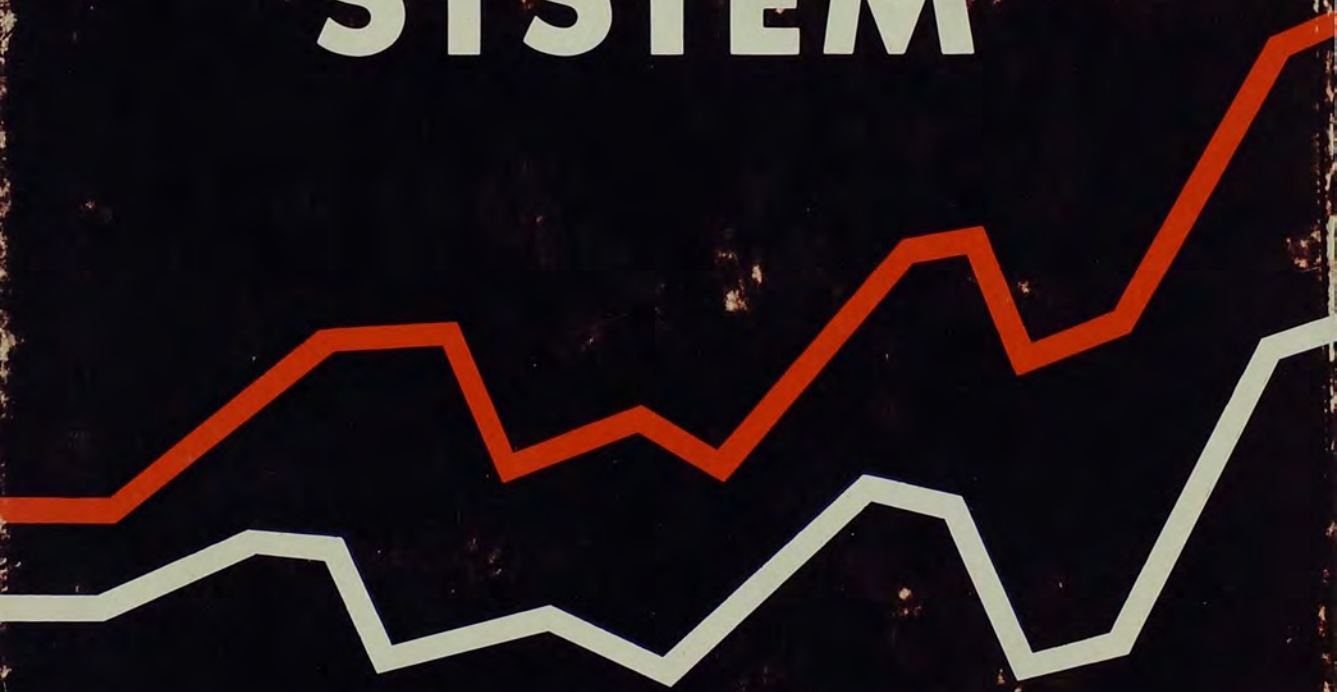
Michael Michaely

ISRAEL'S FOREIGN EXCHANGE RATE SYSTEM



THE MAURICE FALK INSTITUTE FOR ECONOMIC RESEARCH IN ISRAEL

The Maurice Falk Institute for Economic Research in Israel, affiliated to the Kaplan School of Economics and Social Sciences, is an independent nonprofit organization whose purpose is to encourage research, with particular emphasis on the economy of Israel.

ABOUT THE BOOK

This study deals with the development of effective exchange rates in Israel from the inception of the State until 1962. It describes the characteristics of the exchange rate system and outlines the nature and history of the principal arrangements and provisions which have shaped it.

The concept of 'effective exchange rate' is extensively analyzed. When there is no uniform exchange rate—and this has throughout been the situation in Israel—there cannot be any single aggregate effective exchange rate either. It follows that the concept can be variously defined, depending on the purpose for which it is applied. The book contains a discussion of possible purposes and of the definition of effective exchange rate appropriate to each.

The study aims to facilitate investigations which would cast light on several fundamental problems of the economy of Israel—such as the development of the balance of payments; foreign exchange and import control policy; or the effect of devaluation on the economy—none of which can be adequately tackled without accurate information about the exchange rate system.

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Michael Michaely

THE MAURICE FALK INSTITUTE FOR ECONOMIC RESEARCH IN ISRAEL

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The Maurice Falk Institute for Economic Research in Israel is an independent nonprofit organization whose purpose is to encourage research, with particular emphasis on the economy of Israel.

The Institute was founded in January 1964 as the successor to the Falk Project for Economic Research in Israel. The general administration of the Institute is the responsibility of the Board of Trustees, originally nominated by the Hebrew University, Jerusalem, in consultation with the Maurice and Laura Falk Foundation of Pittsburgh, Pennsylvania. The decision of the Board to publish a study reflects its judgement that the work has met the standards of scientific research. The interpretations and conclusions of the study are, however, those of the author, and do not necessarily reflect the views of other members of the Institute staff or of the Board of Trustees.

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PREFACE

This study was conducted jointly by the Falk Institute and the Department of Economics of the Hebrew University of Jerusalem. In its early stages it provided the topic for a departmental research seminar, and I benefited from the work of its participants. As the work developed, Shaul Berger, Yigael Cohen, Menahem Firt, Ramon Harel and Michael Shefer (Fisher) carried the burden of data collection. At later stages, Yair Keusch and Shmuel Shraier helped with the collection and construction of supplementary data.

A major contribution was made by my two research assistants, who were active partners in this undertaking. Benjamin Shidlovski, who was in charge during 1962–64, collated the raw material and took care of the basic data processing. Arie Bar, who took over in 1965, completed this part of the work, provided further elaborations, and compiled and edited the tables and appendixes.

In the early stages of the project I drew considerably on the experience and advice of Joseph Baruh. I also benefited from Ephraim Kleiman's advice and from the comments of W. M. Corden, A. L. Gaathon, Simon Kuznets, and David Pines on an early draft of this book.

In addition to the many discussions I was able to enjoy at the Falk Institute and the Hebrew University's Department of Economics, I drew useful comments from the presentation of selected topics in other surroundings, and in particular from the exchange of views at seminars held at Brown and Columbia Universities.

The assistance of numerous institutions is gratefully acknowledged. I am indebted particularly to the Research Department of the Bank of Israel, the Central Bureau of Statistics, the State Revenue Adminisration, various divisions of the Ministry of Commerce and Industry, and the Research Department of the Bank Leumi Le-Israel.

The financial support received from several sources was no less essential. A major share of the burden was borne by the Bank of Israel, whose participation made possible the work of the departmental seminar on this

subject. Other significant contributions came from the Foreign Exchange Division of the Ministry of Finance and the Bank Leumi Le-Israel.

The editorial staff of the Falk Institute rendered valuable assistance in preparing the work for publication. Susanne Freund, the statistical editor, did much to improve the accuracy, consistency, and presentation of the data. Hanoch Tzadik devoted considerable effort to checking the tables and reading the proofs. The diagrams are the work of Margret Eisenstaedt. Above all, the book owes a great deal to Yaakov Kop, the Institute's editor: to his substantive comments in editing the manuscript, and to his attention to form and structure.

The present volume represents the efforts of many people. Some have been mentioned here, others will be mentioned in the appropriate context, particularly in the Appendixes. But there are still others too numerous to mention, who have contributed in various ways: statistical assistance, seminar work, criticism and comments. I am grateful to all of them.

An article based on part of Chapter 3, "Foreign Exchange Rates in National Accounting" appeared in *Economica* of August 1967, and has been reprinted as Falk Research Paper No. 21.

Jerusalem, May 1968 M. MICHAELY

PREFACE TO THE ENGLISH EDITION

This is an English translation of the Hebrew publication which appeared in the summer of 1968. An English version of an earlier draft was circulated in mimeographed form in early 1966.

The belated decision to issue an English edition reflects the increasing interest in recent years in the general topic of effective protection and effective exchange rates. I have, however, made no attempt to take account in this book of the vast literature on the subject which has developed since this study was completed.

The Hebrew edition of the book was supplemented by two volumes of detailed tables and appendixes. They have not been translated, since they contain specific findings which are probably of interst only to students of the Israel economy.

In addition to the debts recorded in the Preface to the Hebrew edition, I wish to express my gratitude to Hannah Schmorak, who made the English translation; and to Susanne Freund, who spared no time or effort in editing it.

M. MICHAELY

CHAPTER 1

INTRODUCTION

1. Purpose and Outline of the Study

The concept 'rate of exchange' as denoting a single exchange rate has never had much meaning in Israel. Ever since its establishment, the State of Israel has in effect had a system of multiple exchange rates, although there was a formal multiple system for only a few years. The prominence of international transactions has meant that the exchange rate system has been a policy instrument of the first importance and has had a profound influence on economic activity.

The present study is designed to give a qualitative and quantitative description of the exchange rate system—its components and how they have changed in the course of time; and the level and dispersion of the rates set from time to time. The concept of the effective rate of exchange, with its manifold uses and implications, is discussed extensively.

A study of this kind offers an opportunity for the investigation of many problems not hitherto explored: the discrimination between different products; possible criteria for choosing between alternative effective rate components; the economic damage caused by resource misallocation due to the existence of multiple exchange rates; the effect of the exchange rate system on income distribution; its effect on the government budget; the true volume of savings; substitution between foreign currency control and raising the price of foreign currency; the relation between the exchange rates and domestic prices; how imports and exports of single commodities and services and the balance of payments as a whole are affected by alterations in the exchange rate; and what is the role played by exchange rate policy. These and similar questions are of considerable importance and the answers to them may help economic policy makers in their future decisions.

Much work has already been done by previous investigators. We must mention the continuing work of Joseph Baruh, part of which, a survey of exchange rates in 1955–61, has appeared in print.[1] There is also David

[1] Joseph Baruh, "Import Taxes and Export Subsidies in Israel, 1955–61," *Bank of Israel Bulletin,* No. 18 (March 1963), pp. 48–70.

Pines' study of export premiums.[2] The present study often draws on this previous research, but goes beyond it in coverage—both in length of period and degree of detail. Our aim has been to collect all the information obtainable on the exchange rate system—except where it was clear in advance that, for a given item, the game was not worth the candle—and to organize it into a consistent framework.

The results are presented in three parts. The present volume describes the rate system; the second contains detailed tables of the exchange rates and their components; the third contains methodological appendixes.[3]

The present volume, in which our general findings are outlined, contains four chapters and a set of summary tables. The introductory chapter includes brief definitions of the various rates, without which the work cannot be fully understood, and gives a short description of the commodity classification system used.

Chapter 2 describes the exchange rate techniques used during the period under review. The description is divided into three sections dealing separately with imports, exports, and capital imports.

In Chapter 3 a systematic definition of the effective rate of exchange is attempted. The starting point is the basic fact that when there is no *uniform* rate, there also is no *single* effective rate. Hence there is no average of the multiple exchange rates that can be regarded as the equivalent of a uniform rate. The effective rate may thus be variously defined, each definition being capable of serving one or several purposes, but not all of them. We try to determine which rates are appropriate to each of the principal objects of economic analysis, stressing the limitations of each definition and of the data it requires. We also discuss what substitutes can be used when the most suitable data are not available.

The last chapter is a quantitative summary of the exchange rate system. It shows the level and movement of the principal effective rates during the period covered: the components of these movements; the relationship of prices of foreign exchange to other prices in the economy; and the features distinguishing a multiple-rate from a single-rate system—in particular, the dispersion of the rates and its consistency and the patterns which may be revealed within the system.

The tables at the end of the volume show the effective exchange rates by commodity group presented according to some of the principal defini-

[2] *Part II. Tables* and *Part III. Appendixes* are published in separate volumes in Project, 1963; Hebrew).

[3] *Part II. Tables* and *Part III. Appendixes* are published in separate volumes in Hebrew only.

tions used in the study. The weight of each group of commodities in imports and exports is also shown to give an idea of the importance of each rate.

While the descriptive part of Chapter 2 deals with services and capital imports as well as goods, the summary and tables of Chapter 4 refer only to goods. Capital imports can obviously not be lumped together with commodities so that the aggregate exchange rate data shown in Chapter 4 cannot comprise both. The reason for omitting services differs in each case: the item government services consists of both goods and services whose exchange rates cannot always be obtained or defined; in other cases, such as capital and insurance services, it is difficult to speak of value added or value saved, and—as will be argued later—this precludes the meaningful application of the exchange rate concept. The same difficulty arises with tourist services, though it is here practical rather than conceptual. The only service which resembles goods and could in principle be lumped together with them is transport. Data on the relevant rates of exchange in transport services are brought in full in Chapter 2 and also appear, although not consistently, in the final discussion in Chapter 4.

The study and most of the data cover the years 1949–62. The initial date refers to the first full year of the existence of the State, while 1962 is the last year for which the necessary information was available at the end of the data collecting stage in 1964. As the exchange rates varied but little during 1962–65, especially the rates for the broader categories, the 1962 data can for many purposes be applied without excessive error to that period as well.

2. Definition of Exchange Rates

If misconceptions are to be avoided, the apparently simple concept of rate of exchange must be defined carefully in its various meanings, and we shall therefore anticipate Chapter 3 by outlining some of the definitions there discussed in detail.

The rate of exchange is a price ratio between two currencies. We follow the practice accepted in most countries and in the bulk of the literature, by regarding the foreign currency, here generally represented by the dollar, as the 'good' and expressing the price in domestic currency units. Accordingly the rate of exchange is defined as the price in Israel pounds of a foreign currency unit.[4] Consequently a rise in the rate of exchange ex-

[4] Usage has not been uniform in Israel. In 1948, for instance, the exchange rate was commonly quoted as 'four dollars to the pound', the reciprocal of the usage followed here, whereas in 1963 the current phrase was 'three pounds to the

presses a rise in the price of foreign currency and is identical with devaluation; devaluation by a given percentage thus means raising the price of the foreign currency by that percentage.

The present study deals with the *effective* rate of exchange. We shall therefore define this concept as well as the other meanings of the term exchange rate, and their relationship to each other.

a. The official rate of exchange

This is the rate that the government declares as the official rate of exchange. Since 1957, when a par value was first recognized by the International Monetary Fund for the Israeli currency, the official rate has been identical with the par value. When the official rate is not the one actually used in foreign currency transactions, it soon becomes confined mainly to accounting and statistical uses;[5] for instance, in order to convert import and export statistics from foreign to Israeli currency values, or to express the value of foreign-currency bank deposits in Israel pounds. When the official rate is not the formal rate (or one of several formal rates) it is not part of the effective rate and has no significance for the purposes of the present study.

b. The formal rate of exchange

This is the rate fixed by the government for direct foreign currency transactions carried out by foreign-currency dealers, i.e. the banks. It accordingly represents the price at which the banks buy and sell foreign currency.[6] In

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dollar'. The change seems to have been a matter of convenience: it is easier to express the price of the 'bigger' in terms of the 'smaller' currency unit than the other way round, with the smaller as a fraction of the bigger unit.

[5] Exchange-rate-linked obligations generally refer not to the official but to the highest of the formal rates, as defined below.

[6] Differences between the buying and selling price of foreign currency will generally be ignored. Such differences (which represent bank commission for carrying out the transactions) always exist, but are negligible for transactions of a reasonable size.

In defining the formal rate we follow Pines: "The automatic rates, set by government instructions, at which banks buy and sell foreign currency" (*op. cit.*, p. 19). This definition differs slightly from the one used in my *Foreign Trade and Capital Imports in Israel* (Tel Aviv: Am Oved, 1963; Hebrew): "Rates expressly set by the government as the price of a foreign currency unit for making certain types of foreign transactions" (pp. 94–95).

The main difference between the present and previous definitions is that I now include in the formal rates only those applying to transactions of the banks acting

Israel, and earlier in Palestine, the formal rate has always been fixed by the government, with the banks serving as its authorized foreign-currency dealers.[7] Except in 1952–54,[8] there has been only a single formal exchange rate.

The formal rate is always a major component of the effective rate. In countries where government intervention in foreign transactions does not go beyond setting the formal rate of exchange, the formal rate is usually, explicitly or implicitly, identified with the effective rate. Not so in Israel and similar countries where, as we shall see, the price effectively paid for foreign currency diverges considerably from that fixed for direct currency transactions.

c. The effective exchange rate

This is the total price effectively paid for a unit of foreign currency or foreign currency equivalent, whether or not it is in whole or in part expressly stated to be the rate of exchange.

A definition of this kind is necessarily vague and leaves room for numerous interpretations. We shall see, however, that it is difficult and hardly desirable to give a more precise and rigid definition; it is better to clarify the matter by some illustrative examples. In a typical import transaction, the importer buys the foreign currency he needs to pay the supplier, and pays for it at the formal exchange rate. In addition, however, he also pays customs when the goods are released from the port. This payment

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as licensed dealers, and not all rates specifically set by the government. In practice the two definitions are almost identical; the exception is that the rate for unrequited imports (discussed below), which was at one time fixed by the government, is included by the earlier and excluded by the present definition of formal rate.

[7] In principle a person offering foreign currency for sale to a bank does not sell it to the bank but to the Foreign Exchange Fund of the Ministry of Finance for which the bank acts as the agent; the same applies (in reverse) to purchases of foreign currency. Between the bank and the Exchange Fund another intermediary is interposed—the Bank of Israel, which acts as the government's agent, buying the foreign currency from the banks and supplying it to them on Ministry of Finance instructions.

[8] In 1952–54 the official rate was one of the several formal rates while from the end of 1954 to mid-1955 it was not part of the formal-rate system; since 1955, however, it has been identical with the formal rate. In practice there was throughout the period a limited volume of transactions at a flexible rate, i.e. a rate that fluctuated according to supply and demand for this type of foreign currency transaction. Since these flexible rates were not government-fixed they are excluded from the formal rates by our definition.

must be added to the formal rate since it makes no difference to the importer whether he pays in this way or whether the customs duty is abolished and the formal rate raised by an quivalent amount. Or, let us take an exporter who is entitled to a premium on his exports. He is remunerated at the formal rate for the foreign currency earned on his export deal, and he receives the premium in addition. Again it would make no difference to him if he were to receive this extra bonus not by way of a premium but by way of a higher formal rate.

In these instances the components of the effective rate of exchange are obvious; but there are other, less clear-cut cases. In the next chapter we discuss the major receipts and payments involved in foreign transactions which may be regarded as components of the effective exchange rate. As will be seen, whether a given component should be included or excluded depends on the purpose for which the rate is measured. The selection, according to the particular purpose one has in mind, is deferred to Chapter 3.

d. The equilibrium exchange rate

This is the equilibrium price in a foreign currency market which is free of government intervention. Accordingly it is the rate at which the quantity of foreign currency offered is equal to the quantity demanded, excluding amounts supplied or demanded by the government or a government-directed agency with the intention of affecting the exchange rate.[9]

There has been no equilibrium rate since the inception of the State. The fact that foreign currency has throughout been under government control itself shows that demand always exceeded supply.[10] Hence the equilibrium rate was higher than the effective rate and certainly higher than the average formal rate for imports or exports, which was below the effective rate. Probably, however, the effective rate for some import and export commodities was above the equilibrium rate which by definition is the same for all foreign transactions.

As will become clear from the discussion, one of the reasons why we are

[9] The term 'equilibrium in the foreign exchange market' lends itself to several interpretations. It depends, for example, on the length of the period considered—a particularly important factor in Israel where extreme changes have taken place and are likely to take place in foreign currency demand and supply factors, particularly on the supply side. For our present purposes it is however not necessary to analyze the concept further.

[10] After the 1962 devaluation the rate may have approached short-run equilibrium; to put it differently, the rate was close to equilibrium—if for this purpose we ignore speculative capital movements on the demand side.

interested in the effective rate is that on the average it comes closer to the equilibrium level than the formal rate—how close we can obviously not determine as there is no feasible way of measuring the equilibrium rate; and it should be emphasized that we do not measure the effective rate in order to establish the equilibrium rate but in order to determine at which rate transactions actually take place.

In this connection there is, however, one aspect of import transactions that cannot be ignored. Disequilibrium in the foreign currency market means that at the existing rate people were willing to buy more foreign currency than they actually did; or, to put it in another way, buyers were prepared to pay more for the foreign exchange than they actually did. It follows that purchasers of imported goods were willing to pay a higher price than was paid by the importer. Under these circumstances one of two things can, and in fact did, happen at various periods and with different commodities. Either the domestic price of the imported commodity is controlled,[11] or the importer sells it at a higher price than he paid for it, over and above the normal profit margin and the domestic expenses involved in the transaction.[12] In the second case the importer receives quota profits. The price that the local consumer or investor paid for the foreign currency unit was therefore not the importer's effective rate but also included the quota profits on the foreign currency unit.

For most purposes, as we shall see, the price effectively paid by the consumer under price control is not very significant and it would have been better to measure the price he was willing to pay. When there is a free domestic market this can be done and the effective consumer's price can be determined, instead of the (mostly less useful) effective importer's rate. In practice the market was not free so that this measurement would have been much too complicated and would have yielded only partial results. On many import commodities the difference between the effective consumer's and importer's rates was undoubtedly considerable throughout most of the period, although it decreased in the course of the years. There is certainly room for additional research to ascertain these differences and assess the stringency of domestic import price controls.

[11] Alternatively, the importer was permitted to use the imported commodity solely for his own use and prohibited from selling it. This provision applied mainly to investment goods and was tantamount to price control.

[12] It is hardly likely that in the absence of price control there are many instances of an importer selling an imported commodity at the price he paid for it (plus his own costs), as long as his customers are willing to pay more.

3. Commodity Classification

The basic data on the various commodities were collected and processed in considerable detail for imports and exports separately. For imports we used the Israel customs classification, which is based on the Brussels Nomenclature (BTN) and is the classification used at the time by the Central Bureau of Statistics. For exports the classification of the *Export Bulletin* of the Ministry of Commerce and Industry was used. The choice of classification systems was dictated by the following considerations. Since practically every study using exchange rate data for different commodities also requires data on the volume of imports and exports, the exchange rates and the volume data should from the start be related to the same magnitudes. Accordingly we had to base ourselves on the classification systems used in the trade statistics. Another, no less important, consideration was that the effective rates of exchange are largely determined by government decisions. These decisions must as a rule be based on some sort of system of classifying or identifying commodities, in most instances identical with the one according to which the trade data are published. The customs regulations use the same classification as the trade statistics. By adopting the same system the rates laid down by the government can be properly identified. Using any other classification would have resulted in rates of exchange representing averages of the separate decisions whose significance would then be obscured.

The number of commodities in the classification used is large and generally increased in every year covered. Several hundred export commodities are listed and (in the later years) over one thousand import commodities. It is no easy task to present a large variety of data for so large a number of commodities, nor are they easily digested and analyzed and it is therefore desirable to present not only the detailed material but also to aggregate the data into larger commodity groups. The tables at the end of the present volume give the rates of exchange for groups of commdities.[13] The group classification used by the Bank of Israel for its input-ouput analysis was adopted here, for two reasons.[14] First, much work was invested in devising this classification which, like all classifications, may not be suited for all specific purposes but is generally adequate for economic

[13] The detailed figures on single commodities appear in the second volume of this work [*Tables* (Hebrew)].

[14] See Michael Bruno, *Interdependence, Resource Use and Structural Change in Israel* (Research Department: Special Studies No. 2; Jerusalem: Bank of Israel, 1962), mainly Chapter II.

analysis; there therefore seemed to be no need for the extra major investment involved in drawing up a new classification. Moreover, for many of the purposes for which the data of the present study are likely to be used, input-output statistics will also be required; indeed, we make use of them in this work. The usefulness of the data of the study will thus be considerably enhanced if they are from the start drawn up according to the classification which served for the construction of the input-output matrix.

CHAPTER 2

THE COMPONENTS OF THE EFFECTIVE EXCHANGE RATE

This chapter deals with the components of the effective exchange rate and their size. The formal rates are dealt with in the first section; the other three sections deal with the other rate components of imports, exports and capital transfers, respectively.

1. The Formal Exchange Rates[1]

The years 1952–54 can be considered *the* period of multiple formal rates of exchange, for it was then that their extent was greatest, even though several formal rates remained in force until 1958.

Ostensibly there was more than one formal rate in 1948–49 as well. When the Palestine pound was replaced as legal tender by the Israel pound in August 1948 the new currency was set at the same rate of exchange as the previous one, that is, at par with sterling. At that time the price of the pound sterling was about U.S. $4, that is, a rate of exchange of IL 0.250 per dollar. But in practice the direct exchange rate between the Israel pound and the dollar was higher and stood at IL 0.333 per dollar ($ 3 per pound). The lower rate of IL 0.250 per dollar related to the 'soft' currencies of the period whereas the higher rate of IL 0.333 per dollar applied to the 'hard' currencies, the U.S. and Canadian dollars and the Swiss franc. Nevertheless, in accordance with our definition of exchange rate only the higher rate is relevant to our study, as explained in the last section of the next chapter. We therefore consider the period 1948–49 as having a single formal rate of exchange of IL 0.333 per dollar.

In September 1949, when the pound sterling was devalued from 0.250 to 0.357 per dollar, the one-to-one ratio between the Israel pound and the pound sterling was maintained, but the special rate for hard currency was abolished. Accordingly a single rate of IL 0.357 per dollar came into force, about 7 per cent above the previous rate.

[1] This section is partly based on my *Foreign Trade and Capital Imports in Israel* (Tel Aviv: Am Oved, 1963; Hebrew), pp. 94–99.

The next devaluation in the formal rate was not a one-shot measure but a long drawn-out process during which a multiple formal exchange rate system was in existence. The gradual devaluation was carried out by introducing new rates and gradually shifting foreign currency transactions from lower to higher rates. The process began on February 14, 1952, when three rates replaced the single rate in force until then. The lowest of these, rate A, which was declared the official rate, was the old rate of IL 0.357 per dollar; rate B was double the lowest rate at 0.714 per dollar; and rate C was fixed at IL1 per dollar. The highest rate, C, was used for most transactions, with rates A and B applying to some essential imports, rate A to diamond exports, and rate B to exports of citrus, citrus products, and several other commodities.[2]

During 1952 and at the beginning of 1953, transactions were rapidly shifted from lower to higher rates. In April 1953 the so-called premium rate of IL 1.8 per dollar (rate D) was introduced. Officially, this was done by adding IL 0.8 to rate C as a premium on exports or other transactions involving the sale of foreign currency and as a surcharge on imports and other transactions involving the purchase of foreign currency. In practice, however, the extra amount—the premium or surcharge—was automatically paid or received by foreign currency dealers so that the premium rate was to all intents and purposes a formal rate. Transactions were rapidly shifted to this rate until by the end of 1953 it applied to most of them. In December 1953 the two lowest rates were abolished and rate C, which by that time applied to only a small proportion of transactions, was declared the official rate. In July 1953, a new rate of IL 1.3 per dollar was introduced for the transactions of public institutions[3] so that there were again three formal rates: IL 1.0, IL 1.3, and IL 1.8 per dollar.

In August 1954, when the bulk of transactions took place at the highest rate, rate C was abolished. Except for the transactions of public institutions, for which the IL 1.3 rate remained in force, a single formal rate of IL 1.8 per dollar was thus introduced (this was declared the official rate of exchange in July 1955).[4] Several commodities which had until then been

[2] Details of the transactions carried on at each of these rates and a description of the gradual shift from one rate to the other appear in the *Appendixes* (Hebrew).

[3] Public institutions were mainly sellers of the foreign currency they received from abroad. They also paid the same rate for the foreign currency they purchased for import purposes—in effect they kept back a part of their receipts to pay for their imports.

[4] It was not until 1957 that a par value was set for the Israel pound as required by the IMF Article of Agreement, the IL 1.8 per dollar rate being declared the par value.

imported at the lower rates were subsidized, but formally they too were shifted to the higher rate. In October 1955 the institutions rate for foreign currency receipts was raised to IL1.5 per dollar. In April 1958 institutional transactions were shifted to the official rate of IL 1.8 per dollar, and thus a single formal rate was once again established. The gradual devaluation—of over 400 per cent—from a single formal rate of IL 0.357 to another single rate of IL 1.80 per dollar was ostensibly dragged out over a period of over six years. In fact, most of it had been accomplished by 1954, so that it took only about two and a half years.

The third formal devaluation—by 67 per cent—was effected on February 9, 1962, when the formal rate, which was also the official rate, was raised

TABLE 2–1. *The Formal Exchange Rate: 1949–62*

(IL per dollar)

	0.333	*0.357*	*0.714*	*1.00*	*1.30*[a]	*1.50*[a]	*1.80*[b]	*3.00*
Up to September 1949	*							
September 1949–February 1952		*						
February 1952–April 1953		*	*	*				
April–July 1953		*	*	*			*	
July 1953–January 1954		*	*	*	*		*	
January–August 1954				*	*		*	
August 1954–October 1955					*		*	
October 1955–April 1958						*	*	
April 1958–February 1962							*	
From February 1962[c]								*

[a] Only for transactions of institutions.
[b] Officially the IL 1.80 per dollar rate was introduced in July 1955. Before that date it consisted of an IL 0.80 premium added to the IL 1.00 rate.
[c] For the rest of the period covered by this study. There was a subsequent change in November 1967.

to IL 3.0 per dollar. From 1949 until 1962 the formal rate of exchange thus went up by 800 per cent—from IL0.333 to IL 3.0 per dollar.[5]

The formal rates in force at the various times are set out in Table 2–1.

2. THE EXCHANGE RATE FOR IMPORTS

Besides the formal rates, the import exchange rate system contains several elements which persisted for longer or shorter periods. These other components were customs, purchase taxes, special levies, price equalization

[5] In November 1967, when the pound sterling was devalued, the rate was again raised, to IL 3.5 per dollar.

funds, the government's trade account, rate-differential accounts, the Pamaz system (retention quotas), unrequited imports, and special provisions for imports of services.

a. Customs

After the formal rate, customs are the largest component of the effective exchange rate. It is presented in column (1) of Table 2–2.

TABLE 2–2. *The Nonformal Components of the Effective Exchange Rate for Imports: 1949–62*[a]

(IL per dollar)

	Customs (1)	*Purchase tax* (2)	*Levies and 'parallel market'* (3)	*Equalization funds and trade account* (4)	*Rate differential subsidies* (5)	*Clearing differential*[b] (6)
1949	0.053					
1950	0.045					
1951	0.038					
1952	0.056			0.055		
1953	0.165			0.158		
1954	0.239			0.022		
1955	0.463	0.018	0.003	0.031	–0.103	0.017
1956	0.485	0.018	0.001	0.006	–0.040	0.009
1957	0.472	0.021	0.004	0.053	–	0.005
1958	0.398	0.025	0.028	0.120	–0.001	0.005
1959	0.567	0.045	0.023	0.114	–	–
1960	0.610	0.056	0.029	0.128	–	–
1961	0.650	0.088	0.018	0.136	–	–
1962	0.499	0.083	0.009	0.062	–	–

[a] The total (in IL) for each component was divided by total imports (in dollars). For 1956–62, the denominator was imports excluding import-for-exports. In 1949–51 customs was the only nonformal rate component.
[b] See explanation in text, pp. 80–82.
SOURCE: Detailed source notes appear in the *Appendixes* (Hebrew).

It might be objected that as customs are practically universal and have been in existence from time immemorial they should not be included in the effective exchange rate of a given country in a given period; but, as will be clear from the discussion of Chapter 3, customs should be included in the effective exchange rate for most purposes.

b. Purchase tax

Unlike customs, which are levied solely on imports, purchase tax is also applied to domestic products; in Israel the two were sometimes perfect

substitutes. This is most obvious in the case of goods that are not produced locally, where customs and purchase tax have the same implications. In a few instances, the purchase tax was clearly designed to apply to imports, except that these were not imports of finished goods but of parts for assembly in Israel: instead of charging the manufacturer with the customs due on the imported parts, an equivalent amount of purchase tax was levied on the finished product. The main items in this category were cars and refrigerators.

For some purposes, the purchase tax on imported goods of types also produced locally should be included in the components of the effective rate. This matter is discussed in the next chapter.

The purchase tax element of the effective exchange rate is shown in column (2) of Table 2–2.

c. Commodity levies

Like customs, commodity levies apply only to imports, but they are imposed by administrative regulations (with Knesset approval). There were two types of import levies. The first was a compulsory charge on certain raw materials which was introduced in 1956 as part of the liberalization program under which quota restrictions on raw material imports were replaced by customs and levies. As distinct from customs duties, which are payable when the goods are cleared at the port of arrival, the compulsory levies were payable when the import license was issued. The second type of levy, known as 'parallel market' charges, was introduced at about the same time, in 1955 and 1956, after the Scrip system (discussed below) had been abolished. Under the parallel market provisions the import of various luxury items, particularly foodstuffs, was allowed, but at a particularly high rate of exchange, boosted by high customs and special levies. Some of the commodities were imported by Amizan, a government-controlled importers' pool, and the rest directly by the government, in which case the extra charge did not appear as a levy but as a profit on the government's trade account, also described below.

The data are shown in column (3) of Table 2–2.

d. Price equalization funds

The price equalization funds were established during the second world war when price control, one of whose main objects was to prevent frequent price fluctuations, was first introduced. Import prices tend to vary with time or from one shipment to another, according to the importer's commercial acumen and his source of supply or as a result of incidental causes.

In order to stabilize the prices of imports on the domestic market, three equilization funds were set up, for food, agriculture, and fuel, which operated by taxing the cheaper imports and subsidizing the more expensive ones. At the beginning of the period, when price control, especially of food, was most stringent, the Food Equalization Fund played a prominent role while later on the Fuel Equalization Fund predominated.[6]

Gradually, instead of balancing their receipts and payments, the equalization funds became a source of government revenue, their primary function being to levy charges on the import commodities they covered. This tendency increased towards the end of the period when world fuel prices dropped without being correspondingly reduced on the domestic market. On the other hand, at the time of the formal devaluation in Febuary 1962 fuel prices were kept stable by reducing the revenues of the fuel fund.

The surcharges imposed after the formal devaluation of February 1952 on the stock of imported commodities held by manufacturers or merchants superficially resemble the Equalization Fund levies but are different from our point of view. Like the Equalization Fund levies, the surcharge was designed to collect the difference between the controlled price, which was raised following the devaluation, and the lower price paid by manufacturers for imported goods bought before the devaluation. As will become apparent from the next chapter, however, this charge should not be included in the effective exchange rate, as it did not affect the decisions of importers, manufacturers, and consumers about the volume of imports.

e. The trade account

A considerable proportion of imports is purchased by the government. Apart from commodities imported for its own use, the government, through the Ministry of Commerce and Industry, also imports commodities for sale on the domestic market, generally as the sole importer. These government imports are mostly food products or raw materials for their production, of which the most important is wheat; other major items are sugar, oils and fats, and dairy products. The transactions were executed on the government's trade account. When the goods were sold locally at a higher price than was paid for them, the account showed a surplus; when they were sold for less, it showed a deficit. Hence a trade account surplus was tantamount to an import tax and a deficit—to an import subsidy.

The trade account and the equalization funds are to a large extent substitutable. Subsidies or charges designed to equalize import prices and the

[6] The operations of this fund are dealt with in detail in the *Appendixes* (Hebrew).

controlled domestic price level were granted or levied by the equalization funds for imports by a private firm, and by the trade account when the government was the importer. As food control was gradually relaxed the government's share of imports of controlled goods increased, and the trade account began to play a greater role than the Food Equalization Fund.

The combined figures for the equalization funds and the government's trade account are shown in column (4) of Table 2–2.

f. Rate-differential subsidies

The rate-differential account was opened in February 1952 when three formal rates of exchange came into force. Foreign currency was sold to (or bought from) the Exchange Fund of the Ministry of Finance at prices that differed according to the source of the currency (or according to the purpose for which it was intended). The difference between the receipts and payments of the Exchange Fund for the foreign currency it sold and bought constituted the surplus or deficit of the government's rate-differential account. When the multiple formal rates were first introduced there was a considerable deficit. This meant that the rate was on the average lower for imports and other currency payments than for foreign currency receipts—a difference automatically accounted for in the measurement of the formal component of the effective rate of exchange. As long as the rate-differential fund operated as described here it cannot be regarded as a component of the effective exchange rate as its surpluses or deficits merely reflected the formal rates.

