
Number of product groups in which:					
$R_m > R_x$	11	10	11	15	12
$R_m < R_x$	28	35	28	26	30
$R_m = R_x$ ($\pm 10\%$)	11	9	14	9	10
Average export rate (IL per $)	2.05	2.21	2.37	2.49	2.58
Average import rate (IL per $)	3.26	2.91	2.63	3.16	3.47
Import rate as percentage of export rate	159	132	111	127	134

R_m = effective exchange rate for import substitutes.
R_x = effective exchange rate for exports.
SOURCE: Table 4-4.

that is, quota profits are not measured in the calculation of effective exchange rates. But this element exists, naturally, only with regard to protection of import substitutes, and not to exports, in which protection is afforded only by direct price elements. Thus, even were the estimates accurate and complete as far as they are supposed to go, they would not describe the full measure of protection afforded to imports. Hence, this measure is understated for imports in comparisons with estimates of protection for exports.

The second deficiency is due to the technique of the estimates. In deriving these by the use of input-output data, the effective exchange rate for each imported input was assumed—for lack of any alternative—to be the average exchange rate estimated for this import category. Were each such category a homogeneous product, this method would have been correct. But, in effect, every category includes a multitude of individual goods, each with its own effective exchange rate, with the rate for the category as a whole derived as an average weighted by the size of imports of each individual good.[19] This in itself would not be very damaging had the distribution of individual rates within each group of commodities been random. But, as will be seen later, and as is well known from the experience of many countries, this was not the case: exchange rates for raw materials or semimanufactured goods tend to be lower than the rates for final goods, and each category of goods usually consists of a mixture of goods at various stages of production. Thus, were the rates for goods within each category weighted by the size of imports actually used as inputs in domestic production, the average rate yielded would have been lower, as a rule, than the averages employed, in effect, in the calculations—

TABLE 4-6

Effective Rates of Protection for Exports and Import Substitutes, by Individual Industry, 1956–60

(per cent)

Code[a]	1956		1957		1958		1959		1960	
	Exports	Import Substitutes	Exports	Import Substitutes	Exports	Import Substitutes	Exports	Import Substitutes	Exports	Import Substitutes
801	—	−19	—	−26	1	8	10	−17	0	−14
802	—	−21	—	−25	—	−14	—	−19	—	−22
803	—	−25	0	−33	0	−16	0	−33	2	−18
804	−2	−31	3	−30	6	−17	18	−14	14	−16
805	−12	16	5	7	−1	−17	−3	40	−2	28
806	—	−20	—	52	—	−24	—	−12	—	28
807	12	−25	9	−26	−4	−30	9	65	9	42
808	−1	−23	−2	−28	1	−6	−6	12	−1	3
809	−1	—	−32	—	−23	—	−18	—	−13	—
810	−13	−266	1	103	−1	63	−2	291	6	161
811	2	24	−3	5	0	29	2	27	8	103
812	−2	−24	2	−29	1	−30	7	−29	9	−15
814	−2	−25	3	−25	−22	−33	−6	−32	2	−32
815	−4	−15	−3	44	−2	−17	0	16	0	−13
816	9	−26	72	−30	0	−47	3	11	4	−29
817	−2	—	2	—	1	—	0	—	0	—
818	−9	57	−2	−15	−5	−87	−1	45	3	470
819	−2	−51	49	−30	20	110	14	23	0	272
820	−2	239	2	101	1	90	3	65	1	195
821	19	207	12	80	9	−16	−1	95	−4	218

822	−2	2,575	−1	503	1	775	0	—	4	—
823	−2	−10	2	−17	3	−19	10	−13	34	−13
824	−2	−26	2	−33	−14	−35	16	−37	6	−31
825	6	10	−1	−5	−1	−1	15	23	0	31
826	−2	−3	−2	−33	−1	−34	−4	−23	2	8
827	2	−13	0	−24	0	−8	4	−5	5	−11
828	−10	−15	63	−26	62	−42	7	−31	2	−66
829	−2	−25	5	−26	1	0	−19	−23	7	−22
830	12	−3	28	−18	28	−13	0	10	20	6
831	1	−57	−2	−32	2	−37	5	−37	−1	−34
832	24	4	3	−14	1	−3	6	−8	24	3
833	12	−23	2	12	0	−19	−7	−1	−2	−11
834	−2	−19	2	−14	1	−21	3	−17	4	−34
835	8	20	2	42	11	22	8	66	1	−21
836	−4	−28	3	−30	1	6	1	−8	5	2
837	−14	−10	−19	−25	14	−23	−9	—	−18	−21
838	−2	−22	2	−27	1	−31	−3	−17	−2	−34
839	10	—	18	—	−6	—	0	—	2	—
840	−5	−42	8	−18	0	−38	−2	−22	−3	−25
841	−4	−4	−16	−10	−15	−2	1	21	−1	8
842	9	1,373	−9	1,302	16	—	3	—	3	838
843	−1	−23	2	−25	1	−32	3	−20	0	−26
844	−3	−4	−5	13	−4	−12	2	−6	9	6
845	—	−23	0	−45	0	−30	0	35	0	−32
846	39	−20	2	−32	−7	−20	−11	−32	−6	−8
847	−2	−24	2	−29	6	−32	9	−31	0	−31
848	4	−11	3	−33	−2	−24	4	−28	−4	−30

(*continued*)

TABLE 4-6 (*concluded*)

Code[a]	1956		1957		1958		1959		1960	
	Exports	Import Substitutes	Exports	Import Substitutes	Exports	Import Substitutes	Exports	Import Substitutes	Exports	Import Substitutes
849	−2	−25	5	−25	−12	−33	3	−29	−3	8
850	−2	−27	2	−32	1	—	3	−17	25	−38
851	−2	−20	2	−32	10	−28	1	−23	5	−35
852	−2	1	2	−25	3	−7	0	−27	−5	−1
853	−3	−20	2	9	13	81	5	83	11	−7
854	15	1	−4	−2	−12	−17	0	−31	0	−24
855	3	−25	−1	−31	−1	−26	1	−26	2	−31
856	2	10	23	−1	1	24	1	135	0	−32
857	2	−27	2	−32	0	−26	6	−32	−3	−38
858	−2	9	2	−19	1	−3	−6	3	−5	23
859	2	3	4	−6	4	−6	5	51	5	41
860	—	−10	2	−3	1	5	7	−10	12	2
861	—	−22	—	−33	—	−34	—	−30	—	−34
862	—	−25	2	−32	1	−33	—	−32	—	−33
863	0	1	0	−15	−5	86	7	2	2	−5
879	−2	−4	2	−56	1	−6	—	−28	—	−17
880	—	—	—	15	—	—	—	−21	—	7

NOTE: A negative sign indicates negative protection.

