

**Monetary Aspects
of the
1962 Devaluation**

Miriam Beham

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.

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THE MAURICE FALK INSTITUTE FOR ECONOMIC RESEARCH IN ISRAEL

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PREFACE

Currency devaluation has for a long time been of major concern in the economy of Israel. This study attempts an extensive analysis of one aspect of the devaluation of February 1962, a devaluation attended by much serious discussion. Although, as stated, this study deals with only one part—the monetary aspect—of the problem, it can help to clarify some of the important questions consequent on the devaluation.

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M. B.

CHAPTER 1

INTRODUCTION

According to the Minister of Finance, broadcasting on February 9, 1962, the devaluation of the Israel Pound from IL 1.80 to IL 3.00 to the dollar was part of "a comprehensive plan of economic stabilization designed to improve the balance of payments."

The devaluation took place at a time when Israel was accumulating foreign currency balances and it was not an emergency measure taken to keep reserves from running down. Its object was a long-run improvement in the balance of payments, since some of the sources of foreign capital which had until then financed the import surplus were bound to dry up in the next few years. In the short run, the balance-of-payments gap can be closed mainly at the expense of the growth of domestic uses; in the long run, it is necessary to expand those branches which produce import substitutes and exports: in other words, the economy must, in the long run, undergo a structural change in favor of investment in such branches.

In a static economy whose real output is constant, the import surplus cannot be reduced without reducing domestic uses. But, like most modern economies, Israel is growing; its national product increases yearly, and closing the gap does not necessarily mean reducing the standard of living. Under conditions of full employment—such as obtained in Israel at the time of devaluation¹—product can be raised and the balance-of-payments gap closed by adding factors of production and by raising factor productivity and increasing the efficiency of resource allocation.

The multiple effective exchange rates that replaced a unitary rate before devaluation and the fact (shown by the need to devalue) that these

¹ According to the Labor Force Surveys, 4.6 per cent of the civilian labor force were unemployed in 1960, 3.6 in 1961, and 3.7 per cent in 1962 (Central Bureau of Statistics, *Statistical Abstract of Israel 1965*, No. 16, p. 294, Table K/1. No data on unemployed capital are available, and it has generally been assumed that capital was more or less fully employed during the period under review.

rates were in general too low had been a cause of resource misallocation. Had devaluation produced a uniform rate which was also equal to the economy's 'real' rate, the distortion due to the use of multiple rates would have been eliminated, and output could have been raised with the same production factors as before. A uniform rate was not achieved, nor apparently was the devaluation sufficient to catch up with the 'real' rate of exchange. Nevertheless, devaluation was a step in the right direction and could have improved resource allocation and hence expanded the output of existing factors of production.

The other two elements of expansion—an increase in the quantity and productivity of factors—also made it possible to expand output after devaluation. Before devaluation these had helped to raise gross national product, by 8 to 12 per cent annually, and they presumably continued to do so. In 1962 real GNP grew by 11.9 per cent, or by IL 703 million (at 1962 prices). In 1961 the deficit on current account was \$ 420 million or IL 755 million at the then prevailing official rate of exchange,² or IL 1,260 million at the official exchange rate introduced in 1962. Thus, if the entire product increment had been used for exports and import substitution, the bulk of the deficit would have been covered. Obviously this was not feasible, for it is impossible to double exports or halve imports within one year, and the product increment is applied to all three uses—consumption, domestic investment, and the reduction of the import gap. To illustrate, let us examine the figures for 1962 (see Appendix Table 1).

We can assume that the government is not interested in cutting back investment from its actual 1962 level and allocate IL 254 million (the actual 1962 figure) of the total increment of IL 703 million to this use. This leaves IL 449 million for raising consumption and reducing the import surplus; of this, IL 233 million must be allocated to consumption (public and private) if the 1961 per capita level is to be maintained, leaving IL 216 million for reducing the import surplus. Even if we allow per capita consumption to rise by 3 per cent, there would still be IL 53 million for reducing the import surplus. It might very well have been possible to go some way towards closing the gap while maintaining the level of consumption and investment of the preceding years.

The object of devaluation is precisely to shift as many resources as possible to reducing the import surplus. It does this by changing the price structure, so that the relative prices of exports and imports rise:

² Bank of Israel, *Annual Report 1965*, p. 12, Table II-2.

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exports become more profitable and imports less so and the gap between them tends to narrow. But this may fail to occur if aggregate demand rises immediately after devaluation: more resources are then channeled to domestic uses and the effect of the rise in export and import prices is offset by a rise in domestic prices.

Monetary and fiscal policy immediately after devaluation should therefore have been one of restraint. Moreover, devaluation as a rule has the automatic effect of increasing aggregate demand owing to the leads and lags of the system.³ The conditions which force an economy to carry out devaluation do not come about all at once but are the result of gradual change. Devaluation accordingly does not come as a surprise. As expectations build up, the public tends to postpone transferring foreign currency to the country or converting it into local currency in order to profit from the expected higher rate, and to step up purchases of foreign currency for payments abroad in order to make sure of getting it at the low pre-devaluation rate. This trend is reversed as soon as devaluation has taken place: transferrers of foreign currency are now eager to convert it and buyers of foreign currency ease off their purchases, both because they have built up stocks during the preceding period and because they no longer expect profits from further devaluation. The liquidity of the public and the banking system is thus reduced before devaluation and increased immediately after it. Under conditions of full employment and boom, such as prevailed in Israel in 1962, this expansion in liquidity raises the means of payment, thus exerting inflationary pressure. However, even if there were no change in the amount of foreign currency converted before and after devaluation, some inflationary pressure would still arise since devaluation raises the pound value of the foreign currency.

In Israel the pressure on the money supply was particularly severe owing to the large foreign unilateral transfers to the private sector both before and after devaluation. Besides regular dealers in foreign currency—importers, exporters, speculators—many private individuals and institutions receive major transfers, the most important being the recipients of personal restitutions from Germany and institutions benefiting from fund-raising campaigns conducted abroad. These factors caused the immediate post-devaluation pressure on the means of payment to assume larger proportions than could have been expected in their absence. Evi-

³ H. Barkai and M. Michaely, "The New Economic Policy—After One Year," *The Economic Quarterly*, X (No. 37–38, March 1963; Hebrew), 25.

CHAPTER 1

dently, if under normal conditions the constant rise in aggregate demand calls for government curbs, the additional inflationary pressure due to devaluation requires far more stringent measures.

The responsibility for economic policy rests, generally speaking, with two institutions: the Bank of Israel, responsible for monetary policy, and the Ministry of Finance, responsible for fiscal and income policies. The Bank of Israel should have used the recognized instruments of liquidity control and have seen to it that monetary expansion remained within reasonable bounds: for example, that the means of payment should grow at about the same rate as product. The Ministry of Finance should have stabilized the growth of the direct demand of government and public through appropriate fiscal and internal-loan policies accompanied by a restrained income policy.

Coordinated success in these spheres was a prerequisite of a successful devaluation. We should therefore examine whether the desirable policies were implemented in all these fields, but, as its name implies, this study deals only with the monetary aspects. We must therefore stress that the following discussion is incomplete, and we examine only whether, and to what extent, monetary policy was applied after devaluation; it should not be regarded as a comprehensive analysis and evaluation of the effects of devaluation and its success.

The discussion is divided into three parts: Chapter 2 deals with the effects of devaluation on aggregate demand through the capital gains or losses created. Chapter 3 deals with the causes of post-devaluation changes in the quantity of money, with particular stress on the behavior of German restitutions recipients. This chapter also discusses the policy of the Ministry of Finance and the Bank of Israel and the steps taken by them to forestall monetary expansion. Chapter 4 deals with the government's internal loan policy and presents a detailed analysis of the treatment of value-linked mortgages. Chapter 5 summarizes the study and its conclusions.

CHAPTER 2

THE AUTOMATIC CHANGE IN THE COMPOSITION OF ASSETS FOLLOWING DEVALUATION

A change in the price of the dollar may affect the holdings of individuals or firms either by altering the value of their financial balances if they hold any foreign currency deposits or by altering the value of their liabilities (or claims) if they had received or given any dollar-linked loans. In addition, devaluation raises the pound value of the stream of expected receipts of exporters and other transferrers of foreign currency and the stream of expected payments of importers and of firms using foreign factors of production. As a result, the present value of the income streams of the transactors will change.¹ We do not intend to measure the changes in income flows since they are the mechanism through which devaluation should achieve its object of changing the structure of the economy: they are at once a necessary result of devaluation and a prerequisite for its success, and must not be regarded as creating capital gains or losses. Another factor not included in our computations is the devaluation-caused change in the value of inventories of imported goods, equipment, and raw materials. The nature of this change and the reasons for ignoring it require some explanation.

A distinction must be made between inventories required by firms in the general way of production and held even when no devaluation is expected; and those that are not necessary for the production process and are, it may be assumed, held for speculative reasons. Although devaluation affects stocks of both types, the distinction is relevant to our discussion: the capital gain accruing on working inventories is merely an accounting profit; even if it is realized, the gain is only temporary since the stocks must soon be replaced at the new exchange rate. To illustrate: let us assume that a firm's current requirements are \$1,000 worth of stocks, purchased before devaluation for IL 1,800 (at the formal

¹ The present value of an income stream is the value attributed in the present to income that is to materialize in the future, that is, present value is the nominal value discounted by an appropriate rate of interest.

rate of IL 1.8/\$ 1). Devaluation raises the value by IL 1,200, and on the face of it, this is a capital gain. The firm may realize this gain by selling off the stock for IL 3,000; but since this is current working stock, it will soon have to be replaced at the new rate, and the outlay will be the IL 3,000 proceeds of the sale. It follows that a capital gain accruing on working stock is illusory, and not relevant to our subject.

This is not true of inventories held for speculative reasons. They were acquired for the purpose of realizing devaluation gains and need not be replaced once they have been sold. Devaluation raises their value and hence the total value of the asset portfolio. In order to estimate the devaluation gains accruing on imported stocks we need take account only of the so-called speculative stocks; however, we have no data and must make do with the warning that our estimates of devaluation gains take no account of commodity stocks, a fact that must be borne in mind during the discussion of the pressure on aggregate demand exerted by devaluation gains.²

A similar problem exists with credit from abroad, which also consists of a working and a speculative element. The working element is required for the production process (for example, suppliers credit); speculative credit is credit that, from the production point of view, could have been obtained locally, and its size depends on the firm's expectations about devaluation and local price rises. As expectations for devaluation intensify, the amount of speculative foreign credit declines. Our discussion, in which we do not distinguish between the two types of credit, in effect makes the assumption that the operating element is negligible; that, in other words, a firm need never take foreign rather than local credit, and there is perfect substitutability between them (this is not strictly accurate; some foreign suppliers credit, for example, certainly has no domestic substitute). It follows from our assumption that the whole of the credit outstanding at the date of devaluation gave rise to devaluation losses.

We confine our calculation of devaluation-induced changes in the value of assets to financial assets and the resulting understatement should not be forgotten: we have defined the whole of credit as speculative, so that the whole of the rise in its value is defined as a devaluation loss; and we have assumed that all commodity stocks are working inventories, thus ignoring entirely the capital gains accruing from them.

² The distinction between working and speculative stocks does not apply to the stock of foreign balances. Our assumption is that balances could be held as local, and not necessarily as foreign, currency; devaluation gains must therefore be computed for the whole stock of balances.

Let us assume that on the eve of devaluation all economic units were in equilibrium as regards both their asset portfolios and the composition and volume of production. The changes brought about by devaluation will disturb this equilibrium, and the demand for money, bonds, and commodities will also change; a new equilibrium will then be attained in the new conditions, with a different asset portfolio and a different branch structure and volume of production. In this chapter we try to assess the direct influence on the asset portfolio of the change in the price of the dollar: changes in the asset portfolio affect the level of aggregate demand, which, as stated in the preceding chapter, is a critical variable in gauging the success of devaluation.

Just before devaluation Israel had foreign currency reserves of \$300 million. Some of these reserves were held by the government and the Bank of Israel and some by the private sector, particularly by recipients of personal restitutions from Germany. Devaluation, which raised the price of the dollar from IL 1.80 to IL 3.00, automatically increased the nominal value of these foreign currency holdings, and should have led to increased demand on the part of their holders. However, these foreign currency holdings were only part of Israel's balance of foreign claims and liabilities; debts as well as foreign currency reserves had been accumulated. The liabilities amounted to about \$740 million at the date of devaluation. This means that out of the loans received since the establishment of the State to cover the import surplus and to accumulate foreign currency reserves of \$300 million, \$740 million were still outstanding. Israel's foreign debt (net of the foreign currency reserves which are claims against other countries) was thus \$440 million. Since the pound value of this outstanding debt was increased by devaluation, it might be expected that demand would decline. However, for several reasons this is not necessarily so. First, a change in the value of assets or liabilities held by the government or the Bank of Israel would hardly affect aggregate demand to the same extent as an equivalent change in the value of private sector holdings. In assessing the probable direction of the change in demand, the sectors must therefore be considered separately. Second, it is meaningless simply to deduct foreign currency reserves from foreign liabilities, since the public hardly values equally assets which differ in the degree of liquidity and risk. The face values of assets must therefore be converted into market values if the aggregate figure is to be economically meaningful. This point may require some elucidation.

Let us take the case of a totally unexpected devaluation. Here the

changes in foreign balances will be clear-cut and easy to measure: before devaluation both the official and market price of the dollar will—since no devaluation is expected—be, say, IL 1.80; the moment it is announced, the price jumps to the new level, say, IL 3.00, so that the real balances of foreign currency holders appreciate by IL 1.20 per dollar. In the absence of other changes in asset composition, they now hold more real balances than they find desirable, and will therefore reduce real balances and increase demand for goods and bonds. There may well be a desire to raise real balances over the initial level, but the new desired level is assumed to fall short of the level produced by devaluation. Eventually, therefore, some of the real balances will be exchanged for other assets.³ Changes in the composition of non-cash balances can be measured in the same way: if devaluation does not affect expectations of price changes, securities (or debts) will appreciate by the rate of devaluation;⁴ holders of securities (or debtors) will increase (or reduce) their demand for goods and other assets in order to restore the optimum asset portfolio. If expectations do change as a result of devaluation, so that the public now expects prices to rise further than they did before, the value of securities will change by less than the rate of devaluation, because a bigger expected price rise must be discounted from the redemption value. If prices are expected to rise by the rate of devaluation, the value of securities will not change, since the price rise will cancel the nominal rise.

The assumption that devaluation was unexpected is an unrealistic one, as can be seen from the behavior of the market for dollar-linked securities before devaluation.⁵ Let us now take the case at the other extreme, where there is certain prior knowledge of both the extent and date of devaluation. In this case, the change in the real value of assets and liabilities will already have taken place by the date of devaluation and nothing will change on the date itself: the market price of the dollar will have risen as soon as the news of devaluation is known, and will equal the post-devaluation price discounted for interest up to the date of devaluation and for expected price changes up to the date of devaluation or maturity. In other words, the price rises gradually (with less interest being discounted as devaluation approaches), to reach exactly IL 3.00 on the date of devaluation. Since devaluation was fully expected,

³ This assumption implies that the marginal propensity to accumulate real balances out of real balances is less than unity.

⁴ The pre-devaluation value already takes account of interest rate, date of maturity, and expected price changes, none of which are affected.