In August 1954 the Fund changed in character. The lower formal rates were abolished and only the IL 1.8 per dollar rate was left (except for institutional transactions). In fact, however, the lower effective rates remained in force for imports of most of the commodities to which a lower rate had applied previously (finished food products, raw materials for food production, agricultural inputs, drugs, cultural commodities, etc.), except that after August 1954 they were provided for through subsidies from the rate-differential fund.[7] The difference between this new arrangement and the low formal rates previously in force for these commodities was very slight. The changeover was merely another stage in the gradual process of formal devaluation (which assumed a slightly different course in August 1954). The number of commodities on which rate-differential subsidies were granted was rapidly reduced and since 1957 this arrangement has not been important, as may be seen from column (5) of Table 2–2.

[7] Unlike the regular subsidies, these were given by the Foreign Exchange Division of the Ministry of Finance.

g. Pamaz (retention quotas)

The Pamaz system is significant mainly for exports and will therefore be more fully discussed in connection with the export rates. Under this arrangement exporters were allowed to import raw materials at a rate other than the formal one. Since producers who import raw materials for export production do not actually buy any foreign currency such imports involve no explicit rate of exchange. The rate is computed according to the IL price of the raw materials on the domestic market (either the actual price, when the raw materials were sold to others, or the price deduced from the proceeds of the finished product) and the price of the raw materials abroad, in foreign currency.

The arrangement was quantitatively important mainly in 1953–58, particularly for exports. On the average, Pamaz imports constituted only a small proportion of total imports even at their peak, although in some sectors the arrangement was very important.[8]

In the absence of sufficient data, neither the Pamaz export rate, nor the domestic-market import rate under the Pamaz system (from which the export Pamaz rate could be inferred) was included in the effective rate estimates.[9]

h. Unrequited imports

Unrequited imports, or imports without foreign currency allocation, played a major part until 1952. They will here be surveyed briefly.[10]

There were three main categories of imports without foreign currency allocation: imports by foreign residents transferring capital to the country; imports by new immigrants; and outright gifts. The provisions relating to unrequited imports were generally designed to serve a double purpose: to increase the supply of foreign currency (or its equivalent) from these sources by fixing a rate higher than the formal one; and to increase the supply of certain commodities, regarded as 'luxuries' or 'semi-essentials' whose importation was otherwise prohibited.

The unrequited-import provisions were, as stated, of great importance until the formal devaluation process of 1952 began. They must be reviewed

[8] As will be seen from the discussion of the next chapter, the relevant imports here are not imported inputs to exports but imports for the domestic market. The proportion referred to here is therefore the ratio of Pamaz imports for the domestic market to total imports for the domestic market.

[9] Partial data on these rates are given in the *Appendixes* (Hebrew).

[10] A more detailed description and analysis is provided in the *Appendixes* (Hebrew).

against the background of the stringent price control and rationing of foreign currency and commodities in force at the time. At first foreign residents and new immigrants making capital transfers were allowed to do so by bringing in essential commodities to be sold at controlled prices, based on the formal rate plus a reasonable profit. As prospective capital importers derived no special profits they generally made no use of this arrangement. Non-essential commodities were therefore also added and soon became the principal element of the system.

Until October 1949 the unrequited imports arrangements were rather haphazard. The choice of permitted import items was determined by negotiation between the prospective capital importers and the competent authority—the importers obviously being interested in bringing luxury items and the authorities in the import of essential commodities. Usually importers were required to sell a certain amount of foreign currency to the treasury at the formal rate, the amount being set at up to 35 per cent of the value of the imports. In October 1949 procedures were put on a more systematic footing. The authorities drew up a fairly comprehensive list of items, including non-essential commodities, that could be imported in this way by anyone wishing to bring in private capital, with no obligation to sell any foreign currency to the treasury. In practice it was also acknowledged that the importing was not necessarily done by the capital transferrers themselves but by local importers who purchased the foreign currency from transferrers together with their unrequited import rights—obviously at more than the formal rate: in exchange, importers opened blocked accounts with Israeli banks in favor of the capital transferrers, to be used by the latter to finance their local investments. After a few months, however, the government went back on this arrangement: at the end of 1949 the list of items was whittled down and the direct sale of foreign currency to local importers was prohibited. In April 1950 unrequited imports from the United States and Canada were, with a few exceptions, prohibited altogether.

Unrequited imports again flourished from October 1950 until April 1951, a period in which this institution reached its peak. The list of items immigrants were allowed to bring in was again expanded to include non-essential commodities. Capital transferrers were allowed to sell their foreign currency to local importers for the import of selected items, especially building materials and tires. Importers of building materials were, however, required to sell half of their foreign currency purchases to the government at the formal rate. This requirement did not apply to several other commodities (mainly tires) so that an importer could use

the whole of the foreign currency bought for financing his imports of these goods. Of total imports authorized under this arrangement 70 per cent consisted of building materials and 20 per cent of tires.

The rate of exchange at which capital transferrers sold their currency to local importers was freely determined in the market until April 1951, when the government decided to fix the rate. This was done by setting up a buyers' consortium consisting of all importers authorized to import under this arrangement. The consortium was given the exclusive right to buy foreign currency at the rate fixed by the Ministry of Finance and to allocate it among its members. The rates fixed were low and were subsequently reduced still further; the amount of foreign currency sold under this arrangement therefore decreased considerably and imports financed from this source went down. Instead, people wishing to transfer foreign currency to Israel tried to obtain import licences by themselves or used other unrequited import facilities, such as the import of food parcels. With the formal devauation of February 1952 this type of unrequited imports practically came to an end. Although increasing use was made of the alternative facilities the total amount of unrequited imports was less than before the devaluation.

Most unrequited imports after the devaluation were made by way of Scrip gift parcels. The shipment of food parcels, at first done privately, was in the course of time taken over by special firms which (for a fee paid abroad) sent standard parcels to Israeli residents. Still later Scrip certificates were introduced, which the donor would buy abroad and send to a recipient in Israel to be exchanged for food with the local stores of the Scrip company. The company's foreign currency receipts were used to cover food imports and the customs payable on them, as well as local purchases of foods not sold on the free market. In the course of time, especially when bearer gift certificates were introduced and Scrip thus became negotiable, capital transfers by this method became quite common, although they were never legally sanctioned. Gift certificates could also be used for several other commodities, mainly locally manufactured refrigerators.

The gift certificate system was abolished in 1955, and since then the unrequited import market has shrunk to insignificant proportions, although some unrequited imports, such as gifts from abroad or the import of immigrants' effects are of course still made. The importation of immigrants' effects was in fact recognized at various periods—particularly when there was considerable immigration from Eastern Europe—as a legitimate way of transferring capital even when the goods had not previously been in the

transferrer's possession but had been bought abroad for the purpose of selling them in Israel.

An approximate and not very reliable picture of the volume of unrequited imports and the sources from which they were financed may be obtained from Table 2–3, which is based on the import records of the customs authorities and which shows that in the peak years unrequited imports accounted for as much as 20 per cent of total imports. Presumably the changes in their composition by source of finance partly reflect the successive changes in the system. The rising share of gifts and other imports among the sources of finance was apparently due more to the extensive utilization of the gift certificate system than to any increase in the

TABLE 2–3. *Unrequited Imports: 1949–54*

	1949	*1950*	*1951*	*1952*	*1953*	*1954*
Total merchandise imports ($ million)	253.1	302.0	383.7	324.1	282.1	290.3
Unrequited imports ($ million)	38.6	51.2	71.3	65.1	59.8	42.7
Unrequited imports as per cent of total	15.3	17.0	18.6	20.1	21.2	14.7
Finance of unrequited imports (per cent)						
Capital transfers	42.8	40.9	44.3	44.7	40.2	22.5
Immigrants' transfers	39.5	29.1	17.0	14.6	5.0	3.6
Gifts	17.7	30.0	38.7	40.7	34.8	48.8
Other	..	..	..	..	20.0	25.1
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

SOURCE: Total imports—CBS, *Abstract 1966,* No. 17, p. 232, Table I/1; unrequited imports—computed from *Abstract 1957/58,* No. 9, p. 280, Table 13.

proportion of *bona fide* gifts. The decline in the share of immigrants' imports reflects the abatement of immigration after 1951.

Information on the rates of exchange used in unrequited import transactions is inevitably fragmentary and sporadic. Until the end of 1950 the sale and purchase of foreign currency for unrequited import deals was not legally sanctioned, and whatever data are available stem from partial reports received at the time by the authorities. However, the unrequited import and black market rates were presumably very close at that period, as potential foreign currency suppliers had recourse to both. The data (Table 2–4) in fact show great similarity.[11] The black market rate, for

[11] For January–March 1950 (not shown in the table) both series show identical rates; this is obviously no coincidence since they are based on the same data.

which continuous and fairly accurate data are available for most of the period, may thus be used as a basis for estimating the unrequited imports rate of the period for which no direct data are obtainable. From January 1951, the unrequited import rates were estimated on the basis of legal transactions; these estimates are, however, meaningful only until March of that year: since the rates were government-fixed from April 1951, the

TABLE 2–4. *Exchange Rates for Unrequited Imports: 1949–52*

(IL per dollar)

	Black-market exchange rate (1)	*Exchange-rate in unrequited imports market* (r_s)[a] (2)	*Exchange rate for imports of building materials* (r_I)[a] (3)
1949			
June	0.425	0.385	..
October	0.433	0.462–0.500	..
November	0.515	0.446	..
December	0.546	0.500–0.666	..
1950			
April	0.617	0.625–0.645	..
1951			
January	1.176	1.250	2.143
February	1.333	1.300	2.243
March	1.538		
April	1.389	1.100	1.843
May	1.111	0.990	1.623
June	1.163		
July	1.149		
October	1.700		
November	2.705		
December	2.800	0.930	1.503
1952			
January	2.450		

[a] See note 12 on p. 22.

SOURCE: Column (1)—Don Patinkin, *The Israel Economy: The First Decade* (Jerusalem: Falk Project, 1960), p. 143, Appendix B (for June 1949), and CBS, *Abstract 1956/57*, No. 8, p. 148, Table 19 (from October 1949 on). Column (2)—*Appendixes* (June 1949–April 1950); David Kochav, "Imports Without Allocation of Foreign Exchange in Israel: 1949–52" (unpublished M.A. thesis, The Hebrew University, 1953; Hebrew).

unrequited imports to which they applied contracted sharply, and other channels were preferred. Column (3) of the table shows the exchange rate for imports of building materials under the arrangement that came

into force in January 1951. It will be recalled that half the foreign currency bought by importers had to be sold to the treasury at the formal rate, so that the price of the half used for financing imports was above that paid to the foreign currency transferrer [shown in column (2)].[12]

For the period after the 1952 devaluation no data are available on the unrequited import rate, the unrequited import market then consisting mainly of gift certificates. It may be assumed that it again closely resembled the black market rate but this is hard to verify from the available data.

i. Special provisions for imports of services

The services which participate in foreign trade consist mostly of transport, tourism, insurance, capital services, and government services. In the last three the formal rate was also the effective rate; additional components existed only in transport and tourism.

Transport service imports, as shown in the balance of payments, fall into three categories: passengers (shipping and aviation), freight, and expenditures of local carriers (shipping and aviation) for the purchase of goods and services abroad. In the last two categories, the formal and the effective rates were identical, so that there were no additional components except in passenger transport, where a foreign travel tax was levied almost throughout.[13] The tax was first imposed in January 1951 and has fluctuated considerably since. It was generally low after a formal devaluation and increased gradually until the next devaluation. Until May 1956 it was charged at different rates for air and sea travel, and for the latter the rates also varied according to passenger class. From May 1956 the rate was the same for both forms of travel until March 1961, when the distinction between planes and ships was reintroduced. Moreover, until then travel tax had been *ad valorem,* but from then on it consisted of a specific as well as an *ad valorem* element.

[12] Let r_0 = the formal rate
r_s = the rate in the unrequited import market
r_i = the rate for importers of building materials
p = the proportion of foreign currency purchased which the importer is required to sell to the authorities

Then

$$r_i = \frac{r_s - pr_0}{1 - p}$$

and, for the period under discussion, when $r_0 = 0.357$ and $p = \frac{1}{2}$,

$$r_i = 2r_s - 0.357.$$

[13] Details of the travel tax are described in the *Appendixes* (Hebrew).

That part of the tax which was determined by the cost of the ticket is comparable to customs payable on commodities and is clearly a component of the effective rate. The specific tax poses a more difficult problem as it implies widely divergent rates.[14] Even if an average could be computed, which is not easy, it would have little meaning because of the considerable diversity among 'importers' (travelers).[15] Moreover at the margin the tax does not exist at all.[16] No attempt was therefore made to estimate the average specific travel tax.

In tourist services the effective rate during most of the period was identical with the formal rate, but only nominal amounts of currency were allocated to tourism. It was only in the later years of the period that a special tourist rate was introduced under a system that went under a variety of names—the travel dollar market, the foreign securities market, and some others—and was in operation for three years, from the end of 1958 until the formal devaluation of February 1962.[17]

The travel dollar market was created by permitting the sale of foreign currency to Israelis. The principal owners of foreign currency were the recipients of personal restitutions from Germany who were allowed to retain part of their foreign currency receipts in what were known as Tamam accounts (deposits of currency-tranferring residents) to be used for the purchase of durable goods (mainly cars or refrigerators), foreign travel, or the acquisition of foreign securities. When first introduced in July 1957, Tamam holdings were restricted to 20 per cent of total receipts; the proportion was raised to 33 per cent in May 1959 and reduced to 25 per cent after the 1962 devaluation. In December 1958 holders of Tamam deposits were allowed to sell them to Israeli residents to be used for specific purposes, mainly for foreign travel. The amount that could thus be bought was first set at $ 100 per traveler and then raised to $ 120 in July 1959 and to $ 150 in March 1961. The local banks carried out these transactions in a somewhat indirect manner, via foreign securities. Although the rate of exchange on this market was freely determined it varied within a fairly

[14] Even in those years when there was no specific travel tax there were almost perfect substitutes in the form of fixed charges for exit visas and passports far exceeding the cost of the services supplied.

[15] In principle this applies to all other specific duties as well, but throughout the period they were of little importance; moreover, an ordinary commodity is not as heterogeneous as this particular service.

[16] For a general discussion of average and marginal rates, see the next chapter.

[17] This description is based largely on my book, *op. cit.* pp. 114–17. A more detailed survey and analysis of this system and of the exchange rate in 1959–61 is given in the *Appendixes* (Hebrew).

narrow range of less than 10 per cent: the selling rate from IL 2.16 to IL 2.38 per dollar, and the buying rate from IL 2.28 to ILL 2.50 per dollar. About $5.5 million were bought in 1959 (of which about $3 million went to foreign travel) and about $13 million in 1960 (about $5 million for foreign travel); the bulk of foreign travel was financed from this source in both years.[18] The system was abolished at the time of the February 1962 devaluation. Instead Israeli residents could henceforth buy the same amount of foreign currency directly from the authorities and at the formal rate.

3. The Exchange Rate for Exports

The effective exchange rate for exports of goods and services consisted of various premium and compensatory domestic market provisions,[19] over and above the formal rate.

a. Premiums

The beginning of 1956 constitutes a turning point for the premium system: the provisions in force from then until the February 1962 devaluation differ from the earlier provisions on two major counts. First, premiums became comprehensive and fairly standardized; and second, they were awarded on the added value rather than on the total value of the exports.

Premiums in 1949–55: Until February 1952 export premiums were granted extensively and at a variety of different rates. At the end of 1949 the Horowitz Commission recommended a 15 per cent premium on the total value of exports, the eligibility of each export branch being considered on its merits. Accordingly, premiums were paid from December 1949 at a

[18] Before this arrangement came into force all foreign currency for foreign travel was supposedly bought at the formal rate but the official allocation was so small that most of the foreign currency for this purpose was undoubtedly bought on the black market.

[19] We make the following distinctions between premium and other provisions: a premium is any export subsidy which is reflected in the government budget, either as an actual expenditure or a loss of revenue, even if for various reasons it is not explicitly shown in the budget. Provisions which do not involve the direct financial participation of the government are not considered premiums even though they are government-administered. According to this definition, the Pamaz system at one time also contained a premium element (see below).
David Pines, [*Direct Export Premiums in Israel: 1952–1958* (Jerusalem: Falk Project, 1963; Hebrew)], uses a different definition according to which Pamaz and similar provisions are included among premiums.

rate of 10 to 12 per cent of total export proceeds. In May 1950 the base was changed from total proceeds to the value added of exports. The premiums were financed by a special fund generated from a 10 per cent levy on 'non-essential' imports.[20] The overall premium was abolished at the time of the 1952 devaluation and until the end of 1955 premiums were given to only a few, though important, export industries.[21] The premiums were chiefly designed to solve specific problems arising as a result of the process of formal devaluation. Thus in the 1953 season an average premium of IL 0.136 per dollar was paid on citrus exports, to compensate for the fact that the formal rate was raised from IL 1 to IL 1.8 per dollar only in October 1953, while for most other industries it had already been raised in May 1953. On other agricultural exports, premiums of 15 to 20 per cent of the total value were given during 1953–56 because these branches could not benefit from the Pamaz provisions. The diamond industry, which also did not come under the Pamaz system, received a premium of IL 0.40 per dollar on value added from September 1954 until the beginning of 1956.[22] Car exports, for which the formal rate of IL 1.8 per dollar was introduced only in July 1954, received a premium which stood at IL 0.28 per dollar in June–September 1953 and IL 0.32 per dollar from October 1953–June 1954, and was calculated to result approximately in a rate of IL 1.8 per dollar on value added.[23]

Value-added premiums:[24] In February 1956 a flat-rate premium of IL 0.50 per dollar value added was introduced which had fairly wide coverage although some major industries were not included. The premium was raised to IL 0.70 per dollar in July 1956 and to IL 0.85 in February 1957—

[20] The information on premiums before the February 1952 devaluation is taken from Alex Rubner, *The Economy of Israel* (London: Frank Cass, 1960) p. 138.

[21] The description of these special premiums is taken from Pines, *op. cit.*, pp. 43–47, 70–72.

[22] The diamond industry received a so-called premium of IL 0.80 per dollar value added before September 1954. At that time, however, the formal rate for imports of unpolished diamond was IL 1 per dollar and so was the rate paid the exporter for the import content of diamond exports. This meant that the premium was equivalent to a formal rate of IL 1.8 per dollar, a situation formalized in September 1954, when the IL 1.8 rate was applied to diamond exports and imports.

[23] It was assumed that until June 1954 car exports used imports bought before June 1953, when the formal rate of exchange for these imports were raised to IL 1.8 per dollar. It was for this reason that a special premium was introduced instead of a formal export rate of IL 1.8 per dollar.

[24] This description is based on Pines, *op. cit.*, Chapter 7 and on my book, *op. cit.*, pp. 111–14.

a rate which remained in force until the system was abolished at the 1962 devaluation.

To determine the premium, the Ministry of Finance now had to estimate the net value added of each export transaction, that is, the value of exports after deduction of imported inputs, including those used by another local producer in the production of inputs for the exporter. Thus the net value added was the aggregate export value less the value of its imported inputs—whether bought by the exporter (the direct import component) or included in local products used by him as raw materials (the indirect import component). The exporter was paid at two rates for foreign currency sold to the treasury: for the direct and indirect import component he received the formal rate, IL 1.8 per dollar, and for the net value added he received a premium in addition to the formal rate.

Together with the drawback system (described further on) these provisions were designed to establish a general export rate exceeding the formal rate by the amount of the premium.[25] In fact the system was not implemented exactly in the way described here, nor could it have been expected to. The value added was generally not calculated for single consignments but for a whole group of transactions. Thus it was frequently calculated for the total exports of a given exporter, generally consisting of an assortment of sometimes very varied products.[26] Sometimes the value added was calculated on the exports of an entire industry consisting of the sales of several producers whose goods did not necessarily have the same value added. Moreover, the added value of the exports of a given industry or exporter was usually calculated at long time intervals, and often calculated just once to serve for the whole period in which the system was in force. All these departures from the strict principles of the system influenced the effective rate created by it, as will be seen in the next chapter.

Although the system was intended to be comprehensive, several industries were excepted from it, as were exports to certain countries. The most important exceptions were the three main export industries—citrus, diamonds, and transport—as well as tourist services which by their nature require special provisions. Such premiums as were granted to these export branches, were, from February 1956, calculated on export value added but not at the same rate as in other industries. For diamonds, the general system was applied in practice and the premium was mostly paid at the

[25] This is discussed in the next chapter.

[26] Frequently, moreover, the value added of the exporter's total output rather than of his exports was calculated, although his export line might be quite different from his domestic line.

customary rate, but for various reasons special regulations were made and the industry was not officially included in the general system.[27] Citrus premiums were first granted in the 1958 season; the rate was set at the end of each season (although reliable assumptions about the level of the rate were usually already available during the season). For the 1958 season (November 1957–May 1958) the premium was IL 0.25 per dollar value added and IL 0.36, IL 0.50, and IL 0.70 for the 1959, 1960, and 1961 seasons, respectively. For the 1962 season, the premium was fixed at IL 0.85

TABLE 2–5. *Value-Added Premiums for Exports: 1956–62*[a]

(IL per dollar value added)

	General provisions	*Citrus*[b]	*Shipping*	*Aviation*
1956				
Until June	0.50	–	–	–
From July[c]	0.70	–	–	–
1957[d]	0.85	–	–	–
1958		0.25	–	–
1959		0.36	0.12	0.85
1960		0.50	0.36	
1961		0.70		
1962[e]		0.85		

[a] Excluding export premiums under clearing agreements (see discussion in Chapter 3).
[b] Agricultural years; i.e., the 1958 figure is for the citrus season of the agricultural year 1957/58, and so forth.
[c] Through January 1957.
[d] From February.
[e] Up to the devaluation of February 9, 1962. Includes only the beginning of the 1962 citrus season.

per dollar value added for the pre-devaluation proceeds, while the new IL 3 per dollar exchange rate applied to the rest. Transport services (shipping and aviation) were allowed no premium until 1959, when aviation services received the regular value added premium of IL 0.85 per dollar and shipping services a premium of IL 0.12, later raised to IL 0.36 per dollar in 1960 and 1961.

As stated, exports to certain countries were also excluded from the general provisions. At first no premium was given on exports to countries

[27] This was apparently done to forestall complaints from Israel's competitors in the diamond market—and through them from the various international institutions—about support of the industry beyond the formal rate.

with which Israel had special trade (clearing) agreements; eventually they, too, received a premium, but at a low rate.[28] On the other hand, a value-added premium of IL 1.20 per dollar (instead of the usual IL 0.85) was introduced in March 1957 for exports to West and Central Africa.

A general picture of export premiums (excluding the clearing countries) may be obtained from Table 2–5.

'Marginal' export premiums: At the end of 1958 it was decided to grant special premiums to that part of exports which exceeded the 1958 level, to be paid according to specific decisions of an interdepartmental committee for the encouragement of exports.[29] These premiums were thus *ad hoc* measures based on no standard rules. Generally each ruling related to a single producer and was not always extended to other producers, even in the same industry. An entire industry was covered only when it was organized on some sort of contractual basis.

The 'marginal' export provisions also took other forms. Sometimes an increased premium was paid not on the export increment but on exports to new countries. Such premiums were sometimes made on condition that exports to the established markets did not go down or that total exports exceeded the 1958 level. Again, an increased premium was sometimes given only on the incremental exports to a given country. It was also occasionally granted on the amount by which the exports exceeded some quota other than the 1958 level. Yet another interpretation was sometimes adopted; the entire premium, on total and not only on additional exports, was increased when a certain quota was surpassed. As a rule the marginal premium for a given branch or exporter was constant, but there were also cases where premiums were scaled according to the extent to which exports increased. In at least one case there was a ceiling: the extra premium was given only up to a certain volume of exports. Although, as stated, the premium was not standardized, it was usually paid at the rate of IL 1.20 per dollar value added, i.e., IL 0.35 above the ordinary premium, which at that time was IL 0.85.

Most of the special marginal premiums date from the end of 1960 and a few from 1961. When the value added premium system was abolished in February 1962, the marginal premium provisions also lapsed.

[28] This subject is dealt with in the next chapter.

[29] The committee began making rulings on premiums of this kind at the end of 1959, but they were made applicable retroactively to all exports carried out in 1959. A short survey of the committee's marginal-premium decisions is given in the *Appendixes* (Hebrew). Here only the broad principles are reviewed.

Special premiums:[30] In addition to the premium provisions already described, special arrangements were made in 1956–61 which applied to one or more industries, though at most only a small fraction of total exports was covered. One of the provisions was the 'fuel cost refund' which applied mainly to the cement industry where fuel input accounts for a substantial share of the production costs. In spite of its name this premium should not be regarded as an export input subsidy (and cannot be grouped among the other subsidies of this type, reviewed below) because it was given at a fixed amount per ton of exports (i.e. it was a specific subsidy) and did not vary with the effective price of the fuel consumed, as it should have done if it was to serve its ostensible purpose of stabilizing fuel costs at a given level.

Other premiums were from time to time granted in special cases as a means of counteracting protective measures taken by some countries, such as discriminatory duties on Israeli imports of certain goods (mainly by South Africa) or the subsidization of competing exports (as was done in one instance by the U.S. government).

Another provision consisted of the refund of levies on the exports of textiles in the production of which Saran fibers, raw wool, wool waste and rayon yarns were used. When a levy of IL 0.36 per dollar was imposed on imports of these raw materials in April 1956, exporters using them as inputs were granted a special premium of IL 1.80 per dollar (as a substitute for the general premium) on the total value of their exports; the total premium payments could not, however, exceed the total amount paid in raw material levies. Consequently the average premium in 1956–58 amounted only to IL 1.38.

A special arrangement was also made for the tourist industry which, as stated, was not included in the general premium system.[31] At first lower prices were fixed for certain tourist goods and services, for which the government compensated the suppliers. At the end of 1957 a 15 per cent discount was allowed on some goods sold in tourist shops; at the end of 1959 it was raised to 20 per cent. This was referred to as a purchase tax rebate but in fact had nothing to do with purchase tax. In addition, hotel prices for tourists were frozen at the 1956 level and hotel owners were compensated by the government for cost-increases beyond this level. By 1958 this amounted to a premium of 20 per cent. In addition, tourists were exempt from the 10 per cent hotel service tax.

[30] The description is taken mainly from Pines, *op. cit.*, pp. 44–47 and 73–76.

[31] A more detailed description of the provisions applicable to the tourist industry appears in the *Appendixes* (Hebrew).

In March 1959 all these provisions (except the service tax exemption, which is still in force) were revoked. Instead, a 20 per cent premium was allowed on the foreign currency sold by tourists. At first this premium was payable only on cash transfers but in March 1960 it was also made applicable to transfers in Independence and Development Loan bonds. The opportunity thus afforded to tourists to finance their stay in Israel by selling the bonds to the treasury evidently constituted an additional premium: the market price of these bonds in the United States (as will be seen from the ensuing discussion of capital transfers) was below the redemption value received from the treasury.

Payments from branch funds: In 1960–61 subsidies from branch equalization funds were introduced.[32] Eight such funds were set up by the Ministry of Commerce and Industry: for cotton, worsted, plywood and hardboard, cement, tires, hides and skins, wall tiles, and wine. Similar arrangements were made by the Ministry of Agriculture, mainly for eggs. Exports under these provisions were substantial. In 1961, for instance, they amounted to $42 million—about 10 per cent of total exports in that year, and close to one third of exports other than citrus, diamonds, and services.

The funds were financed from a special levy collected from the producers of the respective industries. In some industries the levy was charged on imported raw materials used for domestic production, and in others on finished products sold on the domestic market. The funds were run jointly by the Ministry of Commerce and Industry and the representatives of each industry, and the levies were collected partly on the basis of administrative orders issued by the Minister and partly on the basis of special agreements with the industry. In the plywood industry the arrangement was slightly different: each manufacturer undertook to export a given quota of his output. In exchange, he was allowed to charge higher prices on the domestic market. If exports were less than the quota, a fine was paid to the fund on the shortfall, and if the quota was exceeded, a special premium was received. For eggs there was yet another system: producers sold their whole output through the Poultry Marketing Board, which sold part of it on the domestic market and exported the rest. The producer received a fixed price from the Board, regardless of where his produce went. Accordingly it was the Board that was directly compensated by its domestic returns for the lower foreign prices.[33]

[32] The arrangement was introduced as early as March 1959 in the cement industry.

[33] It is clear from this description of how the equalization funds operated that payments received through them were not equivalent to premiums. Whether they

Premiums on inputs to exports: All the premiums described so far applied to output and were determined according to the value of exports (either total returns or value added). In addition there were also subsidies on some export inputs.[34]

In the present study the input subsidies have not been measured as an effective exchange rate component—the considerable work involved did not seem justified since it was evident from the general information available that they were negligible compared with other components. We shall therefore merely give a short survey of the main types of subsidies included in this category.

One of the most important was the premium on the input of capital services, in the form of low-interest provisions for working capital for export purposes.[35] In most of the years under review the cheap credit came from several sources and was governed by a variety of different provisions that were often applied in combination. Only towards the end of the period, in the middle of 1962, were the provisions standardized. Henceforth, the loans generally bore 6–7 per cent interest. They consisted of one part in Israeli currency, provided by the government, the Bank of Israel, and the banking system, and a second part in foreign currency credit for financing the import component of exports, which came either from the suppliers abroad or from Patah deposits (foreign residents' foreign currency accounts with local banks). The amount of cheap credit supplied was generally determined by the estimated length of the production cycle, the

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should be regarded as a component of the effective exchange rate of exports is discussed in the next chapter.

[34] Pines (*op. cit.*, p. 22) refers to bonuses depending on the value of exports as direct premiums; following this terminology, we could refer to the premiums discussed here as 'indirect'. This term is, however, ambiguous and I therefore prefer to refer to them as input premiums. It might be argued that the value added of exports also constitutes an input—the aggregate input of the domestic factors of production as distinct from the imported input (which is the import content). It will become clear in the next chapter, however, that this definition is not applicable: imported export inputs should not be taken into account in defining the effective rate for exports, so that for our purposes the inputs comprised in the value added constitute the entire relevant value of the product.

[35] In addition, low-interest long-term loans (mainly from the Development Budget) or outright grants were given to industries producing exclusively or chiefly for export. These are undoubtedly among the most important government incentives, but their inclusion in the effective exchange rate would mean that all policy measures affecting exports in one way or another would have to be included. Such a broadly defined effective rate is not conceptually desirable nor is its measurement feasible.

inventory requirements of the industry, and the percentage of value added in the exports. There are no authoritative studies on the connection between the volume of export credit and the volume of exports. From partial information and indications it appears, however, that at least in the latter part of the period (and in the subsequent years) the cheap loans covered at least as much as was needed for the production and marketing of exports. Nevertheless the resulting premiums could not have been substantial.[36]

Another way in which inputs were subsidized was by government participation in inland and overseas transport costs when they were exceptionally high. This was done by means of an outright grant or by allowing a lower tariff when the carrier was government-owned (e.g. Israel Railways) or under government control (e.g. Zim Navigation Co.). Here again the subsidy seems to have been quantitatively insignificant except in isolated cases.

A reduction in port charges on export shipments can also be included in the input-subsidy category. During most of the years under review Haifa port charges amounted to 2 per cent of the value of import cargoes and only $\frac{1}{4}$ of 1 per cent of the value of export cargoes. If 2 per cent does in fact more or less cover the actual costs (which should be roughly the same for export and import shipments), this may be regarded as a premium of 1.75 per cent on total exports. If, on the other hand, the regular port

[36] To illustrate, let us take a case where the production cycle is 4 months, the variable production costs are linearly distributed over this period, there are no fixed production costs, and value added is 50 per cent of total export value. Under these conditions, a 1 per cent reduction in the interest rate constitutes a premium of $\frac{1}{6}$ of 1 per cent of total export value, or $\frac{1}{3}$ of 1 per cent of its value added.

After the period under review the cheap credit provisions may well have constituted a higher premium than appears from this illustration, because most probably more credit was supplied than required for financing exports. Thus foreign currency credits for industrial exports (other than diamonds) were granted for a period of 180 days in 1963/64. Assuming a linear cost distribution this would mean a full year's production cycle which, as a general average, seems excessive. The premium received in this way was thus not negligible. In 1963, for instance, average credit outstanding for industrial exports (other than diamonds) was IL 170 million (including close to IL 100 million in foreign currency). The loans were granted at an interest of about 6 per cent. Compared with the usual 11 per cent on other industrial loans this implies a premium of IL 8.5 million over the whole year, during which exports amounted to IL 420 million at the formal rate of IL 3 per dollar; the value added came to about half this sum. Consequently the premium granted in this way amounted to about 2 per cent of the total value of exports or about 4 per cent of their value added.

charges exceed actual costs, they must, at least in part, be regarded as an import levy whose non-imposition on exports cannot be considered as a subsidy, just as the non-collection of customs does not imply an export subsidy. Presumably 2 per cent port charges on the value of the cargo comprise both elements—payment for services supplied by the government or others and a levy on imports.[37]

Finally we come to the 'drawback' although, as will be seen in the next chapter, this apparent subsidy on imported inputs should not be included in the effective exchange rate. The drawback provisions were devised so that the effective rate for imported inputs, when purchased by an exporter, would be the same as the rate for which he sells them after they have been incorporated in his exports. Exporters were, therefore, entitled to a refund of the charges payable on the imported inputs included in their exports. In actual fact, they were usually not required to pay them in the first place, on declaring that the imports were intended for export production and undertaking to pay any amount due if the export was not carried out and the imports were used to make products sold on the domestic market.

b. Compensation through domestic sales[38]

In addition to direct government premiums there were various expedients by which the government enabled exporters to receive compensation for their exports through extra profits on domestic sales. There were two devices of this kind, the Pamaz (retention quota) scheme and the 'linkage' provisions, of which Pamaz was by far the more important.

Pamaz: This scheme was in force almost from the beginning of the period. As its name—the Hebrew acronym for 'foreign currency deposits'—indicates, exporters were allowed to deposit the whole or part of their export proceeds in local banks instead of selling them to the treasury, and could then draw on them for the purchase of raw materials from abroad required for their export production. This was particularly important in the first few years of the period, when foreign currency allocation procedures were extremely cumbersome and applications were frequently rejected or delayed. The Pamaz system thus provided a means for cutting through the

[37] A discussion of this subject may be found in Haim Lubin, "Tariff Policy in Israeli Ports" (unpublished M.A. thesis, the Hebrew University, 1956; Hebrew). Lubin is inclined to regard the port charges as an import levy.

[38] This section is based largely on Pines, *op. cit.*, Chapter 5, and on Michaely, *op. cit.*, pp. 105–10.

red tape which was a considerable hardship at that time.[39] Beyond that, however, the Pamaz deposits were used in a much broader and more important way. Already in the middle of 1951 exporters in many industries were allowed to use part of their Pamaz deposits not merely for the purchase of raw materials for their own production, but also for buying other commodities abroad. They were entitled to retain foreign currency not only to cover their raw material purchases but up to one third of the gross value added of their exports. The remaining two thirds had to be sold to the authorities at the formal rate, which at that time was IL 0.357 per dollar. The Pamaz foreign currency could be used to buy various commodities abroad for sale in Israel at uncontrolled prices. At a time when the importation of such commodities was severely restricted this permitted high profits as an additional return on exports; and these extra profits were part of the effective rate. After the February 1952 devaluation the scheme was slightly modified: only one third of the value added had to be sold to the authorities instead of two thirds. The second third could be used for importing 'essential' commodities and selling them at controlled prices on the domestic market. The controlled prices probably still allowed the exporter more than the ordinary profit, although certainly not as much as on the uncontrolled commodities which he could still import with the original third.[40]

In May 1953, when the process of raising the formal exchange rate for exports from IL 1.0 to IL 1.8 per dollar started, the Pamaz scheme was recast in a pattern not substantially modified for another six years. It covered practically all export industries except the two main ones—citrus and diamonds. Exporters were no longer required to sell any of their export proceeds to the Ministry of Finance. As before, a part had to be used to finance the direct import component—the raw materials needed for export production.[41] The rest—the equivalent of the (gross) value added—could be used to import goods for sale on the domestic market; these, however, were no longer finished goods but only raw materials in the exporter's line

[39] Pines, *op. cit.*, refers to Pamaz in this restricted sense as 'technical Pamaz'.

[40] The description of the procedures in force in 1951 and 1952 is based on Rubner, *op. cit.*, p. 138.