SOURCE: Data for effective exchange rates for value added in exports and in import substitution are from Table 4-4. They were transformed into effective rates of protection as explained in Appendix B, with the following rates representing equilibrium levels ($\bar{R}$): 1956, IL 2.40 per dollar; 1957–60, IL 2.65 per dollar.

a. Product groups are identified by name in Table 4-4.

often, very probably, by a substantial margin. Using upwardly biased estimates for the rate of exchange for imported inputs leads, of course, to a downwardly biased estimate of the effective exchange rate for value added.

A similar (although probably less important) bias in the same direction is due to the method of estimating average rates of exchange for the final good in each group: the rates of individual goods within the group are weighted by the size of exports (for the export rate) or imports (for the import rate). As is well known, this procedure, as compared with a uniform-rate one, increases the weights of exports with particularly *high* rates and of imports with particularly *low* rates, thus raising the estimate of the value-added rate for exports and lowering it for import substitutes.[20]

The estimates of effective exchange rates for value added in exports and in import substitution may be transformed, in the manner described in Appendix B, into estimates of effective protective rates. These are presented in Table 4-6. Since the ranking of rates is identical, due to the method of transformation used, whether effective exchange rates (for value added) are used or effective protective rates (EPRs), the analysis of both sets of data will yield identical conclusions. In the following discussion, the data on effective exchange rates in Table 4-4 will be used, but the set of EPRs in Table 4-6 could be utilized just as well.

From Table 4-4, it seems that the variance of rates is much higher in imports than in exports, both across groups and when changes within the five-year period presented are considered. This is probably partly a result of the crude and indirect way in which import rates were calculated. It is also probably partly due to the fact that while export rates were by and large known to policymakers because of the subsidization methods, rates for value added in import substitution, which contain elements of exchange rates on imported inputs and reflect the size of the import component, were not known nearly as well, and were not decided upon directly, thus leaving more room for chance to play a role. At least to some extent, though, the large variance shown in rates of exchange for value added in import substitutes must also reflect the actual dispersion of final-value rates, as will be seen in the next section.

From the summary presented in Table 4-5, it appears that in most groups import (value-added) rates were *lower,* in all five years considered, than export rates. In view of the probably gross underestimation of import rates, it is doubtful whether any conclusion could be based on this finding. When *average* rates for total exports and imports are considered, on the other hand, the data in the table show that the import rate always exceeds the export rate.[21] In this instance, awareness of the biases involved should, of course, serve to increase confidence in the conclusion, namely, that for production in the economy as a whole, the protective rate in import substitution exceeded the protective rate for exports.

This inference is strongly supported by preliminary findings of a study relating to a later year, 1965, in which protective rates were estimated by a somewhat more refined procedure.[22] Input-output coefficients were still the main basis of the estimates; but important inputs were examined more carefully, to enable discretionary decisions to be made about the proper inputs and input rates to be included. These findings are summarized in Table 4-7.

TABLE 4-7

Effective Rates of Protection, by Major Industrial Sector, 1965
(per cent)

Sector	Domestic Sales	Export Sales
Agriculture	46	8
Food, tobacco, etc.	153	−1
Textiles and leather	116	121
Other light industries	16	7
Chemicals and minerals	78	−9
Metal industries	64	−16
Total	66	10

SOURCE: Preliminary data provided by Joseph Baruch, "The Structure of Protection in Israel, 1965 and 1968" (Ph.D. diss. in progress, Hebrew University).

It can be seen in the table that in two of the six major sectors—textiles and leather and other light industries—protective rates were about equal in import substitution and in exports. In the other four, effective protection in import substitution was clearly and substantially higher than in exports; effective protective rates in exports even appear to be negative in two of these four sectors, and positive only in one (in the fourth it is practically nil). For the aggregates, the effective protection rate seems to be substantial (66 per cent) in import substitution, and rather low (10 per cent) in exports. Excluding the textile industry, aggregate exports would appear to be subject to negative protection, although not to a high degree. This is due to the previously noted scarcity of export premiums and other subsidies, except in the textile industry, from the devaluation of 1962 to the end of 1966; at the same time, the "drawback" scheme, which in principle frees exporters from import duties on inputs for exports, does not operate perfectly; in particular, it does not provide for refunds of duties paid on the indirect component of imports in exports.

The textile industry has been investigated in some detail, in a study in

which both effective protective rates and domestic resource costs have been determined for a sample of goods drawn from the various subbranches of the industry, where the individual goods are defined in great detail.[23] Rates have been calculated separately for import substitution and for exports. The findings are summarized in Table 4-8.

In comparing effective protective rates in import substitutes (column 3) and in exports (column 6), no general rule seems to emerge.[24] On the basis of these findings, it would not be warranted to assert that import substitution has enjoyed more protection than exports. It should be recalled, however, that effective exchange rates and effective protective rates have persistently been higher, by a substantial margin, for exports of the textile industry than for exports of most other industries, but no such general discrimination in favor of the textile industry has been apparent in import substitution. Thus, even equality of protective rates for exports and imports in the textile industry would have suggested a generally higher rate of protection in import substitution than in exports in other industries.[25]

The findings of Table 4-8 may be more illuminating, however, for another issue: this is apparently the only available set of data which provides reliable estimates for both EERs (and EPRs) and DRCs for the same precisely defined, specific goods. In perfect markets and under equilibrium conditions, the effective exchange rate for value added and the domestic resource cost at the margin should be equal for each good. The existence of monopolies, the imperfect mobility of factors, factor price rigidities, "water in the tariff" (i.e., lack of effective competition from imports at the existing price), and similar phenomena would lead to divergences between the two.[26] Likewise, the estimates of EERs do not take into account the operation of QRs or of various other forms of governmental interference (such as subsidization of long-term capital charges, tax concessions, and the like). Thus, in practice the two measures could be found to diverge widely for any given good. It would thus be interesting to compare the two in the case at hand. The estimates of DRCs in Table 4-8 do not include an adjustment for possible differences between market prices (in the production of each good) and shadow prices of factors.[27] But other reasons for divergence between EERs and DRCs should be reflected in this comparison.