⁵ See for example, Bank of Israel, *Annual Report 1961*, pp. 398–406.

there is no reason to suppose that its actual implementation will have any effect on expectations about price changes. Prices may well have been expected to rise more after devaluation than before it, but this too will already have been reflected in the pre-devaluation value of securities. The same is true of other negotiable financial assets whose price, under these conditions, also remains unchanged after devaluation. But it is not so for non-negotiable financial assets and liabilities, which, since they are not traded on the market, have no market price. If the interest rate were free it would change as the result of foreknowledge, but this cannot happen when it is controlled. Under such circumstances no non-negotiable linked loans would be made from the moment it becomes known that devaluation will occur; lenders will refrain from giving dollar-linked loans repayable before the date of devaluation, and borrowers will refrain from taking dollar-linked loans repayable later.

The real situation is obviously somewhere between the two extremes. Devaluation was expected but its extent and date were uncertain. The market value of dollar-linked financial assets just before devaluation was therefore not the same as the discounted face value at the old rate, since it was affected by expectations about the timing and rate of devaluation and about price changes before and after. The higher the expected rate of devaluation and the sooner it is expected to occur, the higher the market value of the assets; while the further prices are expected to rise before devaluation (in the case of liquid assets such as cash) or before the date of maturity (in the case of assets maturing after the expected date of devaluation), the lower will be the market price. As soon as devaluation takes place, speculations about it cease and expectations about price changes are revised. The market price of foreign-currency linked assets changes in accordance with the new rate of exchange and the new expectations and becomes equal to the nominal value at the new rate (assuming that further devaluation is not expected) discounted by interest and expected future price rises. The market price of an asset may therefore (though it need not) be lower than it was just before devaluation; this could happen if the devaluation was less steep than expected, or if post-devaluation prices have, since devaluation, been expected to rise faster than they were expected to before.⁶

One cannot therefore come to any *a priori* decision about whether capital gains or losses will accrue from devaluation, and what the net effect on aggregate demand will be. But before these questions can be

⁶ See Appendix A.

answered, it is necessary to go into the details of who held foreign assets and who had foreign liabilities; and by how much the value of each type of asset and liability changed as a direct result of devaluation.

1. *The distribution of foreign currency assets by sector*

In order to examine the distribution of foreign currency assets and the profits or losses accruing on them owing to devaluation we distinguish six sectors: households, firms, commercial banks, mortgage banks, government, and Bank of Israel. We assume that there are inter-sectoral differences in behavior, but that within sectors, behavior is homogeneous. Let us assume also that in each sector's portfolio there is symmetry of reaction to a rise or a decline in the value of assets. This enables us to ignore intra-sectoral liabilities. Thus if individual A has a dollar-linked obligation to B whose value increases as a result of devaluation, we assume that the increase in B's demand for goods and services following the change in the composition of his assets is exactly offset by the decline in A's demand due to the change in the composition of his portfolio. Clearly, the reaction of two individuals will not in practice be perfectly symmetrical—the rise in A's demand may be either greater or smaller than the decline in B's demand—but as the two possibilities are equally probable the assumption imposes no constraint on the analysis. The same offsetting effect is assumed for liabilities between firms. But when individuals or firms hold dollar-linked government bonds or have dollar-linked obligations towards the government or each other the effects do not cancel, since households, private firms, and government react differently to changes in asset composition.

The country's foreign balances are held as gold and foreign currency by the Bank of Israel or the commercial banks, or as deposits in foreign banks abroad. However, a bank's deposits abroad do not necessarily represent its share in the country's reserves; such a deposit, representing a claim on the rest of the world, may be offset by a dollar-linked obligation in the form of a third party's foreign currency deposit so that the bank is merely an intermediary between the holder of the claim—the owner of the deposit—and the rest of the world.

It is therefore necessary to compute the net foreign balances of each sector. Balances are here defined as foreign-currency deposits in the Bank of Israel and in commercial banks and cooperative credit societies; deposits in mortgage banks are not included here since they are considered less liquid. Balances of the non-financial sectors (households, firms, and government) consist of their foreign currency deposits in the

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local banks; balances of the commercial banks consist of foreign currency holdings and deposits with the Bank of Israel, net of the public's and the government's foreign currency deposits; and the Bank of Israel's balances consist of its foreign currency holdings and deposits abroad, net of the foreign currency deposits of the other domestic sectors.⁷

TABLE 2-1. *Pre-Devaluation Foreign Currency
Balances, by Sector: 31.1.62^a*
(*\$ million*)

Households	116.7 ^b
Firms	48.7 ^b
Commercial banks ^c	-25.4
Government	68.6
Bank of Israel	89.2
Total	297.8

^a Ideally, this table should show the position at the end of the day on which devaluation was announced, i.e. February 9, 1962. However, the closest available figures are for January 31.

^b Deposits of the public (firms and households) of IL 433.9 million less deposits held by foreign residents (IL 136.1 million). This comes to IL 297.8 million, or \$ 165.4 million at the then prevailing rate of IL 1.8/\$ 1. The data do not distinguish between households and firms; the figure for households is taken to be the amount of PAZAK and TAMAM deposits (see p. 22) with the figure for firms as the residual.

^c Including cooperative credit societies (here and in subsequent tables).

SOURCES : *Bank of Israel Bulletin*, No. 19 (November 1963), 140-50. PAZAK and TAMAM deposits from Bank of Israel, *Annual Report 1962*, p. 316, Table XIV-7, and p. 320, Table XIV-8; unpublished Bank of Israel figures on deposits of foreign residents. The computation of the table is explained in Appendix Table 6.

The distribution of foreign currency balances immediately before devaluation is shown in Table 2-1. Just before devaluation the foreign currency deposits of local residents in local banks amounted to \$ 165 million (see note b in the table). Under the Foreign Exchange (Control) Regulations local residents may not hold foreign currency; the only

⁷ Deposits of foreign residents in local banks should not be included in the foreign currency balances of households and firms since they do not form part of Israel's foreign claims.

CHAPTER 2

exceptions are importers who need foreign currency to carry on their business and residents permitted to hold PAZAK and TAMAM deposits⁸ (mainly recipients of personal restitutions from Germany). Accordingly, the \$ 117 million PAZAK and TAMAM deposits⁹ are the only foreign currency balances held by households. The remaining foreign currency deposits of residents in local banks (\$ 49 million) are assumed to have been held by importers (i.e., by firms).

Just before devaluation the commercial banks had a negative foreign balance of \$ 25 million (Table 2-1). This means that their liabilities, in the form of the foreign currency deposits of foreign banks, the public, and the government, exceeded their foreign currency deposits in the Bank of Israel and in foreign banks. This is rather surprising, for it suggests that the banks were not expecting devaluation. But it would be unwise to attach too much importance to the bank's negative balances. The banks may have preferred to anticipate devaluation by accumulating foreign-currency linked assets less liquid than foreign currency reserves. In order to evaluate their expectations, we must therefore examine not only their foreign-currency balances but all their foreign-currency linked assets.

The government had foreign currency reserves of \$ 69 million just before devaluation.¹⁰ Obviously, the government's devaluation profits reflect no more than an accounting change; whether the government gains or loses is of no practical significance since its policies or decisions should not be influenced in either case.

The data on balances give only a partial view of the position, and this does not apply only to the banks. Thus, households held foreign currency balances of \$ 117 million, but it cannot be inferred from this that devaluation brought them any net capital gains. The dollar-linked debt of households in fact almost equalled their balances so that the capital gains on the foreign balances may have been swallowed up by losses on the debt. The same is true of the other sectors.

⁸ TAMAM ('residents transferring currency') deposits may be used for specified foreign currency outlays. PAZAK ('time deposits') cannot be used in foreign currency, but must be converted into IL; in effect they are deposits in which both principal and interest are linked to foreign currency.

⁹ See sources to Table 2-1.

¹⁰ Interestingly enough its reserves were only \$ 41 million in December 1961. This \$ 28 million increase within a single month was unequalled either before or in the two years after devaluation. [*Bank of Israel Bulletin*, No. 19 (November 1963), 142.]

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Table 2-2 completes the picture by giving the sectoral distribution of foreign-currency linked financial assets other than those defined as balances. Unlike in Table 2-1, which shows net balances of each sector, assets and liabilities are given gross. In Table 2-2 each sector therefore appears once as creditor and once as debtor. Line (1), for instance, shows the balance outstanding at the date of devaluation of loans obtained by each sector from abroad since the establishment of the State (a total of \$766 million), column (1) shows the loans outstanding granted by each sector to the rest of the world (\$28 million). Similarly, the government owed \$42 million to the mortgage banks before devaluation, whereas the mortgage banks owed the government \$33 million.¹¹ The last line and column give the total foreign assets and liabilities (other than balances) of each sector. The difference between the line and column totals of each sector shows its net foreign assets (excluding balances). But since the data are given at face value, the same problems arise as in aggregating foreign balances and less liquid assets. For a number of reasons the face value of assets differs from the 'true' eve-of-devaluation value: the present value of assets of equal redemption value varies with the date of maturity and the rate of interest, regardless of expectations of devaluation and changes in price. Assets of varying dates of maturity, with equal present values under conditions of certainty, may, under conditions of uncertainty and expectations of devaluation and price change, have differing present values. Lastly, before devaluation the public may have distinguished between assets of different types. Thus, it is possible that dollar linkage of mortgages was taken less seriously than the linkage of government bonds, in the belief that in the event of devaluation the pressure of mortgagors would be sufficient to force the government to ease repayment terms. For these reasons it is meaningless to aggregate face values or to subtract liabilities from assets; it is even possible that the net face value of a sector's assets could have the opposite sign to the net present value.¹²

The change in the value of each asset or liability, including balances, is estimated in the next section.

¹¹ Column (6), line (5)—dollar-linked deposits of mortgage banks with the Accountant General; and column (5), line (6)—dollar-linked government deposits for the grant of loans by mortgage banks.

¹² The figures in each cell of the table suffer from the same aggregation bias as do the line and column totals. However, it is reasonable to assume that the bias is less serious in the cells, which, compared with the grand totals, represent aggregations of fairly homogeneous data.

TABLE 2-2. *Pre-Devaluation^a Foreign Currency Assets and Liabilities,^b by Sector*
(\$ million)

Liabilities of		Rest of world	Households ^c	Firms ^c	Commer- cial banks	Mortgage banks	Government	Bank of Israel	Total
Assets of		(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Rest of world ^d				152	9	22	583		766
(2) Households ^c						8			8
(3) Firms ^c				23		1	1		47
(4) Commercial banks	22					20	141		161
(2), (3), (4) Households, firms, banks ^e			46	6			42		94
(5) Mortgage banks			62 ^f	489 ^g		33			584
(6) Government				28					34
(7) Bank of Israel	6								
(8) Total	28	108	698	9	84	767	-	1,694	

^a The table is only an approximation since some data are missing, notably on dollar-linked liabilities between households and firms; it was also not possible to segregate institutions such as local authorities, public institutions and provident funds. No data are available for the end of February 9, 1962, nor for any single day close to it, so that we have been forced to combine figures referring to several dates. Financial institutions balance-sheet data are for January 31, 1962. The figures for mortgage banks were computed from the linkage differentials due to or from them, and are thus applicable to the day of devaluation. The other data are for March 31, 1962.

^b Face (not present) values. Foreign currency balances (Table 2-1) are not included in this table.

^c It was not possible to segregate the liabilities of households and firms to each other.

^d As a rule households receive no loans from abroad; any such loans received by neither the banks nor the public sector are therefore attributed to firms.

^e It was not possible to get the breakdown of the government [column (6)] and mortgage bank [column (5)] bonds held by the private sector.

^f Dollar-linked mortgages from the Development Budget.

^g Dollar-linked loans from the Development Budget.

SOURCES: *Bank of Israel Bulletin*, No. 19 (November 1963), pp. 140-48 (assets and liabilities of financial institutions) [column (3), lines (4), (7)]; column (4); column (6), line (2), (3), (4)].

M. Barnea, "The Financial Structure of Israel's Mortgage Banks, 1958-64," *Bank of Israel Bulletin*, No. 24 (December 1965), pp. 54-79 [line (5) and column (5)].

Ministry of Finance, *Summary of Foreign Currency Accounts for the Fiscal Year 1961/62*, Foreign Exchange Department, Jerusalem, 1962 (Hebrew)—[line (1), columns (3), (6)].

Unpublished data from Accountant General's Office [line (6), except the column (5) figure] and Bank of Israel Research Department [column (1); column (3), lines (4), (7)].

2. *Changes in the value of foreign currency assets*

a. *Foreign currency balances*

As stated, the foreign currency balances of households consisted of TAMAM and PAZAK deposits. With their \$61.9 million TAMAM deposits,¹³ they were entitled to buy foreign securities which could be sold for pounds in the local foreign securities market. The purchasers could in turn sell the foreign securities to the bank for foreign currency; demand for the securities was thus to a large extent determined by the demand for foreign currency. The provision allowing TAMAM holders to trade in foreign securities was designed to enable them to convert their deposits at a rate (above the official one) determined by demand and supply in the foreign securities market. Clearly, therefore, the pre-devaluation rate for TAMAM deposits was not IL 1.80/\$1. A more appropriate rate would be that obtainable on the securities market, which at that time stood at IL 2.42/\$1.¹⁴ The PAZAK deposits of \$54.8 million could not be converted in this way,¹⁵ but here, too, the rate was not IL 1.80, a cash premium of 20 per cent being given on conversion,¹⁶ so that the rate was IL 2.16/\$1. The TAMAM conversion rate was determined by market demand and supply, and can be taken as an index of public expectations; the PAZAK conversion rate was fixed by the government, and the public could sell but not buy at this rate. Since the demand of the public was inoperative, the IL 2.16 rate should be regarded as the lower limit of the market rate.

We therefore put the pre-devaluation value of each TAMAM dollar at IL 2.42 and of each PAZAK dollar at IL 2.16; upon devaluation the deposits thus appreciated by the difference between these rates and IL 3.00, the post-devaluation price, and the value of the foreign balances of households rose by IL 81.9 million.¹⁷

It is somewhat more complicated to estimate the changes in the foreign balances of firms. Although before devaluation firms (importers) bought their foreign currency at the official rate of IL 1.80/\$1, it is clear that

¹³ The equivalent of the IL 111.5 million on January 31, 1962 (Bank of Israel, *Annual Report 1962*, p. 320, Table XIV-8).

¹⁴ As of February 9, 1962, obtained from the Economic Research Department of the Bank Leumi Le-Israel, Tel Aviv.

¹⁵ The equivalent of IL 98.6 million on January 31, 1962 (Bank of Israel, *Annual Report 1962*, p. 316, Table XIV-7).

¹⁶ Ministry of Finance, "Foreign Currency Control Directions," circular dated March 6, 1960 (Hebrew).