[41] This description assumes a fixed volume of exports. When exports increase the amount required to finance the import of raw materials for a new export cycle also increases. If the exporter declared in advance that he intended to increase his exports, he was still able to use the added value of his previous exports to finance imports for the domestic market, for he was then given foreign currency 'on credit' to finance the additional imports required, on undertaking to refund it after having carried out his increased exports.

of production. The exporter was therefore not supposed to derive his profits from direct sales on the domestic market, but only from the sale of the commodities he produced with the aid of the raw materials imported by him. In fact there still were many instances where profits were derived from the direct sale of raw materials to other manufacturers. The definition of 'line of production' was usually rather broad. The exporter was not required to import raw materials in the proportions required for his own production and could purchase any amount of a given raw material as long as it was in some measure used by him. Frequently the raw materials would fetch higher profits than the commodities he might produce from them, and the exporter would naturally tend to spend his foreign currency on the purchase of such materials. Clearly, Pamaz profits could arise only from such raw materials as could not be freely imported.[42]

In some instances exporters were also allowed to transfer their Pamaz rights to local suppliers of raw materials. Instead of buying their raw materials abroad they then bought them with their Pamaz currency from local producers. The local supplier was in this case also regarded as an exporter and was allowed to use the foreign currency proceeds of his sales as if he were the original owner of the Pamaz deposit. This enabled the local producer to sell the raw materials to the original exporter at a price not exceeding their foreign currency value abroad—less than he would ordinarily have charged at the official rate, because he could make extra profits from the foreign currency by using it for raw material imports.

The liberalization of raw material imports from 1956 on reduced the extra returns from the Pamaz scheme.[43] As stated, they existed only when the commodities imported by the Pamaz owner were restricted. As more and more commodities were allowed to be imported freely, the Pamaz owner could make no special profit from importing them. Nevertheless he still had a certain advantage. Although they were subject to customs duty like all other imports, Pamaz imports were exempted from the special levies imposed on liberalized imports. The special profits of Pamaz owners were therefore reduced to the amount of the levy,[44] and it was

[42] It is also clear that the non-inclusion of citrus and diamond exports had no special significance, since these industries were not likely to make use of it anyhow: almost their entire output was sold abroad and the raw material imports required for their production were not restricted.

[43] See p. 14 above.

[44] According to our definition this profit constitutes a premium, since it was paid by the government. It was obviously not the same for all products but varied from one industry to the other according to the composition of its imported inputs and the levies imposed on them.

clearly no longer worth while to import commodities on which no such levy was charged. Another factor that reduced the incidence of the Pamaz system was the introduction of value added premiums in February 1956. Exporters throughout had the choice of selling their export proceeds to the authorities instead of holding them in a Pamaz deposit. After February 1956 this alternative became more worth while, because on selling his export proceeds to the treasury, the exporter received a premium on the value added of his exports, over and above the formal rate. Although he sold the proceeds of the import component at the formal rate, he could also buy the foreign currency he needed to finance it at the same rate without using his Pamaz deposits. Exporters were therefore unlikely to make use of the Pamaz scheme unless it offered profits at least equal to those obtainable through premiums. Some industries consequently abandoned Pamaz altogether once premiums were introduced while others made partial use of it, selling part of their export proceeds to the authorities.[45]

Starting in 1956, deliberate steps were also taken to cut down the Pamaz scheme. One such measure was the abolition of Pamaz rights for the indirect import component. As will be recalled, exporters holding a Pamaz deposit were generally required to use it only for financing the direct purchase of imported inputs. Their export proceeds, however, also included the net value added and the indirect import component, consisting of imported inputs incorporated in the commodities and services the exporter bought from other local producers—such as the fuel included in his electricity consumption or the imported inputs required for the freight services supplied by Israeli carriers. In the later years of the period producers were thus required to sell to the authorities at the formal rate that part of their export proceeds which according to official calculations corresponded to the amount of the indirect import component.[46] The authorities also began to put a ceiling on Pamaz rights which in most industries had originally not been limited. Beginning in 1956 but particularly from 1958, Pamaz rights applied to only part of export proceeds. In some instances only the equivalent of the import component could be kept in a Pamaz deposit, so that the Pamaz system again became no more than a technical arrangement and no longer had any compensatory effect. At the end of 1959 the Pamaz system was abolished altogether, and was replaced by the Damamakh (foreign currency working capital) scheme which was similar to technical

[45] In the wool industry exporters were entitled to a premium on top of their Pamaz profits—see Table 2–7.

[46] The calculation was not made separately for each exporter but at a flat rate for a given industry.

Pamaz: the exporter was allowed to retain not more than the amount required to finance the imported inputs for his export production. The Damamakh scheme apparently offered no extra benefits but was merely an administrative improvement, which was no longer of much importance by the time it came into force. In fact, however, the portion of export proceeds retained sometimes exceeded the direct import component, so that the exporter could use some of his Damamakh deposit for buying imports for sale on the local market. With the devaluation of February 1962 this scheme, too, was abolished.

Linkage provisions: Like the Pamaz scheme, the linkage provisions provided extra compensation to exporters by enabling them to make special profits on the domestic market. Under these provisions they were granted import licenses for restricted raw materials proportionally to their exports.[47] There are some major differences between this and the Pamaz scheme, of which the most important are: (a) In principle the Pamaz scheme was the same for all industries and applied to the bulk of industrial exports, although the special profits, and thus the exchange rate, varied from one industry to another. The linkage system, on the other hand, applied to only a few industries (the most important being confectionery) and even there varied from one item to another, each having a different linkage ratio. (b) As stated, Pamaz profits derived from the (gross) *value added* of exports, which determined the volume of imports that could be sold on the domestic market. Under the linkage scheme, on the other hand, the size of these imports—and of the extra profits—depended on *total* export proceeds. (c) The exchange rate component derived from Pamaz profits was the only addition to the formal rate. Not so under the linkage system. Here the exporter sold his export proceeds to the authorities at the formal rate plus the premium, and in addition he received a foreign currency allocation at the formal rate for imports that could be sold at an extra profit on the domestic market. He thus received a double bonus—the premium and the profits from his domestic sales.

Quantitative data: There are no direct data on the magnitude of the exchange rate component implied by the Pamaz and linkage schemes; this can only be determined by first estimating the profits made on the domestic

[47] Sometimes the linkage operated somewhat differently: a raw material import quota was fixed for all the exporters of a given industry and the individual exporter received a license under this quota proportional to his share in the industry's total exports.

market. When the imported raw materials were sold to other producers these profits were directly expressed in the market. In other instances, when the exporter-producer used the raw materials himself (which was supposed to be the only course open to him) it is necessary to calculate the special profits derived from the production and sale of the finished products. Such calculations are not only difficult but sometimes impossible, and no attempt has here been made to measure the total size of this component.

TABLE 2–6. *Pamaz (Retention Quota) Profits: 1954–58*[a]

(IL per dollar value added)

1954		*1957 (textiles and clothing)*	
Food	2.000	Woollen yarn	1.747
Textiles and clothing	1.350	Fabrics	1.284
Leather and footwear	1.500	Raincoats	2.146
Chemicals	0.750	Knitwear	1.405
Metals	1.000	Stockings, tricot, underwear	2.189
Plywood	0.700	Swim-suits	2.957
Tires	0.200	Made-up textiles	2.442
Miscellaneous	1.200	Miscellaneous	1.310
Weighted average	1.240	Weighted average	1.700
1956		*1957–58*	
Plywood	2.759	Plywood	2.634[b]

[a] The formal rate was IL 1.800 per dollar in the period covered by the table. Accordingly, the effective exchange rate is obtained as IL 1.800 *plus* the Pamaz profit shown in the table.

[b] Covers only part of value added; the rest is included under the premium provisions. The average of premium and Pamaz profits came to IL 1.959 and IL 1.629 per dollar value added in 1957 and 1958 respectively.

SOURCE: S. Gottlieb, "Government Subsidies in Israel: 1954 and 1955," Research report in *Third Annual Report 1956* (Jerusalem: Falk Project, 1957), p. 27, Table 7 (for 1954); David Pines, *Direct Export Premiums in Israel: 1952–1958* (Jerusalem: Falk Project, 1963; Hebrew), p. 62, Table 9 (for 1957); *Appendixes* of the present volume (Hebrew), for plywood.

In the present study estimates were made for only some industries and for specific years where such calculations were feasible. The findings are summarized in Table 2–7.[48] Some partial calculations were also made in previous studies; their results are presented in Table 2–6. As stated, exporters to whom the Pamaz provisions applied were given the alternative of receiving value added premiums. The share of exports carried out under the Pamaz provisions may be deduced from the data on the total exports of a given industry and on the amount of exports on which premiums were granted, as shown in Table 2–8.

[48] Details are presented in the *Appendixes* (Hebrew).

TABLE 2–7. *The Effective Exchange Rate in the Wool Industry: 1959–61*

(IL per dollar value added)

	Yarn	*Fabrics*	*Clothing*	*Knitwear*
January 1959–March 1960				
Pamaz and linkage profits	2.00	2.00	2.00	2.00
Direct premium	0.85	0.85	0.85	0.85
Effective exchange rate[a]	4.65[b]	3.80–4.48[c]	3.80–4.26[c]	4.27[d]
April–December 1960				
Pamaz and linkage profits	1.60	0.02[e]	2.00	2.00
Direct premium	1.20	2.63	2.63	0.85–3.00[f]
Effective exchange rate[a]	4.60	4.45[g]	4.27[d g]	3.17–4.35[d]
1961				
Pamaz and linkage profits	0.20[e]	0.48	0.30	–
Direct premium	2.00	2.00	2.00	2.00
Effective exchange rate[a]	4.00	4.28[h]	4.10[h]	3.80

[a] Computed as the sum of the formal rate (IL 1.80 per dollar) and the two components shown in the table, except as noted below.
[b] In addition, exporters of woollen yarn received a lump-sum grant of $ 340,000 whose inclusion would raise the effective rate to IL 5.56 per value added dollar.
[c] The range shows the upper and lower limits of the effective rate. The rate for each exporter depended on the amount exported: the per cent of value added eligible for the direct premium on top of Pamaz rose with the amount exported, to a ceiling of 80 per cent in fabrics and 50 per cent in clothing.
[d] Part of value added received Pamaz and linkage profits as well as the direct premium, and part received only the premium. The figure is a weighted average for the two.
[e] Linkage profits only.
[f] The direct premium was scaled according to the amount exported. The range gives the lower and upper limits.
[g] This rate applied to 75 per cent of exports; the remainder received a lower rate.
[h] Applied only to exports above $ 100,000. Most exports fall in this category.
SOURCE: *Appendixes* (Hebrew).

TABLE 2–8. *Exports Using Pamaz Provisions: 1956–60*[a]

($ thousand)

	Value added	*Value added receiving premium*	*Value aded using Pamaz provisions*	
			Absolute figures (1)–(2)	*Per cent (3) ÷ (1)*
	(1)	*(2)*	*(3)*	*(4)*
1956	55,070	47,388	7,682	13.9
1957	71,078	64,608	6,470	9.1
1958	72,482	68,228	4,254	5.9
1959	85,666	82,590	3,076	3.6
1960	97,362	93,145	4,217	4.3

[a] Computed as residual; a direct estimate would probably give slightly different results.

4. Exchange Rate Provisions for Capital Imports

Capital exports during the entire period under review were negligible so that the rate of exchange applicable to them need not concern us.[49] Capital imports, on the other hand, whether on capital account or unilateral transfers, were considerable. Some capital import provisions connected with imports of goods and services have already been reviewed and will be only briefly recapitulated. In the main, this section will thus deal with provisions which relate specifically to capital imports and have no direct bearing on the import of goods and services.

Capital imports may be classified by source as follows (not necessarily in order of importance): private investors' transfers; gifts and transfers from abroad; transfers by immigrants; personal restitutions from Germany; transfers of public and nonprofit institutions; and government capital imports. There are a few other sources (such as pensions other than from Germany) of minor quantitative significance.

Some of the exchange rate provisions dealing with capital imports were not restricted to any one source. Of these, the most important were the unrequited import arrangements. As stated, these imports were financed out of the capital imports of private foreign investors, new immigrants and gifts. Some unrequited imports were also financed from institutional transfers, although as a rule such transactions were not legal or at least not within the spirit of the provisions. Several provisions were intended to cover imports from one particular source but were in fact used much more extensively. The Scrip system, for instance, which was supposed to be used solely for gift transfers, in fact also served as a means of transferring capital from private investors, immigrants and even institutions.

Partial and fairly rough data on the exchange rate applying to capital transferred under the unrequited import provisions were shown in Table 2–4.[50] After 1954, the unrequited import market contracted and direct sales of foreign currency under these provisions were minimal. Although substantial amounts of capital continued to be transferred in commodities,

[49] Obviously some accounts, such as foreign loans, contain a gross capital export element, since the loan repayment constitutes a substantial capital export each year. With a few exceptions all foreign loans are approved by the Foreign Exchange Division and repaid at the current formal rate. The repatriation of foreign investments is also important, though much less so than loan repayments. This item is discussed below under blocked accounts.

[50] Clearly the relevant rate for the capital transferrer is the foreign exchange selling rate and not the rate effectively paid by whoever exercised the import right, which, as in the case of importers of building materials, was often above the selling rate.

only a minor share seems to have been sold on the market instead of being used by the transferrer or the recipient of the gift. Yet the very right to transfer capital in the form of commodities rather than cash conferred a special advantage as long as such commodities could not be freely imported so that their domestic price was higher than it would have been according to the formal exchange rate. No data are, however, available on the exchange rate component implicit in the right to bring in commodities, whether for the transferrer's own use or for sale on the market.

Most of the other provisions relating to capital imports were limited to a particular source and will be reviewed accordingly.

a. Private investors

Besides the unrequited import system, there were two other important ways in which importers of investment capital could receive extra benefits—under the Law for the Encouragement of Capital Investments and by the blocked accounts system. The Law provided various incentives to foreign investors. Its provisions were changed several times in the course of the period and will not be reviewed here, both because of the difficulty of computing the value of the various concessions and benefits and because it is doubtful whether it should be included in the exchange rate. This doubt is partly due to the fact that the benefits were not directly related to the amount of foreign currency transferred. For example, various income tax concessions, such as accelerated depreciation, were granted to 'approved' enterprises, and while approval of an enterprise depended on, *inter alia*, whether part of the capital invested was imported from abroad, the tax concessions were not related to amounts so imported. Similarly, provisions for the repatriation of invested capital and profits within a given period can hardly be regarded as an exchange rate component.

The second scheme for the import of capital by private investors was the 'blocked accounts' system. Blocked accounts were the most important of those known as restricted accounts, that is, accounts in Israeli banks whose use was restricted in one way or another. They were first introduced by the mandatory government during World War II, shortly after foreign-exchange control came into force. When the State was established and during most of the period since, there were three types of restricted accounts: Blocked Accounts A, Blocked Accounts B, and Registered Accounts. The last type was the most restricted: every such account of a company or an individual was considered *sui generis* and its use or sale were decided on *ad hoc* by the Controller of Foreign Exchange. For instance, the proceeds of foreign film companies from the distribution of films in Israel were

held in such accounts. From time to time the sale of one or another account and its conversion into foreign currency was permitted at whatever exchange rate the Controller of Foreign Exchange saw fit for that particular transaction. Registered Accounts formed a small part of the total, most accounts being Blocked Accounts A or B, of which Blocked Accounts A were subject to slightly fewer restrictions. Both were derived mainly from the following sources: foreign residents' deposits existing at the time exchange control came into force; proceeds from the sale of real estate and Israeli securities held by foreign residents; income from property owned by foreign residents; capital transfers by foreign residents; and legacies transferred from an Israeli to a foreign resident. The uses to which the blocked account funds could be put were at first very restricted and were extended in the course of time. They were used chiefly for local investment in real estate and securities or for mortgage loans to Israeli residents and to a smaller extent for payments to the government and the local authorities, gifts to Israelis, or the account owner's local expenses during visits to Israel.

At first there was no blocked-accounts market; for although the accounts could be used for specific purposes they could not be transferred to a third party against foreign currency. At the end of June 1953, however, they were made freely transferable from one foreign resident to another, which obviously implied the sale of local currency out of the blocked accounts to persons transferring foreign currency from abroad.[51] From then on, there was thus a blocked-accounts market in which the exchange rate (i.e. the price of foreign currency in units of blocked local currency) was freely determined by the buyers and sellers. Any foreign investor could transfer his capital to Israel by buying a blocked account and using its funds for financing his local investments instead of selling his foreign exchange to the Treasury at the formal rate of transferring commodities. At the end of 1958 (in practice already in April) the distinction between the two types of blocked account was abolished and the two markets became one. Another notable change took place in September 1959 when permission to buy blocked accounts was granted not only to foreign residents but also to immigrants within two and subsequently three years of arrival. The blocked-accounts market thus became a channel for the capital transfers of immigrants as well as for the capital imports of foreign investors.

For most of the period there are no data on the volume of blocked-

[51]The only restriction imposed on such transactions was that Blocked Accounts B could not be converted into Blocked Accounts A, so that there was a separate market for each type of account.

account transactions; partial data indicate that a large share of the cash imports of private investors was carried out in this way, but the amounts were inconsiderable in relation to the size of the balance of payments or to total capital imports. Data are available on the rate of exchange from July, 1953, when blocked accounts became transferable among foreign residents; they are shown in Table 2–9.

TABLE 2–9. *The Blocked-Accounts Rate: 1953–61*[a]

(IL per dollar)

	January–March	*April–June*	*July–September*	*October–December*
1953	..	..	2.173	2.171
1954	2.168	2.153	2.032	2.036
1955	2.006	1.930	1.922	1.917
1956	2.055	2.069	2.104	2.162
1957	2.143	2.092	2.104	2.104
1958	2.054	2.064	2.107	2.090
1959	2.052	2.101	2.174	2.215
1960	2.124	2.045	2.093	2.081
1961	2.150	2.160	2.192	2.113

[a] Unweighted means of weekly rates for each quarter.
SOURCE: Data of the Research Department of Bank Leumi Le-Israel.

It appears that the rate of exchange on the blocked-accounts market was fairly steady and not much above the formal rate (which of course constituted its lower limit, as the buyer always had the alternative of selling his foreign currency to the authorities at this rate). This is also borne out by the more detailed figures: the monthly rates on the blocked-accounts market ranged between IL 1.867 (in June 1955) to IL 2.273 (in August 1961) per dollar—a maximum fluctuation of about 20 per cent over a period of more than 8 years. The monthly movement of the rate was thus within a range of from close to 4 per cent to about 25 per cent above the formal rate. It may be inferred that the restrictions placed on the use of the blocked accounts were not very severe, as a fairly modest premium was enough to induce sellers of foreign currency to channel their supply to this market.

b. Gifts and remittances

Many of the gifts and remittances from abroad were in the form of commodities. Especially in the case of regular remittances, the commodities

were often sold by their recipients. There are, however, no data either on the volume of these transactions or on the exchange rate at which they were carried out.

It will be recalled that in 1952–54 a considerable proportion (probably the bulk) of gifts and remittances was sent through Scrip certificates[52] which were ostensibly designed exclusively for this purpose. From the end of 1951, half of the cash gifts of up to $50 and one quarter of the gifts up to $200 could also be converted into Scrip certificates instead of being sold to the treasury for Israeli currency. The ceiling was presumably designed to restrict the Scrip provisions to *bona fide* private gifts and remittances and as far as possible to prevent institutions or other capital transferrers from making use of them.

The formal rate throughout applied to personal cash gifts sold to the authorities, and when there were several formal rates the highest applied. (In 1953, when the highest rate was IL 1.0 per dollar plus a premium of IL 0.8, the premium was granted only on transfers not exceeding $112.) From June 1953 until February 1962, the rate was accordingly IL 1.8 per dollar. After the devaluation recipients of cash gifts were also allowed to open a Pazak deposit (described below in the discussion of personal restitutions). This gave them an indirect premium, the size of which cannot be assessed, although it could hardly have been considerable.

c. Immigrants' property

As mentioned, immigrants' transfers were one of the major sources of supply on the unrequited import market. Even after the unrequited import system was abolished, most immigrants' property continued to be transferred in the form of commodities—frequently intended for sale on the local market with the tacit consent of the government. The rate of exchange obviously varied from one transaction to another and no data on it are available.

The formal rate applied to cash transfers of immigrants (the highest formal rate when there were several). In July 1957 a premium of IL 0.35 per dollar was introduced on immigrants' transfers from specified countries, bringing up the rate to IL 2.15 per dollar. In addition these immigrants were entitled to a loan on easy terms, also of IL 0.35 per dollar, which gave them a further indirect premium that cannot be estimated but was again presumably not large. Moreover, as the loan came from the Jewish Agency —an institution separate from the government, though closely connected

[52] See above, p. 19.

and acting in coordination with it—the loan premium cannot be regarded as an exchange-rate component.

d. Personal restitutions from Germany

The flow of personal restitutions from Germany began to assume considerable proportions in 1954.[53] At first the restitution receipts were converted at the formal rate, i.e. IL 1.8 per dollar. From July 1957 until the 1962 devaluation there was a premium of IL 0.36 per dollar; this premium was not paid in cash but in government bonds redeemable six months after purchase. In view of the early maturity of the bonds and the fact that they bore a relatively high interest, their market value was about the same as their face value. The rate of exchange for restitution receipts under the premium system was thus about IL 2.16 per dollar.

The personal restitutions could be held in a Pazak (term) deposit on which the interest went up with the length of the deposit period but was not substantially different from that on other term deposits. On the other hand, Pazak deposits had the advantage of being linked to the formal exchange rate, i.e., the deposit in Israel pounds increased automatically in proportion to any devaluation.[54] Since not every resident could hold his assets in this way, the Pazak privileges accorded to recipients of personal restitutions constituted a disguised premium. This premium of course increased with expectations of devaluation. Consequently it was fairly low in the first few years but increased in 1957 or 1958, as expectations of devaluation built up. The premium cannot be estimated, as Pazak (or similar) rights were not negotiable. The upper limit can, however, be determined, because in the years immediately before the 1962 devaluation, all residents were entitled to buy foreign currency or foreign securities from Tamam accounts (foreign currency deposits of local residents, which have already been mentioned and will be dealt with further below). For these rate-linked assets the purchaser had to pay the travel dollar rates. Local residents thus acquired essentially the same rights as Pazak depositors, and the disguised premium of the Pazak owner would therefore at most consist of the difference between the travel dollar rate and the formal rate

[53] Some personal restitutions were also received before 1954, at least partly in *Sperrmark*—German marks which were not freely convertible. From the fragmentary information available, it seems that the rate of exchange for restitutions received in this currency was not the formal one; in view of the small amounts involved, no estimates were attempted.

[54] To make this possible, the banks in turn held equivalent amounts of foreign-exchange linked deposits with the Bank of Israel.

(IL 1.8 per dollar).[55] There seems to be no feasible way of determining the premium more precisely.[56]

From 1957 part of the restitution receipts could be kept in foreign currency. At first 20 per cent could be so retained; in May 1959 the proportion was raised to 33 per cent, and again reduced to 25 per cent after the 1962 devaluation. The retained portion was placed in a local bank as a Tamam deposit, which could be used by the depositor to pay for specified imports of goods and services, on which he sometimes also received a customs rebate. Tamam deposits were used mainly to import cars and other consumer durables and for trips abroad. In December 1958 Tamam deposits became transferable and were sold on the travel dollar market at a price (the banks' purchase price) that ranged from IL 2.16 to IL 2.38 per dollar between 1959 and 1961.[57] The amount by which this rate exceeded the formal rate of IL 1.8 per dollar thus constitutes the lower limit of the premium granted to restitution recipients by this provision, as they always had the alternative of selling it on the travel dollar market; failure to do so meant that they considered the foreign currency they retained—either for personal use or as a deposit—to be worth more than they could obtain for it on the travel dollar market.

e. Institutional transfers[58]

The foreign receipts of public and other nonprofit institutions were transferred to Israel either in cash or in kind. As stated earlier, a probably quite substantial proportion of unrequited commodity imports was carried out by such institutions before the 1952 devaluation, while these imports accounted for an appreciable share of total institutional transfers. Transfers in kind decreased considerably in subsequent years. Fairly reliable estimates of their size are available for the period after 1954: it appears that they averaged $5 to $6 million annually, never exceeding $10 million in any

[55] Only a few foreign securities were acquired in this way until shortly before February 1962 when expectations of devaluation were strong. It can hardly be assumed, therefore, that the premium approached its upper limit during most of the period.

[56] Another way of acquiring a linked asset was to buy foreign currency on the black market but since it had other possible uses it is not comparable to Pazak rights. The black market exchange rate was throughout above the travel dollar rate.

[57] See pp. 23–24 above.

[58] This section is based largely on Moshe Ziskind, "The Effective Exchange Rate for Institutions, 1952–1961" (unpublished seminar paper, Department of Economics, The Hebrew University, 1963; Hebrew).

one year,[59] and came to only about 10 per cent of total institutional transfers. There are no data on the implied exchange rate of these transfers in kind, either for goods sold on the local market or for goods consumed by the institutions themselves.

For most of the period, the bulk of the institutions' foreign receipts were transferred in cash. During some of the period, it will be recalled, special formal rates applied to such transfers. Until October 1949, institutional receipts were converted at the IL 0.333 per dollar rate, and from then until the February 1952 devaluation, at the IL 0.357 per dollar rate. With the introduction of three formal rates in the subsequent devaluation, the lower rate of IL 0.357 per dollar was initially left in force, but soon afterwards, in April 1952, rate B, IL 0.715 per dollar, was applied. In April 1953 it was raised to IL 1.0 per dollar. Shortly afterwards, in July 1953 a special rate of IL 1.3 per dollar for institutional transfers was introduced, first by allowing an additional premium of 0.58 on top of rate B and eventually by explicitly setting an institutions rate. The rate was raised to IL 1.5 in October 1955 and remained at this level until April 1958, when the institutional-transfers rate was abolished and the uniform rate of IL 1.8 per dollar was applied.

In practice, a considerable part of institutional transfers was effected at other formal rates while the special institutions rate was in force. This was done primarily in the following ways: (a) A so-called 'building rate' was applied to capital transfers earmarked for construction programs [mainly the Hebrew University and Technion (the Israel Institute of Technology)]. At the beginning of 1954 this rate was set at IL 1.675 per dollar (by converting 75 per cent to receipts at the formal rate of IL 1.8 per dollar, and 25 per cent at the institutions rate of IL1.3). In October 1955 the 'building rate' was raised to IL 1.8 per dollar. (b) From the end of 1956, the IL 1.8 per dollar rate applied to transfers of the Jewish Agency derived from foreign loans for a term of over 2 years, which were quite substantial. This was done on the grounds that by the time they fell due, the institutions rate—at which the Jewish Agency would have to acquire the necessary foreign currency—would probably have gone up. (c) Under the German reparations agreement the government transferred to the Jewish Agency 18⅓ per cent of its reparations receipts at the IL 1.8 per dollar rate, and not at the institutions rate (since the agreement stipulated that the Jewish

[59] These figures do not represent the total imports of these institutions: they do not include imports financed by foreign currency acquired from the Treasury (to be dealt with below), nor commodity transfers (mainly to the Jewish Agency) from German reparations.

Agency's share should constitute a constant percentage of total reparations receipts in Israel pounds).

Consequently, the actual formal rate for institutional receipts was above the nominal formal rate. This may be seen from Table 2–10, which shows both rates as weighted averages for 1953–58. From 1959 on, the two are of course equal at IL 1.8 per dollar (this is so from April 1958, but the annual averages for 1958 are still affected by the first quarter).

TABLE 2–10. *The Average Institutions Exchange Rate: 1953–58*

(IL per dollar)

	Nominal formal rate[a]	*Actual formal rate*[b]
1953	1.06	..[c]
1954	1.30	1.46
1955	1.34	1.52
1956	1.50	1.68
1957	1.50	1.73
1958	1.73	1.79

[a] Annual average of rates shown in Table 2–1, weighted by the value of transactions in each period.

[b] Computed from Ministry of Finance data as follows: from 1954, the authorities recorded the 'tax' levied from institutions via the special exchange rate as the difference between the actual IL receipts of the institution and the value of the transfers at IL 1.80 per dollar. The figures are accordingly computed as

$$1.80 - \frac{\text{total (net) tax (IL)}}{\text{total transfers (\$)}}.$$

This computation is not strictly accurate, mainly because of timing problems—the tax recorded for a given year does not necessarily apply to transactions during the year.

[c] The method of recording described in note b was not used in 1953 so that the actual rate could not be calculated; it may, however, be assumed that it did not differ much from the nominal formal rate.

SOURCE: Moshe Ziskind, "The Effective Exchange Rate for Institutions, 1952–1961" (unpublished seminar paper, Department of Economics, The Hebrew University, 1963; Hebrew).

The actual formal rate shown in Table 2–10 is not quite the same as the effective rate for institutional cash transfers because it was sometimes raised by special provisions. In 1960, for instance, a 20 per cent premium (IL 0.36 per dollar) was allowed on foreign participation in Hebrew University and Hadassah research projects. These funds were however only about 1 per cent of total institutional transfers. A more significant departure from the formal rate resulted from various *ad hoc* decisions by which quite a number of institutions enjoyed a higher rate; but as these

were mainly smaller institutions only a minor share of total transfers was involved. Thus institutions might be permitted to sell their currency on the blocked accounts market or against a registered account rather than to the treasury. The effective rate for these special transactions cannot be assessed; but the average premium on institutional transfers involved in these arrangements was presumably small compared with the main component, which was the formal rate.

Various import privileges were granted to institutions while the special rate was in force. Institutions could acquire foreign currency for their imports from the authorities at the rate at which it had been sold to them. In addition, institutional imports were until July 1957 exempt from customs and other levies. It may be argued that the exemption was given to the institutions as such, and not in consideration of their foreign currency transfers, but it is difficult to assume that there was in fact no connection with the considerable amounts of foreign currency transferred by institutions at a particularly low rate. That the exemption was abolished when the general formal rate was applied to institutional transfers also suggests that there was a connection. Certainly connected with their foreign currency transfers was the provision by which institutions were allowed to pay local producers in foreign currency for part of their domestic purchases from 1954 until April 1957 (when their imports were restricted to 25 per cent of their cash transfers). The producer's foreign currency receipts were treated like export proceeds and credited to his Pamaz account. Clearly the producer was therefore willing to quote the institution a lower price than he would charge on the domestic market. The institution accordingly received an effective rate above the formal one. The rate of exchange for the approximately $3 million spent in this way each year was estimated at IL 2.15 per dollar on the average.

Generally the significance of the effective rate for institutional transfers lay not so much in the effect it had on the local currency receipts of the institutions but in its effect on their behavior.[60] Any reduction of their local receipts by fixing a low exchange rate generally entailed an increased government allocation or reduced participation in government projects, and vice versa. On the other hand, the level of their exchange rate affected the institutions' propensity to consume imports in preference to domestic products. The rate of exchange may also have affected their fund-raising efforts abroad. In these respects the institutional-transfer rate was evidently similar to the ordinary import and export rates.

[60] That is, the substitution effect of the exchange rate exceeded the income effect.

CHAPTER 3

THE DEFINITION AND SIGNIFICANCE OF THE EFFECTIVE EXCHANGE RATE

The definition of the effective rate given in Chapter 1 was intentionally broad and loosely framed because no single, all-purpose definition is possible. How the effective rate is to be defined depends on the purpose to which the concept is applied. We shall therefore outline the main uses for which estimates of effective rates are required, present the corresponding definitions, and set out the methods by which the rates are calculated.

We first distinguish between the exchange rate for the *single* commodity and the *aggregate*, or average, rate for the whole economy. The first section of this chapter will thus deal with the rate for the single commodity, and the second with aggregate rates. In the third and last section of the chapter we shall also deal with the exchange rate for 'soft' currencies.

1. The Effective Rate for the Single Commodity

a. Exports

The relevant rate for the exporter, which will be termed the *exporter's rate*, is that on which he bases his business decisions. In considering whether to export a commodity or to sell it locally, or whether to produce a different commodity altogether, the producer must compare the returns from these alternatives. Clearly, therefore, the exporter's rate must include all elements that contribute to his income or reduce his expenditure. Accordingly, we include in the effective rate of most commodities the formal export rate as well as the premium, both of them known magnitudes. In principle, we should also have included the components derived from compensatory domestic market provisions and from export input premiums; but data on these magnitudes are mostly not available.

It must be emphasized that an effective rate related to total export proceeds is a meaningless concept; the appropriate rate must refer to the value added only,[1] since this is the rate which determines the profitability

[1] Except where the rate for the import component of an export is the same as for the total proceeds, and where consequently the value added rate is also the same. The terms value added, import component, and the like were briefly defined in

of the transaction.[2] The rates presented in this study accordingly relate to the value added, and not the total value.[3] For the period 1956–61 the size of the premium provides the relevant magnitude directly.[4] Where the exporter was entitled to a value added premium but preferred the Pamaz system instead, the lower limit of the effective value-added rate is clearly the rate obtained under the premium system. In the absence of comprehensive and reliable data on Pamaz exchange rates it was assumed that for any transaction made under the Pamaz provisions which was eligible for premium, the rate of exchange was equivalent to that applying under the premium system.[5] This obviously implies an underestimate of certain

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the preceding chapter; and since they are commonly used in the Israeli economic literature are not elaborated further here. Precise definitions are provided in David Pines, *Direct Export Premiums in Israel: 1952–1958* (Jerusalem: Falk Project, 1963; Hebrew), pp. 23–24.

[2] Again, this is a commonplace of Israeli economics and will therefore not be discussed further despite its great importance. The topic is discussed in David Pines, *op. cit.*, pp. 25–26; U. Bahral, *The Real Rate of the Dollar in the Economy of Israel* (Jerusalem: Ministry of Commerce and Industry, 1956; Hebrew), Chapter I, and H. Barkai, "Consumption of Edible Oils in Israel and Supply of Local Materials for Their Production," *Studies in Economics,* No. 1 (Jerusalem: Eliezer Kaplan School of Economics and Social Sciences, 1956; Hebrew), Appendix C, pp. 83–94.

[3] It may be shown that in his calculations the producer uses a shadow exchange rate for the import component which is equal to the rate for the value added rather than to the formal rate for the import component. With this in mind, it may be said that the rate for the total value is equal to the rate for the value added. This is proved in Pines, *op. cit.*, pp. 78–80.

[4] In these years too, there was the practical problem that the value-added computation made for purposes of paying premiums was not calculated for each transaction, as it should have been under the premium provisions, but for a whole series of transactions of a given exporter (or a whole industry). Once the proportion had been calculated, the producer could view each transaction as if it afforded him some rate of premium, lower than the rate supposed to apply to the value added, for total export proceeds; and this is also the relevant shadow rate of the value-added premium (*ibid.*, pp. 94–98).

The lower value added rate means less incentive to export value added. In the general case, we cannot tell whether the exporter would tend to cut the value added by reducing the total value of his exports or by reducing the share of value added. In this instance, however, it can be shown that there was an incentive to resort to the second alternative, since there is a 'vertical' rate difference. For a discussion of this concept, see *ibid.*, pp. 27–28.

[5] A similar assumption was made by Joseph Baruh, "Import Taxes and Export Subsidies in Israel, 1955–61," *Bank of Israel Bulletin,* No. 18 (March 1963), pp. 48–70.

effective export rates but on the average for all exports, the downward bias is not very significant, as such transactions constituted only a minor share of total exports even when the Pamaz system was at its peak. For particular commodity groups making extensive use of the Pamaz system, however, the bias may be serious.[6] Presumably for a considerable proportion of these products the difference between the actual effective rate and the rate shown here is so great as to render the present data useless for an analysis of the economic decisions involved. Some indication of the usefulness of the data may be obtained from estimates of the extent to which the Pamaz provisions were used. In an industry where extensive use was made of them the average effective exchange rate was probably considerably higher than the one shown here.

The problem is altogether different for the period before 1956. Premiums were not a substantial effective rate component in the vast majority of commodities. Since the Pamaz system, which came into operation in 1953, is not directly reflected in our findings, the effective rate as measured here is almost identical with the formal rate. Had there been a uniform formal rate for exports and imports, it would have constituted the effective value-added rate, but in 1952–54 this was not so. For estimates of the value-added rate, the rate for the import component must be known: if the latter is lower than the rate for total value, then the value-added rate is higher than the total-value rate, and vice versa. To determine the rate for the import component, it would be necessary to know not only the rate for every import commodity—information provided in this study—but also the import components of every export commodity. This requires an input-output table, which is available only for 1958 and even then not in sufficient detail. In the absence of information, it was thus assumed that the import component rate in 1952–54 was equal to the rate for total value of exports, so that by assumption the value-added rate is also equal to it. Fortunately, however, sufficient data were available on the import components of citrus and diamonds, which accounted for the bulk of exports in these years, to enable us to do without this arbitrary assumption.