Comparison of columns 1 and 2 in Table 4-8 shows that in import substitution EERs almost always exceed DRCs, often by a substantial margin.[28] The unweighted average difference between the two is 52 per cent of the DRC. On the average, however, the EERs in column 2 exceed the formal rate of exchange by 140 per cent, compared to which the 52 per cent excess of EERs over DRCs does not seem overwhelming. In exports, moreover, the excess of EERs (column 5) over DRCs (column 4) is on average only 13 per cent, whereas the excess of EERs over the formal rate of exchange is 106

per cent. Perhaps not less important is the comparison of *rankings* of the EERs and DRCs. The rank correlation coefficient between columns 1 and 2 (import substitution) is .79; between columns 4 and 5 (exports), it is .69. The coefficients of determination (r^2) of the series in original units are .72

TABLE 4-8

Domestic Resource Costs and Effective Protection in the Textile Industry, 1968[a]

Product	Import Substitutes			Exports		
	DRC (IL per $ of value added) (1)	EER (IL per $ of value added) (2)	EPR (per cent) (3)	DRC (IL per $ of value added) (4)	EER (IL per $ of value added) (5)	EPR (per cent) (6)
Cotton yarn						
Corded, 81/1	7.4	9.9	182	13.5	10.3	194
Combed, 40/1	12.3	16.0	357	20.9	16.2	363
Cotton fabric						
Semiprocessed drill	5.8	9.7	177	10.8	12.9	274
Poplin polyester	6.2	13.8	294	8.9	8.5	143
(Blended) cotton fabric						
Semiprocessed drill	6.9	9.9	182			
Poplin polyester	6.5	11.6	231			
Combed woollen-type yarn						
Pure knitting wool, 32/2	4.3	6.1	74	6.6	6.0	71
Acrylic, 37/2	2.8	3.9	11	3.8	5.2	49
Acrylic, 60/2	3.8	4.4	26	5.0	5.2	49
Woollen-type fabric						
Polyester	3.4	6.7	91	4.7	5.6	60
Polyester (solid)	4.3	3.3	−6	6.9	6.6	89
Blended polyester	3.8	7.5	114	4.6	6.8	94
Blended polyester (solid)	4.4	6.1	74	5.4	7.3	109
Woollen trousers						
Of imported fabric				5.6	5.6	60
Of domestic fabric				5.1	4.7	34
Poplin polyester shirt						
Of imported fabric				3.9	4.6	31
Of domestic fabric				5.0	6.9	97
Knitted						
Lambswool shirt				5.0	6.8	94
Jersey dress				4.5	4.7	34
Girl's dress				4.6	6.1	74

Notes to Table 4-8.

DRC = domestic resource costs.
EER = effective exchange rates.
EPR = effective protective rates.

SOURCE: Data for domestic resource costs (DRC) and effective exchange rates (EER) from Aharon Ornstein, Haim Ben-Shahar, and Yoram Weinberger, "The Textile Industry in Israel: Profitability, Productivity, and Policy" (in Hebrew), *Rivon Le'Kalkala* [Economic quarterly], June 1970, pp. 118–130, and September 1970, pp. 220–230, Tables 19 and 20. EERs converted to effective protective rates (EPR) by the formula $(R_i - R)/R$, where R_i is the rate for the individual product and R = IL 3.50 per dollar.

a. Exact year is not specified in the source, but may be implied from accompanying text.

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for import substitution and .86 for exports. The outcome of all these measures suggests a rather close resemblance between the series of EERs and DRCs.

The resemblance of the two sets of estimates suggests, first, that the estimates of EPRs could not be wide of the mark as indicators of the degree of protection afforded to an industry, despite the elements missing from the estimates. Beyond that, the association of the two sets could be explained in two alternative ways. It may be assumed, first, that effective exchange rates for each activity are determined in an independent way (that is, by considerations other than costs). The size of production in each activity then expands or contracts to the point at which the cost of value added (the DRC) becomes roughly equal to the effective exchange rate (for value added); that is, market forces work without much hindrance. In the alternative explanation an opposite adjustment would be assumed: At each point in time, the government may be assumed to take the costs of production in each activity as given, and grant the activity an effective exchange rate which would result in an approximate coverage of the costs of this activity. There is no feasible way of deciding which one of these hypotheses should be accepted. Circumstantial evidence suggests that both explanations are plausible: the similarity of the two sets of estimates is probably the combined outcome of both processes. It may also be assumed that the "tailoring" of effective exchange rates to cover costs is more prevalent in the textile industry, particularly for exports, than in most other industries.

iv. FORMAL DEVALUATION AND THE USE OF OTHER PRICE COMPONENTS

Except in the years 1952–54, the formal rate of exchange was uniform for almost all foreign-exchange transactions. Government intervention in trade via the price mechanism was mainly through premiums and other subsidies on exports and tariffs and levies on imports; these constitute the nonformal com-

ponents of the effective exchange rate. In order to judge the significance of this intervention, three interrelated questions must be answered: How large was it in terms of its average size? Was it actually a specific intervention in the working of the mechanism or merely a substitute for the use of the formal exchange rate, i.e., for devaluation? And was it discriminatory or applied uniformly? The first two questions are dealt with here; the third, in the section following.

It may be seen, from Table 4-9, that the nonformal component amounted, at its peak in the early 1960s, to somewhat over 30 per cent of the effective rate (that is, close to half of the formal rate), for both exports and imports. The averages for the period as a whole were, of course, lower, but very often quite close to this peak level. It may thus be seen, by way of a general impression, that these forms of price intervention were not trivial, but rather of considerable quantitative significance.