¹⁷ \$61.9 million *times* (IL 3.00 - 2.42) + \$54.8 million *times* (IL 3.00 - 2.16).

each dollar was worth more to them because of the expected devaluation. The IL 1.20/\$ 1 profit deriving from the differences between the old and new official rates must accordingly be split up into three parts. The first accrued at the time of purchase for a price below what the dollar was worth; the second accrued between the dates of purchase and devaluation, provided that expectations had changed in the interval: if devaluation was expected with increased confidence, or if the estimate of its extent was revised upwards, there was a profit; if expectations weakened or the anticipated rate went down, a loss. Only the third element, i.e. the difference between the new IL 3.00/\$ 1 rate and the immediate pre-devaluation rate (which takes expectations into account)—can properly be called a capital gain due to devaluation. The question is how to estimate the immediate pre-devaluation price of the balances. The black market price of the dollar may give a clue to the answer. It is determined mainly by two factors: expectations about devaluation (the speculative factor) and the restrictions on the amount of dollars Israelis may buy for non-speculative purposes at the official price. We are interested only in the speculative factor and must therefore compute the rise it has caused in the black market price of the dollar. On the assumption that once devaluation has occurred another one is not expected, the price of the dollar on the next day will be free of speculative effects. The difference between the black market and official rates will then be due solely to the existence of excess demand for non-speculative purposes, at the official price and on the official market. The black market price of the dollar was IL 2.61 on February 7, 1962, while on February 21 it was IL 3.30.¹⁸ In other words, the post-devaluation black market rate exceeded the official rate by 10 per cent, attributable to non-speculative excess demand: on this basis the pre-devaluation black market price reflecting speculative factors only was IL 2.37.¹⁹ This, then, is the subjective value attached by importers to each dollar of their pre-devaluation foreign currency balances, so that capital gains from this source were IL 30.7 million.²⁰

The change in the value of the foreign balances of commercial banks does not directly affect aggregate demand, since the banks do not trade

¹⁸ These are the closest dates available. The information was obtained from the Economic Research Department of Bank Leumi Le-Israel, Tel Aviv.

¹⁹ For lack of a better alternative, the calculation ($2.37 = 2.61 \div 110$ per cent) assumes that non-speculative excess demand did not change as a result of devaluation, but this is not necessarily so.

²⁰ \$ 48.7 million *times* (IL 3.00 - 2.37).

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in the commodity market. However, the higher their liquidity ratio, for a given legal reserve ratio, the more they tend to expand credit (and the means of payment). The formal rate of IL 1.80 would be the correct rate for the pre-devaluation foreign balances of the banks; they did not have the choice of converting at a higher rate, and since there is no direct real balance effect on the demand for commodities, it is the change in the nominal rather than the market value of the balances that is relevant. Accordingly, since the banks' eve-of-devaluation foreign balance was negative, it declined by IL 30.5 million.²¹

The government and the Bank of Israel are, at least in theory, guided by considerations of policy rather than profit, and their behavior should therefore not be influenced by the composition of their asset portfolio. We therefore measure their devaluation profits by the change in the official rate of exchange.

b. *Less liquid financial assets*

Dollar-linked bonds: The price of dollar-linked bonds is generally determined by their nominal redemption value, date of maturity, interest rate, expected price changes, and expectations of devaluation. The face value of bonds changes automatically when the currency is devalued. We assume that maturity date, interest rate, and expected price changes did not alter. Expectations of devaluation should have raised the pre-devaluation value of dollar-linked bonds to above their discounted redemption value at the official IL 1.80 rate. If expectations disappear when devaluation occurs, the new price should accord with the new redemption value. The problem is how to estimate the change, and we must first isolate the period in which changes in bond prices were due to devaluation alone: the market cannot adjust itself immediately so that the period taken must not be too short; too long a period would include price changes due to other factors. The Stock Exchange quotations give the impression that bond prices had stabilized by the end of February, so that it seems reasonable to take February 28 as the determining date. The index of dollar-linked bond prices stood at 101.8 at the end of January 1962 and at 136.5 at the end of February,²² so that the price rose by 34.1 per cent or by IL 0.625 per dollar.²³ Accordingly this was

²¹ \$ 25.4 million *times* (IL 3.00 - 1.80).

²² Face value unadjusted for linkage differentials = 100 (at IL 1.8/\$ 1). Bank of Israel, *Annual Report 1962*, p. 449, Table XX-9.

²³ From the end-of-January price (per dollar) of IL 1.832 ($= 1.8 \times 101.8$), to the end-of-February price of IL 2.457 ($= 1.8 \times 136.5$).

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the devaluation gain accruing to holders of dollar-linked bonds. The pre-devaluation price of IL 1.832 per dollar appears rather low and might seem to indicate that there were no expectations of devaluation. But the price of ordinary bonds with a distant date of maturity is always lower than its nominal value. In a stable economy, for instance, without devaluation and price changes, the price of a bond at a nominal value of IL 100 carrying 6 per cent interest and maturing after 5 years is IL 84.84, at a general discount rate of 10 per cent (to take purely hypothetical figures).²⁴ If the price were IL 101.8 in an unstable economy with expectations of devaluation and price changes it would mean that the expectations raised the value of the bond from IL 84.84 to IL 101.8. We do not know what the price of dollar-linked bonds would have been in the absence of expectations for devaluation, so that we cannot calculate by how much they raised prices. Theoretically, the price rise due to expectations (which cannot be measured) and the post-devaluation rise in the market price (which was 34.1 per cent) should together equal the rate of devaluation. This will be so, however, only if no further devaluation is expected, and if expectations about subsequent price changes are not affected by the event. Neither condition obtained, apparently: expectations of further devaluation²⁵ tended to push prices up more than devaluation by itself, while expectations about post-devaluation price rises led to the price of dollar-linked bonds (but not of those linked to the Consumers Price Index) rising less than it would have done in their absence. Hence, the value of bonds at the end of February 1962²⁶ reflected new expectations as well as a distant average maturity date. In order to estimate the devaluation-induced change in the value of linked bonds we should have had to deduct, from their post-devaluation price, the component due to expectations of further devaluation.²⁷ We have no way of doing this, and therefore the entire rise of 34.1 per cent (or IL 0.625

²⁴ The price of bonds is equal to the present value of the sum of all income from the bond, including principal (in IL):

$$84.84 = \sum_{i=1}^5 \frac{6.00}{(1.1)^i} + \frac{100.00}{(1.1)^5}$$

²⁵ These were expressed in the prices of bonds, at least of those with distant dates of maturity ["Main Economic Developments January–September 1962," *Bank of Israel Bulletin*, No. 18 (March 1963), 44–45].

²⁶ At the end of February a \$100 bond sold for IL 245.7 (see note 23 on p. 27); at the new exchange rate this is the equivalent of \$ 81.9.

²⁷ Changes in the expectations about post-devaluation price changes are a direct consequence of the devaluation itself and their effect need therefore not be deducted.

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per dollar) was attributed to devaluation. In other words, we ignore indications that further devaluation was expected.

Dollar-linked mortgages: It might seem that this type of loan could be treated in the same way as other dollar-linked loans. In fact, however, the Ministry of Finance made special concessions to mortgagors after devaluation, which considerably reduced the rise in their indebtedness.

On the date of devaluation some IL 200 million (at face value) of the balance outstanding of the loans granted to home buyers by the government and the mortgage banks were linked to the dollar.²⁸ On February 9, 1962, the nominal value of these debts jumped suddenly by two thirds, to the indignation of mortgagors, especially those whose loans were recent. The government yielded to their pressure with a series of concessions; at first these applied only to loans given out of its own funds, but later also to others, the government compensating the mortgage banks for their concessions.

The concessions were made in three rounds, and it was not known at each stage that there would be subsequent concessions.

The first round of concessions was announced on February 27, 1962.²⁹ Until June 7, 1962 every mortgagor would be entitled to choose one of the following alternatives:

i. Conversion from dollar linkage to index linkage as of the date of receipt of the loan, with future interest set at 8 per cent. This alternative entailed payment of linkage differentials not only on the outstanding debt, but also on the amounts repaid in the past.

ii. Continuation of dollar linkage and extension of the period of repayment by one third.

iii. Immediate repayment of the loan in whole or in part at the rate of IL 1.80/\$ 1; *plus*, instead of linkage differentials, a 3 per cent premium on the sum repaid for each year from the receipt of the loan until its redemption.

Some mortgagors (in immigrant housing and immigrant camp clearance schemes or in development areas) were granted additional concessions, e.g., exemption from linkage differentials on amounts repaid before devaluation and a lower interest rate if they chose alternative (i) and a reduced premium on immediate repayment if they chose alternative (iii).

The second round was announced on August 19, 1962;³⁰ it applied to

²⁸ Table 2-2, column (2), lines (5) and (6).

²⁹ Ministry of Finance, Accountant General, *Introduction to Report on State Loans as of 31.3.62*, Jerusalem, November 1962, Appendix A (Hebrew).

³⁰ *Ibid.*, Appendix B.

mortgagors who had not taken advantage of the February concessions and consisted of repayment in whole or in part before November 30, 1962, with the following discounts on the principal being repaid and on the interest and linkage differentials due on it: (a) A discount of 5 per cent on the payment, if the last instalment was originally due between April 1, 1963 and September 30, 1965. (b) A discount of 10 per cent on the payment, if the last instalment was originally due between October 1, 1965 and March 31, 1969. (c) A discount of 15 per cent, if the last instalment was originally due on or after April 1, 1969. These provisions also applied to index-linked mortgages.

The third round was announced on July 26, 1963.³¹ Under its provisions mortgagors repaying their dollar-linked loans by September 30, 1963, who had not taken advantage of the February and August 1962 concessions, received a discount of 15 per cent on the (dollar-linked) sum repaid; in addition, they could receive an unlinked loan of up to IL 5,666 at 10 per cent interest for seven years in order to repay a linked loan of up to IL 4,000.³²

The early-redemption payments were transferred to the Accountant General who undertook to repay the mortgage banks according to the original terms.

As a result of these concessions, dollar-linked mortgages were not affected to the full extent of the official devaluation, even if we disregard the effect of expectations which had increased their real pre-devaluation value. With this reservation, the effective devaluation may be calculated for each type of concession as follows:

First round: the earlier the date on which the loan was taken, the higher was the effective rate of devaluation—the value of the amount outstanding rose by 3 per cent on a loan taken one year before the devaluation; by 6 per cent on a loan taken two years beforehand, and so forth. Effective and official devaluation would have been equal on loans taken 22 years before devaluation.

Second round: the nearer the original redemption date of the loan, the higher was the effective rate of devaluation, and it ranged from 58.3 per cent to 41.7 per cent.³³

³¹ Ministry of Finance circular to commercial banks on early repayment of mortgages (dated July 26, 1963; Hebrew).

³² The linkage differential on IL 4,000 is IL 2,666; and 15 per cent deducted from IL 6,666 leaves IL 5,666.

³³ Original redemption date April 1, 1963–September 30, 1965 (5 per cent discount): the mortgagor repaid 95 per cent of IL 3.0 on each loan dollar instead

Third round: this stage was implemented only in the second half of 1963 and is too distant from the devaluation to be included among its direct effects.³⁴

There is no way of ascertaining which alternatives were actually chosen by mortgagors. All that is known is that out of the IL 200 million linked mortgages outstanding at the date of devaluation, at least IL 54 million were prematurely repaid in 1962 (i.e. under either of the first two provisions).³⁵ The Accountant General's Office estimates that most of the sum was repaid under the first-round provisions. Assuming that the loans thus repaid were granted 5 years before devaluation, the average effective nominal devaluation on amounts repaid would be 15 per cent (3 per cent premium for every year since the grant of the loan). This is the nominal rate. The 'real' rate, taking into account expectations of devaluation, is certainly lower, and may even be negative. On the other hand the 15 per cent rate applies only to mortgage loans repaid prematurely and benefiting from the concessions; the average for all mortgages is certainly higher.³⁶ Accordingly, an average devaluation rate of

of the pre-devaluation IL 1.8; the effective rate of devaluation was accordingly $[(3.0) (95)/(1.8)] - 100 = 58.3$ per cent.

Original redemption date October 1, 1965–March 31, 1969 (10 per cent discount): here the effective rate of devaluation was $[(3.0) (90)/(1.8)] - 100 = 50$ per cent. Original redemption date on or after April 1, 1969 (15 per cent discount): the effective rate of devaluation was $[(3.0) (85)/(1.8)] - 100 = 41.7$ per cent.

³⁴ The effective devaluation of that part of the mortgage repaid under the terms of this concession was 41.7 per cent (see the computation for the longest-term mortgages in the preceding footnote).

³⁵ Bank of Israel, *Annual Report 1962*, p. 393.

³⁶ It should be noted that we here abandon the marginal calculation used so far in favor of an average calculation. For balances and bonds, the market price is the correct indicator for estimating the value of all balances or bonds on the market and not only that portion actually traded. Along the same lines, it could be argued that since all mortgagors had the opportunity of benefiting from the concessions through premature redemption, the effective devaluation of that part of the loans which was repaid represents the public's estimate of effective devaluation for all mortgages: if a mortgagor preferred not to make use of the concessions, it means that in his view the 'concession' price of the loan—a nominal devaluation of 15 per cent on the average—was higher than the price of continuing to hold the loan and repaying it according to the original linkage terms. It would be the upper limit because it was the government that determined the price, which could not be affected by the behavior of mortgagors. But this argument should be viewed with caution: theoretically, every mortgagor could benefit from premature redemption, but in order to do so, he had to raise the requisite funds. It cannot be safely assumed that this was possible in the prevailing credit-market conditions, even if it was worth while.

25 per cent (or IL 0.45 per dollar) on all mortgages does not seem excessive. It should be stressed that the calculation is made from the point of view of households only. Since the government undertook to compensate the mortgage banks for the concessions it obliged them to make, the government's liability towards them must be taken into account. In the absence of the special treatment accorded to mortgagors, we would have assumed that the value of the mortgage dollar rose by IL 0.625, as did the value of bonds. The new government liability is therefore estimated as the difference between this hypothetical IL 0.625 and IL 0.45 (the amounts received by mortgage banks in addition to what they received directly from households), or IL 0.175 per mortgage dollar. *Other dollar-linked loans and deposits:* It is impossible to make a direct estimate of capital gains or losses on claims and obligations other than bonds. Such loans are not negotiable, so that there is no market price to reflect expectations. Neither, owing to the Interest Law, can expectations be reflected in the interest rate. Clearly, however, expectations of devaluation raised the pre-devaluation value of loans above their nominal value. In the absence of an alternative criterion we assumed that the same considerations apply to loans as to bonds, i.e. that their value rose by an average of 34.1 per cent or by IL 0.625 per dollar.

3. *Sector distribution of devaluation gains or losses*

Table 2-3, which follows the same pattern as Table 2-2, shows the sector distribution of devaluation gains and losses. The face value of each asset appearing in Table 2-2 has been replaced by the relevant devaluation gain. Column (1) also includes the gains from the foreign currency balances (Table 2-1). Several features of the table require elucidation.

The commercial banks incurred a loss on their direct claims abroad because they held negative balances at the date of devaluation. This loss could have been shown in column (4), line (1), but we have included it as a negative gain in column (1), along with all other gains derived from foreign currency balances.