In the later years, export proceeds also included the branch fund payments; this raises the conceptual problem of whether or not these payments constitute ordinary premiums which should be included in the effective rate. Although they began to operate on a large scale only towards the end of our period, this is a question that should be discussed.

The branch fund may be considered as if it were an ordinary monopolist

[6] A few examples are shown in the *Appendixes* (Hebrew).

(or oligopolist) confronted with two markets—in our case the domestic and the foreign—whose demand elasticities differ, being undoubtedly higher in the foreign than in the domestic market. The monopolist would find it worth while to sell his output at different prices in the two markets, charging less in the market with the higher demand elasticity. A monopolist who is a single producer would receive no compensation for what he sells on the market in which the lower price obtains. If, however, the monopolist is an organized cartel and sales are carried out not through a marketing board but by each producer, the proportion of output sold abroad at the lower price might well vary among producers. The cartel will then compensate a firm whose proportion of sales in the low-price market is high, and fine a firm in the opposite situation. Unlike ordinary premiums such compensation cannot be regarded as an effective exchange rate component, as the decision to export a given quantity is made by the cartel as a whole and is not affected by the amount of the compensation paid to this or the other producer; the cartel's decision about the share of output to be sold abroad or on the domestic market is determined rather by the cartel's supply conditions and by the demand of the different markets. The exports of the poultry and plywood industries were evidently determined in this fashion.

As against this, it might be argued that the branch fund merely acts as the intermediary through which the government, via the Ministry of Commerce and Industry, channels special premiums to the industry, and that its payments may therefore be treated like ordinary premiums and constitute an effective exchange rate component.

In order to decide which is the correct approach, or whether a combination of both is in order, it is necessary to examine the mode of operation of the branch funds. It seems that three criteria may be used for this purpose: (a) Whether the cartel in question (the branch fund) was initiated by the producers or imposed by the government and to what extent its activities are determined by government officials. If the cartel was government-imposed, it is probable that the taxes collected on domestic sales are not a fine designed to finance compensation to other producers but an ordinary government levy, and that the branch fund payments constitute an ordinary premium which does not affect the cartel's decision regarding the allocation of its output to different markets. (b) Whether the cartel finances itself or is partly or wholly financed by the government. In the second case, it seems more likely that the branch fund is merely an intermediary distributing government premiums. (c) If the government does participate in financing the fund, whether the participation varies

with the volume of exports or not. If not, the premium may be regarded as a subsidy to the industry rather than to its exports, since it affects its exports in the same way and to the same extent as local sales. If the subsidy is of a given fixed size, then in the short run it has no effect at all either on the industry's exports or on its ouput; but if it varies with output, it constitutes an incentive for increased local as well as foreign sales.

In practice it was difficult to examine the operations of the different funds according to these criteria. From partial information, it appears that the funds varied considerably from one branch to the other, but it was not possible to classify them precisely. It was therefore arbitrarily assumed that they were all similar and should be regarded as ordinary cartels and not as a source for premium payments.[7] Payments made to exporters from the branch funds were therefore not regarded as effective rate components.[8]

The export rates for groups of commodities are given in the tables at the end of this book.[9] The aggregate exporter's rate, which is a weighted average—weighted by the *value added* and not the total value of each branch—is presented at the beginning of the next chapter.

b. Imports

The effective exchange rate relevant to the considerations of the consumer —this term here being used broadly to indicate the final user as distinct from importer—will be referred to as the *consumer's rate.* The consumer's decision whether or not to buy an imported product is affected by the full price he has to pay for the import. This consists of the price of the imported commodity plus its local marketing expenses. The consumer's rate must therefore include the following components: the formal rate, customs (or subsidies), levies, equalization fund and trade account balances, purchase tax and quota profits. As stated in the introductory chapter, the import quota profits were not measured because the calculations would have been very complicated and would at best have yielded

[7] There are of course instances where the mere existence of a cartel generates (by market discrimination) exports which would otherwise have been smaller or nonexistent. The very fact that the government agreed to the existence of a cartel and condoned domestic price fixing or imposed a cartel on the producers in a given industry may be said to have stimulated exports in the industries concerned. Nevertheless such measures cannot be regarded as an effective rate component.

[8] Had they been treated as an effective rate component, the branch fund payments would have been the second most important component after the formal rate in 1962–65, as there were then very few other premium payments or provisions influencing the effective rate.

[9] The rates for single commodities are presented in the volume of *Tables* (Hebrew).

a rough approximation. Accordingly, the estimates of the consumer's rate omit the quota profits element. The consumer's rate, by commodity group, is shown for 1955–62 in Tables A–3 and A–4.

The rate appropriate to the importer's considerations is referred to as the *importer's rate,* and differs from the consumer's rate in that it need include neither purchase tax nor quota profits. By definition, purchase tax applies to both domestic products and similar imported goods and has the same effect on the price of imported commodities as on the price of their domestic substitutes. Although a change in purchase tax therefore affects the combined share of imported and similar domestic goods in the consumer's total expenditure, it does not affect the choice between the two and need therefore not be included in the importer's rate.

That quota profits need not be included is obvious. It should, however, be borne in mind that as long as they existed, a rise in the effective importer's rate did not reduce the importer's demand for imports, but merely for any imports in excess of the quota. Under these circumstances the effect of the importer's rate on the volume of imports cannot be analyzed. On the other hand, changes in the importer's rate may be an indication of the transition from quota to price restriction of imports. Since quota profits were not included in the consumer's rate either, the importer's rate, as meausured here, is less than the consumer's rate only by the amount of purchase tax, which was generally negligible compared with the level of the effective rate (Table 2–2). The importer's rate by commodity group is shown in Table A–2.[10]

Another pertinent rate is the one here referred to as the *protection rate.* This is designed to measure the degree of protection afforded to local producers by the existing exchange rates. To this end it is necessary to know the rate of exchange of the given commodity and of its import component. Conceptually the rate on the final good required for this estimate lies somewhere between the consumer's and the importer's rates. Like the consumer's rate it should include quota profits which, like any other component of the effective rate, imply a higher import price affording the local product extra protection against its foreign competitors. Like the importer's rate, the final-goods rate should not include purchase tax, since it applies to local products and imports equally and therefore affords no protection. Since quota profits do not appear in any of the rates measured here, the rate for the final product is in practice identical with

[10] The rates for single commodities are presented in the separate volume *Tables* (Hebrew).

the importer's rate; but the estimate thus obtained constitutes merely the lower limit of the true protection rate—and the difference between the estimate and the actual rate is undoubtedly considerable for quite a range of commodities.

If the final-product rate were the same as the rate for the import component, it would also constitute the protection rate on the 'value saved'.[11] In every other case the final-product and the value-saved rates differ. Just as in exports the economic decisions are not based on the rate for total export proceeds but on the value added rate, so also in imports—the meaningful protection rate is the rate for the value saved by domestic production. This rate is determined by the importer's rate for the final good, the rate for the import component of the domestic product (i.e., the consumer's rate of the import component[12]), and the proportion of the import component.[13]

[11] This term is used in the Israeli literature for value added in import substitutes.

[12] For this purpose it makes no difference whether the producer pays purchase tax on an imported commodity, which also applies to a local raw material, or whether he pays customs duty, since in both cases the extent of protection afforded to his product is the same. Again, quota profits should have been included in the import-component rate, for even if the producer buys his imported inputs directly and not through an importer, the quota profits accrue to him as an importer and do not constitute protection on his output.

[13] Let R^* = protection rate
R_i = final-product import rate
R_m = import-component rate
R_f = formal rate
P = proportion of import component (i.e., the ratio of the value of the import component to the value of the final product)

There are several ways of calculating the ratio P, of which we shall deal with three:

(1) $P = P'$, where both import component and final product are valued in dollars (or in IL, using the same exchange rate for both). This is the simplest case, yielding the protection rate

$$R^* = \frac{R_i - R_m P'}{1 - P'}.$$

(2) $P = P''$, where the import component is valued at rate R_m while the final product is valued at rate R_i. In this case the protection rate is

$$R^* = \frac{1 - P''}{\frac{1}{R_i} - \frac{P''}{R_m}}$$

In calculating the protection rate of the value saved in domestic production, a similar problem is encountered as in computing the value-added rate in exports. Data are required for each commodity on the rate of exchange of the competing imported commodity and on the proportion and exchange rate of imported inputs to the domestic production of the commodity. Although the rates are known, a detailed input-output table is required to estimate imported inputs to domestic production, and this was available only for 1958 and only for commodity groups.[14] The table was in fact used for estimating the protection rates for groups of commodities in 1956–60 on the assumption that the 1958 coefficients applied also in the two years before and the two years after 1958. Clearly the results are only an approximation and their reliability decreases with the distance from 1958.

The protection rates estimated in this way are presented in Table A–5. It is safe to assume that they are *downward* biased owing to the aggregation of commodities into groups. Within each group the rates for raw materials tend to be lower than the finished product rates and hence lower than the average for the group. The imported-input rate used in this calculation is, however, not the rate for the specific raw material used but the average group rate which, as stated, is above the rate for the given raw material; the computed protection rates are thus lower than the true ones.

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(3) $P = P'''$, where the import component is valued at rate R_f and the final product at rate R_i. The protection rate is then

$$R^* = \frac{R_i\left(1 - R_m \frac{P'''}{R_f}\right)}{1 - R_i \frac{P'''}{R_f}}$$

The nature of the data available dictated the use of formula (3).

[14] This table was drawn up as part of Michael Bruno's study, *Interdependence, Resource Use and Structural Change in Israel* (Research Department: Special Studies No. 2; Jerusalem: Bank of Israel, 1962). In this book only one figure is shown as the total import coefficient for each group, while for the present study the import coefficients of each group entering the production of every other group were required. Thus, in an 80-group classification, data on 80 total import coefficients in the production of a given group were required to calculate the protection rate for the group. A detailed table of this kind, based on the 1958 input-output table, was drawn up by the Bank of Israel's Research Department for the purposes of the present study and appears in the *Appendixes* (Hebrew) to the present study. I am indebted to M. Bruno and E. Hillman for preparing this table and placing it at my disposal.

c. The rate for the single commodity as an average

The single commodity rate necessarily constitutes an average, as it does not —and need not—refer to each transaction separately but is the average of numerous transactions relating to the same commodity. Three problems arise as a result of aggregation.

Heterogeneous commodities: The rate for a single commodity item may in fact be an average for several closely similar commodities. This does not matter much for the detailed rates, since at this level of disaggregation the several hundred export and more than a thousand import items can be assumed to be quite homogeneous. Moreover, the commodity classification used matched that used for administrative purposes. Imports, for instance, were classified according to the customs regulations, in which standard rates were fixed for all the sub-commodities included in a single item, so that even if the item is not strictly homogeneous, the rates for each sub-commodity are identical with the rate for the commodity as a whole.

The situation is different with rates relating to groups of commodities. These consist of commodities whose rates of exchange may differ considerably. The group rate has limited bearing on the economic decisions of consumers, producers, and importers, who base their considerations on the individual items. There was, however, no alternative to presenting group rates, because the disaggregated data are too bulky to present and assimilate. In any case, it was sometimes impossible to break down group data into finer detail because the input-output tables do not (and cannot) go into single commodity detail. In view of their considerable substitutability, the different commodities in a group can probably be treated as one for many purposes, although the possibility of errors and biases, of which the one discussed in connection with the protection rate was an example, must be kept in mind.

We shall mention briefly one such bias (to be discussed more fully in connection with the aggregate rates). The group rate is the weighted average of the often different rates of the single commodities of which the group is composed, the weights in the group average being determined by the foreign-currency value of the transactions relating to them: total imports, value saved in production, and value added in exports. Consequently the weight of commodities that have a comparatively high rate of exchange in a given group of imports is low, since it may be expected that the volume imported is small, while commodities whose rate is low

have a high weight. In exports the effect will be the other way round, for it may be expected that in each group a large quantity of commodities that have a relatively high exchange rate is exported.

Period averages: Even for homogeneous commodities, the single commodity rate presented here may be an average which reflects transactions carried out over a period during which the rate fluctuated.

The period covered is generally one calendar year. An aggregation of this kind is essential, for at a greater level of detail (e.g. monthly), the rates cannot be satisfactorily presented. In any event, within-the-year fluctuations were not large, and even if they had been, it is doubtful whether the rates for shorter periods were likely to have any major effect on the individual's economic considerations. In the case of extreme monthly fluctuations in a given rate, for example, the producer would hardly base his decisions on a rate which he knew from experience was likely to persist only for a very short time. On the other hand, when there is a distinct trend during the year, the annual average of the rate will not be very meaningful. This applies to 1952–54, when the rates showed a strong upward trend, and quarterly consumer's rates are therefore given for these years, on the assumption that the consumer's decisions may have been affected by them.

Multiple rates for a single commodity: Quite often, a homogeneous commodity had several rates during a given period, according to the firm that carried out the exports or the imports or according to some other criterion. In such instances, the rate for the commodity is an average of several rates.

For some purposes we might be interested not in the average rate but in the separate rates. For instance, if there are considerable exchange-rate differences between producers in an industry, the average rate may be meaningless, and any analysis must then deal separately with the exports of each producer, using his specific exchange rate.

We might also sometimes be interested in the marginal rather than the average rate. Assume, for instance, that a given commodity was imported at different rates. The fact that the consumer bought the imports carried out at higher rates means—when price variations have no substantial income effect—that even if all of the commodity had been imported at the higher rate the same quantity would have been bought.[15] In analyzing the

[15] More accurately, this applies only if there is a free domestic market for the commodity. In that case the quota profits of importers who did not pay the higher rate for their imports amount to at least the difference between the higher rate

consumer's economic considerations, we must therefore use the highest rather than the average rate.[16] In practice we cannot as a rule give any but the average rate in this study.

Nevertheless, one important distinction has been made in the import rate: the customs regulations distinguish between ordinary imports, import-for-exports (i.e. the direct import component), and imports with 'conditional customs exemption'. Import-for-exports was made at the formal rate. Customs and levies that would have been payable had the commodities been imported for local consumption either did not apply or if paid were refunded to the exporter under the drawback system at the time he carried out his exports. The same formal rate was, on the other hand, also applied to the export proceeds of the import component. As long as this was so, the import-for-exports rate did not affect the producer-exporter's decision.[17] Neither was this rate relevant to the local consumer's decision whether to use the comodity for final consumption or domestic production and sale, since it had nothing to do with him. Consequently, if the import-for-exports rate, which is lower than the ordinary import rate, is included in the average rate of a commodity the result will be meaningless as regards import-for-exports and also lower than the relevant rate for imports for the domestic market. To obtain the rate that affects the consumer's decisions, those

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and the rate they paid. When the domestic market is not free and the commodity is rationed, the quantity imported at a uniform rate equal to the higher one might be smaller than actual imports.

[16] Similarly the lowest export rate of a given commodity may sometimes be relevant to the exporter's decisions. A good example is furnished by the interchangeable Pamaz and premium systems. A producer who has the choice between the two alternatives will prefer the Pamaz system for exports up to the amount that provides him with an export rate no lower than he would obtain under the premium system (where the rate is constant); anything above that amount will be sold under the premium system. If the exporter chose the premium system for *any* of his exports (and Pamaz for the remainder), he would have exported the same amount had the Pamaz alternative not been offered. The premium rate, which is the marginal rate, is thus the relevant one for his decisions (see Bahral, *op. cit.*, p. 103). In fact, the export rates shown here do not include the Pamaz profits: they were based on the assumption that when the Pamaz system was used, the rate was the same as under the premium system. From the above discussion it appears that this assumption gives satisfactory results when an exporter used both methods simultaneously for the same export commodity.

In this case the marginal exporter's rate is the lowest one, but there are other instances where the marginal rate is above the average. An obvious example is the marginal premium provisions surveyed in the preceding chapter.

[17] In other words, the import-for-exports rate and the rate of the import component was equal to the value added rate. See the discussion of export rates, pp. 50–52.

imports that serve as export inputs must be eliminated from the calculation of the average. A similar conclusion was arrived at in our earlier discussion of the export rate, where the import component rates were eliminated and only the value-added rate was left.

The conditional exemption is essentially different from the exemption granted on import-for-exports. Until the beginning of 1958 it was granted *ad hoc*, mainly to government departments and various institutions, either on all their imports or on specified commodities. In the tables of the present volume two consumer's rates are shown, one with and one without the conditional exemption. While the first rate is the average for all the imports of the commodity that went to the domestic market, the other, which is obviously higher, relates to imports bought by 'ordinary' consumers. Presumably the latter rate is likely to be more useful for some analytical purposes than the one including the conditional exemption.

2. Aggregate Exchange Rates

a. The exchange rates in the national accounts

It is by now commonly recognized in Israel that the official and formal rates are meaningless as far as the national accounts are concerned.[18] It is hardly necessary to dwell on the importance of the exchange rate for the national accounts of a country like Israel with its heavy reliance on foreign trade. We need only mention that altering the exchange rate used in the national accounts affects the estimates of magnitudes such as the product, the share of exports and imports, the share of government, and savings.

The present discussion is not concerned with all the minor or major changes involved in departing from the use of the formal rate. Our object is to identify the rates appropriate to a national accounts system in the widest sense. For this purpose we distinguish between the national product account at market prices and the national product account at factor prices.

Product at market prices: The estimate of product at market prices is designed to show total product and its components as evaluated by the consumer. This estimate may, on certain assumptions, be used for comparing the consumer's standard of living at different periods or in several economies at the same period.

It follows directly from this definition of the principle of measurement

[18] See Don Patinkin, *The Israel Economy: The First Decade* (Jerusalem: Falk Project, 1960) pp. 92–95. See also A. L. Gaathon, "A Note on the Treatment of Multiple Exchange Rates in the National Accounts," *Review of Economics and Statistics*, XLII (August 1960) 326–29.

that imports must be recorded at the consumer's valuation. This means that the import rate to use is the effective consumer's rate which, as will be recalled, comprises the formal rate, customs, levies (or subsidies), equalization funds, and the trade account, as well as purchase tax on imported commodities.[19]

On the same principle, the exporter's rate must be used to evaluate exports in the estimate of product at market prices. In this connection the differential effect of subsidies on local production and on exports should be mentioned. Subsidies on local production generally reduce the value of commodities since they tend to lower their market price. Export subsidies (premiums) have the opposite effect. The producer-exporter who has the choice between selling his commodity on the domestic market or abroad will (at the margin) try to equalize the proceeds from his sales in the two markets. Hence the unit price on the domestic market (which is the value attributed to the commodity by the local consumer) is equivalent to the actual price obtained from the sale of the commodity abroad[20] and this

[19] This procedure differs from that recommended by the U.N. *System of National Accounts,* where imports are presented at the official or formal rate. In practice the effective consumer's rate differs from the formal rate in all countries, including those conventionally considered to conduct free trade at a uniform exchange rate: in most economies, and perhaps in all, there are customs on imports or purchase tax on commodities of which a part is imported. The problem of selecting the appropriate rate for the national accounts therefore exists in all countries. The use of the effective consumer's rate for recording imports in the British national accounts became the subject of much controversy. See J. L. Nicholson, "National Income at Factor Cost or Market Prices?" *Economic Journal,* LXV (June 1955), 216–24; H. Burton, "Expenditure Taxes, Imports and Gross Domestic Product at Market Prices," *Economic Journal,* LXVII (December 1957), 644–54; J. L. Nicholson, "Import Duties and the Gross Dometic Product at Market Prices," *Economic Journal,* LXVII (June 1958), 393–96; H. Burton, "Import Duties and the Gross Domestic Product at Market Prices: A Rejoinder," *Economic Journal,* LXVIII (September 1958), 585–88; R. L. Simmons, "A Note on the Treatment of Import Duties in the Measurement of Gross Domestic Product," *Economic Journal,* LXIX (June 1959), 384–87; J. L. Nicholson, "Import Duties and the Gross Domestic Product at Market Prices: A Reply," *ibid.,* 388–90.

[20] This statement ignores the possibility of price discrimination between the domestic and the foreign market. This in itself interferes with the estimate, regardless of whether an export subsidy does or does not exist. If the price paid by the local consumer of the commodity is lower than the price paid by the foreign purchaser, then according to the market-price principle the export should be recorded, not at the price obtained by multiplying the foreign currency price by the effective exporter's rate, but at the price paid by the local consumer, since this is the price which expresses the consumer's evaluation of the commodities which the economy has transferred abroad.

price in its turn is equal to the price in foreign currency (dollars), multiplied by the effective exporter's rate. Since this rate includes the subsidies to the exporter (premiums), these subsidies raise the value of exports in the product account.[21] It should be emphasized that this discussion applies to subsidies granted to *exports* and not to the *commodity* as such. If a commodity is subsidized regardless of whether it is sold locally or exported, the subsidy is not included in the effective exporter's rate; its effect is to reduce the price to the local consumer and the value of exports in market-price accounting.

Accordingly both imports and exports must be estimated at the effective rates, which include taxes in the case of imports and subsidies in the case of exports. These are the consumer's rate for imports, and the exporter's rate for exports.[22]

Since the national product account is global, it is clear that the rates of exchange required for it are not the single-commodity rates but the aggregate rates for total imports and total exports. The transition from single rates to overall averages presents no special difficulty: the import rate is a weighted average of the single rates, the weight of each imported commodity being its foreign currency value at the time of measurement. The same rate could of course also be obtained by measuring all local currency payments for the economy's imports and dividing them by the foreign currency value of the imports. This also goes for exports.

The problem of average and marginal prices mentioned in connection with the single-commodity rate should be briefly reviewed at this point. In principle the market price should express the consumer's evaluation at the margin (although in the national accounts system this price is attributed to all units bought by the consumer during the accounting period). Hence, when there is more than one exchange rate for the some commodity, the marginal rather than the average rate ought to be used. In practice, however, the average rate was used, for two reasons. One, already mentioned, is the lack of information about different rates for single commodties. The second and more important reason is conceptual. A single commodity may have a variable price not only when it enters foreign trade—

[21] Conversely, taxes on exports would reduce the value of exports at market prices.

[22] Gaathon, *op. cit.*, reaches similar conclusions, although his reasons for using the effective exporter's rate differ from ours. It seems that the special role of export subsidies is not discussed in the literature except in Gaathon's article. This might be due to their small quantitative importance in the principal western countries. The controversy about the British national accounts mentioned earlier was confined to imports.

where the exchange rate is involved—but also when it is a local good. Nevertheless, the national accounts are conventionally based on average prices (in practice the output of a commodity is measured by total expenditures on it, and not by the highest unit price multiplied by the number of units bought during the given period). For the sake of consistency it would be necessary to use the average exchange rate even if the required information on marginal rates were available. For imports this means using the consumer's exchange rate including the conditional exemption, and not the rate which is net of the exemption and which could be regarded as the marginal rate.

This line of reasoning does not apply to import-for-exports, which requires special discussion. The problem relates primarily to the definition of imports and exports rather than to their exchange rates.

As argued above, the rates including the import content of exports are not relevant to the exporter's decisions. Are they relevant for the national accounts? If the effective rates of import-for-export are consistently and correctly measured on both the import and export sides, it makes no difference to the product, import surplus, and national savings estimates whether or not these rates are included in the aggregate rate (and whether or not the import-for-exports itself is included in imports and exports)—these magnitudes would be the same either way.

On the other hand, such indicators as the ratio of exports or imports to product would differ considerably according as import-for-exports was included or excluded. Clearly, these ratios will be biggger if import-for-exports is included on both sides of the account. This procedure, however, is not justified. The national product represents the output of final goods and services. In so far as imports are sold to final users, comparing them with domestic production of final goods and services is to some extent meaningful. This also holds for imports used as raw materials in local production for the domestic market, since final consumer expenditure on these commodities comprises the purchase of imports and of the value added in the economy. On the other hand, if the import served as an input for export production, it is irrelevant to the domestic final user, and its inclusion in total imports renders the comparison between the value of imports and national product meaningless. Imports defined in this way might possibly be compared with the total transactions connected with national product, but the significance of this comparison would be very limited even if the required data were available.

The same applies to exports. Since the national product is the value added of the economy, the comparison should be made with the value

added of exports: comparing total exports with the national product is of doubtful validity.

Accordingly the national accounts should show imports net of the import component of exports and on the export side—only the value added. For imports the effective rate is thus the one that does not include the import-for-export rate[23] and for exports—the average of the exporter's effective rates, which were from the start defined in terms of value added rather than total exports.

As stated, if one is interested only in the product or import surplus estimates, it does not matter whether import-for-exports is excluded or included on both sides. The rate for import-for-exports can then be any arbitrary magnitude, since the net result remains the same. If, however, one wants to estimate the share of total imports or exports in national product, the choice of the appropriate effective rate will pose an insoluble problem as it is hardly possible to define it meaningfully.[24]

An objection sometimes raised to the use of effective exchange rates in the national accounts should be dealt with briefly. The argument is that the formal rate should be used because a country whose current account is balanced in the conventional sense—that is, whose exports equal its imports when valued in foreign currency—will appear as having an unbalanced trade account when imports and exports are recorded at different rates.[25] Such an imbalance is, however, implicit in the concept of national

[23] Similarly in determining the average aggregate import rate the weight of an import commodity will consist of its total imports *less* import-for-export.

[24] Take the drawback system as an example. Assume that the effective consumer's rate consists of the formal import rate of IL 1.80 per dollar together with customs of IL 0.70 per dollar, so that it comes to IL 2.50 per dollar. The exporter, as distinct from the consumer, receives a drawback which implies exemption from or refund of customs duties on imported inputs. It might well be argued that the rate on imports for exports is either IL 2.50 per dollar—the amount the exporter pays on buying the imports and receives on selling them as part of his exports—or else that it is only IL 1.80, as though the customs have been neither paid nor refunded. If we chose the first alternative the estimate of both imports and exports will obviously be higher.

If one insists on estimating effective rates for total imports and total exports, it seems least arbitrary to assume that the import-for-export rate is equal to the value-added rate of exports, as mentioned in the discussion of the exporter's rate. See note 17, p. 60 above as well as Pines, *op. cit.*, pp. 78–80.

[25] See Burton, *op. cit.* (1958), p. 588. The argument there is substantially the same as the one dealt with here, although it is formulated differently. The controversy in which Burton took part dealt only with import taxes, so that a higher effective rate was assumed for imports than for exports. Burton argued *inter alia* that the use of this exchange rate would inflate the value of imports.

accounts at market prices, where the value of transactions is recorded as perceived by the consumer. Assume, for instance, that the foreign trade of an economy when recorded in foreign currency is balanced, but that the effective import rate is higher than the export rate. This means that at the margin, a dollar of imports is worth more to the consumer than a dollar of exports; that is, the consumer attaches a higher value to a dollar's worth of import commodities than to a dollar's worth of export commodities. Since for national accounting purposes the marginal price serves as the average price, it can only be inferred that the total value of imports is in fact higher for the consumer than the total value of exports. In the consumer's eyes there is therefore an import surplus, even though trade is balanced in foreign-currency terms.

It is clear that the estimation of imports and exports in this way is not necessarily suitable for every purpose. In particular it is not designed for analyzing such problems as whether an economy's transactions with other countries are balanced or not. It is obvious that for these purposes the balance of payments must be drawn up in foreign currency terms (or in local currency after multiplying the foreign currency data by some uniform rate of exchange). The export and import data of the balance of payments estimate need not therefore necessarily be the same as those in the national accounts. This is different from the usual convention, by which import and export data as recorded in the balance of payments are identical with those appearing in the 'rest of the world' account of the national accounts system.[26]

Using effective instead of formal rates obviates the effect of variations in the composition of the exchange rate on the national accounts. This is a major advantage when there are substantial variations in the different rate components. For instance, if a devaluation is carried out which replaces a low formal rate with export premiums by a higher formal rate without premiums, the accounts will not be affected as long as the overall effective rate has not changed. Similarly the transition from a low formal import rate with high customs to a higher rate with lower customs will have no effect.

Product at factor prices: Ordinarily the definition of factor prices is very simple. These are product prices to the *producer*; they exclude indirect taxes but include subsidies received by the producer. Factor prices there-

[26] The idea of distinguishing between the rest-of-the-world account and the balance of payments and drawing the two up according to different rules was suggested by Dr A. L. Gaathon.

fore represent the production costs (including profits) of the commodity. The production costs in their turn are payments to the factors of production involved in the commodity. It may be assumed that in a perfect market these factor payments are the same as would be paid by any other entrepreneur.

In the conventional national accounts using a uniform formal exchange rate, product at factor prices equals product at market prices *less* indirect taxes *plus* subsidies. When effective exchange rates are used however, this identity no longer holds.[27]

What, then, are the factor prices of imports and exports? One possibility would be to say that the factor price of imports is the price paid for them by whoever bought them, and that the factor price of exports is whatever the exporter spent on their production, including profits (which is equal to the foreign currency price of the commodity multiplied by the exporter's effective rate of exchange). Accordingly, the market price for imports equals their factor cost, and the same goes for exports. National product at factor cost is therefore equal to national product at market prices *less* taxes on local production *plus* subsidies to local production.[28]

There is another alternative which seems more in keeping with the factor-cost concept. The 'factor of production' bought by the producer-importer is foreign exchange. In a free foreign exchange market, the price per dollar would be the same for all producers-importers and all exporters. Where, as in Israel, the market is not free, the government fixes prices for the dollar which are not the same for all importers. They consist of two elements: one is the price of the factor of production, and it is *uniform* for all dollars acquired for import purposes, just as prices of the

[27] The simplest case is that dealt with in the controversy about the British national accounts. If import taxes are included in imports, they are not included in the national product at market prices (which equals consumption *plus* domestic investment *plus* exports *less* imports). Hence, national product at factor prices equals the product at market prices *plus* subsidies *less* only the taxes on *domestic production,* whereas in the conventional accounts, all indirect taxes are deducted. (See references in note 19, p. 62 above).

[28] This, in fact, is what Gaathon suggested in the accounting system presented in the article quoted above, and is also the current practice in the United Kingdom accounts (see preceding note), though it is there confined to the import side.
I believe that the importer's rate is in better accord with the principles underlying this procedure than the consumer's rate, since purchase tax on imports should for this purpose be regarded as purchase tax on similar domestic commodities and not as part of the exchange rate. With this modification national product at factor cost equals national product at market prices *less* taxes on local production, *less* purchase tax on imports, *plus* subsidies on local production.

other factors of production are uniform (if they differed markedly, the estimate of product at factor cost would lose much of its economic significance). The second element is a tax or a subsidy.

What is the size of the uniform element? One could say that it is the equilibrium rate of foreign exchange, that is, the rate which would prevail in the market in the absence of government intervention. Whatever the conceptual advantages of this idea, it is not likely to be of much practical help in determining the rate suitable for the national accounts. Another possibility, the one advocated here, is to derive the required rate from the actual magnitudes, in the manner shown below.

In order to maintain imports at their actual level, the flow of foreign-exchange proceeds, and consequently the flow of exports must be maintained at their current level. Exports are made possible by the resources invested in them, and for each dollar of exports the value of these resources equals the exporter's effective exchange rate. Therefore the uniform element in the price of imports is the effective export rate. Thus if the dollar price of a given import is higher than the effective export rate it includes an element of tax and if lower—an element of subsidy. The uniform element —which is what we are looking for—will be referred to as the 'imputed import rate', and the remainder as the 'imputed tax' (or subsidy).

The existence of multiple exchange rates in exports makes it difficult to identify the imputed rate. Different assumptions about the reasons for the introduction of multiple rates would lead to different conclusions and would imply different methods of measurement. In principle there seem to be two main alternatives.

Assume first that the government wishes to 'produce' foreign exchange at the lowest possible cost. If so, the imputed rate will be the highest of the existing exporter's rates. The discrimination between different export industries by means of different exchange rates will then be due to the inelasticity of supply of some exports or to differences in their foreign demand elasticities. Industries with a very low supply elasticity are likely to get particularly low exchange rates to prevent their obtaining an economic rent; for the purpose of determining the imputed rate these low rates should be ignored. Similarly, when the foreign demand elasticities are not all infinite, there will be inter-industry differences in marginal foreign-exchange revenue at any given rate. To obtain a given flow of foreign exchange at the lowest possible cost it is accordingly necessary to equate marginal revenue for all export industries, which requires exchange-rate discrimination. The more elastic the foreign demand, the higher the rate accorded to the industry's exports. And the higher the rate, the closer it

is to the (uniform) price paid for a unit of *marginal revenue* of foreign exchange. As this price is the imputed rate we are looking for, the highest rate constitutes its lower limit, and this cannot be very far off its correct value, since presumably foreign demand elasticity is very high in a large proportion of commodities (that is, there is no substantial difference between their price and their marginal revenue).

The alternative assumption is that the government does not set the export rates so as to obtain foreign currency at the lowest possible cost but is guided by various other considerations as well (or that its decisions are based on unreliable conjectures regarding the elasticities of the various industries).[29] On this assumption, one cannot say that the imputed rate is represented by the highest exchange rate. The lowest possible expenditure that has to be made in order to maintain the existing flow of foreign currency should then be the weighted average of existing exporter's rates, each industry being weighted by export proceeds and the elasticity of the industry's supply of foreign exchange.[30]

In practice, the calculation proposed in the second alternative is highly complicated. One way of achieving it or getting some approximation of it would be to exclude all export industries whose supply is very inelastic or whose foreign demand is inelastic, and to weight the remaining export industries by their foreign exchange proceeds, disregarding any possible differences in their elasticities. The results will probably not differ much from those obtained according to the first assumption. The main difference will no doubt be in the way the highest rates enter into the calculation; in the previous calculation they were identified with the imputed rate while here they will not be of decisive importance. The most practicable way of calculating the imputed rate therefore seems to be the following (i) to ignore extremely high rates relating to minor export proceeds, on

[29] For instance, the agricultural price support policy has frequently led to the creation of surpluses of this or the other agricultural commodity. Assume that, as has happened in quite a number of instances, the competent authority is able to perceive only two alternatives: to destroy the surplus or to export it. It will then decide in favour of exports as long as their (net) marginal revenue is positive. The exporter's effective rate in this instance may appear to be very high, but this has nothing to do with any decision regarding the diversion of resources to exports, for it is not an output originally intended for that purpose that is being exported, but an unintentional surplus.

[30] This point is discussed further in the next section. See also W. M. Corden, "The Effective Protective Rate, the Uniform Tariff Equivalent and the Average Tariff," *Economic Record,* XLII (June 1966), 200–16. This article contains a similar discussion of what is defined there as 'uniform subsidy (or tariff) equivalent'.

the assumption that they were not intended to obtain foreign exchange at the lowest possible cost but to serve some other purpose; and (ii) to identify the imputed rate with the highest rate (or with a group of rates fairly close to each other) which applies to a substantial fraction of exports.

This study does not provide the full range of export exchange rates, since the compensatory domestic market provisions, which are largely responsible for the heterogeneity of the export exchange rate system, are not reflected in the rates measured here. For 1949–52, the diamond export rate appears to be suitable for our purposes; for 1953–54 the citrus export rate, and from 1955 on, the rate for merchandise excluding citrus and diamonds. These were the highest export rates measured which relate to a considerable proportion of total exports. They are shown in Table 4–6.

When the effective import rate is higher than the imputed rate, it contains, as stated, an element of imputed tax by which the product at market prices exceeds the product at factor cost; and the other way around where an imputed subsidy exists. In exports, on the other hand, there can be no such difference between market and factor prices, as is clear from the earlier discussion. The production costs of the producer-exporter equal the sum of payments to the factors taking part in the production process. This amount in its turn equals the price in foreign exchange multiplied by the effective exporter's rate. As we have seen, this is also the price prevailing on the domestic market and is therefore the market price of the product.[31]

To sum up, the national product at factor prices is equivalent to its value at market prices *plus* subsidies on domestic production *less* indirect taxes on domestic production *plus* [imports in foreign currency *multiplied by* the difference between the consumer's effective rate and the imputed rate], or:

$$(1) \quad GNP_m = C + I + G + XR_x - MR_m$$

$$(2) \quad GNP_f = C + I + G - T + S + XR_x - MR_i$$

$$(3) \quad GNP_f = GNP_m - T + S + M \ (R_m - R_i)$$

[31] The lack of symmetry between imports and exports is independent of the composition of the effective rate. Let us imagine an economy where the exchange rate is determined in a market free from any intervention and is at its equilibrium level. Let us further assume that the government imposes taxes both on imports and exports of certain commodities. The import taxes will then be included in the market price of the imports but not in their factor cost. The taxes on exports, on the other hand, will be deducted from the formal rate regardless of whether exports are estimated at market price or factor cost. A similar conclusion is implicit in Gaathon's presentation (*op. cit.*, pp. 328–29).

where GNP_m = gross national product at market prices
GNP_f = gross national product at factor cost
C = private consumption (at market prices)
I = gross domestic investment (at market prices)
G = current government expenditures (at market prices)
M = foreign currency value of imports
X = foreign currency value of exports
R_x = the exporter's effective rate
R_m = the consumer's effective rate
R_i = the imputed import rate
T = indirect taxes on domestic production
S = subsidies on domestic production

b. Average rates as indicators of uniform rates

The aggregate import and export rates discussed in the preceding section are averages weighted by the export and import values of the various commodities (either gross or net of the import component of exports). Though the rates obtained in this way are suitable for the national accounts, there are other purposes for which they cannot and should not be used. One of these will be discussed here. A similar discussion of the aggregate protection rate appears in the next section.