The data in Table 4-9, together with those of Table 4-3, may very tentatively provide a clue to the extent to which nonformal components were used as a substitute for formal devaluation. In this respect, some difference appears between exports and imports. Table 4-3 shows that annual changes in the effective exchange rate over time were as a rule more uniform for exports than for imports. Since changes in the formal rate were mostly identical for exports and imports, this difference must, of course, be due to the behavior of the nonformal components. It appears indeed, from Table 4-3, that in exports this component was used, over the long run, to smooth out the process of devaluation, at least until the latter half of the 1960s. Formal devaluations were substantial, but between devaluations the nonformal component of the rate kept rising. Upon formal devaluation, however, the nonformal component would be drastically reduced, to mitigate considerably the effect of the formal change on the effective rate of exchange. The devaluation of 1962, entailing an increase of 67 per cent in the formal exchange rate, thus led to an increase of only about 13 per cent in the effective exchange rate for exports. In principle, this tendency was true also for the two later episodes of formal devaluation (November 1967 and August 1971), but to a much smaller extent, probably because these devaluations were themselves mild (17 per cent in the former and 20 per cent in the latter). By and large, it may therefore be assumed that the nonformal component of the export rate was used as a substitute for formal devaluation: it was gradually raised between devaluations, and reduced (or even eliminated) at times of formal devaluation. The guiding principle for such a policy might have been the prevention of short-term rent payments to exporters, a principle which, as will be pointed out later, served also to a large extent to determine the pattern of differential rates among export industries.

In imports, the level of the nonformal component, as well as its fraction

TABLE 4-9

Formal and Nonformal Components of Effective Exchange Rates in Exports and Imports, 1949–71

(Israeli pounds per dollar)

Year	Formal (Official) Rates		Nonformal Components[a]		Nonformal Component as Percentage of Effective Rate	
	Exports (1)	Imports (2)	Exports (3)	Imports (4)	Exports[b] (5)	Imports[c] (6)
1949	0.340		0.012	0.046	3.4	11.9
1950	0.357		0.028	0.045	7.3	11.2
1951	0.357		0.050	0.038	12.3	9.6
1952	0.702	0.694	0.105	0.111	13.0	13.8
1953	1.163	0.830	0.113	0.337	8.9	28.9
1954	1.663	1.506	0.063	0.293	3.6	16.3
1955	1.800		0.027	0.411	1.5	18.6
1956	1.800		0.249	0.461	12.1	20.4
1957	1.800		0.409	0.534	18.5	22.9
1958	1.800		0.569	0.550	24.0	23.4
1959	1.80		0.69	0.70	27.6	28.1
1960	1.80		0.78	0.77	30.1	29.9
1961	1.80		0.86	0.80	32.2	30.9
1962 (Feb.–Dec.)	3.00		0	0.57	0	16.0
1963	3.00		0.04	0.49	1.3	14.0
1964	3.00		0.06	0.47	2.0	13.3
1965	3.00		0.08	0.55	2.7	15.5
1966	3.00		0.27	0.59	8.6	16.4
1967 (Jan.–Nov.)	3.00		0.57	0.68	16.0	18.5
1968	3.50		0.54	0.63	13.4	15.3
1969	3.50		0.55	0.72	13.6	17.1
1970	3.50		0.99	0.92	22.2	20.8
1971 (Jan.–Aug.)	3.50		1.29	1.24	26.9	26.0
(Sept.–Dec.)	4.20		1.03	1.38	19.8	24.7

SOURCE: For 1949–62, Michaely, *Foreign Exchange System*, Table 4-2; 1963–71, calculated from data in Amiel, "Effective Exchange Rate."

a. Includes premiums and other subsidies on exports and tariffs and levies on imports.

b. Column 3 divided by the sum of columns 1 and 3.

c. Column 4 divided by the sum of columns 2 and 4.

of the total size of the effective rate of exchange, fluctuated much less than in exports. Only in the episode of the devaluation of 1962 does it appear clearly that part of the formal change of the rate was used to replace the nonformal component—and even on this occasion the replacement is much smaller than in the case of exports. Excluding the first few years, it appears that even at its low points, just after formal devaluations, the nonformal component constituted about 15 per cent of the effective exchange rate for imports, whereas in exports this component was very often nil or amounted to just a few percentage points. It may thus be inferred—necessarily, in a very tentative way—that in imports the nonformal component of the rate was much less extensively used than in exports as a substitute for formal changes in the rate of exchange. If this is true, then this component must be related to the conventional functions of tariffs and duties on imports, namely, raising revenue for the government and protecting specific industries. This interpretation, in turn, would lead one to suppose that the nonformal component was used in a more discriminatory fashion in imports than in exports; that is, the degree of dispersion in the effective-exchange-rate system would be higher in imports than in exports. This is indeed the case, as I explain in the following section.

v. DISCRIMINATION IN THE EXCHANGE-RATE SYSTEM

The data used for determining whether the exchange-rate system for exports is discriminatory are somewhat deficient. Although the direct premium elements have been estimated with reasonable accuracy, other subsidy elements, realized through compensation in the local market and through branch funds, are mostly missing from the estimates. Quantitatively, the most important estimate missing is for the subsidy element in the Pamaz system of the mid- and late 1950s.[29] This deficiency is not serious so far as estimates for exports as a whole, or major export categories, are concerned: Such average rates would be only little affected by the missing magnitudes, since their total size was not substantial. For a few individual goods, however, these elements were important, and probably led to very high effective exchange rates. But, although in this way extreme values were eliminated from the estimates, available fragmentary information about the extent of use of these subsidization forms suggests that conclusions about the attributes of the rate system for exports as a whole would not be altered significantly by this deficiency of the data.

Bearing this reservation in mind, it appears from the data on rates for individual goods (not presented here) that the rate system was largely uni-

form: deviations of individual rates from each other, or from the average, were quite small, seldom exceeding a range of, say, 10 to 20 per cent of the average. This may be gathered from the fact that the main subsidization forms —the premium programs of 1956–61 and from 1966 on—were applied in a rather uniform way. So far as major export groupings are concerned, deviations from the average—again, not very substantial—may be seen mainly in the two traditional export categories, citrus fruit and polished diamonds, and in textiles. Effective exchange rates for value added for these major groups are presented in Table 4-10.