The IL 8 million shown in column (6), line (5), are a loss of the government and a gain for the mortgage banks arising out of the special provisions for the premature redemption of mortgages. In practice, the government suffered an additional loss from the concessions: it cannot be assumed that the government foresaw that it would take over part of the mortgagors obligations to the banks. Its loss should therefore consist of the entire sum it undertook to pay the mortgage banks, i.e. the difference between what the mortgagors actually repaid (an average of

TABLE 2-3. *Devaluation Gains and Losses on Foreign Currency Assets, by Sector^a*
(IL million)

<i>Gain of</i> <i>Loss of</i>	<i>Rest of world</i>	<i>Households^b</i>	<i>Firms^c</i>	<i>Commer- cial banks^e</i>	<i>Mortgage banks^e</i>	<i>Govern- ment^e</i>	<i>Bank of Israel</i>	<i>Total</i>
	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
(1) Rest of world			95	6	14	364		479
(2) Households	82 ^d				5			87
(3) Firms	31 ^e							31
(4) Commercial banks	-17 ^f		14		1	1		-1
(2), (3), (4) Households, firms, banks ^g								
(5) Mortgage banks		21	4		13	88		101
(6) Government	83 ^f	28	306		21	8 ^h +26		59
(7) Bank of Israel	111 ^f		17					438
(8) Total	290	49	436	6	54	487	-	1,322

^a This table follows the arrangement of Table 2-2; for dating of underlying figures see note a to Table 2-2.

^b IL 0.45/\$1.

^c IL 0.625/\$1.

^d IL 0.58 per TAMAM dollar; IL 0.84 per PAZAK dollar.

^e IL 0.63/\$1.

^f IL 1.20/\$1 for balances; IL 0.625/\$1 for other assets.

^g See note e to Table 2-2.

^h The IL 8 million represents the government's obligation to compensate the mortgage banks for the linkage concessions to mortgagors (IL 0.175 per dollar of mortgage loans to households).

SOURCES: Table 2-1 (foreign balances) and Table 2-2 (other foreign assets).

about 15 per cent over IL 1.80/\$ 1, see p. 31) and the real value of the mortgages at the new rate (IL 3.00/\$ 1, discounted for price changes expected until the date of repayment). However, since we are more interested in the losses and gains of the private sector and since the profits or losses of both mortgagors and the banks were not affected by the fact that the government's loss was unexpected, its exact amount is immaterial to our discussion.

The terms loss or gain cannot properly be applied to the rest of the world, since devaluation changed the IL but not the foreign currency value of the national wealth. The column (1) figures cannot therefore be called losses of the rest of the world (since in foreign currency terms foreign claims did not change as a result of devaluation), but represent an increase in the IL value of the national wealth; similarly, the line (1) figures are not gains in the ordinary sense but represent a decline in the IL value of the national wealth. Devaluation thus raised the share in the national wealth of holders of foreign-currency linked assets, and reduced the share of those having foreign-currency linked debts.

Table 2-4 shows the net devaluation gains of each sector, i.e. the gains of each sector (line totals in Table 2-3) less its losses (column totals in Table 2-3). We stress once again that we are discussing the change in the value of financial assets only, and it can be assumed that our estimate of capital gains is consequently biased downwards.

Households, mortgage banks, and the Bank of Israel had net devaluation gains, and firms and government suffered net devaluation losses. The situation of the commercial banks is not clear. Against their net loss of IL 7 million, they also had a share in the IL 101 million gains derived from dollar-linked government bonds held by banks, firms, and households at the date of devaluation. If the banks did lose, it was certainly less than IL 7 million, and it is quite conceivable that they made a gain.

As stated, the losses and gains of each sector were computed in order to estimate the direct effect of devaluation on aggregate demand due to the change in the composition of the asset portfolio.

Assuming that the asset portfolios of households and firms were in equilibrium before devaluation, the demand of households should have risen and that of firms should have declined.³⁷ In addition, effective devaluation was greater for imported capital goods (54 per cent) than for

³⁷ In aggregating the profits and losses of each sector it is implicitly assumed that the sector reacted symmetrically to changes in its assets and liabilities. See p. 20.

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all merchandise imports (39 per cent), so that the automatic price rise due to dearer imports was 15 per cent for investment compared with 9.5 per cent for the general price level,³⁸ another reason for the demand of firms declining.

TABLE 2-4. *Net Devaluation Gains, by Sector*
(IL million)

	<i>Gains</i>	<i>Losses</i>	<i>Net gain</i> <i>(1)-(2)</i>
	<i>(1)</i>	<i>(2)</i>	<i>(3)</i>
Households	87	49	38
Firms	31	436	-405
Commercial banks	-1	6	-7
Households, firms, commercial banks ^a	101		101
Mortgage banks	59	54	5
Government	438	487	-49
Bank of Israel	128	-	128
Total	843	1,032	-189

^a It was not possible to get the breakdown of the government and mortgage bank bonds held by the sectors.

SOURCE: Table 2-3.

We shall not discuss the effect on aggregate demand of the change in the asset portfolios of the government and the Bank of Israel. It was assumed (although the assumption is not altogether realistic) that there is no such effect since state institutions are supposed to act on policy considerations only.

The banks are not a direct demand factor on the market; but in so far as they made any net gains from the automatic appreciation of their financial assets, it was to be expected that they would expand credit, thus increasing the means of payment and exerting indirect upward pressure on aggregate demand.

³⁸ Bank of Israel, *Annual Report 1962*, p. 33, Table III-1, for effective devaluation of imports; and p. 76, Table VI-2, for the resulting price rise.

4. *Summary*

In this chapter we have tried to evaluate the (immediate) automatic changes in the value and composition of assets due to devaluation and likely to affect aggregate demand. It is the uncertainty about the date and extent of devaluation that provided the conditions necessary for these changes to take place; had there been no uncertainty, devaluation would have produced no changes in the asset portfolio and consequently no change in aggregate demand on the day of devaluation. Underlying this presentation of aggregate demand as a function of the change in the asset portfolio is Friedman's permanent income and consumption theory,³⁹ according to which the consumption of individuals in the present is affected by future income expectations. We conclude that devaluation, by changing the asset portfolio, should have automatically raised the consumption and investment demand of households (especially of the recipients of personal restitutions from Germany who held over one third of the foreign balances at the date of devaluation) and reduced the investment demand of firms.⁴⁰

We have disregarded the fact that in the last analysis firms are owned by households. In fact, because of the decline in the value of the net assets of firms, capital losses would accrue to households and reduce their demand also.

On the other hand, devaluation may lead to an immediate growth in demand in two other ways: first, Friedman's theory is fully applicable only under conditions of a perfect loan market; in order to consume on account of income expected in the future (because of a rise in the rate of exchange) it must be possible to borrow freely in the present. Imperfections in the loan market may prevent people from attaining an optimum asset portfolio by realizing future income in the present, with the consequence of involuntary abstention from consumption before devaluation. When devaluation occurs the expected income can be realized and consumption increased.

Second, the existence of dollar linkage may increase savings while devaluation is expected. If for instance the government issues dollar-linked bonds at a time when devaluation is expected some people will prefer to increase their present saving in order to increase future consumption

³⁹ Milton Friedman, *A Theory of the Consumption Function* (National Bureau of Economic Research, New York; Princeton: Princeton University Press, 1957).

⁴⁰ According to Friedman's consumption theory the increase in the value of future restitutions receipts would have a further effect on household demand.

THE COMPOSITION OF ASSETS

when the bonds are redeemed at a higher price. In this sense, the expected devaluation is equivalent to a rise in the interest rate, something that is likely to stimulate saving. The total saving of the economy will rise only if the government does not increase its expenditure. Once devaluation has occurred, investors drawn into the bond market by the higher rate of interest are likely to sell and their demand for goods to grow.

The direction and extent of the direct effects of devaluation on demand varied from one sector to the other, and no quantitative estimate can be made of the combined effect. The important question of whether devaluation was, in its direct effects, deflationary or inflationary must therefore remain unanswered. However, we can examine the question of whether the estimated change in the demand of each sector separately was in itself desirable and conducive to the success of devaluation, or whether it was detrimental, necessitating government measures to combat its harmful effects.

As stated, the direct effect of devaluation was to increase the demand of households and reduce the demand of firms. The effect on household demand was undoubtedly undesirable. Since the main object of devaluation was to reduce imports and to divert resources from domestic uses to exports it was clearly undesirable that consumer and housing investment demand should rise, since neither of these two components of aggregate demand help to reduce the import surplus. As regards the demand of firms, we should again stress that our estimates of devaluation gains are biased downwards since we have ignored devaluation gains or losses on non-financial assets.

It is not possible to come to a clear-cut conclusion about firms. A reduction in the investment demand of firms certainly eases the pressure on resources. On the one hand, if exporting firms curtail their present investment, their future exports will suffer, a clearly undesirable result. If, on the other hand, it is firms producing for the domestic market whose investment demand declines, while exporting firms are encouraged to expand by the rise in the relative price of export goods, the result is desirable; in this case, the direct effect of devaluation is to facilitate a re-allocation of resources in favor of export branches. In 1962 gross investment declined in both agriculture and manufacturing.⁴¹ The decline in agricultural investment began in 1959 and it reflects a change in

⁴¹ Bank of Israel, *Annual Report 1962*, pp. 66-67.

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immigration policy,⁴² so that it cannot be ascribed to devaluation. However, the decline in industrial investment suggests that the rise in the value of business indebtedness due to devaluation may have outweighed the effect of higher export prices.

The less immediate effects of devaluation on aggregate demand, through the induced increase in the means of payment, are discussed in the next chapter.

⁴² From 1959 the emphasis shifted from agricultural settlement of immigrants to settlement in development towns. See Bank of Israel, *Annual Report 1961*, p. 61

CHAPTER 3

THE INCREASE IN THE MEANS OF PAYMENT

By itself, devaluation has no direct effect on the quantity of money. Foreign currency as such is not affected by the revaluation of the pound, nor is it part of the means of payment until it is converted into pounds; the effect is then two-fold. First, every dollar is converted to a greater number of pounds. Second, bank reserves will increase as a result; if, as was plausible under Israeli conditions at the time of devaluation, the banks and the public are interested in expanding credit, and if the public does not increase its cash holdings by the full amount converted, there will be a further increase in the quantity of money.

Table 3-1 shows the means of payment by source at the end of January¹ in each of the years 1961, 1962, and 1963 [columns (1) to (4)]. The effect of the revaluation of the dollar is shown in column (7). It is only the foreign-currency linked items that show this effect: each change appears twice, once in sources of increase, and once in sources of decline, so that the net effect—the automatic change in the quantity of money due to devaluation—is nil. This can be illustrated through the changes recorded in the Bank of Israel's balance sheet in connection with, say, a foreign currency deposit of the government with the Bank. On the liabilities side, the government deposit increases and the Bank's own capital decreases by the same amount; the Bank may, however, hold a deposit abroad (or foreign currency cash reserves) against the government deposit: in this case, the rise in the government deposit is matched by a rise on the asset side, instead of being offset by a decline in own capital. In neither case are the means of payment affected. In the first, 'Bank of Israel credit to the government' (item 2b in the table, defined as loans to government *less* government deposits) would decline,

¹ In the absence of the (more appropriate) figures for February 9, 1962, the table gives end-January data. Accordingly, the annual changes mentioned in this chapter are for twelve months ending with January.

TABLE 3-1. Sources of Change in the Means of Payment: January 31, 1961-63
(IL millions)

	At IL 1.8/\$1		At IL 3.0/\$1		Change during		Devaluation difference (3) - (2)
	1961	1962	1962	1963	February 1961 to January 1962	February 1962 to January 1963	
	(1)	(2)	(3)	(4)	(5)	(6)	(7)
<i>Sources of increase</i>							
1. Assets abroad	393	570	950	1,405	177	455	380
2. Bank of Israel credit	391	314	104	-39	-77	-143	-210
a. To the public	51	63	96	28	12	-68	33
b. To the government	340	251	8	-67	-89	-75	-243
3. Commercial bank credit	578	670	698	832	92	134	28
a. To the public	536	637	664	784	101	120	27
b. To the government	42	33	34	48	-9	14	1
4. Other accounts (net)	-83	-103	-103	-144	-20	-41	0
5. Total sources of increase	1,279	1,451	1,649	2,054	172	405	198
<i>Sources of decrease</i>							
6. Foreign currency deposits of the public	193	298	496	577	105	81	198
7. Local currency time deposits	180	178	178	193	-2	15	0
8. Total sources of decrease	373	476	674	770	103	96	198
Net sources (5. less 8.)	906	975	975	1,284	69	309	0
<i>Means of payment</i>							
9. Cash held by public	307	343	343	411	36	68	0
10. Demand deposits of the public	599	632	632	873	33	241	0
11. Total means of payment	906	975	975	1,284	69	309	0

SOURCE: Appendix Table 2. The items are explained in Appendix Table 6.

and 'other accounts' (item 4 in the table, which includes the Bank's own capital as a negative component) would rise by the same amount. In the second, the decline in 'Bank of Israel credit to the government' would be matched by a rise in 'assets abroad' (item 1 in the table, which includes the deposits abroad and foreign cash holdings of the Bank).²

The increase in the means of payment during 1961 was calculated using the 1962 figures at the IL 1.8/\$ 1 rate [column (2)], and the calculation of the 1962 increase used the figures at the IL 3.0/\$ 1 rate [column (3)]. As can be seen the 1962 rise was considerable.

When (as in Israel during the devaluation period) banks do not accumulate excess liquidity, the quantity of money can rise only if there is an exogenous increase in the total liquid assets of banks and the public, or if the public reduces its share of this total, or if liquidity regulations are modified to allow the deposits of the public to increase relatively to bank reserves. Without such modification banks can expand credit only if they acquire additional liquid assets, for which there are three possible sources: bank deposits by the public out of cash holdings; central bank purchases (from the public or the commercial banks) of non-reserve assets such as foreign currency (i.e. conversions by the public) or securities (open market purchases);³ and expansion of direct (net) central bank credit to the public, the banks, or the government.

Foreign currency is not part of bank reserves, so that a devaluation-caused rise in the value of the foreign currency assets of banks does not have an automatic effect on the size of their reserves. To use the devaluation in order to increase their reserves the banks must sell foreign currency assets to the Bank of Israel. The government and the Bank of Israel exercise no direct control over the amount of cash holdings and foreign currency conversion of the public, but they may exert indirect influence through the terms laid down for the various types of

² See also Appendix Table 6 for details of the transition from Bank of Israel balance-sheet terms to the presentation of Table 3-1.

³ The conversion of foreign currency by the government has no monetary significance, since the Accountant General can at any time ask the Bank of Israel to buy foreign currency against his IL deposit with the Bank. This affects the composition of foreign and local currency assets of the government and the Bank of Israel, but neither bank reserves nor the means of payment will change. Similarly, the purchase of securities from the government by the central bank has no automatic effect on the means of payment; so long as the government does not use the proceeds for local purchases there will be no real change, but merely an equal increase in government loans and deposits; net direct credit to the government grows only when the deposit is used for purchases.

deposit and through the rate of interest. Expansion of Bank of Israel credit depends primarily on the Bank itself; commercial banks, provided there is excess demand for credit, can only expand their credit by increasing their reserves (which depends partly on the Bank and partly on the public), subject to the liquidity regulations imposed by the Bank.

It may thus be said that in general the government and the Bank of Israel manipulate and control the means of payment through the amount of central bank credit to the government, through bank loans and open market operations, and through the liquidity regulations and bank rate.

During the twelve months after devaluation the means of payment increased by IL 309 million, or by 31.7 per cent over the end-January 1962 figure of IL 975 million [Table 3-1, column (6)]. The average increase for the period was 18.3 per cent.⁴ During the 12 months before devaluation the means of payment had grown by IL 69 million, or by 7.5 per cent from the IL 906 million at the end of January 1961. In 1962 the increase was thus much greater than in 1961. We shall now discuss what the various factors contributed to the growth in the means of payment during these two years.