Sometimes the *average* import rate is regarded as being equivalent to the *uniform* import rate which would maintain the volume of imports obtained by the existing rate system. This is an incorrect notion, and it is possible to speculate about the direction of the error involved. Generally, the actual average rate will be lower than the required uniform rate. This bias is due to two factors: first, it will be recalled that each rate is weighted by the actual value of imports to which it applies. There are likely to be fewer imports in industries with high rates of exchange, so that the higher rates have small weights and the average rate thus obtained tends to be lower than the uniform rate. The other factor which may—but need not—apply is the relationship between the rate of exchange in each industry and its import demand elasticity. It can be assumed that particularly high rates were set for those commodities and services for which the demand is relatively elastic, whereas lower ones were generally set for those for which the demand is inelastic.[32] If this assumption is

[32] This amounts to saying that in setting the import rates, the protection of local production carried more weight than government revenue. If the protection rate is to have the desired effect it must be higher when the local supply of the commodity is elastic. An elastic local supply of a commodity also means an elastic

correct, then the import rates have a further bias which operates in the same direction.[33]

With exports, the opposite result may well be expected. Assuming equal supply elasticities for all export commodities, the average rate will be higher than the uniform rate sought. Since commodities with a high rate will have a large volume of exports, their share in total exports will be high. The opposite will happen with low-rate commodities. The average rate obtained from such a system will therefore be biased upward. Since in fact the supply elasticities of export commodities vary, this effect might be offset if particularly high rates are assigned to commodities whose supply is elastic and low rates are assigned to commodities whose supply is inelastic—a system which like the one described for imports contains an inbuilt downward bias compared with the uniform rate.[34]

It may be concluded that the average import rate is presumably the lower limit of the uniform import rate, and the average export rate is the upper limit of the uniform export rate. But even if this conclusion is correct, it does not contribute much information, since the difference between these limits and the true value of the uniform rates may be substantial;

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local demand for imports, since the latter is obtained by deducting the local supply from the total demand for the importable good. Fiscal considerations, on the other hand, will favor high exchange rates, i.e. a high level of customs and charges, precisely when the import demand elasticity of the product is low, since in that case the optimum customs level from the revenue point of view is high. Some commodities of this kind may, however, be considered 'essential', so that far from being heavily taxed, they are actually subsidized.

[33] To illustrate this point, assume a starting position with a uniform rate of exchange and equal import values for all commodities. The uniform rate is then abolished and a system of multiple exchange rates is introduced, higher rates being set for commodities with a high import demand elasticity. Imports of these commodities will consequently go down considerably. On the other hand, imports of commodities for which low rates were set will rise only slightly, since demand for them is not elastic. Total imports will therefore decline. In order to restore the former level of imports, it is necessary to reduce the rates on all imports and consequently a lower average rate than the initial uniform rate will be obtained.

[34] Let us use an illustration similar to that used for imports: initially there is a uniform rate and equal export values for all commodities. The uniform rate is then abolished and higher rates are set for commodities with an elastic export supply, whose exports will then rise considerably. The exports of those commodities for which lower rates have been set will go down only slightly, since their supply is inelastic. The total value of exports will go up and in order to bring them down to their initial level all the rates in the system must be reduced. Consequently the average rate, too, will be lower.

and there seems to be no feasible way of extracting estimates of the true values from the available data about the exchange-rate system.[35]

c. The aggregate protection rate

This rate, which is designed to serve as an index of the amount of protection afforded to local production against competitive imports, is some weighted average of the protection rates of individual locally produced commodities. It is clear that the weights must be determined by the composition of local production and not of imports.[36] It is therefore to be expected that there will be only slight resemblance between the protection rate and the average effective import rate used for national accounts purposes. Not only does the protection rate of any single commodity (the rate on the value saved) differ from its effective consumer's rate, but also the weights used to determine the two aggregate rates undoubtedly differ considerably. It could even be assumed that the greater the imports of a commodity—so that its weight in total imports is large—the less will be produced locally—so that its weight in local production will be small.

It should be noted that, along the lines of the earlier discussion, the

[35] Assume 1, 2, . . . , n, import commodities, each having its own demand elasticity η and its own effective consumer rate, R. The required uniform rate is R^*. If the rate of commodity 1 were changed from the actual rate R_1 to the uniform rate R^*, imports of commodity M_1 would change as follows:

$$\Delta M_1 = M_1\eta_1 \cdot \frac{R^* - R_1}{R_1}.$$

The uniform rate we are looking for is that rate which would change the import value of the various commodities in such a way that the sum of all changes would be zero: the increases in some import values would exactly offset reductions in others, that is:

$$\Delta M_1 + \Delta M_2 + \cdots + \Delta M_n = 0$$

$$\text{or } M_1\eta_1 \frac{R^* - R_1}{R_1} + M_2\eta_2 \frac{R^* - R_2}{R_2} + \cdots + M_n\eta_n \frac{R^* - R_n}{R_n} = 0$$

$$\text{or } \sum_{i=1}^{n} \left(M_i\eta_i \frac{R^* - R_i}{R_i} \right) = 0.$$

This is an equation with one unknown, R^*, which can in principle be solved. In fact, however, though we do know the values of M_i and R_i, the values of η_i—the import demand elasticities of the various commodities—are not known. It is difficult to think of any reasonable hypothesis that might do instead.

[36] Weighting by the composition of local production for the measurement of average customs was first proposed by E. Lerdau, "On the Measurement of Tariffs: The U.S. over 40 Years," *Economia Internazionale,* X (May 1957), 232–44.

aggregate protection rate, an average weighted by the composition of actual production, cannot be the same as the uniform rate which would provide the same degree of protection as the existing system of rates. It is to be expected that commodities with a particularly high protection rate which has helped to push up their production will have a correspondingly large weight in the aggregate rate. The aggregate protection rate is therefore of limited applicability: it measures the degree of protection afforded to existing local production as it exists.

But it is doubtful whether the local output of each commodity is really the appropriate weight. The level of the protection rate may have an entirely different significance for different commodities, depending on the elasticity of supply of the local industry. To illustrate this point, assume the existence of two classes of goods, with equal values of local production. The supply elasticity of one class is very high and of the other is zero. Let us then assume two alternatives. In the one case there is a high protection rate for commodities of the first group and a low rate for commodities of the second group, and vice versa in the other case. The average obtained through weighting the multiple rates by the actual composition of production will be the same in both cases, although clearly the amount of protection given to local production is totally different. The high protection rate given to products whose supply elasticity is zero has no effect. By assumption, their output is constant, regardless of the exchange rate level. For commodities with a high supply elasticity, on the other hand, the high rate will lead to a considerable expansion in production, which means that they are afforded a high level of protection—if the rate is abolished, the local output of the product will fall off considerably. Hence commodities whose supply elasticity is zero should not be taken into account in calculating the weighted average, that is, they should be given a weight of zero. For the aggregate protection rate to be economically meaningful, commodities with a higher supply elasticity should thus be given more weight than commodities whose supply elasticity is lower.[37] No information is, however, available

[37] Take commodity 1 of which a quantity Q_1 is produced, whose elasticity of supply (of the value saved) is ε_1, and whose protection rate is R_1 The degree of protection afforded by this rate, compared with a lower rate, R^*, may be defined as the increase in the output of the commodity (i.e., in its value saved) attributable to the present rate; or conversely, the decline in output which would be caused by shifting the commodity from rate R_1 to Rate R^*.
Let ΔQ_1 denote this change in output; then

$$\Delta Q_1 = Q_1 \varepsilon_1 \cdot \frac{R_1 - R^*}{R^*}.$$

on supply elasticities, and it is difficult to conceive of reasonable assumptions that might replace these data. The aggregate protection rate therefore had to be left uncorrected, using only the output values (i.e., the value saved) of each group of commodities to weight its protection rate.[38]

d. The 'intended' rate

Sometimes attempts are made to distinguish between components that

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For n commodities, the aggregate protection will accordingly be

$$\sum_{i=1}^{n} \Delta Q_i = \sum_{i=1}^{n} Q_i \varepsilon_i \cdot \frac{R_i - R^*}{R^*}.$$

Aggregate protection is therefore determined by three factors: the volume of output of each industry, its protection rate, and its supply elasticity. An aggregate protection rate which expresses the degree of protection should therefore reflect all three. As an ordinary weighted average it actually reflects only the first two—the exchange rate and the volume of output of each commodity. Thus, the implicit assumption of such a calculation is that the supply elasticities of all commodities are equal.

It should be noted that in this formulation the demand for the various commodities has been ignored. It is based on the simplified assumption that although the protection rate promotes local production at the expense of imports, there are still some imports of the commodity. This point is of fundamental importance. Take an industry whose protection rate is R_i. This rate may be higher than required for the actual degree of protection, that is, there may be some lower rate affording the same degree of protection. This, of course, can occur only if there are no competing imports at the lower rate; for whenever there are competing imports, any rise in the rate enhances the degree of protection, reducing imports and increasing local production. But the converse may also apply; rate R_1 may still not afford any protection even if it is very high; it is conceivable that the local production costs of the industry in question are so much higher than they are abroad, that even at a high rate the local commodity cannot compete with imports. In neither instance does the protection rate give an accurate measurement of the degree of protection, but for opposite reasons. It serves as a proper index only when the commodity is both locally produced and imported.

The case where the rate is insufficient to allow any local production does not interfere with the calculation of the aggregate rate, for in the absence of local production the weight will be zero. In the opposite case, the commodities of which there are no imports could likewise have been eliminated had the economic branch classification been more detailed. In fact, however, no protection rates could be calculated for single commodities, but only for groups, and there is scarcely any group which does not have some imports. It is impossible in practice to extract from the aggregate those commodities where there are no competitive imports. This by itself leads to an upward bias of the aggregate protection rate.

[38] Suitable data exist only for 1958, and the output data for this year are therefore used as weights for other years also. This procedure naturally increases the inaccuracy of the results.

were designed to constitute part of the effective rate and those intended for other purposes. Customs, for instance, are practically universal and are also levied in countries that generally have an equilibrium—or close to equilibrium—rate of exchange. Generally, their function is not to modify the rate of exchange but to protect a given sector against competitive imports or to provide a source of government revenue. In Israel some customs duties presumably also fulfilled the traditional functions while others were designed to alter the exchange rate. As a rule the government's motives were probably mixed.[39]

It is difficult to see the precise economic significance of what is here called the 'intended' rate, i.e. the rate that comprises those components which were intended to be a substitute for the formal rate of exchange and does not include components designed for other purposes. At best, this rate would not be relevant to economic behavior, even if the purpose of each component could be ascertained, but could only be applied to government intentions: it would show at what level the government intended to set the exchange rate or rates. As such, it might be useful for a comparison with exchange rates in countries where there are no additional components intended to substitute for the formal rate. But even such a comparison can at most serve to satisfy scientific curiosity, and cannot be used for the economic analysis of exchange rate effects.[40]

It is also difficult to determine the purpose assigned to each component or part of it. The discussion in the next chapter of the relationships between movements of the various effective rate components may give some tangible indication of how government policy was made. Here we outline briefly some of the ideas put forward by various authors on the possible identification of the 'intended' rate.[41]

There seems to be general agreement that export premiums as well as the Pamaz provisions constitute part of the intended rate for exports. On

[39] See Arnon Gafni, Nadav Halevi, and Giora Hanoch, "Classification of Tariffs by Function," *Kyklos,* XVI (No. 2, 1963) 303–18. See also the short discussion in my *Foreign Trade and Capital Imports in Israel* (Tel Aviv: Am Oved, 1963; Hebrew), pp. 117–18.

[40] On the other hand, the 'intended' rate might be used for other purposes, such as an analysis of the sources of government receipts. For such an analysis and the role played in it by the exchange rate, see Amotz Morag, *Public Finance in Israel: Development and Problems* (Jerusalem: The Magnes Press, 1967; Hebrew), Chapter 4, section 4.

[41] These ideas have only partly been presented in writing, but have frequently cropped up in verbal discussions in Israel on the significance and measurement of the effective rate.

the import side, the distinction is sometimes drawn between customs, regarded as having the traditional function, and levies, regarded as an 'intended' rate component. Sometimes the line is drawn between customs and levies which appear in the budget and extra-budgetary receipts. Both ideas are based on the principle that long-term government measures perform the conventional functions of customs, whereas short-term measures are designed to solve temporary balance of payments problems and serve as a substitute for a change in the formal rate of exchange. It is however questionable whether this represents a correct description of government policy, so that there seems to be little point in proposals of this type. Another suggestion is based on the assumption that in 1954 the formal exchange rate was close to equilibrium and that therefore the customs and levies collected at that time were not designed for any exchange rate functions, but merely for the traditional protective and fiscal purposes. The changes in tariffs and levies from then until the 1962 devaluation may, on the other hand, be regarded as an alternative to formal devaluation.[42]

Another possibility is to assume that the 'true' level of customs, that is, that part which is designed to play the conventional role, is 'normal'—in other words, that it is similar to the level mostly found in other economies (which is presumably measurable). Any customs and levies beyond that level would be regarded as part of the intended rate.

Although the assumptions cited here are not altogether unreasonable, they are all highly arbitrary. In the present study the intended rate was not calculated; but anyone interested may use the data in conjunction with these or similar assumptions to get one or another concept of the 'intended' rate.

3. Soft-Currency Rates

a. Limited-convertibility currencies

The rate of exchange was defined as the price of a unit of foreign exchange in local currency units. But since there are many foreign currencies the particular one referred to must be specified.

In the present study, in accordance with current usage in Israel, the exchange rate is expressed as the price of the U.S. dollar. Currencies that are freely convertible against the dollar—sometimes known as hard currencies—constitute no special problem. Their price in Israel pounds can be easily translated into the price of the dollar via the formal exchange

[42] See Baruh, *op. cit.*, p. 50, and Economic Advisory Staff, "The Israel Economy in 1954" (Report submitted to the Minister of Finance; Jerusalem, 1955), p. 24.

rate between them and the dollar, since hard currencies are convertible into dollars at the nominal exchange rates. The matter is not so simple when the foreign currency bought or sold is not convertible into U.S. dollars at the formal exchange rate. Using the formal dollar rate of that currency to convert its IL price into the IL dollar price does not necessarily produce a meaningful result.

When Israel, whose currency is not convertible, trades with another country whose currency is similarly non-convertible and the trade is not carried on in a third convertible currency, some sort of agreement or arrangement must be made. This may vary from a pure barter agreement, such as governed trade with Austria over a long period, to an arrangement such as that with the United Kingdom which persisted while sterling was not dollar convertible, that is, until the end of 1958; in this instance, trade was carried on in a currency which was convertible with most currencies in the world, though not with the U.S. dollar.[43]

It would of course be possible to express the exchange rate not in terms of the U.S. dollar but of the currency in question. However, we would then obtain a large number of exchange rates which cannot be compared, for lack of a common denominator. Clearly data drawn up in this way would be of little use. This procedure, which might be compared to using different units of weight for quoting different prices of the same commodity, would have to be followed if there were no basis of comparison for foreign currencies. But usually some such basis does exist.

The most reasonable basis for creating a common denominator is the formal rate between the currency in question and the dollar, which can be used as long as it can be assumed that it does not differ much from what it would be if the currency were freely convertible. Whether this is so may be judged from the economy's balance of payments, its expectations, the degree to which its formal rate prevailed in international transactions, and the like. The formal rates of most West European countries could thus be used for this purpose during most of the period of our study, although until the end of 1958 most of them were not dollar convertible. Here it should be stressed that the admissibility of a formal rate as a common denominator must be considered from the viewpoint of the Israeli economy, although the trading partner might then present an aspect that differs from that seen from the viewpoint of most other economies. For example, assume that the formal rate of a given currency (that is, the price of the dollar in units of that currency) is by all indications below the

[43] In practice, though not officially, sterling had been convertible to the dollar since 1954, at a discount of at most 2 per cent of the nominal rate.

equilibrium level: to make it convertible, its rate of exchange must be raised. The economy in question supplies a commodity of which Israel is willing to buy—at current prices and at the currency's formal rate—more than can be bought with the currency obtained from Israeli exports to that country. In the ordinary case Israel can then buy the commodity against U.S. dollars or some other hard currency. Thus Israel would not convert the currency into dollars at the formal rate even if it were convertible, but would on the contrary use dollars so as to finance imports from the country in question. From the point of view relevant to Israel's economic decisions the formal rate between the given currency and the dollar should then be used to establish a common denominator. Accordingly, whenever Israel has an import surplus (financed by dollars or some other hard currency) with a given country, the currency of this country should be treated as if it were convertible at the formal rate, regardless of the actual position. This is the point of view adopted here—as well as in Israel's foreign exchange policy. Consequently, the currencies of most European countries are viewed as if they were convertible. The rates of exchange of the Israel pound with these currencies, translated by their formal rates with the dollar, were equivalent to the dollar rate and need no separate discussion. The only exception is the year 1949 which we shall deal with later.

b. 'Clearing' currencies

Other currencies present more of a problem. These are the 'clearing' currencies which were created by some of Israel's clearing agreements. If the currency acquired by Israel for exports to the trading partner—at the trading partner's prevailing commodity prices—were convertible, it would be used by Israel to acquire dollars at the currency's formal exchange rate, instead of being used for imports from the trading partner. The formal rates of exchange between each of these currencies and the dollar are therefore lower than they appear from Israel's point of view. In other words, the dollar vaue which is pertinent to Israel's economic decisions—and which must therefore be used as the link between such a currency and the dollar—is lower than indicated by these currencies' nominal rates of exchange. The real value is in turn determined by prices of export goods in the clearing countries in relation to Israel's demand for them.[44]

[44] The problem of determining the hard-currency value of clearing currencies is thoroughly discussed by Bahral, *op. cit.*, p. 206. Bahral refers to the proportion to be deducted from the dollar value of the clearing currency according to its formal rate as the 'real disagio', a term which has in the meantime become current usage in Israeli economic literature.

It is of course impossible in the present study to determine the real value of the various clearing currencies for Israel's economy. Here we have in fact two alternatives. One is to use the formal rates between the clearing currencies and the U.S. dollar. This is certainly inadequate and should be done only when no other choice is available. The second alternative, which we have adopted here, is to look for an indicator which may serve as a proxy for the real value of the clearing currencies. The indicator here chosen is the decisions of the competent authorities in Israel regarding the value of these currencies. These decisions took the form of fixing a disagio, a percentage to be deducted from export proceeds from clearing countries on the sale of clearing dollars to the authorities.[45] The assumption here is that the decisions of the authorities regarding the disagio expressed their view of the value to the Israeli economy of the currency in question; and for lack of a better alternative, this is the evaluation adopted here. The disagio provisions were in force from 1953 until 1958 and were particularly important in 1955–58.

Accordingly the disagio deducted from the exporter's proceeds, at a given rate fixed by the government, does not appear in this study as an export tax or a reduction of the export premium, and is therefore not reflected in the effective export rate. Only if more than the standard disagio was deducted—and no such case is known—the difference could be regarded as an export tax. In the converse case, if less than the standard disagio was deducted, the difference could be regarded as a special export premium for a particular transaction, and as such it would constitute a component of the effective export rate. Such instances were very numerous and sometimes assumed considerable proportions.[46] The premium was often decided upon *ad hoc*, to encourage a given export transaction for incidental reasons. At other times, however, it was due to linkage provisions between export and import transactions contained in the clearing agreement. Certain imports from the trading partner which were cheap relatively to its total export prices could be bought only if Israel made specified exports to the other country. These exports did not simply result

[45] The 'clearing dollar' is merely an accounting unit under a clearing agreement, expressing the value of the clearing currency (or—from the point of view of the partner to the agreement—of the Israeli currency) when stated in dollars at the formal exchange rate. Thus, if the formal exchange rate is 4 Turkish pounds per U.S. dollar, the value of one Turkish pound is $0.25. An exporter selling TL 1,000 of commodities to Turkey will then receive 250 clearing dollars in exchange. Similarly, an Israeli exporter buying TL 1,000 of commodities in Turkey will pay 250 clearing dollars for them.

[46] See Pines, *op. cit.*, pp. 36–40.

in the acquisition of the country's clearing currency—whose value was determined by its standard disagio—but of, as it were, a special clearing currency allowing the purchase of particularly cheap imports. For this reason these exports were given a special premium by means of a smaller than usual disagio.[47]

If the value of the clearing dollar is set at less than the U.S. dollar by the amount of the disagio, its IL price to the importer should also be lower by the same amount. This was done through the agio, an apparent subsidy on clearing dollars bought by importers. As long as the agio and disagio are the same, the agio is not a real subsidy, and therefore not an exchange rate component: only the difference between it and the disagio forms part of the effective rate. A positive balance, that is, when the agio exceeds the disagio, means that the importer was given a subsidy on purchases of clearing currency, and a negative balance—that he was taxed.[48] In practice, unlike the disagio, the agio was determined *ad hoc* for each import transaction. On the average, it was lower than the disagio. The difference constituted a tax on imports from clearing countries, producing a higher effective import rate, and shown as a rate component in the data of this study.

The official disagio properly reflected the authorities' evaluation of the clearing currency only when exports were carried out under the Pamaz provisions. An exporter who, for instance, earned 1,000 Turkish clearing dollars and wanted to use his Pamaz rights for carrying out imports from the United States received U.S. $700 for the clearing dollars, the disagio being 30 per cent. Not so, however, when the export proceeds were sold to the treasury. In that case, the exporter should have received U.S. $700 *times* the effective export rate, which includes the premium due under the general provisions (pp. 27–28). In fact, a smaller premium was paid on exports to the principal clearing countries, and sometimes none at all. Some of the exports that did not benefit from any premium were also excluded from the Pamaz provisions, although similar exports to other countries had the choice of premium or Pamaz. Also, there were some countries on whose clearing currencies there was no disagio at all, although

[47] *Ibid.* and Bahral, *op. cit.*

[48] For instance, assume a 30 per cent disagio on Turkish clearing dollars received by exporters to Turkey, so that this clearing dollar is equivalent to U.S. $0.70. Assume further that a 20 per cent agio is allowed on import transactions with Turkey, and that the formal rate is IL 1.80 per dollar. The importer then pays IL 1.44 (80 per cent of 1.80) per clearing dollar valued at 70 cents. The exchange rate for this import is therefore IL 2.06 (= 1.44 ÷ 0.7) per dollar, consisting of the formal rate of IL 1.80 and a tax of IL 0.26 per dollar derived from the difference between the agio and the disagio.

exports to them did not receive the ordinary premium. Assuming, as is here done, that the value of the clearing currency was expressed by the amount of the disagio, this means that the effective exchange rate in these cases was lower than usual.

When exports to clearing countries were given a smaller premium or none at all, the authorities apparently considered them to be worth less than according to the disagio rate. One way of reducing their value is to set a higher disagio, but in some instances this course could not be adopted. This lower evaluation sometimes also found expression in premium payments which increased (per dollar of value added) with the proportion of value added out of total export value. A provision of this kind is consistent with a lower valuation of the currency than is indicated by the disagio although it could not serve as a perfect substitute for a higher disagio.[49]

In conclusion one may say that the provisions for expressing the value of the clearing currencies were not consistent. The evaluation of the clearing currency is accurately reflected by the standard disagio only in the Pamaz provisions. From the export provisions it frequently appears that the authorities thought that the disagio put too high a value on the currency in question. On the other hand, the low average agio to importers suggests the opposite. If the clearing currency was worth less than according to the disagio, the acquisition of clearing currencies by importers should have been encouraged by allowing a higher agio, and not the other way round.[50] Hence, our evaluation of the clearing currencies according to the official disagio suffers from two defects. Not only is it conceivable that the authorities erred—sometimes by a large margin—in determining the disagio, but their actions indicate that they themselves did not consistently regard the disagio as a proper yardstick. Nevertheless, it is difficult to conceive of any better measure.

It should also be mentioned that in the published statistics Israel's transactions with other countries are recorded in U.S. dollars, the value of transactions carried out in other currencies being converted into dollars

[49] See Pines, *op. cit.*, pp. 102–103.

[50] If the disagio was based on the *average* price level of Israeli imports from the trading partner, those instances where it was reduced for special 'linked' deals should also point in the same direction. The procedure implies that while the general disagio was based on the more expensive transactions, particularly cheap import transactions were linked to special export deals. On the average therefore, the value of the clearing currency was higher than according to the official disagio. It is quite possible that the disagio was in fact determined by the evaluation of the average price level, although a preferable, more logical method would have been to use the prices in marginal transactions. See Bahral, *op. cit.*, p. 208.

at their formal rates. In this study, on the other hand, clearing currencies were entered at a lower value than in the official statistics. Consequently imports and exports in these currencies (and hence total imports and exports) are also lower. This also implies a reduction in the share of the clearing countries in Israel's total trade. The adjustment reduced exports relatively more than imports, since the share of trade with the clearing countries was larger in Israel's exports than in its imports. But even in the case of exports, the adjustment is slight and comes to only about 3 per cent in 1956 and 1957 when the clearing agreements were at their peak.

c. The period before the 1949 devaluation

As stated at the beginning of Chapter 2, there was a period before September 1949 when there were two rates of exchange, one for convertible currencies—mainly U.S. dollars and Swiss francs—and the second for all others. Ostensibly the Israel pound was at that time at par with sterling, that is, the rate was IL 0.250 per dollar. In fact, this rate was maintained only for soft currencies, whereas for hard currencies it was 0.333 per dollar. The distinction was made by paying a special premium to exporters on their dollar or Swiss franc proceeds and collecting special levies from importers on their dollar purchases. The premiums and levies were paid and collected directly by the banks acting as foreign exchange dealers, so that an additional formal rate was created. This arrangement was a legacy from the days of the British mandate[51] and came to an end with the British devaluation of September 1949 (when the exchange rate of sterling was changed from £0.250 to £0.357 per dollar, or the price of the pound sterling dropped from $ 4 to $ 2.8). The price of the pound sterling was then left at IL 1.00, whereas the price of the U.S. dollar was changed from IL 0.333 to IL 0.357.

The price of IL 0.250 per dollar obtained from the sterling price of the dollar and the IL price of the pound sterling could be regarded as the formal rate; the higher price that prevailed for trade with the hard currency countries could then be regarded as containing export premiums or import levies which raised the effective rate. The extent to which the average rate is raised would then depend on the share of hard-currency trade in the total volume of trade. This, however, is not the method adopted here, as it is not consistent with the approach presented at the beginning of this section (pp. 77–78). Instead, we have used the method suggested in connection with the clearing currencies.

[51] See my book, *op. cit.*, pp. 94–95.

The rate of exchange has in this study been defined as the IL price of the U.S. dollar; under the provisions in force at the time, this was IL 0.333 (and not IL 0.250) per dollar, which is accordingly the price taken as the formal rate. The special provisions made for the pound sterling show that at this time the competent authorities in Israel regarded the soft currencies as being worth less than indicated by their formal rates. This seems a reasonable view of most currencies before the 1949 devaluation.[52] A 25 per cent disagio was therefore imposed on the soft currencies although it was not called by that name; that is, Israel valued the soft currencies at 75 per cent of their nominal dollar value at the foraml rate. According to this approach, the pound sterling was worth U.S. $ 3, instead of U.S. $ 4. The price of IL 1 for the pound sterling therefore meant an exchange rate of IL 0.333 per dollar. From the beginning of 1949 until September, the formal rate of exchange should therefore be regarded as having been IL 0.333 per dollar.[53]

The definition of the exchange rate as the price of a given foreign currency —the U.S. dollar—though unavoidable, necessarily has its drawbacks. Above all it does not reflect variations in the IL price of other foreign currencies occasioned by changes in the ratio between them and the U.S. dollar, the yardstick used in our study. Such variations may sometimes have been relevant to economic decisions in Israel, but in the period under review such instances were very rare.[54]

[52] It should also be borne in mind that at that time Israel had considerable sterling balances. From Israel's point of view this necessarily led to a lower valuation of the pound sterling—the principal soft currency used in her transactions.

[53] At the formal devaluation of September 1949 the IL was thus devalued by only 7 per cent, from IL 0.333 to IL 0.357 per dollar. This is more plausible than the much bigger devaluation indicated by the alternative calculation, since, with a a few exceptions, the maximum *de facto* devaluation was 7 per cent. This was the rate for the hard currencies, whereas for most of the soft currencies, and particularly sterling, the Israel pound was not devalued at all. A devaluation of over 7 per cent applied only to a few soft currencies, which did not change their rates in line with sterling, or only to a small extent.

[54] During the period covered in this study, the main substantial changes in major world currencies after the 1949 devaluation were the several devaluations of the French franc. Much smaller fluctuations were recorded in the exchange rate of the Canadian dollar. Other changes, including the 1961 revaluation of the German mark and the Dutch guilder were not very large.

CHAPTER 4

THE RATE SYSTEM AND ITS ATTRIBUTES

1. The Level of the Effective Exchange Rate

As will be recalled from the previous chapters, no single effective exchange rate can be defined, but various definitions apply according to the purpose for which the effective rate is required. The following discussion will refer mainly to two of these several rates—the exporter's and the importer's rate.[1] All the rates discussed here are aggregate rates, relating to total exports and imports,[2] and were calculated as averages, as described in the preceding chapter.

TABLE 4–1. *The Effective Exchange Rate: 1949–62*

	Exporter's rate		*Importer's rate*	
	IL per dollar (1)	*Per cent change over preceding year* (2)	*IL per dollar* (3)	*Per cent change over preceding year* (4)
1949	0.352	..	0.386	..
1950	0.385	9.4	0.402	4.1
1951	0.407	5.7	0.395	–1.7
1952	0.807	98.3	0.805	103.8
1953	1.276	58.1	1.167	45.0
1954	1.726	35.3	1.799	54.2
1955	1.827	5.8	2.211	22.9
1956	2.049	12.1	2.261	2.3
1957	2.209	7.8	2.334	3.2
1958	2.369	7.2	2.350	0.7
1959	2.487	5.0	2.504	6.5
1960	2.576	3.6	2.567	2.5
1961	2.655	3.1	2.604	1.4
1962[a]	3.000	13.0	3.570	37.1

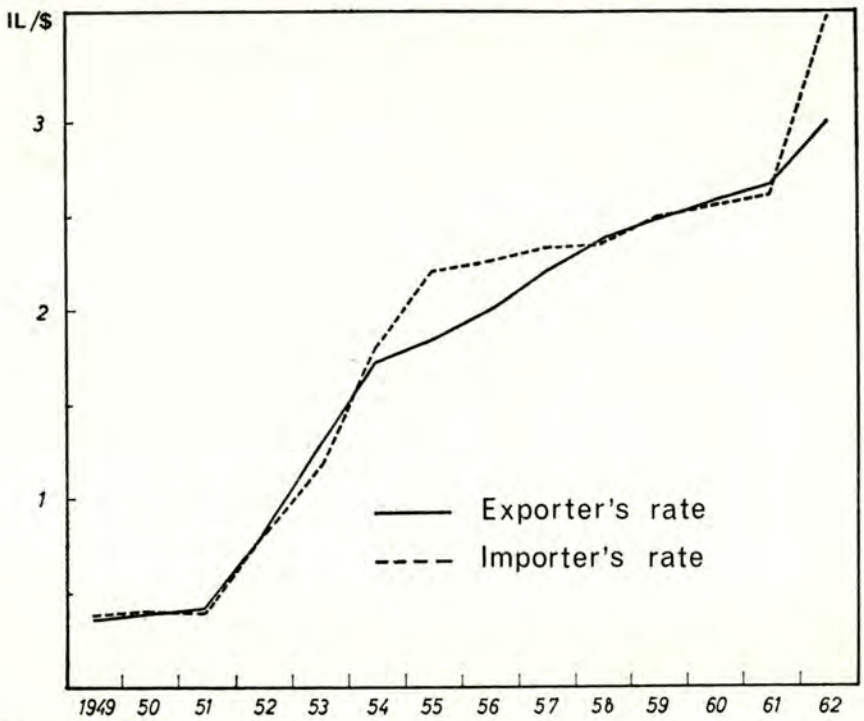
[a] The 1962 figures refer to the period after the devaluation of February 9.

[1] The difference between the aggregate consumer's and aggregate importer's rate is very small.

[2] Both defined as net of the import component of exports.

The exporter's and importer's rates of the period under review are shown in Table 4–1 and presented graphically in Figure I. The picture obtained from the table and the diagram is clear-cut. The most striking features are: (a) The effective exchange rates rose persistently and to a considerable extent, with some rise recorded in every single year (except for the importer's rate in 1951). The main increases were between 1952 and 1954 and again in February 1962—coinciding with the formal devaluations. (b) During the period the exporter's and importer's rates rose in similar

FIGURE I. *The Effective Exchange Rate: 1949–62*



SOURCE: Table 4–1.

though not identical fashion. The importer's rate went up slightly more than the exporter's rate. Comparing the two, several stages may be distinguished. Until 1954 the two rose more or less together. In 1955–56, both rose to a similar extent over the two years, but the timing was different. From 1956–61, the exporter's rate rose more than the importer's rate.[3] The 1962 devaluation pushed up the importer's rate much more than

[3] The exporter's rate, as measured here, does not include the Pamaz component,

the exporter's rate, so that the former more than caught up with the latter after having lagged behind during the preceding years.

Changes in the effective rate from one period to another may be due to two factors: a change in the rates of the different commodities or a change in their weights. When the weight of a commodity with a low exchange rate in the total imports or exports goes up, the aggregate rate of imports or exports goes down, and when its weight decreases the aggregate rate goes up. The opposite applies to commodities whose exchange rate is high.

TABLE 4–2. *Explanation of Changes in the Effective Exchange Rate: 1950–62*[a]

(per cent change over preceding year)

	Exporter's rate			*Importer's rate*		
	Total change	*Change due to*		*Total change*	*Change due to*	
		Change in rate	*Change in weight*		*Change in rate*	*Change in weight*
	(1)	*(2)*	*(3)*	*(4)*	*(5)*	*(6)*
1950	9.4	10.7	–1.2	4.1	6.7	–2.4
1951	5.7	5.5	0.2	–1.7	0.1	–1.9
1952	98.3	97.6	0.2	103.8	108.2	–2.1
1953	58.1	57.1	0.8	45.0	45.0	0.0
1954	35.3	33.6	1.3	54.2	58.2	–2.5
1955	5.8	5.4	0.4	22.9	19.8	2.6
1956	12.1	13.7	–1.3	2.3	4.5	–2.2
1957	7.8	6.7	1.0	3.2	1.4	1.8
1958	7.2	3.6	3.5	0.7	7.4	–6.2
1959	5.0	0.7	4.3	6.5	8.0	–1.3
1960	3.6	2.2	1.4	2.5	5.0	–2.3
1961	3.1	1.1	1.9	1.4	1.4	0.0
1962[b]	13.0	..	..	37.1	38.6	–1.1

[a] The computation is explained in notes 4 and 5 on p. 88.
[b] The computation would be meaningless for the exporter's rate in 1962, since a uniform rate is assumed.

and is thus biased downward in the years when the Pamaz provisions were in force. Moreover, the omission of the Pamaz component creates a bias in the comparison of sub-periods. The exporter's rate appears to have risen less than it actually did between 1953 (when the Pamaz provisions came into operation) and 1955, and more than it actually did in 1956–59, when the premium provisions at least partly replaced the Pamaz provisions. This is not taken account of in the measurement of the exporter's rate, which includes the premium component in 1956–59 (and subsequently), but does not include the Pamaz component in the previous years.