Until the mid-1950s, apparently, none of the three major export categories covered in the table was systematically discriminated against or treated with special favor. From that time until the 1962 devaluation, diamonds received the prevailing rate for industrial exports (IL 2.65 per dollar), exports of citrus fruits received a lower rate, and textiles, a higher one. From the time of the 1962 devaluation until 1965, when export premiums were as a rule nonexistent, exports of textiles received favorable treatment. From 1966 on, with the reintroduction of general export premiums, the favorable treatment of textiles was reinforced, but both diamonds and citrus fruits were discriminated against relative to other exports—the former more than the latter. These two traditional exports, it may be recalled, did not (and could not, by their nature) enjoy the benefits of the Pamaz (retention-quota) plan of the 1950s or other forms of compensation through the local market. It may thus be assumed that in comparison with other exports, these two have been discriminated against during most of the period since the mid-1950s.

The special favorable rate for textiles has been part of an over-all effort to encourage the growth of that industry, which was judged by the government to be most suitable for the newly established towns in Israel, in the framework of a general policy meant to encourage the dispersion of population. The discrimination against citrus fruits and diamond exports was due, most probably, to both demand and supply considerations. In these two industries (and only in these two, among export categories) Israel has a significant share of the world market. Consequently, foreign demand for Israel's exports of goods in these two categories is probably less elastic than in others. In the citrus industry, but not in diamonds, supply factors are also involved: since local consumption absorbs only a minor share of the country's production (some 20 to 25 per cent), and the gestation period of investment in plantations is quite long, the short-term supply of exports is rather inelastic. In the short run, then, high export premiums for citrus products would largely constitute a rent, while their impact on the government's budget—due to the size of these exports—would be significant. Short-term supply considerations —and it may be suspected that the government's considerations in this area

TABLE 4-10

Selected Effective Exchange Rates for Exports, 1949–70

(Israeli pounds per dollar of value added)

Year	Citrus Fruit	Polished Diamonds	Textiles	Total Exports of Goods
1949	0.34	0.39	0.35	0.35
1950	0.38	0.39	0.37	0.39
1951	0.41	0.42	0.37	0.41
1952	0.76	0.95	0.82	0.81
1953	1.22	1.20	1.26	1.28
1954	1.80	1.47	1.80	1.73
1955	1.80	1.87	1.80	1.83
1956	1.80	2.40	2.33	2.05
1957	1.80	2.65	2.65	2.21
1958	2.05	2.65	2.66	2.37
1959	2.16	2.65	2.83	2.49
1960	2.30	2.65	2.75	2.58
1961	2.49	2.65	2.92	2.66
1962[a]	3.00	3.00	3.18	3.05
1963[a]	3.00	3.00	3.18	3.05
1964[a]	3.00	3.00	3.18	3.05
1965[a]	3.00	3.00	3.18	3.05
1966	3.11	3.00	4.44	3.27
1967	3.23	3.08	5.76	3.57
1968	3.94	3.50	5.79	4.04
1969	3.95	3.50	5.84	4.05
1970	4.27	3.79	6.18	4.49

SOURCE: For 1949–61, Michaely, *Foreign Exchange System*; the textile rate is calculated as a weighted average of five industry subgroups, using total size of exports of each subgroup for the whole period as weights. For 1962–70, Amiel, "Effective Exchange Rate."

a. The rates for 1962–65 are averages for that period.

were primarily of a short-run nature—thus were an added argument against granting high exchange rates to the citrus industry. It may well be that the lack of discrimination against this industry until the mid-1950s was at least partly due to a higher supply elasticity in those years. During World War II and again during the War of Independence, a very large fraction of the citrus plantations was badly damaged. Some plantations could not be restored; but

in others, yields could be increased fast by investment in restoration of the trees as well as by introduction of modern techniques. Profits could, therefore, at that time have a substantial impact even on short-term supply.

On the import side, the degree of dispersion of the exchange-rate system seems to be much greater. This has already been noted earlier in the discussion of effective rates for value added in import substitutes. Effective rates for final import goods, too, varied widely from each other. Detailed data on effective rates for individual imported goods (whose number changed from a few hundred at the beginning to over a thousand in later years), which are available for the years 1949–62, show a high degree of dispersion. This may be verified by a few alternative measures, one of which is presented in Table 4-11.

TABLE 4-11

Coefficients of Variation of Import Exchange Rates, 1949–62

Year	Coefficient	Year	Coefficient
1949	.383	1956	.452
1950	.161	1957	.261
1951	.142	1958	.345
1952	.315	1959	.240
1953	.468	1960	.395
1954	.285	1961	.435
1955	.306	1962	.268

SOURCE: Michaely, *Foreign Exchange System*, Table 4-7.