1. *Conversion of foreign currency by the public*

In both years the most important source of increase in the means of payment was the accumulation of foreign-currency assets. This came to IL 177 million in 1961 and IL 455 million in 1962, or 257 per cent and 147 per cent, respectively, of the increase in the means of payment (Tables 3-1 and 3-2). In contrast, foreign-currency deposits by the public—a factor reducing the means of payment—grew by only IL 81 million in 1962, or less than the IL 105 million increase in 1961. In dollar terms the decline is even more striking—from \$ 58 million in 1961 to \$ 27 million in 1962.

Another way of presenting the picture is to compare the change in foreign-currency deposits with the change in total foreign balances; the latter rose, largely as a result of personal restitution receipts, by \$ 98 million in 1961 compared with \$ 152 million in 1962; the rise in deposits, on the other hand, declined from \$ 58 million (59 per cent of the rise in total foreign balances) in 1961 to \$ 27 million (18 per cent) in 1962.⁵

⁴ Average for 12 months after compared with 12 months before devaluation. Computed from Appendix Table 2.

⁵ The change in deposits is a function of current receipts and conversion out of both current receipts and previously existing deposits. It would therefore be better to compare the change in foreign balances (i.e. total current receipts)

TABLE 3-2. *Sources of Change in the Means of Payment: January 31, 1961-63*
(per cent)

	At IL 1.8/\$ 1		At IL 3.0/\$ 1		Change during	
	1961	1962	1962	1963	February 1961 to January 1962	February 1962 to January 1963
	(1)	(2)	(3)	(4)	(5)	(6)
<i>Sources of increase</i>						
1. Assets abroad	43.4	58.5	97.4	109.4	256.5	147.2
2. Bank of Israel credit	43.1	32.2	10.7	-3.0	-111.6	-46.3
a. To the public	5.6	6.5	9.9	2.2	17.4	-22.0
b. To the government	37.5	25.7	0.8	-5.2	-129.0	-24.3
3. Commercial bank credit	63.8	68.7	71.6	64.8	133.3	43.4
a. To the public	59.2	65.3	68.1	61.1	146.3	38.8
b. To the government	4.6	3.4	3.5	3.7	-13.0	4.6
4. Other accounts (net)	-9.1	-10.6	-10.6	-11.2	-29.0	-13.2
5. Total sources of increase	141.2	148.8	169.1	160.0	249.2	131.1
<i>Sources of decrease</i>						
6. Foreign currency deposits of the public	21.3	30.6	50.9	44.9	152.1	26.2
7. Local currency time deposits	19.9	18.2	18.2	15.1	-2.9	4.9
8. Total sources of decrease	41.2	48.8	69.1	60.0	149.2	31.1
<i>Net sources (5. less 8.)</i>	100.0	100.0	100.0	100.0	100.0	100.0
<i>Means of payment</i>						
9. Cash held by public	33.9	35.2	35.2	32.0	52.2	22.0
10. Demand deposits of the public	66.1	64.8	64.8	68.0	47.8	78.0
11. Total means of payment	100.0	100.0	100.0	100.0	100.0	100.0

SOURCE: Table 3-1.

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The difference between the two is a rough indicator of the amount converted. In the absence of direct government and banking system transactions with the rest of the world, the increase in total foreign-currency balances would be the same as conversion *plus* the increase in foreign currency deposits. In practice, it is equal to conversion *plus* the increase in deposits *plus* inflows of the government and the banking system. The last two do not raise the means of payment.⁶ At any rate, it seems that in 1962 the public converted much more than in 1961, and this was the principal source of the means-of-payment increase; it is impossible to isolate the amount converted, and we have therefore shown the total increase in foreign currency balances as a source of means-of-payment increase (line 1 of Table 3-1).

Since conversion played such a large part in raising the means of payment it is worth examining its causes and, in particular, finding out who did the converting and who held deposits.

Foreign currency holders and transferrers may be divided into three groups: exporters, who must sell their entire proceeds to the Treasury and are not allowed to hold foreign currency deposits; recipients of restitutions from Germany, immigrants, and others, some of whom, mostly restitution recipients, are entitled to hold foreign currency (TAMAM) deposits or foreign-currency linked (PAZAK) deposits; importers who require foreign-currency deposits for their transactions abroad.

Foreign currency deposits of the public were IL 193 million at the end of January 1961, two thirds of this amount being held by recipients of personal restitutions from Germany; by the end of January 1962, the amount was IL 298 million, of which 70 per cent was held by restitutions recipients. The corresponding figures for the end of January 1963 were IL 577 million and 84 per cent.⁷ In other words, the proportion of foreign

with new deposits (i.e. current receipts *less* current conversions only). However, we have data only for the net change in deposits.

⁶ To illustrate: if we regard the total increase in foreign balances as conversion by the public, it means that we have included in the latter loans received by the government from abroad and deposited in the Bank of Israel, and the conversion figure thus derived is biased upward. In the Bank's balance sheet these loans are reflected as an increase in the government's foreign currency assets and a corresponding decline in net credit to the government, so that although the means-of-payment total changes, the weights of the sources of means-of-payment change do not.

⁷ For total foreign currency deposits of the public, see Table 3-1; for deposits of recipients of personal restitutions, see PAZAK and TAMAM deposits, Appendix Table 8.

currency deposits held by restitution recipients and the total IL value of deposits both grew. In 1962 the foreign currency deposits of restitution recipients increased by 38 per cent, while other deposits declined by 35 per cent (both net of the automatic two-thirds increase in the IL value of the deposits). The decline is mainly accounted for by a modification of the financing procedure for importers, part of the phenomenon of lags and leads. According to regulations in force at the time of devaluation importers had to keep 20 per cent of the value of their orders in foreign currency deposits. Until February 1962 they were themselves agreeable to this arrangement, which to some extent insured them against devaluation; when this inducement vanished, they pressed for a change in the procedure, and their deposits declined.⁸ On the one hand, this raised liquidity by reducing purchases of foreign currency ('negative conversion'); on the other hand, importers were now able, with the moneys thus released, to enter other markets—securities, real estate, and commodities.

A successful devaluation implies a net increase in foreign currency receipts. In itself, such an increase may well involve increased conversion (but need not necessarily do so⁹): a reduction in imports means that importers buy less foreign currency (i.e., negative conversion declines), while higher exports mean that exporters sell more foreign currency (i.e., positive conversion rises). However, since devaluation is designed to reduce the import surplus in foreign currency terms, it is evident that even if the changes on current balance-of-payment account raise the means of payment, there is no call for the government to do anything to counteract an increase due to this cause.

The two other sources of foreign currency are foreign loans and investment and unilateral transfers, of which restitutions from Germany account for a considerable share. We shall now discuss these two sources of conversion.

a. *Foreign loans and investment*

In 1962, net long-term and medium-term loans amounted to \$ 121 million and net foreign investment to \$ 82 million. Of the foreign loans, some \$ 100 million were to the government. Israel's net foreign balances stood at \$ 260 million at the beginning of 1962 and grew by \$ 115 million in the course of the year, so that the capital inflow exceeded what was

⁸ Bank of Israel, *Annual Report 1962*, pp. 319–20.

⁹ If the rise in the exchange rate outweighs the decline in the import surplus, so that less foreign currency is bought with more pounds, negative conversion will increase.

necessary to cover the import surplus.¹⁰ At this period the Bank of Israel repeatedly advocated strict selectivity and restraint in obtaining foreign loans; at a time when foreign currency reserves are relatively large and are expected to grow it is advisable to give up some of the capital imports (for which interest must be paid in foreign currency) so as to curb demand and the rise in the means of payment. In August 1962, the Governor of the Bank of Israel stated that "there is no justification for accepting new foreign loans except when these are earmarked for projects of top economic priority and are granted for periods exceeding 15 years and at rates of interest below 6 per cent per annum."¹¹ This recommendation was repeated more forcefully in May 1963 together with a demand to curb the accumulation of deposits by foreign residents and to curtail measures for the encouragement of capital investment.¹² The capital import figures (\$ 121 million long-term and medium-term loans and \$ 82 million foreign investments in 1962, compared with \$ 83 million and \$ 52 million, respectively, in 1961¹³) show that government did not follow the Bank's recommendations in 1962. Moreover, interest rates in many instances exceeded the ceiling recommended by the Bank, and on some loans as much as 6.5, 7, or 8 per cent interest was paid.¹⁴ In the second half of 1963, the Ministry of Finance went some way towards meeting the Bank's demands by reducing foreign liabilities: net loans declined from \$ 121 million to \$ 35 million in 1963. At the same time, however, the government continued to encourage foreign investment which came to \$ 135 million.¹⁵

b. *Personal restitutions from Germany*

Of the \$ 165 million foreign currency deposits held by the public (other

¹⁰ Total loans and investment from Bank of Israel, *Annual Report 1963*, p. 35, Table III-4; loans to the government from *ibid.*, p. 100, Diagram VII-3; reserves at the beginning of 1962 from *Annual Report 1962*, p. 48, Table III-14. The figures cited here are for calendar years.

¹¹ See "Report on the Increase in the Money Supply during the Period December 31, 1961 to June 30, 1962," *Bank of Israel Bulletin*, No. 18 (March 1963), 92.

¹² See "Report on the Increase in the Money Supply during the Period June 30, 1962 to February 28, 1963," *Bank of Israel Bulletin*, No. 19 (November 1963), 112-25.

¹³ Bank of Israel, *Annual Report 1963*, p. 35, Table III-4.

¹⁴ During 1962, for example, Isasbest Ltd obtained a \$ 5.4 million loan at 8½ per cent, and American-Israeli Paper Mills Ltd obtained \$ 1.7 million at 8½ per cent. (Data from Foreign Exchange Department of the Ministry of Finance.)

¹⁵ Bank of Israel, *Annual Report 1963*, *loc. cit.*, and *Annual Report 1964*, p. 35, Table III-1.

than foreign residents) at the date of devaluation, \$ 117 million (about 70 per cent) were PAZAK and TAMAM deposits.¹⁶

Whether a foreign currency holder keeps his deposit or converts it into local currency depends on a variety of circumstances. It depends chiefly on the comparative yields of deposits and other assets, on his wealth or his income from restitutions and other sources, and on expectations of devaluation and price changes.

In this section we estimate the amount of conversions that could have been expected in 1962, taking into account the size of PAZAK and TAMAM deposits at the date of devaluation, the behavior of depositors in previous years, and their expected restitution receipts during 1962.

In order to examine the factors affecting conversion we have used several models. In all of them, conversion of PAZAK and TAMAM deposits appears as a linear function of current restitution receipts combined with one or more other variables, such as PAZAK and TAMAM deposits at the beginning of the period, or restitution receipts in a previous period or periods. The yields of foreign currency and alternative deposits were not included in the models. Neither the interest rates on the various types of deposit nor the uses to which they may be put have changed much in the period under review, and they may accordingly be disregarded. Yields of alternative assets—shares, bonds, real estate—have changed, but this is a subject requiring separate investigation. The models developed, which are presented in detail in an appendix, will now be described briefly.

The first model tests the hypothesis that conversion out of PAZAK and TAMAM deposits is a function of restitution receipts in the current month and of the stock of deposits at the beginning of the month. According to this model, recipients tended to convert about half their restitutions on receipt. It also appears that the size of the beginning-of-month stock of deposits did not affect the amount converted.

The second part of our hypothesis was thus disproved, and we therefore tried a second model in which the stock variable was replaced by the stream of past restitutions receipts (which, together with conversion, determines the stock)—in other words, we tested the hypothesis that conversion in a given month depends on the amount received in that month and in preceding months. This model led to the conclusion that conversions are primarily a function of receipts in the current month and the preceding

¹⁶ Table 2-1. For the explanation of PAZAK and TAMAM, see note 8 on p. 22, above. Hardly anyone other than recipients of personal restitutions from Germany is allowed to hold such deposits; other depositors are estimated to account for less than 5 per cent of the amount.

one, and it appears that recipients tended to convert 36 per cent of the current month's *plus* 10 per cent of the preceding month's receipts.¹⁷ It therefore follows that if restitution receipts are constant in two consecutive months, the amount converted monthly will be 46 per cent (36 + 10) of total current receipts.

If the current and the preceding month's receipts were the only variables to affect conversion, we should expect actual conversion to deviate from computed conversion in a random manner. The deviations are shown in Figure I, from which it is clear that this was not so, but that the deviations are systematic: up to the end of 1958 and from early 1960 to mid-1961, actual values exceeded computed values; while from the beginning of 1959 to early 1960, and again from mid-1961, actual values fell short of computed values. In order to find an explanation of this pattern we decided to test the effect of expectations for devaluation. As a criterion of devaluation expectations we chose the black market exchange rate of the dollar, assuming that it rises when expectations are strong and declines when they weaken. The figures show that conversion from PAZAK and TAMAM deposits was below what could be explained by current receipts when the black market rate rose; and that conversion was higher than explained by current receipts when the black market rate declined (Figure II).

We therefore added the black market exchange rate variable to the model. Using the three variables—current month's receipts, preceding month's receipts, and the black market dollar rate—we find that the deviations of actual from computed conversions are considerably smaller as well as more random,¹⁸ as is seen clearly in Figure III, which shows the

¹⁷ The equation, derived by the direct least squares method is:

$$Y = 1.70 + 0.36X_1 + 0.10X_2$$

(0.11) (0.10) [=standard deviations]

where Y = conversion in month t

X_1 = restitution receipts in month t

X_2 = restitution receipts in month $t-1$.

The coefficient of determination (R^2) was 0.60.

¹⁸ The equation is: $Y = 9.50 + 0.37X_1 + 0.14X_2 - 3.23X_3$

(0.09) (0.09) (0.71)

where Y , X_1 and X_2 are defined as in note 17, and X_3 is the average black market exchange rate of the dollar in month t .

The coefficient of determination is $R^2 = 0.71$.

The effect of expectations of devaluation is expressed by the coefficient of X_3 : its negative sign shows that the stronger the expectations (and the higher the black market rate), the smaller is conversion. The increase in the coefficient of determination, from 0.60 to 0.71, shows that this equation gives a better explanation than the previous one.

deviations from both the regression that ignores expectations of devaluation and the one that includes them.

The three factors discussed thus determine the amount converted. However, devaluation itself leads to a change in the conversion function. Since expectations are assumed to lapse when devaluation occurs, only the two variables expressing the inflow of restitutions remain in the model. But devaluation also has an income—more precisely a wealth—effect and a substitution effect. The wealth effect is due to the fact that a devaluation gain of IL 82 million (Table 2-3) accrued to restitutions recipients on their foreign currency holdings of \$ 117 million (Table 2-1) at the date of devaluation. If he is to maintain the previous composition of his portfolio an individual must sell some of his foreign-currency assets, in order to realize his capital gains and increase his holdings of other assets. The substitution effect also tends to raise the rate of conversion: the expected yield of foreign-currency linked assets declines and the relative yield of other assets rises as a result of devaluation; the substitution effect thus tends to reduce the weight of dollar-linked assets and to increase the weight of others. Accordingly, it is to be expected that after devaluation the rate of conversion will exceed the pre-devaluation rate of 45 per cent (approximately the figure obtained from the several variants) in addition to the constant monthly amount of \$ 1.7 million.¹⁹ This is borne out by the deviations from the regression in the months following devaluation, as shown in Figure I.