In Table 4–2 an attempt has been made to isolate the effects of these two factors. Columns (1) and (4) show the actual year-to-year change in the importer's and exporter's rates. In columns (2) and (5) the rate changes were computed with the weights held constant. It was assumed that in every year t, the volume (exports and imports) of the different commodities remained the same as in the preceding year, t–1, and that only their exchange rates varied. The exchange rate calculated for each year t was compared with the actual rate of the preceding year, t–1. Columns (3) and (6)[4] show the effect of the change in weights on the average exchange rate. In other words, each of these columns shows how the average exchange rate would have looked if all the rates of the individual commodities had remained the same and only their weights in exports and imports had varied.[5]

The calculation was not done exactly in the way described here. To reduce the amount of work involved to reasonable proportions, weighting was done by groups and not by single commodities. It was thus assumed

[4] Obtained as $[100+(1)]/[100+(2)]-100$ and $[100+(4)]/[100+(5)]-100$, respectively.

[5] Let r_i^t and r_i^{t-1} be exporter's rate for commodity i in years t and t–1 respectively

x_i^t and x_i^{t-1} be the weight of commodity i in total exports of years t and t–1 respectively

Then the ratio between the aggregate rate of year t (assuming fixed weights) and the actual rate of year t–1 is

$$(1) \qquad \frac{\sum r_i^t x_i^{t-1}}{\sum r_i^{t-1} x_i^{t-1}}.$$

This is a Laspeyre index of the aggregate rate with changes in the individual rates weighted by year $t-1$ exports and it is the index shown in column (2) of Table 4–2 (for convenience, it is there expressed as a percentage change). The actual index of change in the rate between the two years is

$$(2) \qquad \frac{\sum r_i^t x_i^t}{\sum r_i^{t-1} x_i^{t-1}}.$$

Dividing (2) by (1) we obtain

$$(3) \qquad \frac{\sum r_i^t x_i^t}{\sum r_i^t x_i^{t-1}},$$

which is a Paasche index of changes in the aggregate rate due to changes in commodity shares in total exports, the rate of each commodity in the later year, t, being taken as the weight. This index is the one shown in column (3) of Table 4–2.

that the group weights remained constant while the exchange rates varied. This means that only a partial adjustment was made for the year-to-year change in weights, since the group rates, like the aggregate rate, change *inter alia* because of changes in within-group weights, and these were not taken into account.

As could have been expected, the effect of changes in single-commodity rates was dominant in years when the change in the aggregate rate is large; whereas in years of small change, the group-weight effect was comparatively strong. In years when the rates changed only slightly, mainly from 1955 onwards, the effect of the change in weights on the importer's rate seems to have been in a downward direction, although not altogether consistently. The average exporter's rate, on the other hand, was consistently raised by the change in weights during the years following the gradual formal devaluation of 1952–54; in 1959–61 this factor contributed much more to the rise in the average rate than did the changes in the single commodity rates. The chief reason for this was the decline in the share of citrus in these years. Since the citrus export rate was below other export rates—although the difference tended to narrow over the years—the decline in the share of citrus led to a rise in the average rate.

The significance of separating the effects of these two factors—the variations in the individual commodity rates and in their weights—on the change in the average exchange rate, is not quite clear. At first sight, it seems that the first factor reflects direct government measures whereas the second is a random 'unintentional' effect superimposed upon the first. But the two are not entirely independent. An increase in the average export rate due to a relative increase in industrial exports means a higher average premium and larger government premium payments, and in considering a change in the premium level the government undoubtedly takes this into account. Hence, the rate fixed for a given product depends, among other things, on the composition of exports. A similar argument holds for imports: a decline in the aggregate effective rate achieved through decreased imports of a commodity on which high customs are levied means a decline in customs revenues per dollar, which the government again presumably takes into account in deciding on the customs tariff. It is clear that this is more valid in the long run and that for shorter periods the two factors can safely be regarded as independent.

It is interesting to examine the finding that while the change in export weights consistently led to a rise in the exporter's rate, the changes in import weights almost always reduced the importer's rate. It follows that the weight of the higher-rate commodities rose in exports and declined

in imports. This of course is compatible with the assumption that high exchange rates increase exports and reduce imports.

2. The Formal Rate Versus Other Components of the Effective Rate

However heterogeneous the exchange rate system, quantitatively the formal rate always played the main part. This may be seen from Figure II and Table 4–3 showing the formal export and import exchange rates and the remaining effective rate components.

Table 4–3. *The Formal and Nonformal Components of the Effective Exchange Rate: 1949–62*

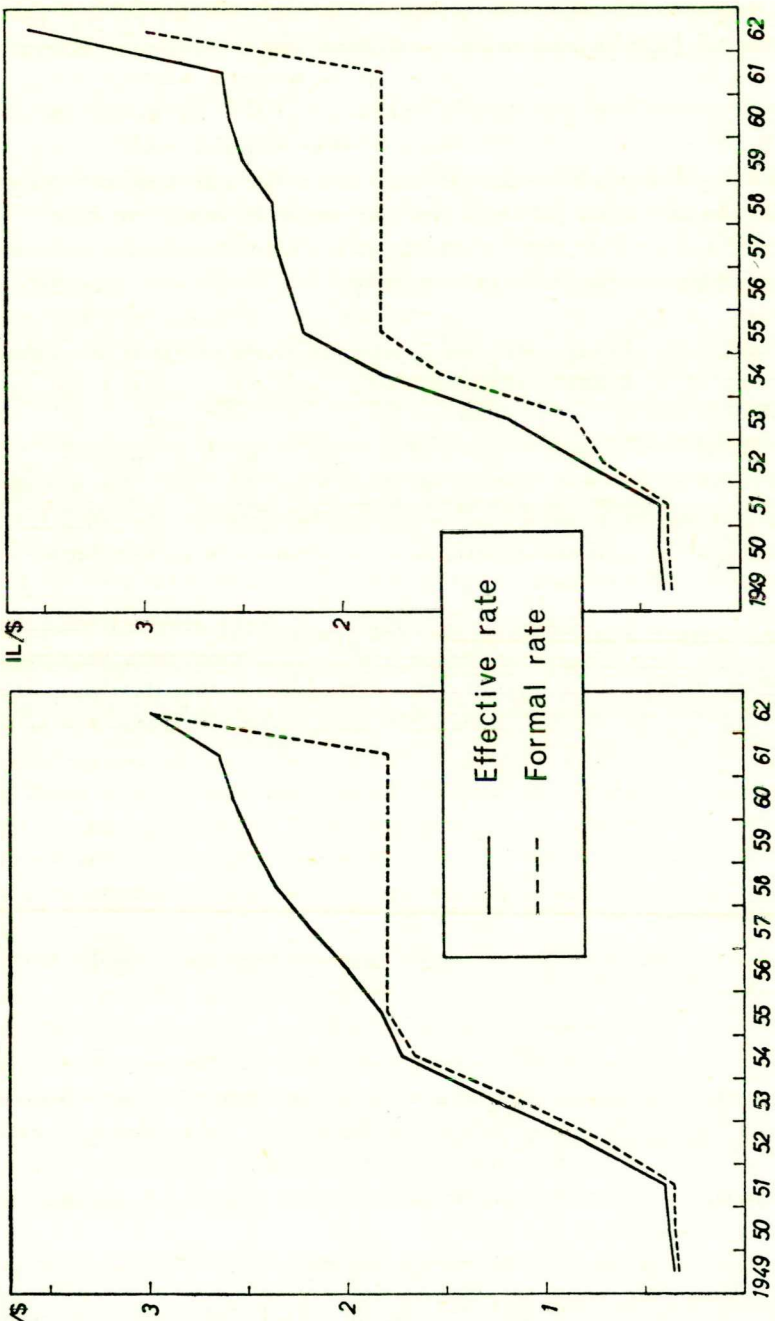
(IL per dollar)

	Formal rate		*Nonformal component*		*Nonformal component as per cent of effective rate*	
	Exporter's	*Importer's*	*Exporter's*	*Importer's*	*Exporter's*	*Importer's*
	(1)	*(2)*	*(3)*	*(4)*	*(3)* / *(1)+(3)* (5)	*(4)* / *(2)+(4)* (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[a]	0.702	0.694	0.105	0.111	13.0	13.8
1953[a]	1.163	0.830	0.113	0.337	8.9	28.9
1954[a]	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	1.800		0.687	0.704	27.6	28.1
1960	1.800		0.776	0.767	30.1	29.9
1961	1.800		0.855	0.804	32.2	30.9
1962[b]	3.000		–	0.570	–	16.0

[a] Averages of the several formal rates in force in 1952, 1953, and 1954, weighted by the value of transactions carried out at each rate.
[b] The 1962 figures refer to the period after the devaluation of February 9.

It appears from the table that the formal rate was throughout the dominant rate component. The share of the other components did not come to more than one third of the effective rate even at its peak, in 1961. Its apparent rising trend may not be very significant in view of its frequent fluctuations.

FIGURE II. *The Effective Rate and the Formal Rate: 1949–62*



SOURCE: Table 4–3.

Special attention should be paid to any possible relationship between the movement of the formal and nonformal rate components. Several hypotheses can be set up of which we shall compare two which *a priori* seem plausible. According to the first, the movements of the formal and effective components are totally unrelated. This corresponds with the assumption that the nonformal components of the effective rate were not designed to have any exchange rate function and should therefore not be affected by any change in the formal exchange rate.[6] The second hypothesis, which is the converse of the first, is that the nonformal components are merely substitutes for the formal rate. By this assumption we should find that when the formal rate was changed considerably, the share of the other components decreased. Conversely, whenever the formal rate remained unchanged a considerable rise may be expected in the nonformal component.

The data of Table 4–3 show differences between sub-periods as well as between exports and imports. By and large, however, the second hypothesis—that there is an inverse relationship between the formal and informal component of the effective rate—seems to be more valid for exports than for imports. Both the absolute and the relative level of the informal component of the export rate generally went down when a formal devaluation was carried out. The exception was 1952, when both the formal rate and the nonformal component almost doubled, so that their proportions in the effective rate hardly changed. In all other years, there is a clear inverse relationship between the two. In 1949–51 when the formal exchange rate remained practically unchanged, the absolute and relative levels of the nonformal component both went up. In 1952–55 the opposite happened (with a slight deviation in 1954): there was a formal devaluation of over 150 per cent and the nonformal component of the exchange rate almost disappeared.[7] In 1955–61 the earlier process was repeated but with greater force and consistency; the formal rate remained unchanged whereas the nonformal component increased steadily, to about 30 per cent of the effective rate or close to half the formal rate. The formal devaluation of 1962, like that of 1952–54, once more reversed the movement: the devaluation was considerable and with it the nonformal component of the rate disappeared. It may thus be concluded that the nonformal component of the effective export rate as a rule served as a substitute for formal devaluation. It could even be said that the formal devaluation of 1962

[6] See the section on the 'intended' rate, Chapter 3, pp. 75–77.

[7] According to the data on which Table 4–3 is based, and which do not include Pamaz provisions which came into force in 1953. Including the Pamaz component might have led to a different conclusion.

merely completed the process of gradual devaluation through the nonformal component that took place from 1955 on: the increase in the effective rate due to the formal devaluation was of the same order of magnitude as the annual increase in the preceding years. The earlier formal devaluations, however, did not merely replace nonformal devaluation, as each of them resulted in a considerable increase in the effective rate.

In imports matters were different. In 1949–51, when the formal rate was stable, the nonformal component declined slightly; in 1951–55, in spite of a formal devaluation (of over 400 per cent!) the nonformal component not only failed to decline but its absolute level increased enough for its share of the effective rate to rise considerably. It may therefore be assumed that at this time the nonformal component was not a substitute for the formal component. Between 1955 and 1961, on the other hand, imports developed similarly to exports. The formal rate remained stable, while the nonformal component rose steadily so that its share of the effective rate increased. But the orders of magnitude were entirely different in imports and exports: whereas the share of the nonformal component in the effective export rate increased from 2 to 36 per cent from 1955 to 1961, it only rose from 19 to 31 per cent in the import rate. This is also true of the 1962 devaluation: the formal devaluation brought down the asbolute, and consequently also the relative, level of the nonformal effective import rate component; the shift was in the same direction as in exports, but it was much less pronounced. Hence, although it may be inferred from the 1955–62 data that to some extent the nonformal import rate component was a substitute for a rise in the formal rate, this is only partly true. Independent factors were responsible for some of the movements. This is not surprising since customs, the chief nonformal component of the effective import rate, were presumably also supposed to fill their conventional functions, besides changing the exchange rate.

3. The Exchange Rate and Other Prices

We have seen that the effective rates went up steeply and steadily throughout the period. For most purposes of economic analysis, however, information is required not only about the changes in the exchange rates as such but also about how they are related to other relevant price changes. A question of general interest is how the exchange rate shifted in relation to the economy's general price level which (as a weighted average) represents the price movements of individual commodities and services. In our calculation the general price level is represented by the price index of gross national product, which for this purpose is preferable to the price index

TABLE 4–4. *The Effective Exchange Rate, the Domestic Price Level, and Purchasing Power Parity: 1950–62*[a]

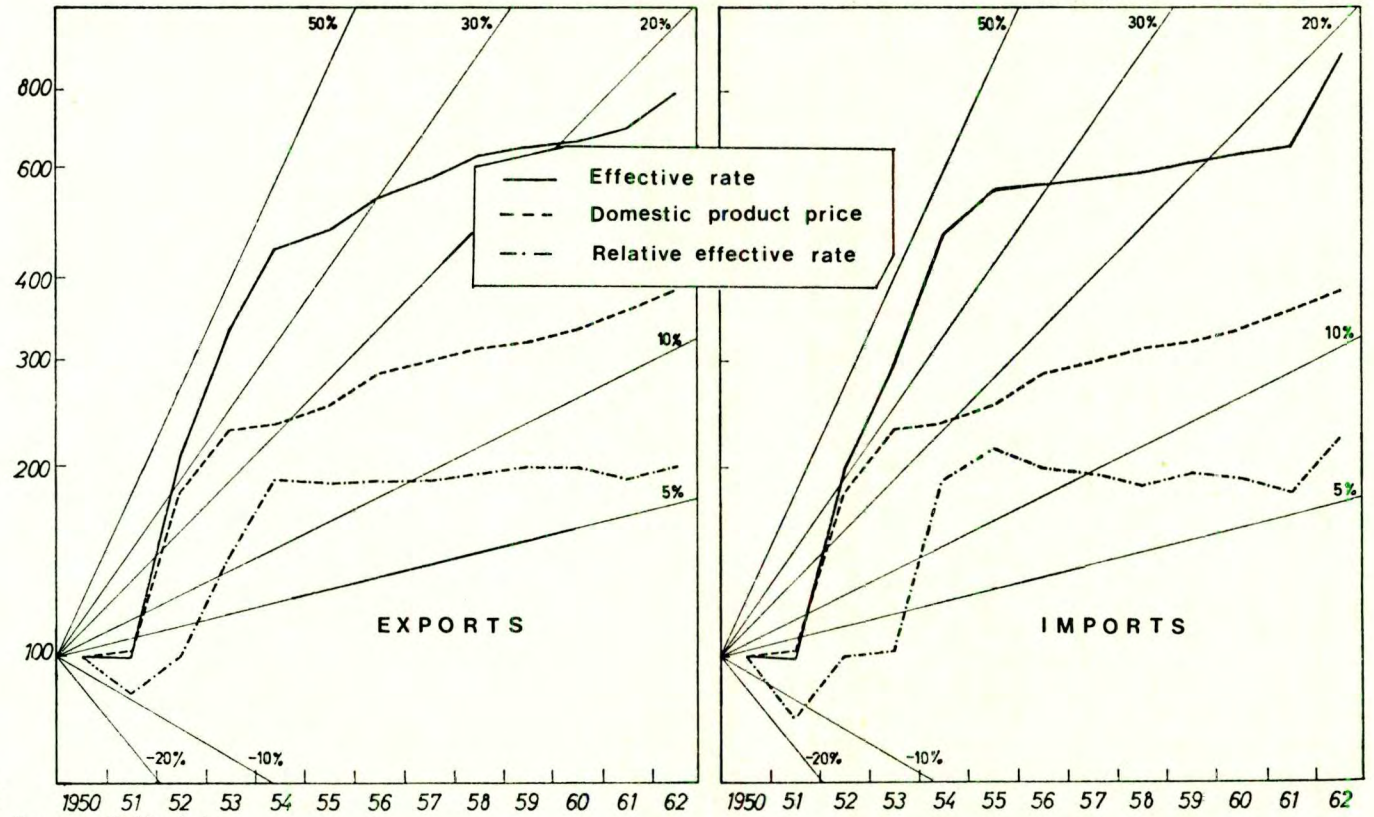
(index, 1950=100)

	Effective exchange rate[b]		*Gross national product prices*	*Purchasing power parity*	*Exporter's rate relative to*		*Importer's rate relative to*	
	Exporter's	*Importer's*			*Domestic price level*	*Purchasing power parity*	*Domestic price level*	*Purchasing power parity*
	(1)	*(2)*	*(3)*	*(4)*	*(1)÷(3)* *(5)*	*(1)÷(4)* *(6)*	*(2)÷(3)* *(7)*	*(2)÷(4)* *(8)*
1950	100	100	100	100	100	100	100	100
1951	106	98	122	103	87	103	80	95
1952	210	200	184	154	114	136	109	130
1953	331	290	230	208	144	159	126	139
1954	448	447	237	222	189	202	189	201
1955	474	550	254	223	187	212	216	247
1956	532	562	280	234	190	227	201	240
1957	574	581	297	236	193	243	196	246
1958	615	585	312	262	197	235	187	223
1959	646	623	320	279	202	231	195	223
1960	669	638	330	285	203	235	193	224
1961	690	648	357	314	193	220	182	206
1962	779	888	384	344	203	226	231	258

[a] See explanation in text pp. 93–96, 97–98.
[b] The 1962 figures refer to the period after the devaluation of February 9.
SOURCE: *Appendixes* (Hebrew).

FIGURE III. *The Effective Exchange Rate and the Domestic Price Level: 1950–62*

(index, 1950=100; semi-log scale)



SOURCE: Table 4–4.

of total resource use (private and public consumption and gross investment), since the latter reflects the movement of the exchange rate itself, via its effects on import and export prices. The ratio of the exchange rate index to the domestic price index is shown in Table 4–4[8] and in Figure III.

Table 4–4 shows the relative level of the effective import and export exchange rates. From it and the accompanying diagram it appears that in 1949–51 there was a relative decline in the effective exchange rates, reflecting a very slight rise in the rates and a considerable rise in domestic prices.[9] There was a marked relative increase in the effective rate in 1952–54—the years of the sizable (formal and effective) devaluation—when the effective rate grew to 4.5 times its initial level. The domestic price level also rose, but by much less. Consequently, the relative effective rates more than doubled from 1951 to 1954. The subsequent years were a period of stability, when both the exchange rates and the domestic price level rose only moderately. The relative level of the effective rates thus remained fairly stable between 1954 and 1961, with minor annual fluctuations round a slight rising trend for exports and a downward trend for imports.

To sum up, in 1949–51 there was a real appreciation of the Israel pound (where we use the term 'real' for changes in the exchange rate relative to the domestic price level); in 1952–54 there was a real devaluation; from 1955 to 1961 there were no significant changes; and in 1962 there was a real devaluation of the importer's rate, while the exporter's rate remained stable.

The causal relationships between the exchange rate and the domestic price level are not discussed in this study, but several facts are worth noting. It may be assumed that the 1952–54 devaluation was not primarily designed merely to counter the effect of a prior rise in domestic prices: the 1952 devaluation alone would have been sufficient to bring the rela-

[8] The price indexes in this section were computed by Shmuel Shraier. Details and sources of the calculations are given in *Appendixes* (Hebrew).

[9] Only partial data are available on the domestic price level in 1949, and this year is therefore not included in Table 4–4 and Figure III. However, the full data would probably confirm that the trend existed from 1949.

In 1949–51, especially in 1951, domestic prices almost certainly rose much more than is shown by the index of column (3), which is based on official price indexes, mainly the Consumers Price Index. In these years the official indexes were deficient in particular, the Consumers Price Index did not properly weight the prices of uncontrolled goods and services, while black-market prices were not reflected at all. Since these prices rose much more steeply than did controlled prices, the index is downward biased. For similar reasons, it is probable that in the first few years of the subsequent period the rise in prices is overestimated.

tive effective exchange rates up to the 1949 levels. The additional devaluations, of about 120 per cent in 1953 and 1954, cannot be explained as compensation for local price movements in these years. It is sometimes argued that they were made in anticipation of future price developments, that is: after the 1952 devaluation a considerable rise in prices was expected, and the 1953 and 1954 devaluations were intended to compensate for it and ensure that the 1952 devaluation should be a real one. It is difficult to disprove the existence of intentions of this kind by reviewing actual developments, but the expectations were certainly not borne out by them. The effective exchange rates rose by about 120 per cent from 1952 to 1954, while the domestic price level rose by only 100 per cent from 1952 to 1961, the year before the next devaluation. Even if it were argued that the domestic price rises from 1952 until the end of 1961 were the result of the 1952–54 devaluations, the conclusion would have been that their price-raising effect works itself out only over many years. In any case, the rise in prices can hardly be attributed to the 1953 and 1954 devaluations beyond 1958 or 1959, since it came to a virtual halt then. Within this period, from 1952 until 1958, the domestic price level rose by only about 80 per cent or by only two thirds of the 1952–54 devaluation.[10] Finally, the developments of 1954 should be noted. In that year alone, the importer's effective rate rose by more than 50 per cent, over and above the extensive devaluations of the preceding two years; the domestic price level nevertheless rose by only about 5 per cent.

The relationship between the exchange rate and the domestic price level may also be expressed by means of the purchasing power parity rate which takes account of foreign as well as domestic price movements, rising with the domestic price level and falling when the foreign price level increases.[11]

[10] As stated in the preceding footnote, it may also be assumed that domestic prices actually rose less in 1952 and 1953 than appears from column (3) of Table 4–4 since some of the price rises recorded in these years in fact took place earlier.

[11] The purchasing power parity for any period 1 is defined in relation to the base period 0 as follows:

$$\frac{R_1}{R_0} = \frac{P_{h1}}{P_{h0}} \div \frac{P_{f1}}{P_{f0}}$$

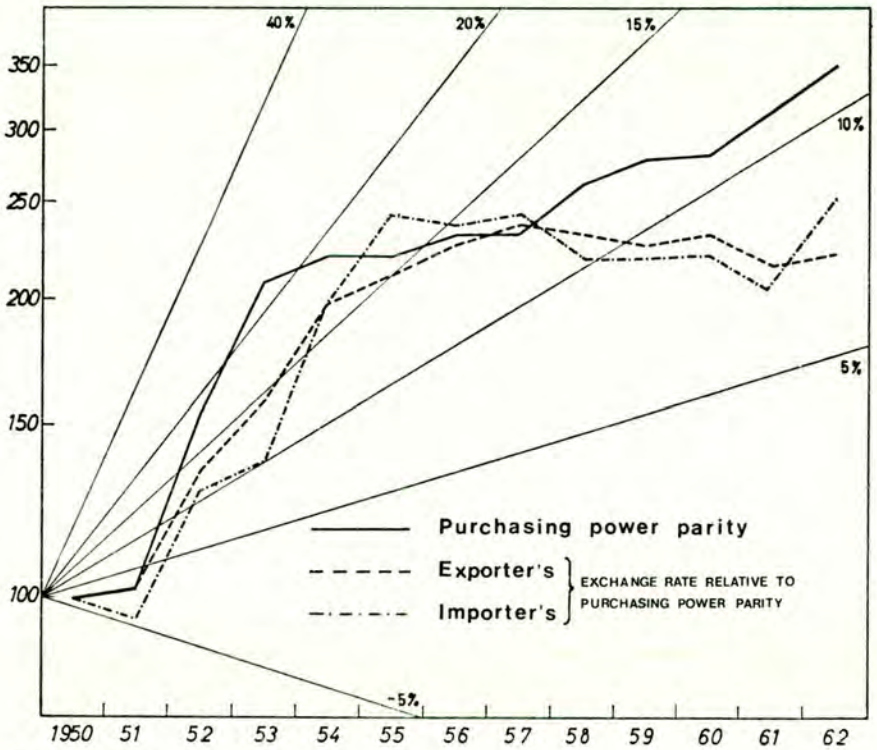
where R = purchasing power parity
P_h = domestic price level
P_f = foreign price level

The domestic price level here means the price level of the domestic uses of the national product, whereas the relevant foreign price level is that of Israeli imports and exports abroad. The details of the calculation are presented in the *Appendixes* (Hebrew).

The comparison of the effective rates with the purchasing power parity is shown in columns (6) and (8) of Table 4–4 and illustrated by Figure IV. Obviously this comparison closely resembles the earlier comparison of the exchange rate with domestic prices alone, since foreign price movements were generally minor compared with those in Israel. Comparing the corresponding series in Table 4–4 [column (5) with column (6) and column

FIGURE IV. *The Effective Exchange Rate and Purchasing Power Parity: 1950–62*

(index, 1950=100; semi-log scale)



SOURCE: Table 4–4.

(7) with column (8)] we find a marked difference between them in only a few years. Thus, in 1954–57, the importer's rate rose only slightly in relation to the domestic price level, whereas it went up significantly in relation to the purchasing power parity owing to the rise in foreign prices at that time. Generally, however, the development was the same as described before: up to 1955 the rates rose considerably more than pur-

chasing power parity; from then on, the exporter's rate rose, with slight fluctuations, only to about the same extent as purchasing power parity; while until 1961 the importer's rate declined relatively to purchasing power parity, also with slight fluctuations—to go up steeply at the time of the 1962 devaluation. The comparison with purchasing power parity throughout shows a higher relative rise in the effective rate than does the comparison with the domestic price level. This is due to the fact that foreign prices kept rising, which tends to lower the purchasing power parity. Consequently the effective rates appear to rise more when compared with

TABLE 4–5. *The Effective and the Black-Market Exchange Rates: 1949–62*

(IL per dollar)

	Black-market rate (1)	*Ratio of effective to black-market rate*	
		Exporter's (2)	*Importer's* (3)
1949	0.466	1.32	1.21
1950	0.704	1.83	1.75
1951	1.536	3.77	3.89
1952	2.517	3.12	3.13
1953	2.417	1.89	2.07
1954	2.606	1.51	1.45
1955	2.303	1.26	1.04
1956	2.511	1.23	1.11
1957	2.518	1.14	1.08
1958	2.381	1.01	1.01
1959	2.652	1.07	1.06
1960	2.453	0.95	0.96
1961	2.570	0.97	0.99
1962	3.207	1.07	0.90

SOURCE: Black-market rate—CBS, *Abstract 1958/59,* No. 10, p. 210, Table 4 (for 1949); *Abstract 1966,* No. 17, p. 519, Table Q/5 (for 1950, 1953–62); *Abstract 1956/57,* No. 8, p. 148, Table 19 (for interpolation of 1951–52). Effective exchange rates—Table 4–1.

purchasing power parity than with the domestic price level. From the beginning until the end of the period, the effective rates rose by about twice as much as purchasing power parity. This is another indication that the rise in the exchange rate not only compensated for the increase in other domestic and foreign prices, but exceeded it by far.

The relationship between the effective rates and the black-market foreign exchange rate is also of interest. This is shown in Table 4–5. As may be seen from this table, the black-market rate rose rapidly from 1949 to 1952,

to over 5 times its initial level, while the effective rates remained practically unchanged.[12] This kind of relationship—a steep rise in the illegal rate with the legal rate remaining stable—may be expected under the conditions of acute inflation and growing foreign-exchange shortage that were characteristic of the Israeli economy at the time. After the 1952 devaluation, the movement was in the opposite direction. The formal rates went up rapidly and consistenly whereas the black-market rate, with slight fluctuations, remained almost constant.

During the period when the black-market rate rose steeply, the ratio of the black-market to the effective rate almost quadrupled. When the black-market rate levelled off the trend was reversed until in 1958–62 the two rates were about equal. There is obviously no reason why the rates *must* be equal. The black-market rate cannot be below the formal rate but as a rule there is no necessary correspondence between it and the effective rates. Nevertheless, the fact that the two rates were equal does not seem to be entirely coincidental. It may be conjectured that in setting the effective rates the government took the black-market rate into account, for several reasons. One is the widespread though fallacious view that the black-market rate represents the equilibrium price of foreign exchange, and that therefore the effective rate should be fixed so as not to be far removed from the black-market rate. Another reason is connected with the operation of the black market and relates mainly to export transactions. When the effective rate is considerably below the black-market rate there is a strong incentive for exporters to sell their proceeds on the black market. On the other hand an exporter's rate that is much higher than the black-market rate acts as an incentive in the opposite direction: it is an inducement to overstate the volume of exports, buy foreign exchange on the black market, and sell it to the government as export proceeds. In addition to deterring the government from setting an effective rate greatly at variance with the black-market rate this mechanism apparently helped to bring the black-market rate close to the effective rate once the latter had been set.[13]

[12] The black-market rate in fact ceased to rise at the beginning of 1952, with the start of the formal devaluation. The 1952 figure in the table is substantially above the 1951 figure because during 1951 the rate rose steeply so that the average for the year is considerably below the end-year figure. In other words, if end-year rates were used in the comparison, the figure would be lower in 1952 than in 1951.

[13] There is also a conjecture, based on partial and unconfirmed information, that in one major instance the government itself recognized black-market operations as a substitute for setting a higher effective rate. This is the case of diamond exports during the period of the premium provisions. When the black-market rate

4. The Dispersion of Rates in the System

So far, we have dealt with the size and development of the effective average exchange rates of large aggregates—total imports and exports. Here and in the following sections, we shall deal with the characteristics of the exchange rate *system,* that is, we shall try to find out what distinguishes a multiple from a uniform rate system. We shall not be concerned with its consequences but confine ourselves to a description of the system.

When the system comprises several exchange rate components instead of only the formal rate, the necessary consequence—in practice if not in logic—is the existence of multiple exchange rates at any given period. Moreover, it can hardly be assumed that the exchange rate system would have taken this form if it had not from the start been designed to allow for the existence of different exchange rates for different payments to and receipts from abroad. A cursory glance indeed suggests that the commodity group rates—and even more the single commodity rates—are markedly heterogeneous. Though our main concern is with the import rates, we shall first briefly review the export rates.

a. Export rates

There is no practical way of giving an accurate description or even a reasonably reliable approximation of the dispersion of the system of exporter's rates, because some components which could produce considerable differences, mainly those deriving from the Pamaz and linkage provisions, have not been measured here.[14] Instead of actually measuring the Pamaz component, it was assumed that it was equivalent to the standard value-added premium, which was the minimum always available to the exporter if he made use of the premium instead of the Pamaz provisions. This assumes a uniform rate consisting of the formal rate and the standard premium. The procedure presumably does not markedly diminish the reliability of the average rate computation for aggregate exports, but it invalidates any

was above the effective rate, that is, the formal rate *plus* the premium to diamond exporters, the government tended to underestimate the value added of diamond exports, making it possible for exporters to sell some of their foreign exchange proceeds on the black market. When the effective rate rose above the black-market rate, a higher value-added proportion was set, so that the exporter could buy foreign exchange on the black market and sell it to the government as if it were export proceeds.

[14] The data in the *Appendixes* (Hebrew) are only partial and are mainly illustrative. See pp. 37–38 above.

calculation of the variability of the separate rates from the outset. Any index of dispersion of export rates will thus have little meaning.

Nevertheless, at least some of the more important rates may be compared. As stated, the Pamaz and linkage provisions applied to most but not all export industries. Included were practically all industrial exports, but diamond exports were a major exception. Nor did the provisions cover citrus and services. For these sectors, the premium provisions, too, were different. Four export rates may therefore be compared—for citrus, diamonds, transport, and goods other than diamonds and citrus. The rates

TABLE 4–6. *Principal Exporter's Exchange Rates: 1949–62*

(IL per dollar)

	Merchandise excluding citrus and diamonds (1)	*Diamonds* (2)	*Citrus*[a] (3)	*Transport*	
				Aviation (4)	*Shipping* (5)
1949	0.347	0.389	0.343	..	
1950	0.390	0.393	0.380	..	
1951	0.391	0.424	0.410	..	
1952	0.742	0.951	0.757	..	
1953	1.370	1.199	1.224	..	
1954	1.768	1.474	1.800	1.800	
1955	1.827	1.868	1.800	1.800	
1956	2.350	2.400	1.800	1.800	
1957	2.700	2.650	1.800	1.800	
1958	2.680	2.650	2.050	1.800	
1959	2.730	2.650	2.160	2.650	1.920
1960	2.750	2.650	2.300	2.650	2.160
1961	2.750	2.650	2.490	2.650	2.160
1962[b]	3.000	3.000	3.000	3.000	

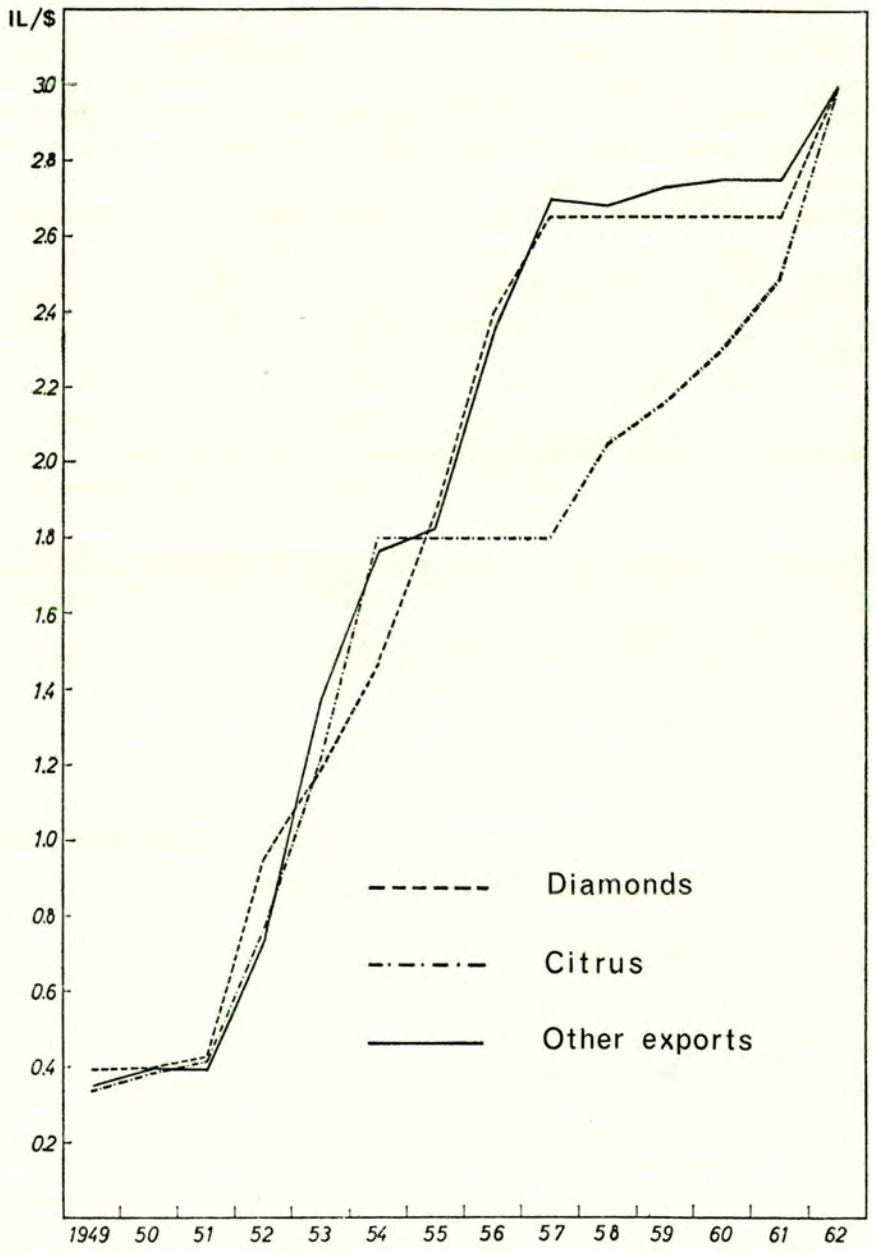
[a] Agricultural years (see note b to Table 2–5).
[b] After the devaluation of February 9, 1962.

measured for the first three, which accounted for the bulk of total exports, may be assumed to at least approximate the actual ones, but for the remaining exports, the rates calculated for the Pamaz and linkage period constitute only the lower limit of the actual rates. The four rates are compared in Table 4–6 and Figure V.[15]

Table 4–6 shows that through 1955, there was no substantial difference between the rates. Their rank varied from year to year, but the distance

[15] The rate for transport services is not presented in Figure V because for the earlier years no data are available and in the later years two rates applied.