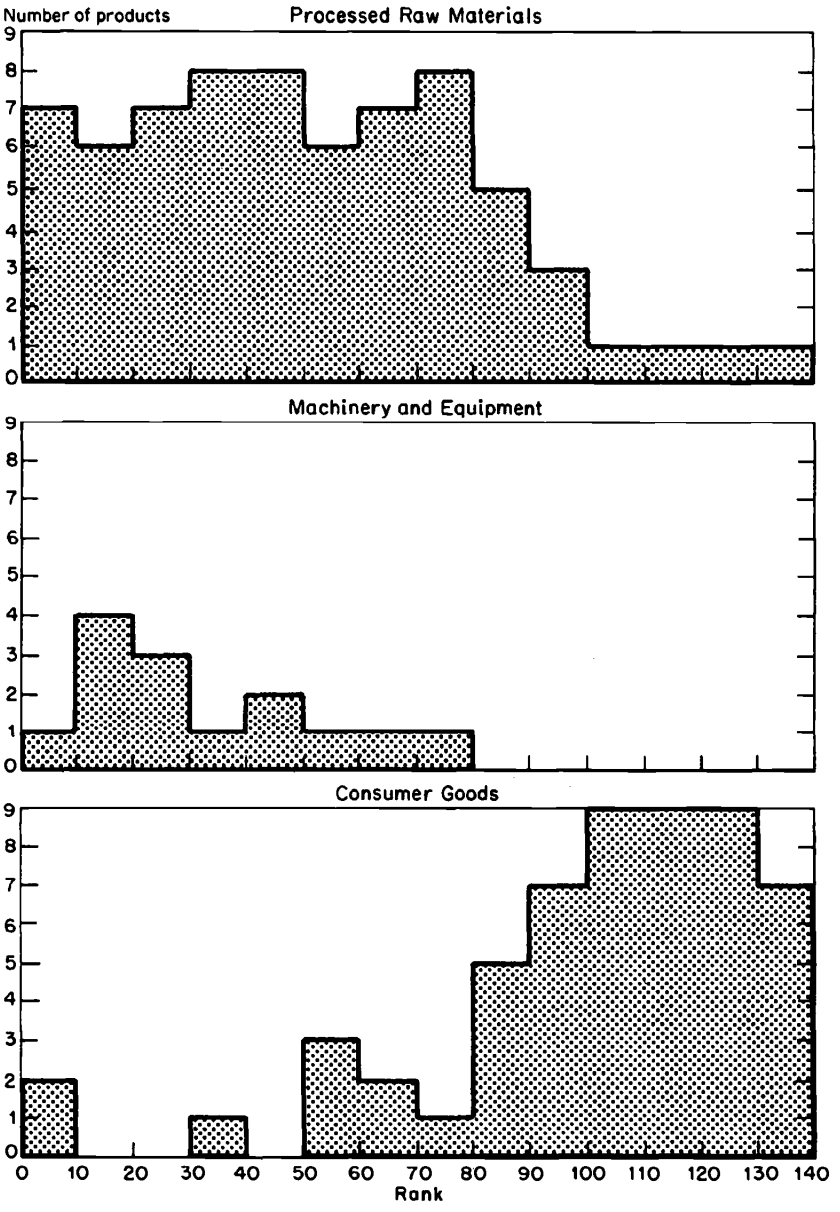
It appears from Table 4-11 that the coefficient of variation in the rate system[30] during most of the period was substantial, in some years reaching 0.4 or above.[31] Other measures (such as frequency distributions or Lorenz curves), also yield the same impression.

What gives this dispersion special significance is that the ranking of each product in the system remained quite consistent over the years, that is, the rates were consistently discriminatory against some goods and consistently favorable toward others.[32] It is thus reasonable to ask what were the discriminatory aspects of the rate system for imports.

Chart 4-1 presents frequency distributions of the *rankings* (from lowest to highest exchange rates) of 138 commodity items classified into three categories: raw materials, machinery and equipment, and finished consumer goods. The rankings shown are averages for each item for 1955–61.[33] It seems

CHART 4-1

Ranking of Importers' Exchange Rates by Principal Commodity Groups,[a] Averages for 1955–61



Notes to Chart 4-1.

SOURCE: Michael Michaely, *Israel's Foreign Exchange Rate System* (Jerusalem: Falk Institute, 1971; in English), Fig. VIII.

a. The ranking, proceeding from the lowest to the highest exchange rates paid by importers, includes 138 commodities, of which 69 are classified as processed raw materials; 14, as machinery and equipment; and 55, as consumer goods.

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very clear that machinery and equipment goods were concentrated at the top of the ranking order; that is, their exchange rates were lowest. Final consumer goods, on the other hand, were just as consistently concentrated at the tail end of the ordering, that is, their exchange rates were highest. The third category, raw materials, seems also to tend toward the top of the ordering (lower exchange rates), but to be much less concentrated than the other two, that is, the degree of variation of rates *within* the category is higher. Despite this variance of raw materials, there seems to be a clear ordering of the categories: machinery and equipment goods are imported at the lowest effective exchange rates; raw materials follow; and final consumer goods are imported at the highest rate.

Similar frequency distributions are not available for other years.[34] However, estimates of average rates for large categories of imports classified by economic destination are available for the whole period from 1955 to 1971. These are shown in Table 4-12 and confirm the impression gained earlier. The highest exchange rates are found, as a rule, for final consumer goods, with rates for durable goods and processed foods usually occupying the top places. Lowest rates are found for investment goods and, in recent years, fuel: the level of rates in this category is usually close to the formal rate of exchange (including, since August 1970, the general 20 per cent levy on imports). The main exception is imports of transportation equipment, trucks being subject to high duties. Raw materials for the most part occupy a place in between, with construction materials having considerably higher rates than other raw materials.

To sum up: Import exchange rates showed wide variations throughout the years. Consistently, the lowest exchange rates were accorded to investment goods, and the highest, to final consumer goods, with raw materials in between. This pattern largely agrees with the observations made, in earlier chapters, about quantitative restrictions. It will be recalled that the first goods to be liberalized, whether formally or de facto, were raw materials and machinery and equipment. Only much later did the process of liberalization of final consumer goods get under way, and imposition of high tariff duties accompanied the move, tariffs which, of course, influenced the effective exchange rate of imports.

TABLE 4-12

Effective Exchange Rates for Imports, by Category, 1955–71

(Israeli pounds per dollar of gross value)

	1955	1956	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966	1967	1968	1969	1970	1971
Final consumer goods																	
Nondurable consumption	2.01	2.08	2.20	2.46	3.22	3.44	3.50							5.84	5.56	5.77	7.20
Food	2.03	2.31	2.30	2.54	3.79	4.23	4.47							6.32	5.79	5.99	7.39
Durables[a]	2.26	2.30	2.28	2.42	2.48	2.58	2.71							5.90	6.60	6.83	8.29
Total[a]	2.05	2.13	2.22	2.45	3.00	3.16	3.19	4.81	4.73	4.58	4.83	5.35	5.26	5.86	5.98	6.20	7.60
Raw materials																	
For industry	1.87	1.95	2.00	2.06	2.14	2.18	2.20							3.88	3.89	4.11	5.22
For agriculture	1.69	1.74	2.21	2.57	2.43	2.64	2.73							3.68	3.75	3.98	5.19
For construction	2.61	2.61	2.62	2.63	2.77	3.20	3.17							5.47	5.30	5.53	7.10
Fuel	2.91	2.89	2.98	3.30	3.72	3.77	3.75							3.55	3.55	3.55	4.26
Total	2.06	2.15	2.24	2.36	2.41	2.48	2.50	3.38	3.37	3.35	3.36	3.33	3.40	3.90	3.94	4.14	5.29
Investment goods																	
For industry and construction	1.84	1.84	1.85	1.86	1.95	1.92	2.17							3.81	3.85	4.08	5.39
For agriculture	1.85	1.87	1.83	1.84	1.84	1.91	2.07							3.62	3.53	4.08	5.08
For transportation	2.03	2.00	1.94	2.03	2.06	2.34	2.03							3.95	4.45	4.59	5.81
For other services	1.84	1.91	2.07	2.27	2.34	2.09	2.50							3.87	3.94	4.17	5.55
Total	1.92	1.90	1.91	1.94	2.00	2.02	2.10	3.37	3.36	3.37	3.45	3.47	3.55	3.86	4.03	4.23	5.54
All import goods	2.03	2.09	2.16	2.28	2.38	2.43	2.45	3.47	3.49	3.47	3.55	3.59	3.68	3.99	4.01	4.33	5.58