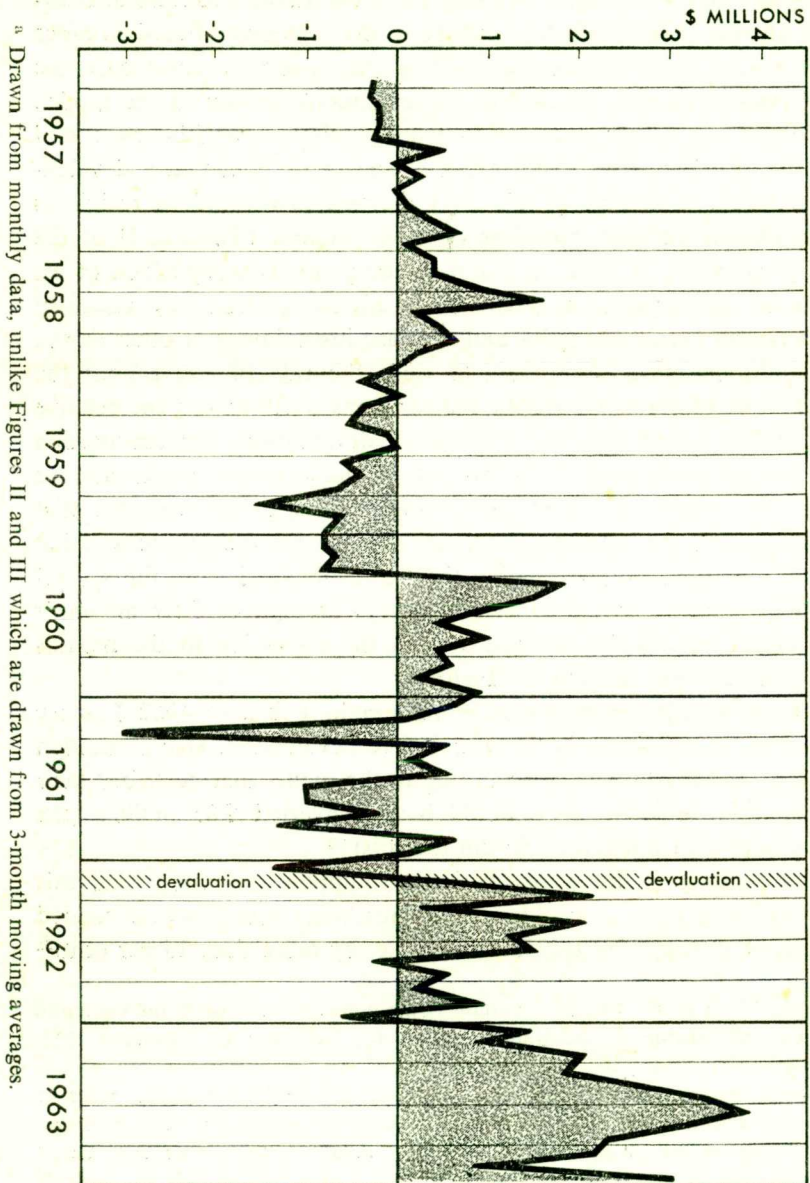
Restitution receipts came to \$ 139 million in February 1962–January 1963, and to \$ 112 million in the year before devaluation. Had restitution recipients continued to behave according to the model that described their pre-devaluation behavior, they would have converted \$ 85 million (the amount computed from actual current receipts).²⁰

Even if—and it is not a reasonable assumption—no more than this was converted in 1962, it would, other things being equal, have expanded the means of payment by IL 255 million, i.e. by more than 25 per cent.²¹

¹⁹ See note 17 on p. 48. The \$ 1.7 million is the constant variable in the equation.

²⁰ See Appendix Table 8: the sum of figures for February 1962–January 1963, according to equation (2b), in column (6).

²¹ Not every conversion implies a direct increase of demand for goods; some of the conversion may be for the purpose of purchasing securities or other holdings; but so long as the amount converted is not used to buy foreign securities it does increase the means of payment. In 1962 foreign securities held by residents grew by \$ 5.4 million (see Bank of Israel, *Annual Report 1963*, p. 426, Table XX-14). Most of the converted funds were therefore used for purchases in local currency, and raised the means of payment.

FIGURE I. *Deviations of Actual From Computed Conversion^a*

MEANS OF PAYMENT

Actual conversion during the period was \$ 95 million [see Appendix Table 8, column (3)], or \$ 10 million more than was to be expected from the regression. At the time it was frequently stated that the large PAZAK and TAMAM deposits of the private sector were the main cause of the unprecedented post-devaluation growth in the means of payment. This contention finds no support in the figures. Out of the \$ 95 million converted by restitution recipients roughly \$ 85 million may be ascribed to current receipts and only \$ 10 million to balances accumulated because devaluation was expected (or as a result of the wealth and substitution effects discussed earlier). This means that it was not the large foreign currency balances held by restitutions recipients at the date of devaluation, but their receipts in the subsequent period that hampered monetary restraint.

There were previous years in which restitutions receipts were considerable. Why then did the means of payment grow comparatively little in 1961, for instance? Two reasons may be adduced: in the first place, every dollar converted in 1961 raised the means of payment by IL 1.80²² instead of by IL 3.00 as in 1962. Secondly, in 1961 there were several factors at work in the opposite direction; although there was positive conversion by restitutions recipients, other transferrers were a source of negative conversion and bank credit to the government was reduced. Although bank credit to the public grew in 1961, the net effect of all the factors (other than conversion of restitutions) was negative, so that means of payment rose by IL 69 million at a time when restitutions converted came to IL 119 million. In 1962, the effect of the large amount of restitutions converted was enhanced by other positive conversions, as well as by the expansion of bank credit to the public; the decline of bank credit to the government and the change in 'other accounts' were not enough to offset the factors raising the means of payment, which grew by IL 309 million while recipients of restitutions converted IL 284 million.²³

When it devalued, the government was aware that considerable restitutions funds were due in 1962. It also knew that the public, in anticipation of devaluation, had accumulated foreign currency balances. It should have been clear that conversion was bound to increase unless special curbs were imposed. Together with devaluation the government should therefore have introduced the monetary measures required to forestall the consequent developments.

²² With the exceptions mentioned in Chapter 2, section 2.

²³ See Appendix Table 7

FIGURE II. *The Black Dollar Rate and Deviations of Actual from Computed Conversion*

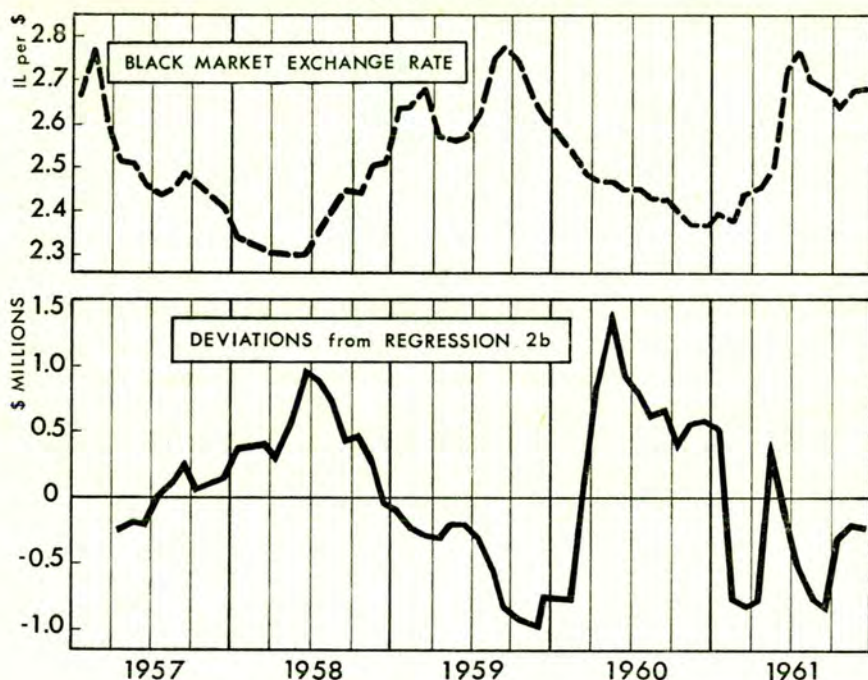
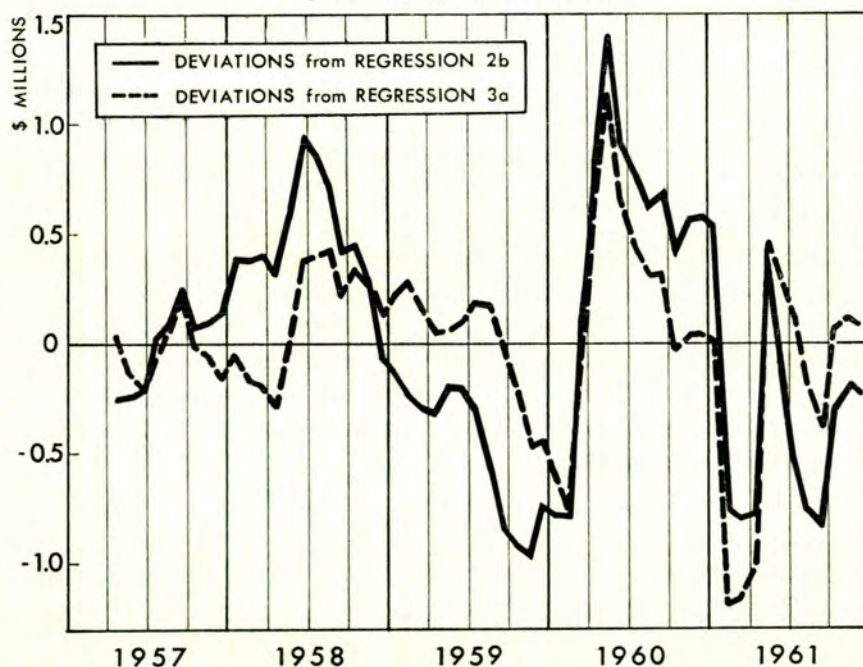


FIGURE III. *Comparison Between Deviations According to Two Computations of the Deviation^a*



^a For a detailed explanation of regression equations 2b and 3a see Appendix B. Equation 3a includes the black dollar rate, and equation 2b does not.

Only two steps were taken to restrain conversion by restitution recipients: the maximum interest rate on PAZAK and TAMAM deposits was raised from 6 to 7 per cent; and the premature withdrawal of term deposits was prohibited.²⁴ In fact, not only were these measures quite inadequate, but another change was made that operated in the opposite direction—the proportion of restitution receipts that could be held in TAMAM deposits was reduced from one third to one quarter and the uses to which TAMAM deposits could be put were restricted.²⁵ This was tantamount to reducing their yield and counteracted the increase in the interest rate. In the event, the increase in TAMAM deposits was smaller in 1962 than in 1961, and this was hardly compensated for by the increase in PAZAK deposits, so that the increment to both types of deposit combined declined slightly.

Although it was evident that PAZAK and TAMAM conversion had contributed greatly to the means-of-payment increase, nothing was done even after 1962 to encourage depositors to hold on to their foreign currency. On the contrary, in February 1963 the maximum interest on TAMAM deposits was reduced from 7 to 4.5 per cent.²⁶ This measure was apparently designed to induce depositors to shift from TAMAM to PAZAK in order to conserve the country's foreign balances (since PAZAK deposits cannot be used as foreign currency; see note 8 on p. 22). What was not taken into account was that PAZAK deposits were only one of several possible alternatives to TAMAM. By reducing the yield of TAMAM, the relative profitability of all other assets was increased, and there was no reason to assume that a shift out of TAMAM would be wholly to PAZAK deposits. The actual result was that TAMAM deposits declined in 1963, and the combined increment to PAZAK and TAMAM deposits fell from 32 per cent of restitution receipts in 1962 to about 20 per cent in 1963.²⁷ The price

²⁴ Bank of Israel, *Annual Report 1962*, p. 317. The prohibition was enforced strictly for only a short time after devaluation. A few weeks later it was already possible to obtain credit against term deposits; subsequently applications for premature withdrawal were approved.

²⁵ *Ibid.*, *loc. cit.*

²⁶ Bank of Israel, *Annual Report 1963*, p. 308.

²⁷ A small part of TAMAM deposits was no doubt used to purchase foreign securities and did not expand the means of payment. In 1963 foreign securities held by local residents rose by \$11.1 million, compared with \$5.4 million in 1962 (see Bank of Israel, *Annual Report 1963*, p. 426, Table XX-14). Assuming that the entire increase in holdings of foreign securities came out of PAZAK and TAMAM deposits, the increase in foreign securities and foreign currency deposits together came to only 28 per cent of restitutions receipts in 1963, compared with 38 per cent in 1962 (the calculation here is based on January–December figures).

paid for warding off a future depletion of foreign balances by TAMAM depositors was the inflationary pressure created by the conversion of the deposits into pounds.

2. *Commercial bank*²⁸ *loans to the government and the private sector*

The second most important element in increasing the means of payment in 1962 was the expansion of commercial bank credit to the public and the government.²⁹ This rise by IL 134 million³⁰ or 19 per cent (excluding devaluation differentials) from February 1962 to January 1963, accounted for 43 per cent of the total increase in the means of payment in the period. During the corresponding months of 1961, bank credit expanded by IL 92 million or by 16 per cent (Table 3-1), and this came to 133 per cent of the total means of payment increase (Table 3-2). The monthly figures for 1962 show that total bank credit rose in every month except December, when the reduction in credit to the government exceeded the rise in credit to the public (Appendix Tables 2 and 3).

Most commercial banks started the year 1962 with a liquidity deficiency because the formal liquidity ratio had been raised twice during 1961 and because from June 1961 net foreign currency assets could no longer be included in the liquid reserve.³¹ The two increases in the ratio gave rise to two authorized deficiencies to each of which the banks had to apply 18 per cent of additional deposits.³² A bank which had deficiencies on both counts could not expand credit on account of a rise in deposits held

²⁸ As elsewhere in this work, 'commercial banks' includes cooperative credit societies.

²⁹ Under conditions (prevailing in Israel) of excess demand for credit at the existing rate of interest, with the banks always at the formal liquidity ratio, net bank credit to the public is at the expense of credit to the government, and vice versa. The relevant variable for the increase in means of payment is therefore total commercial bank credit, regardless of the receiving sector. For the government to reduce its net bank credit without doing anything to prevent the banks from expanding credit to the public from the surplus reserves created is tantamount to doing nothing to restrict the means of payment.

³⁰ Out of this amount, about one quarter is credit to the public out of provident fund deposits earmarked for loans. The figure therefore exaggerates the contribution of the commercial banks to the increase in means of payment.

³¹ See "Bank of Israel Directions," in *Bank of Israel Bulletin*, No. 15 (November 1961), pp. 77, 85, and in *Bank of Israel Bulletin*, No. 16 (March 1962), p. 51. The liquidity ratio was raised from 58 per cent to 62 per cent at the end of March and again to 64 per cent at the end of September.