FIGURE V. *Principal Exporter's Exchange Rates: 1949–62*



SOURCE: Table 4–6.

between them was neither consistent nor great. From general information it may be assumed, even though no precise calculation was made for most years, that this was also true of the transport export rate. From 1956 on, the dispersion increased and the ranking was consistenly maintained: (in descending order) goods other than citrus and diamonds, diamonds, citrus and transport services, the last two fairly similar.[16] Had the Pamaz and linkage components been included, the first rate would have been still higher. The other three rates would not be affected as these export classes did not, and by their nature could not, benefit from the compensatory domestic market provisions. With the 1962 devaluation, the different export rates were amalgamated so that their variance disappeared. However, there were still some provisions which, if included in the exchange rate system, would have boosted the export rate of some commodities.

As there is no possibility of measuring the real dispersion of the exporter's rates, it is also impossible to compare it with the dispersion of the importer's rates, reviewed below. Nevertheless, the outcome of such a comparison may be safely assumed. Many rates were quite close to the average in the 'other than citrus and diamonds' category (which accounted for only a minor share of total exports). The four rates shown in Table 4–6 thus cover the bulk of exports, and the similarity between them is much greater than between the import rates. This result will be strengthened if extreme cases of commodities with a small volume of trade and particularly high rates are omitted, since these were apparently more frequent in exports than in imports.

b. Import rates

Several statistical indexes may be used to describe the scatter of the import rates. The most convenient index for our purpose seems to be the weighted standard deviation (Table 4–7).[17]

[16] This is true only as long as one takes the combined rate for transport services, which is a weighted average of the rates for shipping and aviation; in 1959–61 however shipping and aviation rates differed considerably.

[17] This index is

$$\sigma = \sqrt{\frac{\Sigma(R_i - \bar{R})^2 M_i}{\bar{R}\,\Sigma M_i}} \quad \text{or} \quad \sigma = \sqrt{\frac{\Sigma(R_c - \bar{R})^2 M_i}{\Sigma R_i M_i}}$$

where R_i is the importer's rate for commodity i,
M_i is the import value of comodity i, and
$\overline{R}$ is the average importer's rate $[= (\Sigma R_i M_i)/\Sigma M_i]$

In order to make the index meaningful, Table 4–7 shows the coefficient of variance $\sigma/\overline{R}$, instead of the standard deviation.

For some of the years under review the scatter has also been graphically presented by means of the frequency distribution (Figure VI) and the Lorenz curve (Figure VII).[18]

Two major findings stand out. One of them is that the level of dispersion of the import rates was high. True, no absolute statement can be made about whether a coefficient of variance is 'high' or 'low'. This can only be determined by way of comparison, and in relation to the purpose for which we measure dispersion. But it is plausible that, as noted, the import rates show much greater dispersion than the export rates. It may also be con-

TABLE 4–7. *Coefficient of Variance of Importer's Rates: 1949–62*

1949	0.383	1956	0.452
1950	0.161	1957	0.261
1951	0.142	1958	0.345
1952	0.315	1959	0.240
1953	0.468	1960	0.395
1954	0.285	1961	0.435
1955	0.306	1962	0.268

jectured that the dispersion was considerably greater than in most other countries, especially those that have a uniform formal rate.[19]

The second finding is that there were considerable fluctuations in the degree of scatter. In 1950 and 1951, it was very low and the importer's exchange rate system came closer to a uniform rate system than in any other year. In 1952, and still more in 1953, the scatter increased considerably. These were the years of the multiple rates which discriminated

[18] The diagrams were made for selected years only for reasons of economy. The years were selected by inspection of the data presented in Table 4–7. In Figure VII single Lorenz curves are given for 1952–54 and 1959–61 because of the great similarity between the separate curves for these years.

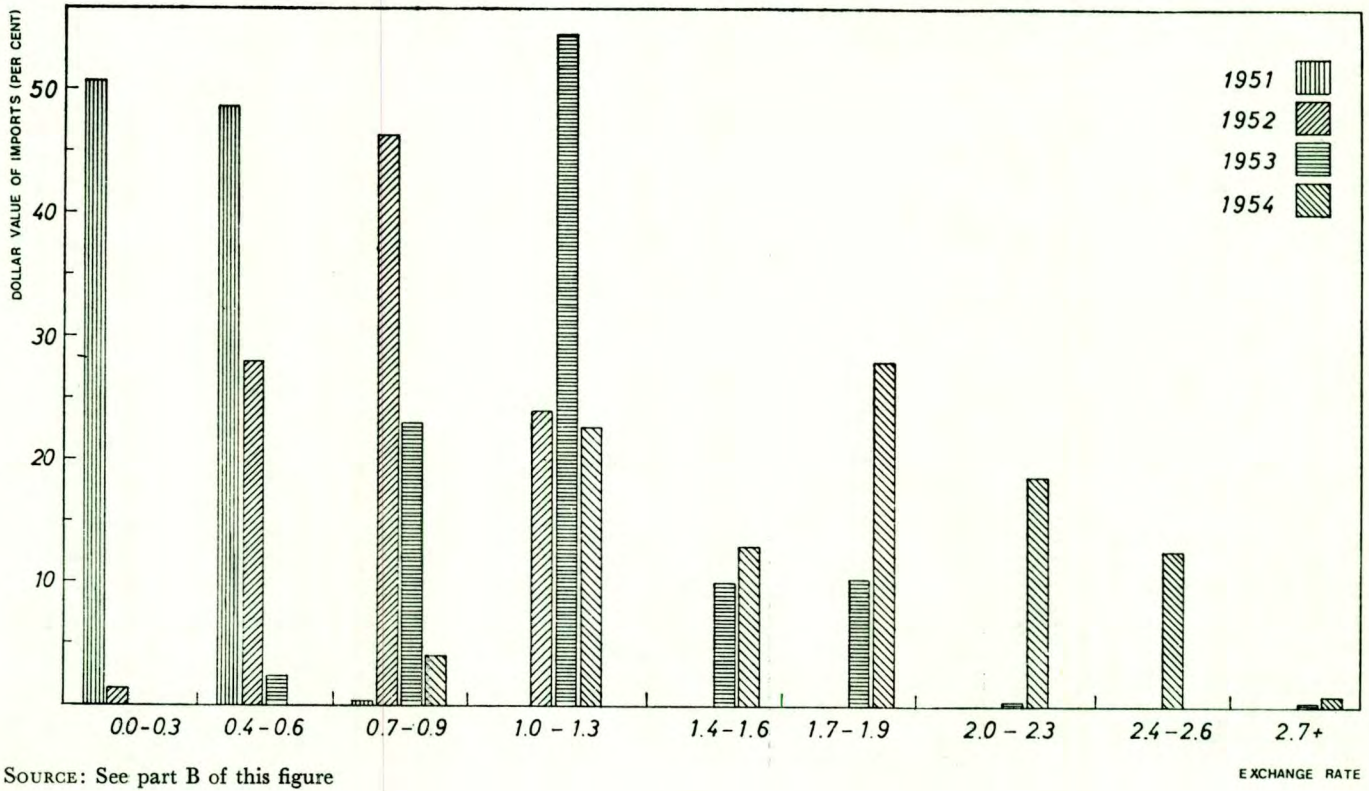
[19] To illustrate the meaning of the coefficient of variance, we shall examine the following numerical examples:

a. Assume that imports consist of five commodities of equal weight, whose rates are IL 1, 2, 3, 4, and 5 per dollar. The coefficient of variance will then be about 0.45, similar to that found in Israel during the years when the scatter was large.

b. Assume that imports consist of three commodities of equal weight, whose rates were IL 2, 3, and 4 per dollar. The coefficient of variance will then be about 0.27, as found in the years when the scatter was smallest.

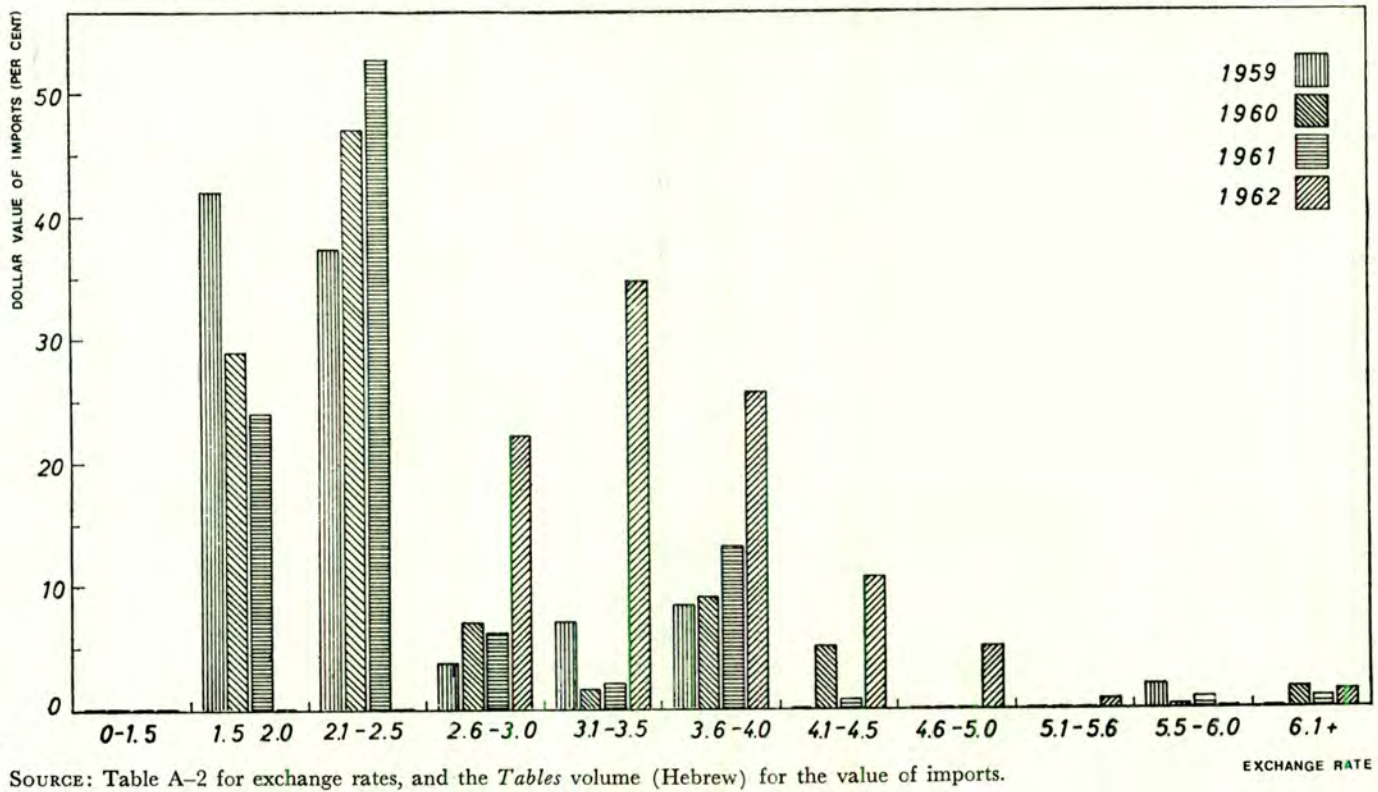
c. Assume that after the 1962 devaluation, half of the imports were made at the formal rate of IL 3 and the other half at a rate of IL 5 per dollar. The coefficient of variance will then be 0.25, which is slightly below the actual coefficient found for 1962.

FIGURE VI. *Distribution of Importer's Exchange Rates*
A. 1951–54



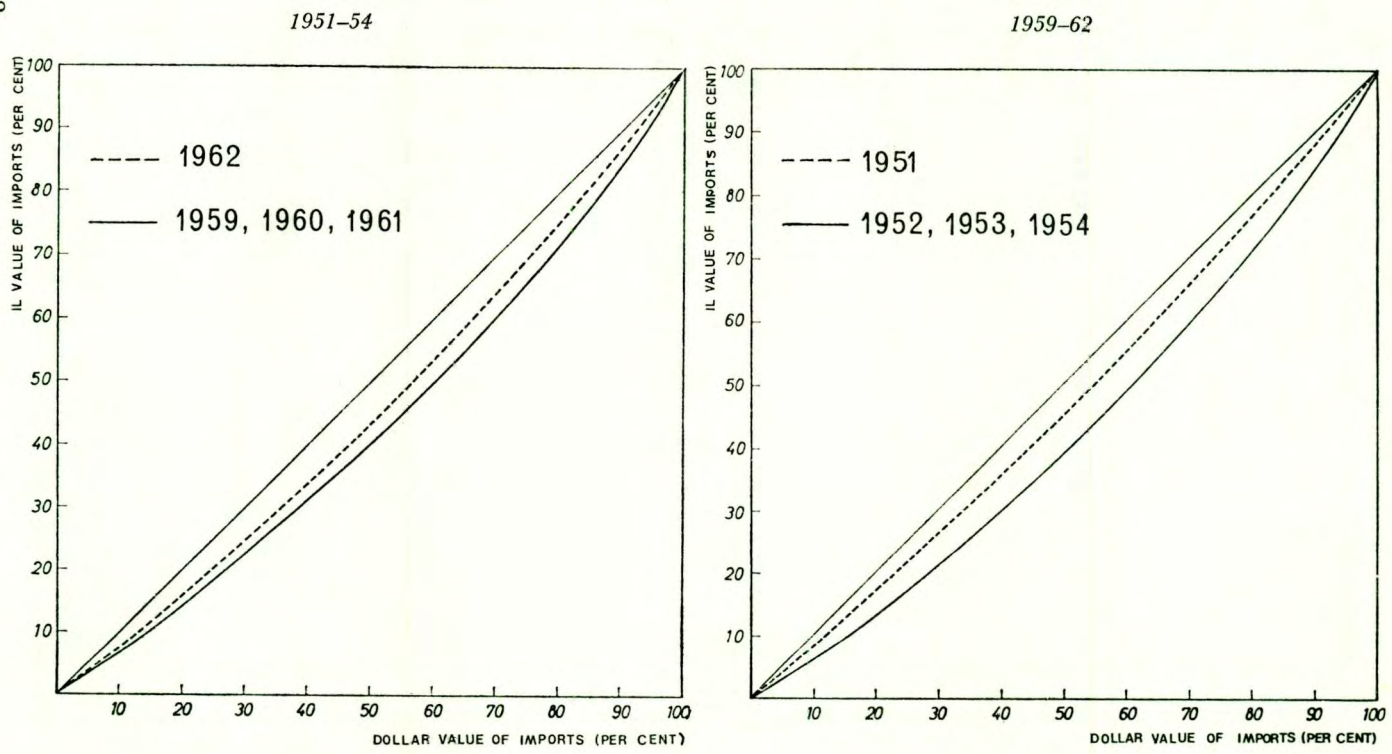
SOURCE: See part B of this figure

FIGURE VI. *Distribution of Importer's Exhange Rates*
B. 1959–62



SOURCE: Table A–2 for exchange rates, and the *Tables* volume (Hebrew) for the value of imports.

FIGURE VII. *Distribution of Importer's Exchange Rates—Lorenz Curves*



SOURCE: See source to Figure VI.

between commodities. In addition, the nonformal component of the exchange rate rose considerably both absolutely and relatively;[20] the increased dispersion of the import rates was probably due to variations in the informal components as well as to the different formal rates.

In 1954 and 1955 the dispersion was again smaller. Not only did the formal rates coalesce but, as shown in Table 4–3, the share of the informal component decreased.[21] From then on dispersion tended to rise, although the trend was not strong compared with the annual fluctuations, which were probably a random result of continuous processes. For instance, quota restrictions were replaced by levies in the course of the liberalization process begun in 1956; since the levies applied to only some commodities, they tended to increase the rate scatter. Afterwards, when the process was extended to other commodities as well, the scatter was reduced. The increase in dispersion is particularly pronounced in 1960 and 1961, the two years before the formal devaluation of 1962. In contrast to the preceding devaluuation, this one considerably reduced dispersion since the accompanying changes in customs tariffs and other levies operated in this direction. Although no proper comparison can be made of how the devaluation affected the variability of imports and exports, it is probable that the effect was much greater on imports than on exports. In other words, the formal devaluation of 1962 implied not only a much higher average devaluation in imports than in exports, but also a stronger shift towards amalgamation of rates.[22]

5. The Ranking of Importer's Exchange Rates

a. The consistency of ranking

As we have seen the importer's rates varied over a wide range. Whether this result is significant depends to a large extent on the answer to another question—whether the pattern of scatter of import rates was consistent,

[20] See p. 92.

[21] For the purposes of the present discussion the absolute and relative decline in the informal component from 1954 to 1955 is irrelevant. It was due mainly to changes in definition, by which (pp. 11–12) the lower formal rates were abolished in August 1954, to be replaced by subsidies. An increase in subsidies naturally led to a decline in the informal component (as long as they did not exceed the other, positive, informal components of the exchange rate). As the change in definition had no effect on the importer's rate, it should also not affect its scatter.

[22] Especially if one bears in mind that the items whose effects are not reflected in our data, particularly the Pamaz provisions, played a much smaller role on the eve of the formal devaluation than in the preceding years. Nevertheless, after the 1962 devaluation variability was still much higher for imports than exports.

or whether it was merely a random result. In this connection we refer to the relative position of the commodities over the range. If the commodities consistently kept their relative position, it may be assumed that the variability of the importer's rate system was a result of a deliberate policy and that it had a significant effect on economic behaviour. If, on the other hand, a commodity that had a high rate in one year had a low one in the next, it may be assumed that its relative rate level in either year was not due to any deliberate policy, and had little effect on the economy, as the commodity maintained its relative price for only a short time.

The consistency of the scatter should therefore be examined by comparing the rank of each commodity in each year. A suitable index for this purpose is Spearman's rank correlation coefficient. The test was applied to 277 commodities during the period 1955–62.[23] The period and the number of commodities were limited because only those items that appeared throughout the period could be usefully examined. If a longer period had been taken, the number of commodities would have been much lower, so that the comparison would have lost most of its meaning. As it is, not all commodities appear in all the years of the restricted period covered here; those that do not are omitted. The coefficients of correlation between the ranks of each pair of years of the period are shown in the form of a symmetrical matrix (Table 4–8). The value in the 1960 column in the

TABLE 4–8. *Rank-Correlation Coefficients of Importer's Exchange Rates: 1955–62*[a]

	1955	*1956*	*1957*	*1958*	*1959*	*1960*	*1961*	*1962*
1955	–	0.69	0.65	0.57	0.59	0.52	0.60	0.64
1956	0.69	–	0.65	0.55	0.53	0.48	0.55	0.63
1957	0.65	0.65	–	0.51	0.48	0.49	0.54	0.50
1958	0.57	0.55	0.51	–	0.70	0.65	0.67	0.66
1959	0.59	0.53	0.48	0.70	–	0.67	0.71	0.67
1960	0.52	0.48	0.49	0.65	0.67	–	0.73	0.73
1961	0.60	0.55	0.54	0.67	0.71	0.73	–	0.68
1962	0.64	0.63	0.50	0.66	0.67	0.73	0.68	–

[a] See explanation in text.

line for 1957, for instance, is the rank correlation between these two years. The same value of course also appears in the 1960 line of the 1957 column.

The table shows two interesting results: (a) There is a high positive

[23] This applies to most of the calculations. However, the comparison of 1962 with 1955–60 was based on 221 commodities whereas the one for 1961 with 1962 was based on 843.

rank correlation for every pair of years. All the coefficients are significant at any reasonable level. Generally, it seems that the correlation for the years after 1958 is somewhat higher than for the years before 1958. (b) The correlation between adjacent years is not at all or only slightly greater than between non-adjacent years. This may be seen from the mean coefficients of the right-to-left diagonals of the table. The diagonal next to the main (empty) diagonal contains the correlation coefficients of two adjacent years, the next diagonal—the coefficients of two years at one year's remove, and so on. The mean coefficients are as follows:

Diagonal	1 (adjacent years)	0.66
	2	0.63
	3	0.61
	4	0.57
	5	0.52
	6	0.62
	7 (one coefficient only)	0.64

This is particularly interesting, since it shows that no consistent gradual changes took place in the ranking of commodities. There seems to have been a general rank order that was maintained over the entire period, any deviations from it being random and tending to right themselves from one year to the next.

This impression is confirmed by another index—Kendall's coefficient of concordance.[24] This index tests the degree of correspondence between the rankings of the entire period (and not of two years only, as does the Spearman coefficient). For 1955–61 Kendall's coefficient of concordance was close to 0.7 (0.691).[25] This is higher, though only a little, than the mean of the correlation coefficients between pairs of adjacent years, which was 0.66. It provides further evidence that during the period in question, a consistent ranking of commodties was maintained without any systematic change from year to year.[26]

[24] For the definition and description of this index, see for instance S. Siegel, *Nonparametric Statistics* (New York: McGraw-Hill, 1956) pp. 229–38.

[25] Again, significant at any required level.

[26] The consistency of the system was also tested by means of another index—the Friedman two-way analysis of variance by ranks. Here it is not the intensity of the actual rank correlation that is tested but the probability of the null hypothesis that no correlation exists. The index showed that this hypothesis can be quite definitely rejected so that one can accept with complete certainty the hypothesis that the similarity between the ranks is not a random one. See Siegel, *op. cit.*, pp. 166–72.

It should be noted that the general result also applies to the comparison of 1962, the year following the last formal devaluation of the period, with the preceding year or years. In other words, the formal devaluation, while substantially reducing the spread of the rates, did not fundamentally change the rank of the commodities.

b. The rank of specific commodities

The consistency in the spread of the exchange rates led to the conclusion that the ranking of commodities by their exchange rates was systematic, at least in the period from 1955, for which the indexes were computed. It therefore makes sense to discuss the rank of a specific commodity over the whole period, a figure that can be obtained as the average of the ranks for the years 1955–61.[27]

The average rank order for the 277 commodities which were imported throughout this period is shown in the volume of *Tables* (Hebrew). Even though a table comprising so large a number of commodities obviously cannot give a clear picture, a cursory look shows that finished consumer goods had the highest rates: the commodities appearing at the bottom (highest rates) of the scale are almost all in this category. Finished consumer goods with a low rate (mainly books and periodicals) are the exception. The conclusion is confirmed by a systematic, though partial, check. Commodities were classified into three categories (a) machinery and equipment; (b) raw materials and semifinished products; and (c) finished consumer goods. The classification was not designed to be exhaustive but to comprise the major types of commodity; a commodity was assigned to one of the three categories only when it seemed quite clear that it belonged to it and only to it.[28] Of the 277 commodities 138 were classified in this

[27] The following example for four commodities over three years may help to clarify the procedure:

Commodity	*Rank in*			*Average rank*	*Rank in 1955–57*
	1955	*1956*	*1957*		
A	2	1	1	4/3	1
B	1	3	2	6/3	2
C	3	2	4	9/3	3
D	4	4	3	11/3	4

[28] In addition to commodities that belonged to none of the categories or to more than one, all medical products, such as finished drugs and materials for their production, various apparatuses for invalids, and hospital equipment, were excluded. Whatever their classification, they always came under the lower exchange rates.

way. Their average rank in the 277-commodity array was as follows: machinery and equipment, 54.9; raw materials, 92.4; and finished consumer goods, 206.0, so that it is clear that there was a systematic difference in the ranking of the three categories.

The existence of a systematic difference merely means that the commodities are not scattered at random. However, it is perhaps possible to make a stronger statement: that all commodities belonging to the first category appear first, then all those belonging to the second category, and last, all those belonging to the third category. It is possible to calculate what the average rank in each category would be if this hypothesis were true. This is done in Table 4–9 for the 138 commodities included in the three-category classification: it appears that the picture obtained according to the hypothesis is not far removed from the actual situation. At

TABLE 4–9. *Average Exchange-Rate Rank of Principal Import Categories*[a]

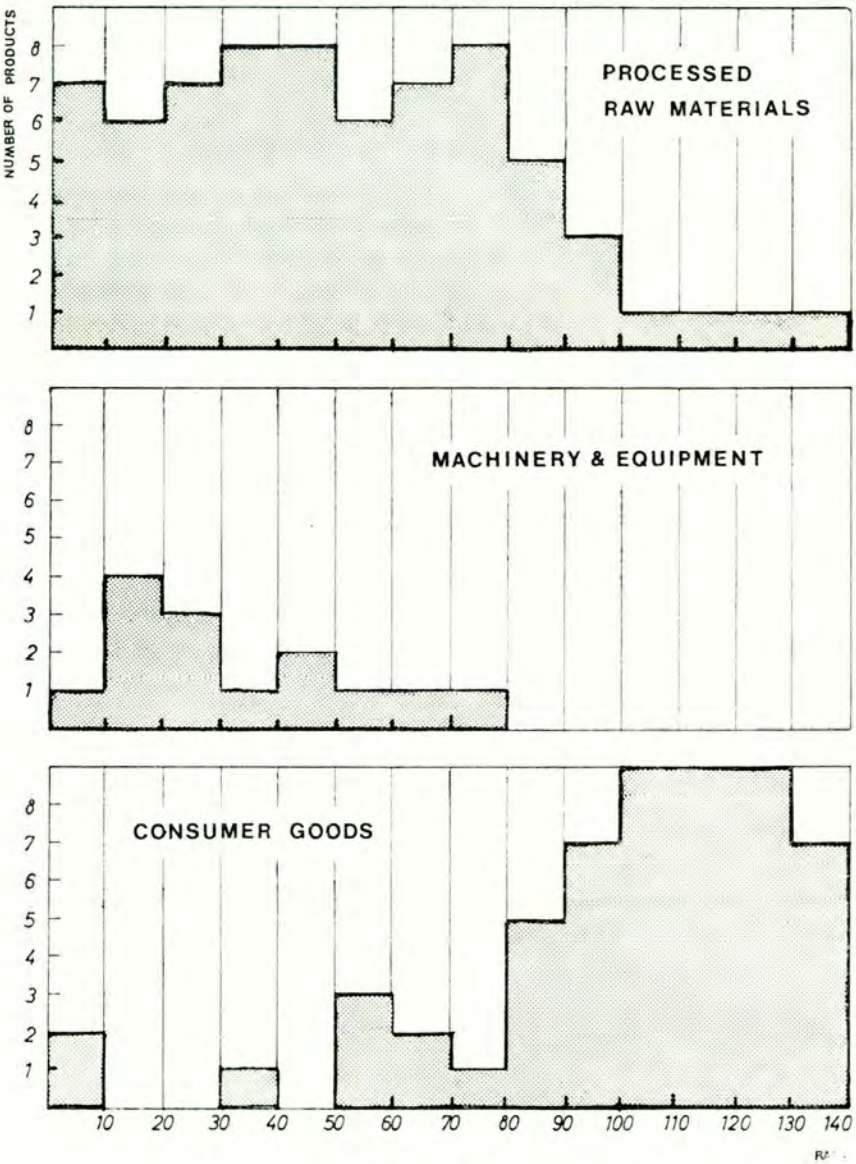
	Actual rank	*Rank assuming perfect consistency*	*Rank assuming random distribution*
Machinery and equipment	33.7	7.5	69.5
Raw materials and semifinished inputs	51.4	49.0	69.5
Consumer goods wholly or mainly finished	101.3	111.0	69.5

[a] See explanation in text.

any rate the actual situation is much closer to this position than to the hypothetical array expected in the absence of any consistent rank order, that is, if the commodities were placed at random in the array. That there was an almost systematic rank order may also be deduced from the frequency distribution of the commodity ranks illustrated in Figure VIII, which also shows that the dispersion was greater for raw materials than for the other two categories.

In conclusion it may be stated that in 1955–61 the import rates were systematically determined: the lowest rates were for machinery and equipment, the second highest—with a wide spread—for raw materials and semifinished products, and the highest rates, for finished goods. A rapid glance at the pre-1955 data shows that this description in general holds for these years as well.

FIGURE VIII. *Ranking of Importer's Exchange Rates, by Principal Commodity Group*[a]



[a] The ranking includes 138 commodities, as follows: processed raw materials, 69; machinery and equipment, 14; consumer goods, 55.
SOURCE: Volume of *Tables* (Hebrew).

6. Differences between Aggregate Import and Export Rates

Comparison of the effective exporter's and importer's rates (Table 4–1) shows that there was no consistent, clear difference between the two, sometimes the one and sometimes the other leading slightly. It is only after the 1962 devaluation that the two rates diverge markedly, the importer's rate rising to about 20 per cent above the exporter's rate—a much bigger difference than the norm for the period.

A more important comparison for purposes of economic analysis is not between the exporter's and importer's rates but between the exporter's and the protection rates. The exporter's rate represents the IL return for a dollar of value added in exports, while the protection rate represents the IL return for a dollar of value added (or saved) in domestic production competing with imports. For a producer weighing the alternatives of production for export or for import substitution, these are the rates that are relevant to his decision.

It will be recalled that it is very difficult to calculate the protection rate either for single commodities or for groups and *a fortiori* for the aggregate or average rate. The weights required for the average are the size of the value added in each group of commodities. As they are available for only one year (1958) the average protection rates can be properly calculated

Table 4–10. *The Exporter's Rate and the Protection Rate: 1956–60*

(IL per dollar)

	Exporter's rate (1)	*Protection rate* (2)	*Relative protection rate (per cent)* (2) ÷ (1) (3)
1956	2.049	3.257	159
1957	2.209	2.912	132
1958	2.369	2.628	111
1959	2.487	3.161	127
1960	2.576	3.465	134

only for that year. In fact, they were also calculated for the two preceding and the two subsequent years by applying the 1958 input/output table and using the 1958 weights for these years as well.[29] The rates calculated in this way are presented in Table 4–10 together with the exporter's rate.

It appears clearly that during 1956–60 the protection rate was higher—

[29] See p. 57.

usually by a wide margin—than the exporter's rate. As the protection rate was calculated in a highly arbitrary fashion, a more detailed analysis does not seem in order. However, although both rates appearing in this table are understated, the degree of error in the exporter's rate is not large. The main source of error here is the omission from the effective rates of the Pamaz and linkage provisions which, as stated, is not likely to cause any major distortion of the average exporter's rate.[30] The protection rate, on the other hand, is defective primarily because it does not take into account quota profits; these are undoubtedly substantial, not only for a few commodities but also for average imports. The protection rate is further downward biased because the exchange rate for imported inputs was not computed from the raw materials and equipment rates for each import commodity group, but from the average rate for all commodities in each group. As we have seen, the rates for raw materials and equipment tend to be lower than the others. By making no distinction between the commodities in a group, the rates for imported inputs are overestimated and the protection rate is thus underestimated.[31] It follows that the protection rates probably exceeded the exporter's rate by more than appears from our data. It should be noted that this refers to a period—1956–60—when exports were ostensibly given special encouragement and the exporter's rate was in fact raised more than the importer's rate. It is therefore probable that had the protection rates been calculated for the earlier years as well a similar picture would have emerged—of protection rates considerably higher than the exporter's rates. This would mean that exchange rate policy gave priority to import substitution over production for export. Although no firm statement to that effect can be made without further research, it thus seems that the exchange rate system tended to steer the economy towards autarky.

[30] See p. 101.
[31] See again p. 57.

APPENDIX TABLES

The rates presented in the tables of this appendix are defined in the text as follows:

Symbols

.. Not computed or implausible magnitude

0 Negligible

– No import or export

TABLE A–1. *The Exporter's Exchange Rate: 1949–61*

(IL per dollar)

Code		Weight[a]	*1949*	*1950*	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*	*1957*	*1958*	*1959*	*1960*	*1961*
801	Cereals and pulses	0.4	–	–	–	–	–	–	–	–	–	2.68	2.92	2.65	2.65
803	Cotton	0.2	–	–	–	–	–	1.80	–	–	2.66	2.64	2.64	2.71	2.65
804	Other field crops	1.4	–	–	–	–	–	2.05	1.83	2.35	2.73	2.81	3.12	3.01	3.00
805	Vegetables and melons	0.2	–	–	0.36	–	1.40	1.80	2.04	2.12	2.52	2.62	2.56	2.61	2.80
807	Poultry	1.4	0.34	–	–	–	–	1.80	1.80	2.69	2.88	2.55	2.88	2.89	2.76
808	Other livestock	0.2	0.35	0.36	0.36	–	1.65	1.80	1.80	2.39	2.59	2.67	2.49	2.63	2.65
809	Citrus	41.7	0.34	0.38	0.41	0.76	1.22	1.80	1.80	1.80	1.80	2.05	2.16	2.30	2.49
810	Other fruit	0.4	–	–	–	0.84	2.95	4.34	3.84	2.08	2.62	2.62	2.61	2.82	2.98
811	Other agricultural products	0.2	–	–	–	–	1.68	1.93	1.93	2.44	2.56	2.66	2.69	2.85	2.86
812	Gravel and scrap metal	1.4	0.35	0.36	0.36	0.81	1.78	1.80	1.80	2.35	2.70	2.68	2.84	2.88	2.65
814	Nonmetallic minerals	0.7	–	–	–	–	1.00	1.80	1.80	2.35	2.72	2.08	2.48	2.70	2.66
815	Meat and fish products	0.3	–	–	–	–	1.23	1.80	1.80	2.30	2.58	2.61	2.66	2.65	2.66
816	Dairy products	0	–	–	–	–	–	1.80	1.80	2.61	4.55	2.64	2.73	2.75	3.00
817	Edible oils and fats	0	–	–	–	–	1.00	1.80	–	2.35	2.70	2.68	2.65	2.65	2.91
818	Vegetable and fruit preserves, spices, and coffee	5.4	0.35	0.49	0.45	0.64	1.47	1.80	1.80	2.18	2.59	2.51	2.62	2.73	2.66
819	Flour-mill and bakery products	0.1	–	–	–	–	1.44	1.80	1.80	2.35	3.96	3.18	3.02	2.66	2.65
820	Sugar and confectionery	0.5	0.34	0.36	0.36	0.81	1.56	1.80	1.80	2.35	2.70	2.68	2.73	2.68	2.65
821	Beverages and ice	0.3	0.34	0.36	0.37	0.76	1.47	1.80	1.80	2.86	2.96	2.89	2.63	2.55	2.65
822	Tobacco products	0	–	–	–	–	1.00	1.80	1.80	2.35	2.63	2.68	2.66	2.75	2.65
823	Cotton spinning	0.2	–	–	–	–	1.00	1.80	1.80	2.35	2.70	2.72	2.91	3.54	2.65
824	Wool spinning	0.9	0.35	0.39	0.37	0.81	1.50	1.80	1.80	2.35	2.70	2.29	3.08	2.80	3.00
825	Fabrics, weaving and finishing	2.1	0.35	0.37	0.37	0.76	1.51	1.80	1.80	2.26	2.63	2.63	3.05	2.66	2.91
826	Knitting, twine, and textiles n.e.s.	1.3	0.35	0.36	0.38	0.88	1.07	1.80	1.80	2.35	2.61	2.62	2.54	2.69	2.92
827	Clothing	2.9	0.35	0.37	0.36	0.83	1.03	1.80	1.80	2.44	2.65	2.65	2.76	2.77	2.92
828	Basic wood products	1.4	–	–	0.36	0.74	1.66	1.80	1.80	2.16	4.32	4.28	2.84	2.71	2.67
829	Carpentry and joinery	0	–	–	–	–	–	1.80	1.80	2.36	2.53	2.68	2.14	2.83	2.65
830	Paper and paper products	0.4	–	–	–	–	1.50	1.80	1.80	2.69	3.38	3.38	2.69	3.19	2.65
831	Printing and publishing	0.8	0.35	0.36	0.37	0.84	1.55	1.80	1.80	2.43	2.60	2.70	2.77	2.62	2.65
832	Leather and leather products	0.1	–	0.36	0.36	0.71	1.40	1.80	1.80	2.97	2.72	2.67	2.80	3.28	2.93
833	Rubber products	0.1	–	–	–	–	1.80	1.80	1.80	2.68	2.70	2.65	2.47	2.60	2.65
834	Manufacture and repair of tires	2.3	–	–	–	1.00	1.76	1.80	1.80	2.35	2.70	2.68	2.73	2.75	2.65

835	Plastic products	0.1	–	–	–	–	1.57	1.80	1.80	2.58	2.70	2.95	2.88	2.67	2.65
836	Basic chemicals	2.2	0.35	0.36	0.36	0.73	1.39	1.80	1.80	2.31	2.58	2.67	2.68	2.78	2.69
837	Oil, soap, and detergents	0.6	–	0.36	0.36	0.83	1.50	1.80	1.80	2.06	2.14	2.29	2.42	2.18	2.65
838	Paints	0.4	–	0.36	0.36	0.71	1.66	1.80	1.80	2.35	2.70	2.68	2.56	2.61	2.65
839	Oil refining	0	–	–	–	–	1.33	1.80	1.80	2.63	3.14	2.50	2.64	2.59	2.65
840	Pharmaceutics, insecticides, and other chemicals	1.3	0.36	0.36	0.36	0.78	1.58	1.80	1.80	2.28	2.43	2.64	2.60	2.58	2.65
841	Glass and ceramics	0.4	–	–	–	–	1.70	1.80	1.80	2.30	2.22	2.26	2.67	2.63	2.65
842	Cement	1.6	0.35	–	–	1.00	1.00	1.80	1.88	2.61	2.40	3.08	2.74	2.72	2.71
843	Cement and lime products	0	–	–	–	–	–	–	–	2.37	2.70	2.68	2.73	2.66	2.65
844	Asbestos and nonmetallic mineral products n.e.s.	0.2	–	–	–	–	1.00	1.80	1.80	2.32	2.51	2.54	2.70	2.90	2.65
845	Diamonds	16.4	0.39	0.39	0.42	0.95	1.20	1.47	1.87	2.40	2.65	2.65	2.65	2.65	2.65
846	Basic iron and steel	0.1	–	–	–	–	–	1.80	1.80	3.33	2.70	2.47	2.36	2.50	2.65
847	Basic non-ferrous metals	0.1	–	–	–	–	–	1.80	1.80	2.35	2.70	2.82	2.90	2.65	2.65
848	Metal pipes	0.3	–	–	–	–	1.72	1.80	1.87	2.49	2.73	2.61	2.54	2.54	2.65
849	Plumbing fixtures	0.1	–	–	–	–	–	1.80	1.80	2.35	2.79	2.32	2.72	2.57	3.00
850	Structural metal products	..	–	–	–	–	1.80	1.80	1.80	2.35	2.70	2.68	2.74	3.32	2.65
851	Tin products	0.1	–	–	–	–	1.05	1.80	1.80	2.35	2.70	2.92	2.67	2.78	2.65
852	Wire products	0.1	–	–	–	–	1.80	1.80	1.80	2.35	2.70	2.72	2.66	2.53	2.65
853	Kitchen utensils, tools, and galvanizing	0.3	–	0.36	0.36	0.78	1.61	1.80	1.80	2.32	2.70	3.00	2.79	2.95	2.65
854	Other metal products	1.8	0.35	0.36	0.36	0.80	1.58	1.80	1.80	2.75	2.54	2.34	2.66	2.64	2.80
855	Industrial and agricultural machinery	0.3	–	–	–	–	1.46	1.80	1.80	2.48	2.63	2.62	2.69	2.70	2.65
856	Household equipment	0.4	–	–	0.36	0.83	1.62	1.80	1.80	2.45	3.26	2.68	2.67	2.66	2.65
857	Electric motors and transformers	0.1	–	–	–	–	1.72	1.80	1.80	2.44	2.70	2.65	2.80	2.58	2.88
858	Electric installation, batteries, and accumulators	0.1	–	0.36	0.36	0.73	1.79	1.80	1.80	2.35	2.70	2.68	2.50	2.53	2.70
859	Domestic electric appliances, radio, and communications equipment	0.2	–	0.36	0.36	0.73	1.80	1.80	1.80	2.45	2.75	2.74	2.78	2.77	2.97
860	Manufacture of motor vehicles	2.8	–	–	0.36	0.71	1.21	1.51	1.82	–	2.70	2.68	2.84	2.98	2.65
861	Repair of motor vehicles	0	–	–	–	–	–	1.80	1.80	–	–	–	–	–	–
862	Manufacture and repair of ships and aircraft	0	–	–	–	–	–	1.80	–	–	2.70	2.68	–	–	–
863	Precision instruments and manufactures n.e.s.	2.1	0.35	0.37	0.36	0.75	1.55	1.80	1.80	2.40	2.64	2.52	2.84	2.69	2.70
879	Miscellaneous, repairs, etc.	0.8	0.35	0.36	0.36	0.75	1.44	1.80	–	2.35	2.70	2.68	–	–	–

[a] Average weight of commodity group in export value added over the period (per cent).