SOURCE: For 1955–61, Joseph Baruch, "Import Taxes and Export Subsidies in Israel, 1955–61," Bank of Israel *Bulletin* 18 (March 1963), Table 1. For 1962–71, Amiel, "Effective Exchange Rate," Tables 2, 6, and 24.

Since Baruch and Amiel used different methods of estimation, the data shown do not constitute entirely consistent time series. For the same reason, the 1955–62 estimates for total imports shown here are not identical to the estimates shown in other tables in this chapter.

a. The estimates of the rate for durable goods for 1955–61 seem questionable. Amiel's estimate for the rate in 1961 is 3.72, rather than 2.71. It is likely, therefore, that estimates of the rates for total consumption for 1955–61 are biased downward.

NOTES

1. In this section and the next, descriptions of forms and mechanisms for the period until 1962 are heavily drawn from Michael Michaely, *Israel's Foreign Exchange Rate System* (Jerusalem: Falk Institute, 1971; in English).

2. The most important exemptions were as follows: (a) military imports were first exempted on the assumption that levies on these would be just a "transfer from one pocket to another" of the government. But a year later, with the formal devaluation of August 1971, military imports, too, became subject to the 20 per cent levy. This was done to obtain a more accurate estimate of the size of these imports and the magnitude of defense expenditures and to encourage the substitution of locally made items for foreign ones by increasing the cost of the latter. The defense budget was exempt from the income effect of the levy because an amount equal to it was allocated to the budget. (b) Most imports of investment goods have been exempted from the levy, since they were imported for the use of "approved" investments. The rationale of this procedure is that these investments are carried out by foreign investors, whose capital imports are transferred at the formal rate of exchange, and who should therefore pay no more than this rate for their imports of investment goods. (c) Imports of major food products have also been mostly exempted from the levy. Since the majority of such imports are handled by the government itself, this procedure is reflected, as will be explained later in the text, not through the loss of revenue from the levy, but through a loss (or absence of profit) in the government's commercial account (that is, by setting lower prices on local sales of these goods). Here, too, many prices were raised (to include, in effect, the August 1970 levy) with the formal devaluation of August 1971.

It may be mentioned that imports for exports have *not* been exempted from the levy, although, as a rule, the "drawback" system (i.e., the rebate of tariff duties on the import component in exports) applies to them. The reason is that simultaneously with the imposition of the import levy, export premiums were raised so as to compensate for the levy on the import component in exports.

3. "Premiums" is the term conventionally used in Israel for export subsidies.

4. For instance, the season for exports of citrus fruits runs from October to May. Most exporters were benefited by the shift of the rate from IL 1.00 to IL 1.80 per dollar in May 1953. To compensate citrus exporters for the subsidy forgone after May, they were granted a special premium of IL 0.136 per dollar during the 1953–54 season.

5. Diamonds were, in fact, subject to the universal premium arrangement. But mainly because of the possibility of negative reactions of other countries involved in this industry, the premium was disguised by other schemes. Exports of citrus fruits were also granted a premium for value added, but at a much lower rate. Gradually this rate approached the general premium rate, until the two coincided on the eve of the 1962 devaluation.

6. In all the cases involved in the actual application of the plan, no concern was expressed about distinctions between an industry and the individual firms included in it. This was because individual industries consisted either of a single firm—a fairly common phenomenon at that time—or were organized under some cartel agreement.

7. Almost since its beginnings, Israel has also had a widespread arrangement for providing *long-term* capital for investment at below market (or below equilibrium) interest rates as well as various other subsidy devices (such as special income-tax facilities) for aiding investment. Despite their undoubted importance, these provisions are not discussed here because they cannot be considered export subsidies. Although export inten-

tion and capacity were among the major criteria used in judging the applicability of these provisions for a contemplated investment, the facilities granted were not in effect dependent on export performance; and they were not even intended to vary with the amount or fraction of exports of the plant involved.

8. A fully free market for short-term (or long-term, for that matter) credit has never existed in Israel. During most of the 1960s, the rate of interest was subject to a legal ceiling of 11 per cent per annum and of 10 per cent for lending to industry and agriculture; earlier it had been 9 per cent. A semilegal and largely free market ("third-side lending" or "I.O.U. arbitrage") developed, however, which amounted to a very sizable fraction of total short-term lending. Interest rates in this market were much higher than the legal ceiling. Varying with market conditions and, of course, with the quality of the borrower, they were mostly in the range of 15 to 25 per cent per annum.

In early 1970, the maximum-interest law was abolished, and something approximating a free credit market has existed since (excluding credit such as that from export funds discussed here, and other subsidized lending to local industries, which still form a substantial part of total short-term credit). Interest rates on short-term credit from the banking system, in the three years since then, have usually ranged from 15 to 18 per cent.

9. The term "Pamaz" is derived from the Hebrew initials for "foreign-currency deposits." This points to the origin of the arrangement, which at first (before 1953) was intended merely to provide the exporter with deposits of foreign exchange which were built up from his export proceeds and were meant to free him from the bureaucratic costs involved in requesting foreign-exchange allocations to finance his imported inputs.