³² I.e., deposits against which liquid assets must be held. Excess reserves derived from other sources did not have to be applied to the deficiencies.

with it, while a bank with one deficiency could expand credit at the rate of 18 per cent of additional deposits.³³ For instance, a deposit of IL 100 would create excess reserves of IL 36 at the 64 per cent reserve ratio. Of this, IL 18 were earmarked to cover the deficiency due to *each* rise in the liquidity ratio. If, therefore, there was a deficiency on both counts, there was no excess reserve and the bank could not expand credit; with one deficiency the excess reserve was IL 18.

The fact that—despite the deficiencies—the banks expanded credit during the first few months of 1962 shows that current and other deposits requiring liquid-asset backing were not the only source of increased reserves during the period. Another source was the decline in the banks' foreign currency assets.

At the time of devaluation net foreign currency assets of commercial banks stood at about IL 22 million, and their value rose by IL 14 million. The monthly figures show that the banks converted some of their devaluation gains as early as March, reducing their foreign currency assets by IL 11 million (Appendix Table 4). If this reduction was designed to increase reserves the banks could have expanded credit by IL 17 million.³⁴

By the end of January 1963 the banks had cut back their foreign currency assets by another IL 8 million—a further potential source of credit expansion of up to IL 12.5 million. It should be noted that the banks did not accumulate foreign currency assets before devaluation. On the contrary, in 1961 they reduced them by IL 4 million (Appendix Table 4), so that their operations were apparently not governed by expectations of devaluation. It is, however, absurd to assume that they did not expect devaluation, and there may have been two reasons for the reduction in foreign currency assets in 1961. First, the banks may have accumulated enough foreign currency assets in previous years; in 1961 they may have been merely interested in keeping these holdings at a more or less constant level, i.e. their expectations did not augment during 1961. Second, their expected profits from other transactions may have exceeded the expected profits from devaluation. Even before June 1961, when the liquidity regulations were changed to exclude net foreign currency assets from liquid assets, there was no discernible tendency for the banks to accumulate foreign balances.

³³ Bank of Israel, *Annual Report 1962*, p. 307, note 1.

³⁴ *Ceteris paribus*, the multiplier is $1/\text{formal liquidity ratio} = 1/0.64 = 1.56$. This does not take into account liquidity exemptions of up to 22 per cent granted by the Bank of Israel.

Despite the existence of authorized deficiencies and the fact that the public increased its cash holdings by IL 48 million during June–September 1962 (Appendix Table 3), bank credit grew considerably after June; the banks also created unauthorized deficiencies (despite the fines of 10 per cent to which they were liable) in response to the heavy seasonal demand for credit,³⁵ while foreign currency conversion continued. In all, bank credit grew by IL 134 million (Table 3–1) in 1962.

The formal liquidity ratio, twice revised in 1961, stayed the same throughout 1962. As long as there were still deficiencies due to the previous rises in the liquidity ratio there was no need to raise it further; even so the regulations might well have been amended to provide for all additions to reserves to be applied to covering deficiencies—instead of only additional reserves derived from deposits requiring liquid backing. The need for a further change in the liquidity ratios arose in June 1962 when the banks began working off their deficiencies and could begin to use their entire excess liquidity to expand credit. In 1961 the rise in reserve ratios had been effective in curbing credit expansion at the beginning of 1962;³⁶ although it would therefore have been justifiable to raise them again in June 1962 the Bank of Israel waited until January 1963.

While the Bank of Israel failed to raise the liquidity ratios, it did, according to its 1962 Report, exercise its right to grant—and refrain from granting—liquidity exemptions. This device was designed to enable the Bank to divert some bank credit to projects in which the government is interested, and gives the Bank additional control over the amount of credit granted by the banks. Liquidity exemptions are of up to 22 per cent, that is to say, amounts of controlled credit (i.e. credit granted with Bank of Israel approval) not exceeding 22 per cent of deposits requiring liquid backing may be included in the banks' liquid assets. Clearly, other things being equal, such exemptions enable the banks to expand credit to the private sector, since including controlled credit in the liquid asset reserve in effect reduces the reserve ratio, and the effective liquidity ratio declines by 22 per cent when exemptions reach the limit. The Bank of Israel usually granted exemptions to the limit, but in 1962 it used this instrument as a device to restrict credit, by granting less than the full amount of exemptions.³⁷ In the first eight months of 1962 the Bank did not grant any exemptions at all, and in August exemptions reached a low point of 17.5 per cent of the quota. In the last three months of the year there was some

³⁵ Bank of Israel, *Annual Report 1962*, p. 331.

³⁶ *Ibid.*, *loc. cit.*

³⁷ *Ibid.*, pp. 340, 342.

relaxation and 18.9 per cent out of the quota was exploited; at the end of December IL 28.3 million of the quota were not exploited.³⁸

3. *Bank of Israel credit*

Direct loans by the Bank of Israel to the public (rediscount) declined by IL 68 million during the year following devaluation (Table 3-1). The decline occurred in February-July 1962 (IL 50 million) and in January 1963 (IL 44 million), while in August-December 1962 strong seasonal demand raised credit by IL 26 million (Appendix Table 3).

Credit to the government declined by IL 75 million during the year following devaluation—less than the IL 89 million in the preceding year (Table 3-1).³⁹ The monthly figures (Appendix Table 3) show that the bulk of the reduction (IL 57 million) took place in January 1963, so that in the eleven months after devaluation the drop was only IL 18 million.

That the Bank reduced its direct credit to the government and the public and that it avoided granting liquidity exemptions to the permitted limit were in fact the only real steps it took during the period. The Bank did not raise the formal liquidity ratio; the effective ratio did rise in February-May 1962⁴⁰ in consequence of the earlier rise in the formal ratio and because fewer exemptions were granted; for the effective ratio to go on rising it would have been necessary to raise the formal ratio further. Neither did the Bank undertake open market operations, despite the fact that the development of the bill-brokerage market in 1962 shows that conditions were ripe for such measures on the part of the Bank.⁴¹ The

³⁸ Information from the Research Department of the Bank of Israel.

³⁹ The IL 75 million does not include the Bank's devaluation gains (by law transferred to the government) nor the government's own devaluation gains used to repay its debts to the Bank. Devaluation gains used to repay government debts to the Bank of Israel are shown in column (7) of Table 3-1 (automatic devaluation differentials). This is merely a book-keeping transaction which should affect neither the means of payment nor economic activity. However, there may be an indirect inflationary effect when the government reduces its debt to the Bank of Israel, in so far as it will then feel more free to take new loans from the Bank in the future. We ignore this factor in the discussion since there is no way of verifying the supposition.

⁴⁰ See Bank of Israel, *Annual Report 1962*, p. 341, Table XIV-17.

⁴¹ This criticism was voiced by H. Barkai and M. Michaely in "The New Economic Policy—After One Year," *The Economic Quarterly*, X (No. 37-38, March 1963; Hebrew), 23-29. In his reply ("Comments on Criticism," *ibid.*, p. 40), the Governor of the Bank of Israel pointed out that coordination between the central bank and the Ministry of Finance was a prerequisite of open market operations undertaken to absorb money from the public. It is not clear whether

balance of bill-brokerage trade was IL 263 million at the end of 1962,⁴² even though the market had begun to develop only in the middle of 1961. The terms it offered to lenders were not always better than those of the government's Short-Term Loan. Nevertheless, the bills competed successfully with the latter, apparently because of the relatively high brokerage commissions charged by the banks and because the banks were interested in the custom of borrowers looking for credit through the bill-brokerage market as well as in their lending clients.⁴³ With a little effort and by offering slightly better terms the Ministry of Finance or the Bank of Israel could in these circumstances have absorbed at least part of the sums transacted in the bill-brokerage market. It would also have been possible to attract funds from saving schemes, whose deposits grew by IL 25.5 million during the twelve months following devaluation.⁴⁴ These measures might well have increased excess demand for credit at the existing interest rate. But this is a conflict inherent in the Interest Law, and will continue to exist for as long as the authorities attempt to curb inflationary tendencies and at the same time to maintain a legal ceiling on interest. Under these conditions any credit restrictions or attempts to attract funds from private lenders to the government or the central bank—measures designed to prevent a rise in the means of payment—will increase excess demand for credit. And unless such measures are taken the means of payment will expand.

the required coordination was lacking or whether the two institutions together came to the conclusion that it was unnecessary (or not possible) to sell securities to the public. In any event, the Bank did not use this important method of absorption.

In the same article the Governor added that the Bank refrained from open market sales because (as anti-deflationary measures had not previously been required) it had never bought on the open market and therefore had no securities to sell. But the Bank is entitled to issue its own bonds for sale to the public and the banks.

⁴² Bank of Israel, *Annual Report 1965*, p. 332, Table XV-9.

⁴³ Bank of Israel, *Annual Report 1962*, pp. 334-35.

⁴⁴ *Ibid.*, p. 316, Table XIV-7, and *Annual Report 1963*, p. 306, Table XV-7.

CHAPTER 4

THE GOVERNMENT'S INTERNAL LOAN POLICY¹

The flotation of internal loans is a major anti-inflationary device at the disposal of the government. It is, however, an effective device only if the government neutralizes the moneys obtained by depositing them with the central bank.

The two monetary measures chiefly used by the government during 1962 to absorb money from the public were the Short-Term Loan and the early redemption of mortgages. For all practical purposes the two measures are equivalent, since both affect the means of payment in the same manner.

The sale of Short-Term Loan bonds gained momentum after devaluation, and the government's net receipts from this source rose from IL 10 million in 1961 to IL 70 million in 1962.² The increased demand was stimulated both by a publicity campaign mounted by the Ministry of Finance, and by the fact that devaluation had enhanced the advantages of the Short-Term Loan over dollar-linked bonds and foreign currency deposits. The Short-Term Loan was highly liquid, and its net yield was 8.5 per cent,³ compared with a maximum of 7 per cent on these alternative investments. As soon as prospects for devaluation gains in the near future evaporated, the Short-Term Loan became more attractive to investors, who shifted from foreign-currency deposits and linked bonds to the higher-yield, unlinked short-term bonds.

For some reason, the government did not push the sale of long-term bonds. On the contrary, the interest on index-linked bonds was reduced after devaluation:⁴ in 1961 index-linked government loans carried 6 per

¹ In this chapter we confine ourselves to extra-budgetary internal loans designed to absorb purchasing power from the public and do not go into any comprehensive analysis of government budgets.

² Bank of Israel, *Annual Report 1962*, p. 452, Table XX-11.

³ *Ibid.*, p. 450.

⁴ Since devaluation practically all long-term government loans have been linked

cent linked interest; the new series issued in 1962 carried either 6 per cent unlinked interest, or 5 per cent linked interest,⁵ so that average interest declined. This was apparently part of a general policy of reducing interest rates on long-term bonds. Just before devaluation the interest on the majority of linked bonds listed on the Stock Exchange was 6.5 per cent, with 6 per cent for only a minority.⁶ After devaluation the Capital Issues Board, which reviews all new issues, no longer approved interest rates of more than 6 per cent.⁷ As a result of this policy, the net sale of government long-term bonds fell off from IL 15 million in 1961 to IL 5 million in 1962.⁸

It is difficult to explain why the government should have reduced the interest rate on long-term (and particularly on its own) bonds during the post-devaluation period when it was supposed to absorb money from the public, especially when we consider that at the same time it paid extremely high interest rates in order to attract funds from a particular section of the public—the home buyers with dollar-linked mortgages. We have already discussed the concessions made to mortgagors. At each of the three stages mortgagors were given the opportunity to avoid paying some of the linkage differentials due, through immediate repayment of their loans. It may be assumed that in the first instance the government was simply unable to withstand the pressure for concessions, but it soon realized the possibility of using them to absorb funds from the public; the fact that the second-round concessions also applied to index-linked mortgages shows that it acted accordingly. The first-round concessions included the option of extending the payment period if full linkage differentials were paid, and this certainly ran counter to the idea of absorbing purchasing power. The third-round concessions provided for new loans to replace linked mortgages. In so far as mortgagors took advantage of this possibility (i.e., in so far as they did not mobilize any of the capital required for premature

to the Consumers Price Index instead of to the dollar; sometimes both principal and interest were linked, sometimes only the principal.

⁵ Bank of Israel, *Annual Report 1962*, *loc. cit.*

⁶ See Tel Aviv Stock Exchange Ltd, *Kovetz Hodaot* [Stock Exchange Announcements (securities listings—bonds)], November–December 1961, and January–February 1962.

⁷ *Kovetz Hodaot*, *op. cit.*, April 1962 and subsequent issues. An example is the linked bonds issued by Tefahot Israel Mortgage Bank: the 1961 issue carried 6.5 per cent interest (Bank of Israel, *Annual Report 1961*, p. 432); the 1962 issue carried only 5 per cent, in spite of the more distant date of maturity (Bank of Israel, *Annual Report 1962*, p. 476).

⁸ Bank of Israel, *Annual Report 1962*, p. 452, Table XX-11.

redemption by themselves), there was no absorption of funds unless monthly repayments on the new loan exceeded those on the old. In any event, premature redemption might well have replaced other government loan flotations; there is no way of finding out if this happened, but if it did, there was no net absorption of funds.

During 1962, the government received at least IL 54 million⁹ in premature redemptions under the first two concessions,¹⁰ and it is worth examining the interest rate on these amounts.

First-round concessions: Let us assume a dollar-linked loan balance of X pounds at the date of devaluation, repayable under the original contract in fixed monthly instalments of C pounds, over a period of another n years. Devaluation raises the value of the outstanding debt by 67 per cent. Under the linkage terms monthly payments will now be IL $1.67C$ for n years. If instead, the balance of the debt (IL $1.67X$, including the linkage differential) is paid off, there will be a lump-sum payment of IL $(1 + 0.03m)X$, where m is the number of years since the loan was received, and 0.03 is the annual premium to be paid in lieu of linkage differentials. This payment replaces the monthly instalments and may thus be regarded as an investment of IL $(1 + 0.03m)X$ with a monthly yield of IL $1.67C$ over n years (assuming no further devaluation is expected). The implicit interest rate (the internal rate of return) is easy to calculate as the rate r which solves the equation

$$(1 + 0.03m)X = \sum_{i=1}^{12n} \frac{1.67C}{\left(1 + \frac{r}{12}\right)^i} \quad ^{11}$$

This can be considered as interest paid by the government to mortgagors taking advantage of the premature redemption provisions. The rate r varies with the number of years m which have elapsed since the loan was granted, and with the number of years n left until the original date of final repayment. It is also affected by the determinants of C : the original rate of interest on the loan, the length of the period $n + m$, and the amount of the principal. The results, shown in part A of Table 4-1, are extremely

⁹ *Ibid.*, p. 293.

¹⁰ The concessions are described in detail on pp. 29-30.

¹¹ For annual payments, the formula would be $(1 + 0.03m)X = \sum_{i=1}^n \frac{1.67C}{(1 + r)^i}$

since payments are monthly, there are $12n$ terms in the summation, and the monthly interest rate is $r/12$.

CHAPTER 4

high. The rates in the top left corner of the table might be spurious, since no loans taken up in 1960 or 1961 had maturity dates as close as 1963.