TABLE A–2. *The Importer's Exchange Rate: 1949–62*

(IL per dollar)

Code		Weight[a]	*1949*	*1950*	*1951*	*1952*	*1953*	*1954*	*1955*	*1956*	*1957*	*1958*	*1959*	*1960*	*1961*	*1962*
801	Cereals and pulses	10.0	0.33	0.36	0.36	0.53	1.01	1.35	1.85	1.95	2.11	2.23	2.20	2.30	2.43	3.72
802	Roughage	0.2	0.34	0.36	0.36	0.83	1.07	1.68	1.96	1.91	1.94	3.63	2.12	2.08	2.01	3.00
803	Cotton	1.1	0.34	0.36	0.36	1.02	1.10	1.73	1.88	1.81	2.06	2.29	2.21	2.37	2.44	3.00
804	Other field crops	3.5	0.39	0.50	0.46	0.54	0.87	1.29	1.15	1.77	2.08	2.19	2.27	2.22	2.02	3.08
805	Vegetables and melons	0.3	0.36	0.39	0.37	0.66	0.76	1.54	2.46	1.91	2.01	2.23	3.49	3.28	3.30	5.43
806	Cattle	0.4	0.35	0.36	0.36	0.37	1.10	1.46	3.27	2.30	4.99	2.08	4.00	3.98	2.63	3.00
807	Poultry	0.1	0.35	0.41	0.39	0.52	1.13	1.31	1.79	1.81	2.03	1.89	3.29	1.80	3.20	3.68
808	Other livestock	0.9	0.34	0.36	0.36	1.01	0.88	1.53	2.02	2.24	2.07	2.41	2.82	2.63	2.78	3.10
810	Fruit other than citrus	0.1	0.44	0.43	0.45	0.79	2.19	3.83	3.40	6.84	4.83	3.92	6.41	5.75	6.96	8.21
811	Other agricultural products	4.6	0.37	0.38	0.37	1.03	1.18	2.09	2.41	3.40	3.43	3.15	3.31	4.26	3.99	4.91
812	Gravel and scrap metal	0.1	0.36	0.41	0.39	0.62	1.00	1.36	1.87	2.34	1.87	1.83	1.86	2.18	2.03	3.04
814	Nonmetallic minerals	3.2	0.34	0.36	0.36	0.52	0.92	1.30	1.86	1.95	1.97	1.82	1.99	1.89	1.91	3.00
815	Meat and fish products	2.8	0.36	0.39	0.39	1.05	1.26	1.67	1.73	2.11	1.87	2.33	2.39	2.99	3.50	4.57
816	Dairy products	1.7	0.34	0.39	0.38	0.51	0.41	0.97	1.99	1.71	1.73	1.49	2.77	1.94	3.30	3.76
818	Vegetable and fruit preserves, spices, and coffee	1.8	0.44	0.43	0.43	0.77	1.31	1.92	2.64	3.37	3.33	4.25	3.73	3.74	5.87	5.44
819	Flour-mill and bakery products	1.6	0.32	0.36	0.37	0.68	0.83	1.22	1.32	0.82	1.98	2.94	2.56	3.42	4.47	3.36
820	Sugar and confectionery	1.9	0.43	0.43	0.41	0.65	1.57	2.39	5.06	5.22	4.70	5.55	5.72	6.38	6.75	7.89
821	Beverages and ice	0.1	1.08	0.88	0.81	0.63	3.07	3.98	6.75	6.70	5.76	6.29	5.13	6.77	6.33	7.70
822	Tobacco products	0	2.97	2.88	2.09	2.54	2.95	5.43	7.93	8.25	6.05	6.59	8.35	8.87	9.71	11.66
823	Cotton spinning	0.5	0.37	0.41	0.37	0.96	1.06	1.63	1.86	2.04	2.48	2.15	2.14	2.27	2.25	3.13
824	Wool spinning	0.5	0.35	0.36	0.36	0.85	1.00	1.69	1.80	1.80	1.99	1.82	1.80	1.80	1.80	3.00
825	Fabrics, weaving and finishing	1.9	0.45	0.45	0.45	1.05	1.31	2.50	2.39	2.35	2.39	2.50	2.53	2.33	2.13	3.41
826	Knitting, twine, and textiles n.e.s.	0.1	0.45	0.47	0.45	0.86	1.32	1.92	1.90	2.22	1.84	1.88	2.10	2.67	2.01	3.82
827	Clothing	0.7	0.46	0.48	0.47	0.74	1.44	2.09	2.25	2.18	2.01	2.40	2.44	2.36	2.55	3.56
828	Basic wood products	1.3	0.40	0.40	0.43	0.60	1.24	2.17	2.40	2.43	2.34	2.61	2.38	3.08	3.05	4.56
829	Carpentry and joinery	0.1	0.47	0.48	0.49	0.93	1.24	2.13	2.11	1.77	2.03	2.67	2.18	2.47	2.36	–
830	Paper and paper products	2.0	0.43	0.43	0.44	1.26	1.67	2.16	1.93	2.22	2.25	2.34	2.91	2.65	2.39	3.61
831	Printing and publishing	0.5	0.34	0.36	0.36	0.84	0.94	1.15	1.64	1.11	1.81	1.70	1.74	1.81	1.81	3.01
832	Leather and leather products	0.2	0.38	0.48	0.45	1.03	1.58	2.22	2.69	2.37	2.40	2.57	2.49	2.60	2.76	3.98
833	Rubber products	0.2	0.44	0.47	0.46	1.11	1.50	2.55	1.86	1.91	2.66	2.25	2.44	2.52	2.36	3.53
834	Manufacture and repair of tires	0.3	0.37	0.50	0.43	0.97	1.41	2.30	2.27	2.26	2.28	2.36	2.40	2.34	2.59	3.31
835	Plastic products	0.1	–	0.48	0.48	1.04	1.54	2.71	2.73	2.41	2.80	2.83	3.13	3.04	3.35	4.52
836	Basic chemicals	3.0	0.38	0.38	0.36	0.90	1.13	1.54	1.82	1.74	1.88	2.51	2.29	2.46	2.37	3.49

837	Oil, soap, and detergents	1.4	0.39	0.40	0.39	0.61	0.90	1.25	1.76	2.67	2.15	2.08	2.04	2.27	2.06	3.81
838	Paints	0.8	0.34	0.38	0.39	0.85	1.03	1.91	1.88	1.78	1.86	2.01	2.24	2.20	2.40	3.22
840	Pharmaceutics, insecticides, and other chemicals	2.0	0.46	0.42	0.41	0.83	1.00	1.49	1.41	1.55	2.17	2.06	2.12	2.09	2.14	3.12
841	Glass and ceramics	0.3	0.44	0.47	0.45	0.86	1.23	2.20	2.24	2.22	2.31	2.37	2.77	2.83	2.25	3.98
842	Cement	0.2	0.44	0.44	0.42	0.73	1.37	2.98	2.93	3.26	2.33	2.70	2.67	6.08	..	6.74
843	Cement and lime products	0.2	0.45	0.47	0.47	0.84	1.29	2.26	2.05	1.92	1.95	1.85	2.07	2.04	2.45	3.02
844	Asbestos and nonmetallic mineral products n.e.s.	0.2	0.46	0.41	0.45	0.65	1.20	2.22	2.03	2.12	2.23	2.22	2.75	2.40	2.45	3.78
845	Diamonds	0.1	0.33	0.36	0.36	0.38	1.00	1.35	1.81	2.19	1.89	1.82	1.88	2.08	1.96	3.22
846	Basic iron and steel	6.0	0.35	0.41	0.40	0.97	1.21	1.97	2.09	2.09	1.95	2.08	2.14	2.15	2.29	3.23
847	Basic non-ferrous metals	1.5	0.34	0.36	0.36	0.83	1.04	1.84	1.83	1.84	1.89	1.83	1.85	1.90	1.94	3.18
848	Metal pipes	1.6	0.41	0.43	0.43	0.84	1.03	1.83	2.06	2.00	1.80	1.93	1.90	2.11	1.96	3.10
849	Plumbing fixtures	0.3	0.36	0.48	0.48	1.07	1.10	2.36	1.89	1.85	1.95	1.83	1.87	2.55	2.05	3.90
850	Structural metal products	0.4	0.34	0.36	0.36	0.71	0.95	1.79	2.02	1.80	1.80	1.80	2.08	1.81	1.80	4.05
851	Tin products	0.1	0.38	0.42	0.47	1.10	0.95	1.47	2.27	1.90	1.82	1.97	1.96	1.94	1.96	4.35
852	Wire products	0.9	0.39	0.41	0.41	1.03	1.17	2.27	2.18	2.36	1.95	2.33	1.91	2.47	2.19	3.70
853	Kitchen utensils, tools, and galvanizing	0.8	0.40	0.42	0.41	0.82	1.20	2.29	2.19	2.40	2.55	3.33	3.29	2.43	2.28	3.23
854	Other metal products	1.2	0.45	0.47	0.47	0.97	1.53	2.51	2.27	2.29	2.25	2.15	2.20	2.16	2.36	3.17
855	Industrial and agricultural machinery	9.5	0.36	0.37	0.37	0.74	0.87	1.77	1.83	1.83	1.85	1.82	1.92	1.92	2.10	3.32
856	Household equipment	1.2	0.43	0.43	0.40	0.98	1.23	2.04	2.41	2.33	2.21	2.63	3.19	2.42	2.57	3.49
857	Electric motors and transformers	1.7	0.35	0.40	0.39	0.74	1.01	1.82	1.81	1.82	1.82	1.81	1.87	1.82	2.20	3.21
858	Electric fixtures, batteries, and accumulators	1.8	0.46	0.48	0.47	0.88	1.18	2.19	2.04	2.04	2.41	2.42	2.41	3.01	3.04	3.03
859	Domestic electric appliances, radio, and communications equipment	0.6	0.47	0.51	0.51	0.94	1.44	1.94	2.39	2.34	2.36	2.92	3.21	3.13	3.02	4.06
860	Manufacture of motor vehicles	5.6	0.42	0.44	0.42	0.94	1.19	1.87	2.59	2.36	2.41	2.42	2.42	2.59	2.33	3.65
861	Repair of motor vehicles	0.5	0.46	0.47	0.43	0.93	1.10	1.88	1.84	1.86	1.88	1.88	1.92	2.01	1.95	3.36
862	Manufacture and repair of ships and aircraft	2.3	0.35	0.36	0.36	0.91	1.01	1.46	1.80	1.80	1.80	1.80	1.80	1.80	1.80	3.89
863	Precision instruments and manufactures n.e.s.	2.1	0.40	0.46	0.46	1.10	1.30	2.31	1.80	2.34	2.11	2.14	2.52	2.47	2.40	3.67
879	Miscellaneous, repairs, etc.	1.5	0.34	0.39	0.36	0.49	0.93	1.48	1.89	2.11	1.84	2.25	1.80	2.04	1.98	3.29
880	Fuel, extraction and refining	9.7	0.35	0.37	0.46	1.05	1.93	2.53	3.00	2.94	3.03	3.35	3.80	3.85	3.81	4.28

[a] Average weight of commodity group in total imports over the period (per cent).

TABLE A–3. *The Consumer's Exchange Rate (definition A[a]): 1955–62*

(IL per dollar)

Code		*1955*	*1956*	*1957*	*1958*	*1959*	*1960*	*1961*	*1962*
801	Cereals and pulses	1.85	1.95	2.11	2.23	2.20	2.30	2.43	3.72
802	Roughage	1.96	1.91	1.94	3.63	2.12	2.08	2.01	3.00
803	Cotton	1.88	1.81	2.06	2.29	2.21	2.37	2.44	3.00
804	Other field crops	1.14	1.77	2.08	2.19	3.27	2.22	2.02	3.08
805	Vegetables and melons	2.46	1.91	2.01	2.23	3.49	3.28	3.30	5.43
806	Cattle	3.27	2.30	4.99	2.08	4.00	3.98	2.63	3.00
807	Poultry	1.79	1.81	2.03	1.89	3.29	1.80	3.20	3.68
808	Other livestock	2.02	2.24	2.07	2.41	2.82	2.63	2.78	3.10
810	Fruit other than citrus	3.40	6.84	4.83	3.92	6.41	5.75	6.96	8.21
811	Other agricultural products	2.41	3.40	3.43	3.15	3.31	4.26	3.99	4.91
812	Gravel and scrap metal	1.86	2.34	1.87	1.83	1.86	2.18	2.03	3.04
814	Nonmetallic minerals	1.86	1.95	1.97	1.82	1.98	1.89	1.91	3.00
815	Meat and fish products	1.73	2.11	1.87	2.33	2.39	2.99	3.50	4.57
816	Dairy products	1.99	1.71	1.73	1.49	2.77	1.94	3.30	3.76
818	Vegetable and fruit preserves, spices, and coffee	2.64	3.37	3.33	4.25	3.73	3.74	5.87	5.44
819	Flour-mill and bakery products	1.32	0.82	1.98	2.94	2.56	3.42	4.47	3.36
820	Sugar and confectionery	5.06	5.22	4.70	5.55	5.72	6.38	6.75	7.89
821	Beverages and ice	7.90	11.42	..	8.86	6.94	8.15	8.81	10.79
822	Tobacco products	7.93	8.25	6.05	6.59	8.35	8.87	9.71	11.66
823	Cotton spinning	1.86	2.04	2.48	2.15	2.14	2.27	2.25	3.15
824	Wool spinning	1.82	1.87	2.02	2.67	2.08	3.36	2.71	3.00
825	Fabrics, weaving and finishing	2.61	2.49	2.66	2.96	2.77	2.61	2.43	3.73
826	Knitting, twine, and textiles n.e.s.	1.90	2.22	1.84	1.88	2.10	2.67	2.01	4.54
827	Clothing	2.30	2.26	2.07	2.40	2.44	2.47	2.55	3.61
828	Basic wood products	2.41	2.43	2.36	2.61	2.38	3.08	3.05	4.57
829	Carpentry and joinery	2.11	1.77	2.03	2.67	2.18	2.47	2.36	–
830	Paper and paper products	1.93	2.26	2.28	2.39	3.25	2.65	2.53	3.88
831	Printing and publishing	1.64	1.11	1.81	1.70	1.74	1.81	1.81	3.01
832	Leather and leather products	2.69	2.37	2.40	2.57	2.49	2.60	2.76	..
833	Rubber products	1.86	1.91	2.66	2.25	2.44	2.52	2.36	3.53
834	Manufacture and repair of tires	2.27	2.26	2.28	2.36	2.40	2.34	2.59	3.61
835	Plastic products	2.73	2.41	2.80	2.83	3.13	3.04	3.35	6.30
836	Basic chemicals	1.82	1.77	1.89	2.57	2.35	2.51	2.46	3.49

837	Oil, soap, and detergents	1.76	2.67	2.60	2.08	2.04	2.27	2.06	3.81
838	Paints	1.95	1.87	1.94	2.08	2.43	2.31	2.72	3.68
840	Pharmaceutics, insecticides, and other chemicals	1.41	1.55	2.17	2.06	2.12	2.09	2.14	3.13
841	Glass and ceramics	2.71	2.59	2.40	2.37	2.97	3.57	2.74	4.27
842	Cement	3.71	4.91	3.59	3.87	4.36	8.80	..	7.97
843	Cement and lime products	2.05	1.92	1.95	1.85	2.07	2.04	2.45	3.05
844	Asbestos and nonmetallic mineral products n.e.s.	2.03	2.12	2.23	2.22	2.75	2.40	2.45	3.78
845	Diamonds	1.81	2.19	1.89	1.82	1.88	2.08	1.96	3.23
846	Basic iron and steel	2.09	2.09	1.95	2.08	2.14	2.15	2.31	3.25
847	Basic non-ferrous metals	1.83	1.84	1.89	1.83	1.88	1.91	1.97	3.18
848	Metal pipes	2.06	2.00	1.80	1.93	1.99	2.37	2.15	3.25
849	Plumbing fixtures	1.89	1.85	1.95	1.83	1.87	2.55	2.05	3.90
850	Structural metal products	2.02	1.80	1.80	1.80	2.08	1.81	1.80	4.05
851	Tin products	2.27	1.90	1.82	1.97	2.16	2.09	2.17	5.41
852	Wire products	2.18	2.36	1.95	2.33	1.91	2.47	2.22	3.73
853	Kitchen utensils, tools, and galvanizing	2.31	2.44	2.59	3.45	3.39	2.43	2.28	3.23
854	Other metal products	2.27	2.29	2.25	2.15	2.20	2.16	2.36	3.17
855	Industrial and agricultural machinery	1.83	1.83	1.85	1.82	1.94	1.92	2.10	3.32
856	Household equipment	2.51	2.51	2.31	3.02	3.33	2.63	3.03	3.81
857	Electric motors and transformers	1.81	1.82	1.82	1.81	1.87	1.82	2.20	3.21
858	Electric fixtures, batteries and accumulators	2.10	2.07	2.45	2.45	2.42	3.19	3.08	3.06
859	Domestic electric appliances, radio, and communications equipment	3.06	3.00	3.09	3.56	4.22	3.78	3.83	4.21
860	Manufacture of motor vehicles	2.67	2.43	2.49	2.50	2.70	3.00	3.02	4.25
861	Repair of motor vehicles	1.84	1.86	1.88	1.88	1.92	2.01	1.95	3.36
862	Manufacture and repair of ships and aircraft	1.80	1.80	1.80	1.80	1.80	1.80	1.80	3.89
863	Precision instruments and manufactures n.e.s.	1.87	2.41	2.18	2.21	2.67	2.57	2.43	3.81
879	Miscellaneous, repairs, etc.	1.89	2.11	1.84	2.25	1.80	2.04	1.98	3.29
880	Fuel, extraction and refining	3.00	2.94	3.03	3.35	3.80	3.85	3.81	4.27

[a] Imports including those eligible for the "conditional exemption".

TABLE A–4. *The Consumer's Exchange Rate (definition B[a]): 1955–62*

(IL per dollar)

Code		1955	1956	1957	1958	1959	1960	1961	1962
801	Cereals and pulses	1.89	1.95	2.11	2.23	2.20	2.30	2.39	3.72
802	Roughage	1.96	1.91	1.94	3.63	2.12	2.08	2.01	3.00
803	Cotton	1.88	1.81	2.06	2.29	2.20	2.59	2.45	3.00
804	Other field crops	0.88	1.77	2.08	2.19	2.27	2.22	2.02	3.08
805	Vegetables and melons	2.46	1.91	2.01	2.23	3.49	3.28	3.30	5.43
806	Cattle	3.27	2.30	4.99	2.08	4.01	3.98	2.63	3.00
807	Poultry	1.79	1.81	2.03	1.91	3.63	1.85	3.21	3.69
808	Other livestock	2.02	2.24	2.07	2.43	2.83	2.63	2.79	3.10
810	Fruit other than citrus	3.41	7.04	5.16	4.85	8.33	6.29	6.96	8.29
811	Other agricultural products	2.91	2.42	3.55	3.37	3.49	4.61	4.20	4.94
812	Gravel and scrap metal	1.84	2.34	1.87	1.83	1.86	2.19	2.03	3.04
814	Nonmetallic minerals	1.86	1.95	1.97	1.82	1.98	1.89	1.91	3.00
815	Meat and fish products	1.73	2.12	1.87	2.35	2.43	3.06	3.54	4.60
816	Dairy products	2.50	1.69	1.73	1.47	2.89	1.95	3.91	4.06
818	Vegetable and fruit preserves, spices, and coffee	2.67	3.45	3.87	4.63	4.03	4.11	6.91	5.95
819	Flour-mill and bakery products	1.32	0.81	2.03	2.99	2.62	3.50	4.55	3.39
820	Sugar and confectionery	5.09	5.29	4.72	5.56	5.75	6.39	6.87	7.97
821	Beverages and ice	7.91	11.42	..	10.57	11.22	8.92	9.75	12.05
822	Tobacco products	8.83	8.99	8.57	7.87	10.49	9.22	10.16	11.70
823	Cotton spinning	1.87	2.04	2.48	2.16	2.14	2.27	2.26	3.19
824	Wool spinning	1.82	1.87	2.02	2.67	2.08	3.35	2.76	3.00
825	Fabrics, weaving and finishing	2.83	2.76	3.02	3.42	3.15	2.78	3.04	4.46
826	Knitting, twine, and textiles n.e.s.	1.91	2.25	1.84	1.87	2.10	2.67	2.01	4.55
827	Clothing	2.35	3.27	2.11	2.42	2.45	2.49	2.56	3.62
828	Basic wood products	2.42	2.47	2.39	2.67	2.39	3.13	3.06	4.60
829	Carpentry and joinery	2.16	1.96	3.07	2.98	3.24	3.20	3.23	–
830	Paper and paper products	2.11	2.35	2.30	2.39	3.26	2.68	2.53	3.89
831	Printing and publishing	1.64	1.10	1.81	1.70	1.74	1.81	1.81	3.01
832	Leather and leather products	2.72	2.42	2.42	2.57	2.49	2.61	2.76	..
833	Rubber products	1.87	1.91	2.81	2.53	2.74	2.95	2.51	3.56
834	Manufacture and repair of tires	2.27	2.26	2.28	2.38	2.41	2.39	2.62	3.63
835	Plastic products	2.88	2.87	2.88	2.91	3.17	3.09	3.41	6.60
836	Basic chemicals	1.82	1.76	1.89	1.61	2.41	2.73	2.58	3.53

837	Oil, soap, and detergents	2.02	2.68	2.61	2.17	2.04	2.28	2.06	3.86
838	Paints	1.98	1.87	1.94	2.08	2.44	2.32	2.73	3.69
840	Pharmaceutics, insecticides, and other chemicals	1.34	1.51	2.25	2.11	2.17	2.16	2.21	3.15
841	Glass and ceramics	3.20	3.30	2.47	2.45	3.07	4.01	3.08	4.64
842	Cement	3.72	4.99	4.82	3.87	4.46	8.99	..	8.01
843	Cement and lime products	2.35	2.22	2.73	2.18	2.56	2.08	2.57	3.06
844	Asbestos and nonmetallic mineral products n.e.s.	2.14	2.16	2.46	2.46	3.40	2.68	2.78	3.89
845	Diamonds	1.81	2.19	1.89	1.82	1.88	2.08	1.96	3.23
846	Basic iron and steel	2.11	2.10	1.97	2.09	2.14	2.16	2.33	3.25
847	Basic non-ferrous metals	1.83	1.83	1.89	1.83	1.88	1.91	1.97	3.18
848	Metal pipes	2.06	2.00	1.80	2.05	2.00	2.43	2.28	3.41
849	Plumbing fixtures	2.04	1.88	2.72	2.34	1.94	2.65	2.06	3.90
850	Structural metal products	2.02	1.80	1.80	1.80	2.08	1.81	1.80	4.05
851	Tin products	2.27	1.91	1.82	1.97	2.16	2.09	2.63	6.16
852	Wire products	2.19	2.43	1.98	2.39	1.91	2.48	2.42	3.87
853	Kitchen utensils, tools, and galvanizing	4.22	2.50	2.65	3.59	3.40	2.43	2.32	3.25
854	Other metal products	2.65	2.64	2.67	2.29	2.21	2.16	2.39	3.22
855	Industrial and agricultural machinery	1.83	1.83	1.85	1.82	1.93	1.92	2.16	3.45
856	Household equipment	2.48	2.64	2.60	3.22	3.61	2.87	3.31	4.20
857	Electric motors and transformers	1.81	1.82	1.82	1.81	1.87	2.01	2.29	3.24
858	Electric fixtures, batteries, and accumulators	2.20	2.23	2.55	2.55	2.44	3.32	3.19	3.06
859	Domestic electric appliances, radio, and communications equipment	3.40	3.57	4.01	4.07	4.75	4.40	4.25	4.81
860	Manufacture of motor vehicles	2.71	2.46	2.51	2.52	2.66	3.02	3.06	4.36
861	Repair of motor vehicles	1.84	1.87	1.91	1.88	1.93	2.02	1.97	3.39
862	Manufacture and repair of ships and aircraft	1.80	1.80	1.80	1.80	1.80	1.80	1.80	4.11
863	Precision instruments and manufactures n.e.s.	1.92	2.49	2.37	2.26	2.75	2.69	2.83	4.13
879	Miscellaneous, repairs, etc.	1.89	2.12	1.84	2.83	1.85	2.49	2.03	4.12
880	Fuel, extraction and refining	3.06	3.00	3.04	3.37	3.89	4.02	4.00	4.29

[a] Imports excluding those eligible for the "conditional exemption".

TABLE A–5. *The Import-Component Rate and the Protection Rate: 1956–60*

(IL per dollar)

Code		1956		1957		1958		1959		1960	
		Import component rate	*Protection rate*	*Import component rate*	*Protection rate*	*Import component rate*	*Protection rate*	*Import component rate*	*Protection rate*	*Import component rate*	*Protection rate*
801	Cereals and pulses	1.99	1.94	2.12	1.97	2.20	2.44	2.10	2.21	2.37	2.28
802	Roughage	1.98	1.90	2.19	1.98	2.08	2.28	1.92	2.14	2.04	2.08
803	Cotton	1.88	1.79	1.75	1.78	2.08	2.22	1.97	1.78	2.10	2.18
804	Other field crops	1.95	1.65	2.17	1.86	2.10	2.19	1.99	2.28	2.09	2.23
805	Vegetables and melons	2.22	2.78	2.33	2.83	2.32	2.20	2.51	3.71	2.73	3.39
806	Cattle	1.88	1.93	1.99	4.03	2.12	2.01	2.19	2.33	2.21	3.40
807	Poultry	1.83	1.80	1.97	1.96	2.46	1.85	2.29	4.48	2.42	1.54
808	Other livestock	2.03	1.84	2.15	1.90	2.17	2.49	2.19	2.96	2.25	2.72
810	Fruit other than citrus	1.90	8.79	2.10	5.38	1.86	4.31	2.10	10.35	2.23	6.92
811	Other agricultural products	1.92	2.97	1.94	2.77	2.43	3.42	1.90	3.37	2.20	5.38
812	Gravel and scrap metal	1.64	1.83	1.66	1.88	1.71	1.85	1.71	1.88	1.76	2.24
814	Nonmetallic minerals	1.84	1.81	1.90	1.98	1.93	1.78	1.84	1.81	1.94	1.80
815	Meat and fish products	1.96	2.04	2.11	3.81	2.19	2.21	2.28	3.08	2.34	2.31
816	Dairy products	1.92	1.77	2.06	1.86	2.03	1.40	2.33	2.94	2.21	1.87
818	Vegetable and fruit preserves, spices, and coffee	2.75	3.77	2.49	2.24	2.83	4.95	3.12	3.80	3.71	15.11
819	Flour-mill and bakery products	1.94	1.18	1.98	1.86	2.13	5.57	2.21	3.26	2.28	9.86
820	Sugar and confectionery	3.03	8.13	2.82	5.33	2.83	5.04	3.65	4.36	3.44	7.82
821	Beverages and ice	2.20	7.37	2.24	4.78	2.17	2.23	2.36	5.16	2.47	8.43
822	Tobacco products	1.85	64.19	1.96	15.99	2.09	23.19	2.27	..	2.27	..
823	Cotton spinning	1.87	2.15	1.87	2.19	2.18	2.14	1.93	2.30	2.22	2.31
824	Wool spinning	1.83	1.78	1.84	1.78	1.95	1.73	2.00	1.66	2.10	1.84
825	Fabrics, weaving and finishing	1.89	2.63	1.81	2.52	2.14	2.62	2.05	3.27	2.24	3.48
826	Knitting, twine, and textiles n.e.s.	2.01	2.34	2.00	1.77	2.17	1.76	2.21	2.04	2.41	2.87
827	Clothing	1.97	2.08	1.98	2.02	2.17	2.44	2.18	2.51	2.34	2.36
828	Basic wood products	2.54	2.04	2.48	1.96	2.93	1.55	2.79	1.83	3.84	0.89
829	Carpentry and joinery	2.38	1.80	2.31	1.97	2.72	2.65	2.57	2.04	3.46	2.07
830	Paper and paper products	2.15	2.34	2.34	2.18	2.20	2.30	2.48	2.92	2.50	2.81
831	Printing and publishing	1.92	1.04	1.95	1.79	2.00	1.66	2.20	1.68	2.22	1.76
832	Leather and leather products	1.94	2.49	2.77	2.29	2.14	2.58	2.53	2.43	2.24	2.74
833	Rubber products	2.04	1.85	2.12	2.98	2.44	2.15	2.34	2.62	2.74	2.35

834	Manufacture and repair of tires	2.28	1.94	2.27	2.28	2.62	2.10	2.60	2.19	2.94	1.74
835	Plastic products	1.79	2.87	1.87	3.76	2.42	3.23	2.21	4.39	2.40	2.09
836	Basic chemicals	1.81	1.72	1.95	1.86	1.97	2.82	1.92	2.44	1.98	2.71
837	Oil, soap, and detergents	1.71	2.16	1.88	1.98	2.17	2.04	2.31	..	2.02	2.10
838	Paints	1.87	1.88	1.97	1.94	2.23	1.83	2.33	2.20	2.33	1.76
840	Pharmaceutics, insecticides, and other chemicals	1.75	1.40	2.09	2.17	2.10	1.63	2.17	2.08	2.25	1.99
841	Glass and ceramics	1.84	2.31	1.93	2.38	2.04	2.59	2.01	3.21	2.08	2.86
842	Cement	2.16	35.36	2.35	37.16	2.10	..	1.95	..	1.99	24.85
843	Cement and lime products	2.33	1.86	1.70	2.00	2.04	1.81	1.90	2.11	2.38	1.97
844	Asbestos and nonmetallic mineral products n.e.s.	1.93	2.31	1.94	3.00	1.91	2.32	1.86	2.48	1.99	2.81
845	Diamonds	1.81	1.85	1.97	1.47	1.79	1.86	1.18	3.57	1.81	1.79
846	Basic iron and steel	1.88	1.93	1.86	1.79	1.99	2.12	1.87	1.81	2.14	2.43
847	Basic non-ferrous metals	1.84	1.82	1.88	1.88	1.87	1.81	1.87	1.84	1.91	1.82
848	Metal pipes	1.90	2.14	1.83	1.77	2.06	2.01	1.84	1.92	2.24	1.85
849	Plumbing fixtures	1.87	1.81	1.87	1.98	1.95	1.78	1.86	1.87	2.02	2.87
850	Structural metal products	1.90	1.76	1.83	1.79	..	..	1.84	2.20	2.26	1.64
851	Tin products	1.89	1.92	1.86	1.79	2.08	1.90	1.85	2.03	2.29	1.72
852	Wire products	2.13	2.42	1.93	1.98	2.21	2.46	1.89	1.93	2.36	2.62
853	Kitchen utensils, tools, and galvanizing	1.92	1.92	1.88	2.89	2.06	4.80	1.94	4.84	2.08	2.46
854	Other metal products	1.91	2.43	1.12	2.59	2.08	2.21	1.93	1.82	2.21	2.01
855	Industrial and agricultural machinery	1.90	1.81	1.88	1.84	2.06	1.96	1.90	1.95	2.18	1.82
856	Household equipment	1.98	2.65	1.96	2.63	2.19	3.28	2.28	6.22	2.06	1.79
857	Electric motors and transformers	2.02	1.75	1.91	1.80	2.14	1.96	2.02	1.81	2.37	1.63
858	Electric fixtures, batteries, and accumulators	1.97	2.61	1.92	2.15	2.15	2.56	2.03	2.57	2.31	3.27
859	Domestic electric appliances, radio, and communications equipment	2.07	2.46	2.03	2.49	2.18	2.49	2.40	4.00	2.63	3.75
860	Manufacture of motor vehicles	2.04	2.17	2.20	2.58	2.28	2.52	2.14	2.38	2.45	2.69
861	Repair of motor vehicles	1.99	1.87	2.15	1.78	2.20	1.75	2.08	1.86	2.33	1.76
862	Manufacture and repair of ships and aircraft	1.82	1.80	1.83	1.80	1.89	1.78	1.83	1.80	1.92	1.78
863	Precision instruments and manufactures n.e.s.	2.00	2.43	2.02	2.25	2.21	4.92	2.18	2.70	2.35	2.53
879	Miscellaneous, repairs, etc.	1.09	2.31	3.54	1.17	1.17	2.50	1.15	1.91	1.22	2.20
880	Fuel, extraction and refining	1.79	..	1.68	3.05	1.80	..	1.79	2.09	1.71	2.84

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