10. When exports were not stable but increasing, the exporter would get "credits" (in a bookkeeping sense) of foreign exchange, enabling him to finance the increased requirements for imported inputs.

11. In fact, the exporter was not forced to buy materials according to their proportions in his export production, but could concentrate his purchases as he saw fit. He could thus buy inputs and resell them to other industries in which he could obtain high prices for them. For instance, exporters of chocolate and sweets at one time used most of their Pamaz rights to buy cellophane packaging paper, which was in large demand in the local market. If each industry uses many inputs, even in very small amounts, it is likely that each such input can be bought by many industries. This would, in turn, tend to lower the profit differentials among industries from what they would have been if inputs were bought by each industry according to the weight of the inputs in production.

12. As the available data show, exporters rarely made an all-or-none decision between the alternatives. Presumably, in each industry, exporters used their Pamaz rights to the point where, *at the margin*, extra profits fell to the level of premium payments, selling all the remainder to the Treasury at the premium rate. Since the number of exporting firms in each industry was usually small, thus giving some monopolistic position to each, a considerable gap might have often existed between the *marginal* profit rate (equal to the premium) and the (higher) *average* rate.

13. It will be recalled that very often, the process of liberalization of imports of raw materials was accompanied by the imposition of special import levies. On a few occasions, exporters using their Pamaz rights were exempted from the duty; in effect, this exemption amounted to a subsidy for such exports.

14. For instance, exporters were required to sell part of their foreign-exchange proceeds to the Treasury, at the formal rate, as a counterpart to the value of the indirect import component used in the production process (which otherwise could be used to

provide extra profits through Pamaz purchases). Pamaz rights were also often lowered beyond this.

15. The import exchange rates presented here are for imports *subject to duty*. Duty-free imports of goods that are generally subject to duty are excluded. The latter category consists of two groups: imported inputs for exports, which are generally duty free under the drawback system; and imports (referred to in Israel as subject to "conditional exemption") that are duty free when imported by and for the use of an organization such as, say, a hospital or nonprofit institution, which is exempted from payment of these duties.

16. That is, for each of the 80 industrial groups, 80 separate import coefficients were used. These refer to *total* (i.e., both direct and indirect) inputs.

17. Tables for 1965 and 1968 have also been completed recently. They could not be utilized for the purpose on hand, however, because detailed estimates of effective exchange rates for imports of individual commodities are not available beyond 1962.

18. Table 4-4 contains fewer than 80 commodity groups, since in about 20 groups, there are no exports or imports.

19. The 80 groups included over a thousand individual goods.

20. Data on domestic production classified by individual commodities, which could have served instead for weighting, are not available.

21. The weights used for these averages were identical for exports and imports: 1958 value added in each group of commodities.

22. Joseph Baruch, "The Structure of Protection in Israel, 1965 and 1968" (Ph.D. diss. in progress, Hebrew University).

23. This study has been prepared by the Israeli Institute for Financial Research. The main findings are contained in Aharon Ornstein, Haim Ben-Shahar, and Yoram Weinberger, "The Textile Industry in Israel: Profitability, Productivity, and Policy" (in Hebrew), *Rivon Le'Kalkala* [Economic quarterly], June 1970, pp. 118–130, and September 1970, pp. 220–230.

24. As noted in Table 4-8, the transformation of effective exchange rates into effective protection rates has been carried out by the use of the *formal* exchange rate, rather than the equilibrium rate advocated in Appendix B. The reason is that the method for approximating an equilibrium rate suggested in the appendix and employed in the construction of Table 4-6 is not appropriate for 1968. In that year, effective exchange rates for exports only slightly exceeded the formal rate except for the export of textiles, for which the high rate may be explained by reasons other than balance-of-payments considerations. In any case, for the purpose in hand, the comparison of protection for exports and import substitution, it is immaterial which exchange rate is used.

25. Domestic resource costs in the textile industry appear to be universally higher in exports than in import substitution. This, however, is an almost inevitable result. Each of the goods listed is assumed to be homogeneous; so costs of production are assumed to be equal whether a unit of the good is exported or used for home consumption. Value added in exports, on the other hand, is universally lower for exports than for home consumption (import substitution), since transportation costs of the final good must be added to the former.

26. See, for instance, Anne O. Krueger, "Evaluating Restrictionist Trade Regimes: Theory and Measurement," *Journal of Political Economy* 80 (January–February 1972): 48–62.

27. The lack of such adjustment is helpful in the present context because the purpose of the comparison is not selection among alternative investment projects but deter-

mination of the relevance of EERs (and EPRs) for market developments, as the latter are reflected in the level of costs.

28. At least some consistency in this margin should be expected on a-priori grounds: under conditions of perfect markets, EERs should be equal to *marginal* DRCs, whereas the estimates are concerned with average DRCs, which presumably are lower.

29. As is explained in Appendix B, the subsidy generated by this system was assumed, in the estimates, to be equal to the level of the general export premium.

30. The coefficient is $\sqrt{[\Sigma(R_i - \bar{R})/\bar{R}^2 \Sigma M_i]}$, where R_i is the effective rate for imports of commodity i; M_i is the weight (= annual value) for imports of i; and $\bar{R} = \Sigma R_i M_i / \Sigma M_i$ = average effective rate for imports.

31. To illustrate: the coefficient of variation would be around 0.33 in a system of two rates (equally weighted) in which one rate is twice the other; it would be 0.5 when one rate is three times the other.

32. This is demonstrated by a number of measures in Michaely, *Foreign Exchange System*, pp. 109–112.

33. This averaging procedure is legitimate, of course, only because ranks in each year were quite similar to those of other years, as was just noted: had the rank of each good fluctuated widely from one year to another, the average rank for the seven years would not be of much significance.

The 138 goods shown are taken from a list of 277 items which appeared in the arrays of all seven years. The goods selected were ones which could be clearly classified into one of the three categories. The nature of the other goods either could not be judged from their definitions or they could be assumed to belong to more than one category.

34. Detailed estimates of exchange rates for individual commodities have not been carried out beyond 1962. For years prior to 1955, the number of goods for which estimates of exchange rates exist for all (or most of) the period is rather small; so consistency of ranking could not be examined.