TABLE 4-1. *Interest Rate on Early Redemption^a of Dollar-Linked Mortgages (first-stage concessions)*

Loan received in ^b	Original date of final repayment						
	1963	1964	1965	1966	1967	1968	1969
<i>A. Alternative to early redemption: original dollar-linkage terms</i>							
1961	108	60	42	33	27	24	21
1960	100	60	39	30	27	24	
1959	93	54	36	30	24		
1958	88	48	36	27			
1957	81	45	33				
1956	76	42					
1955	72						
<i>B. Alternative to early redemption: linkage to Consumers Price Index^c</i>							
1961	27	15	12	9	9	8	8
1960	36	18	12	12	9	9	
1959	45	18	12	12	9		
1958	84	24	18	15			
1957	174	45	27				
1956	180+	69					
1955	.. ^d						

^a Assumed to take place on April 1, 1962.

^b Assumed to be received on April 1 of stated year, and to run for a whole number of years at 6 per cent.

^c Including linkage differential on amounts already repaid.

^d Linkage differentials (Z) were greater than $(1 + 0.03m)X$, so that the result for this cell is meaningless.

Even so, the remaining rates are still high—often over three times the interest paid to other lenders, such as purchasers of government Short-Term Loan. The further off the date of maturity, the lighter the burden felt by the mortgagor, and the greater the incentive required to induce early redemptions; the government should therefore have given extra encouragement to the repayment of late-maturing loans. Table 4-1 shows that the opposite happened: the further off the date of maturity, the lower the interest rate, so that the greatest incentive was for loans which would in any case have been paid off soon.

A frequently-voiced complaint was that dollar linkage of housing loans was 'unfair' to mortgagors, who were usually not given a choice between dollar and index linkage. Taking account of this argument, we can repeat our calculation, with the same early redemption conditions, but with the alternative of replacing dollar by index linkage (which involves the payment of linkage differentials on all instalments paid since the loan was taken up).¹²

The alternatives open to the mortgagor are either, as in the previous example, a lump-sum payment of $IL (1 + 0.03m)X$, or a lump-sum payment of the index-linkage differentials (together with interest) on the amount repaid in the past m years, *plus* monthly instalments for n years, with index linkage replacing dollar linkage. If prices have risen by P per cent during the past m years, future instalments will be $IL (1 + P)C$. Future price increases need not concern us, since it is assumed that linkage to the Consumers Price Index means fixed payments in real terms.

In this case the lump-sum investment will give a monthly yield of $(1 + P)C$, *plus*, at the time of redemption, a windfall Z which is the sum of index-linkage differentials on the instalments repaid in the past. The implicit interest rate will be the value of r which solves the equation

$$(1 + 0.03m)X = \sum_{i=1}^{12n} \frac{(1 + P)C}{\left(1 + \frac{r}{12}\right)^i} + Z.$$

Unlike in the previous example, r is here the real rate of interest.

Part B of Table 4-1 shows the results of this exercise.¹³ Here too, interest is lower the further off the original date of final redemption. The government paid very high rates for mortgages due in 1963 or 1964, and it was worth making a considerable effort to raise enough money to repay them in 1962. It is doubtful, however, whether interest rates of 8, 9, or even 12

¹² Mortgagors with dollar-linked debts had been repaying principal and interest, without any linkage differentials, for n years up to the date of devaluation. When they chose to replace dollar linkage by index linkage on the outstanding balance (X) of the debt, they stood to gain on the unlinked sums paid in the past if the price index had risen during the m years. It was therefore reasonable to require payment of the linkage differentials (together with interest on them) that would have been paid had the loan been index-linked from the start. In practice, mortgagors who preferred to exchange dollar linkage for index linkage were exempted from paying the interest on past differentials if these were paid off immediately the change was made.

¹³ Computed without taking account of the additional concession mentioned at the end of the preceding footnote.

per cent provided sufficient inducement in the case of mortgages not due before 1966.

Second-round concessions: The inducement for premature redemption was in this case in the form of a discount which rose with the distance from the original date of final redemption. We again regard the lump-sum payment (the outstanding amount of the loan *less* the discount) as an investment whose yield is the future instalments which it replaces. The implicit interest rate is obtained by solving for r in the equation

$$(1 - \alpha)1.67X = \sum_{i=1}^{12n} \frac{1.67C}{\left(1 + \frac{r}{12}\right)^i},$$

where n , C , and X are defined as before, and α is the rate of discount. The results are shown in column (2) of Table 4-2. The discount rises in discrete steps with the distance from the original date of final repayment; the rise in the interest rate is therefore not monotonic, but rises with the discount and declines as the distance from the date of final repayment increases. The figures show that the discount does not rise enough to compensate for giving up longer periods of repayment, so that it is fair to say that the second-round concessions also gave greater incentives for

TABLE 4-2. *Interest Rate on Early Redemption^a of Dollar-Linked Mortgages (second-stage concessions)*

<i>Original date of final redemption^b</i>	<i>Per cent discount α</i>	<i>Interest rate r implied by discount</i>	<i>Per cent discount (α^*) required for interest to be 16 per cent</i>
	(1)	(2)	(3)
1963	5	16.7	4.7
1964	5	11.4	8.7
1965	10	14.0	12.4
1966	10	12.0	15.8
1967	10	10.8	18.9
1968	10	9.6	21.8
1969	15	11.4	24.7
1970	15	10.7	27.4

^a Assumed to take place on November 30, 1962.

^b Assumed to be on November 30 of stated year. The mortgage was assumed to be at 6 per cent interest.

early redemption to those who would in any case have paid off their loans within a short time.

The discount required for the rate of interest to be 16 per cent is shown in column (3) of Table 4-2.¹⁴ It is obtained by solving for α^* in the equation

$$(1 - \alpha^*)1.67X = \sum_{i=1}^{12n} \frac{1.67C}{\left(1 + \frac{0.16}{12}\right)^i}.$$

Our computations show that the government paid a high price for the IL 54 million absorbed from mortgagors. There is no doubt that the same amount, or more, could have been raised from the public, and at lower cost, if the government had offered less extreme inducements to more people.

In 1962, the government's income from the Short-Term Loan and early mortgage redemptions came to IL 124 million (IL 70 million from the first, and IL 54 million from the second). To this must be added the IL 11 million collected by the end of the year through the compulsory savings scheme introduced in August 1962 as another means of absorbing purchasing power.¹⁵ The monetary developments of 1962 required from the government that it should deposit the receipts of extrabudgetary internal loans and premature mortgage redemption with the Bank of Israel. As we saw in Chapter 3, p. 57), the government had reduced its debt by a mere IL 18 million by the end of the year. This means that of the IL 135 million received in order to absorb funds, only IL 18 million were actually absorbed—the bulk of the money borrowed from the public was put back into circulation.

¹⁴ This arbitrarily chosen interest rate approximates the rate actually accruing to those whose original date of final repayment was within one year of the date of premature redemption.

¹⁵ Bank of Israel, *Annual Report 1962*, p. 112 (compulsory saving); p. 393 (premature mortgage redemptions); p. 452, Table XX-11 (Short-Term Loan).

CHAPTER 5

CONCLUSION

The currency was devalued at a time of full employment and constant inflationary pressure, a pressure apt to be reinforced and thus likely to defeat the purpose of devaluation. This danger was particularly great because foreign currency conversions were expected to increase both because of an increased flow of dollar capital imports and because of an even greater growth in IL terms; in addition, expectations of devaluation had restrained conversions during the preceding period, so that a backlog of foreign currency, likely to be converted once devaluation occurred, had built up. Since foreign currency conversion is one of the direct sources of increase in the means of payment and in bank liquidity (which in turn further expands the means of payment), the government and the Bank of Israel should have taken steps to curb capital imports, to encourage the public to hold on to its foreign currency deposits, and to absorb any liquidity surpluses nevertheless created.

As expected, there were considerable capital imports and foreign currency conversions after devaluation. But neither the government nor the Bank of Israel did enough to prevent the consequent increase in the means of payment and they grew to an unprecedented extent.

The Bank of Israel recommended the greatest possible restraint in taking high-interest foreign loans. Nevertheless, the government and private firms often paid as much as 6, 7, or 8 per cent interest or more on foreign loans. This happened, moreover, at a time when the government was taking steps to reduce interest on long-term internal loans: firms which tried to raise internal capital by issuing bonds were not permitted to pay more than 6 per cent interest (or 5 per cent if interest as well as principal was index linked) even when they were prepared to do so.

What was done to curb conversion of foreign currency after devaluation was also inadequate. The interest on foreign currency deposits was raised by a bare 1 per cent, from 6 to 7 per cent, and only for one year, interest on TAMAM deposits being reduced to 4.5 per cent in February 1963.

CONCLUSION

Moreover, at the time of devaluation, the percentage of restitution receipts which could be held as TAMAM deposits was reduced and the terms were made less attractive by limiting the uses to which the deposits could be put. All these measures were bound to reduce the amount deposited.

Thus, adequate steps were not taken to counter capital imports and conversion which came to IL 284 million during the 12 months following devaluation; in view of this the government and the Bank of Israel should at least have used other means to curb the expansion in the means of payment. In other words, something should have been done to reduce bank credit to the public and the government. Of the means at the disposal of the Bank of Israel for controlling the money supply, it chose to use only two: to reduce its direct credit to the public, and to withhold the full permissible quota of liquidity exemptions from the commercial banks, thus somewhat raising the effective liquidity ratio. In January 1963 the Bank of Israel raised the formal liquidity ratio, something that should have been done in mid-1962, when considerable excess reserves began to accumulate and the banks began to expand credit substantially.

The government did carry out some open market operations (and this may be the reason why the Bank refrained from doing so), but its policy was inconsistent and contradictory. Although it greatly expanded the sale of the Short-Term Loan by offering attractive terms, it reduced interest on long-term loans, and their sales declined. Moreover, it made great efforts to attract funds from mortgagors by offering interest far exceeding the prevailing market rate on the early redemption of dollar-linked mortgages. If the same resources had been devoted to improving the terms of other loans, especially long-term loans, the government could undoubtedly have absorbed much larger sums from the public. Most important, the government's open market transactions did not reduce liquidity, since it did not repay its debt to the Bank of Israel to the full extent of the sums withdrawn from the public in order to absorb funds, instead using most of the money to finance its own operations.

Because of this failure to take adequate steps to reduce the liquidity of the banks and the public, the means of payment increased at an unprecedented rate in the post-devaluation period. The increase need not necessarily have had an immediate effect on the commodities market (indeed, much of the first impact was felt in the securities and real estate markets). Eventually however, the commodities market was affected, jeopardizing the purpose of devaluation: the diversion of resources from domestic uses to exports.

APPENDIXES

APPENDIX A

CONDITIONS REQUIRED FOR THE PRICE OF FOREIGN-CURRENCY LINKED ASSETS TO DECLINE AFTER DEVALUATION

(Appendix to Chapter 2)

In the case of foreign currency balances, i.e. dollars, the unknown but expected date of devaluation is the 'redemption date' of the assets. We use the following notation:

R^* = the expected rate of devaluation (IL per \$)

m^* = number of years expected to elapse before devaluation

P^* = expected rate of price change during year i

R = actual exchange rate after devaluation

r = the rate of interest

K = market price of the assets

All expected rates relate to market conditions just before devaluation, and are in terms of expected values. Then, the market price in IL of one dollar immediately before devaluation is:

$$K_1 \leq \frac{R^*}{(1+r)^{m^*} \prod_{i=1}^{m^*} (1+P_i^*)}.$$

This is the upper limit of the pre-devaluation price of the dollar, which is in practice reduced by risk and uncertainty of expectations.

Immediately after devaluation the price of the dollar will be $K_2 = R$

Clearly, if $R < R^*$ (i.e., if the expected rate of devaluation is above the actual rate), or if $\prod_{i=1}^{m^*} (1+P_i^*) < 0$ (i.e. if until devaluation prices were expected to fall) it is possible for $K_2 < K_1$.

For less liquid assets the calculation is more complicated.

Using the notation:

n = number of years until date of maturity ($n \geq m^*$)

P_{1i}^* = the post-devaluation price change during year i expected before the date and rate of devaluation are known

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P_{2i}^* = the price change expected during year i once devaluation has taken place.

R^* , R , r , and K are defined as above.

Again, expected rates relate to pre-devaluation conditions in terms of expected values. Then the market price of one dollar's nominal value of the linked asset immediately before devaluation will be:

$$K_1 \leq \frac{R^*}{(1+r)^n \prod_{i=1}^n (1+P_{1i}^*)}$$

and immediately afterwards:

$$K_2 \leq \frac{R}{(1+r)^n \prod_{i=1}^n (1+P_{2i}^*)}$$

Assuming that the uncertainty involved in P_{2i}^* reduces K_2 to the same extent as the uncertainty involved in P_{1i}^* and R^* reduces K_1 , then the condition for $K_2 < K_1$ is:

$$\frac{R^*}{(1+r)^n \prod_{i=1}^n (1+P_{1i}^*)} > \frac{R}{(1+r)^n \prod_{i=1}^n (1+P_{2i}^*)}$$

$$\text{or: } \frac{\prod_{i=1}^n (1+P_{2i}^*)}{\prod_{i=1}^n (1+P_{1i}^*)} > \frac{R}{R^*}$$

In other words, for the pre-devaluation price of the asset to be higher than its price immediately after devaluation, the ratio between the actual and expected rates of exchange should be smaller than the ratio between the price change expected after devaluation has taken place and the price change expected beforehand.

APPENDIX B

APPENDIX TO CHAPTER 3

The models used to determine the factors influencing restitution recipients to convert their foreign currency deposits into local currency were described briefly in Chapter 3. They are here presented in greater detail.

It is our intention to infer from the pre-devaluation behavior of restitution recipients what should have happened as a result of devaluation. In estimating the various parameters we therefore use monthly data for 1957-62 rather than later data. Throughout we regard restitution receipts as an exogenous variable. In fact, it is known that there is some 'smuggling': there are attempts to circumvent the law by not transferring restitutions payments to Israel *in toto*; the more favorable are local conditions, such as the price of the dollar, the yield from deposits and other assets, and the general price level, the less will presumably be smuggled abroad; the size of receipts is thus not a purely exogenous variable, and our assumption involves a slight error.¹

In the first model, conversion of PAZAK and TAMAM deposits appears as a function of restitution receipts in the current month and the stock of PAZAK and TAMAM deposits at the beginning of the month.

Let Y_t = the amount of PAZAK and TAMAM deposits converted in month t

X_{1t} = restitution receipts in month t (including receipts directly converted into IL without going through a TAMAM and PAZAK deposit)

X_{4t} = the amount of PAZAK and TAMAM deposits at the beginning of month t .

The hypothesis then is

$$(1) \quad Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{4t}$$

Y_t is throughout defined as the sum of deposits at the beginning of

¹ In the 12 months after devaluation, for instance, restitution receipts rose to a monthly average of \$11.6 million compared with \$9.3 million during the preceding 12 months. This might have been a coincidence, but it might also have been due to the rise in the price of the dollar, which made it less profitable to smuggle funds abroad.

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period (X_{4t}), plus current restitution receipts (X_{1t}), less the stock of deposits at the end of the period [$X_{4(t+1)}$], that is, $Y_t \equiv X_{4t} + X_{1t} - X_{4(t+1)}$. Y_t thus represents those receipts not used to increase the deposits. This definition of conversion is not quite accurate, since, as stated, TAMAM deposits may be used for certain purposes, such as travel abroad and purchase of foreign securities in foreign currency. Hence if a TAMAM depositor has reduced his deposits in order to pay for a trip abroad, then this appears as a conversion in the Y series, although in fact it was not. The problem may be circumvented by regarding the TAMAM depositor using his foreign currency as having carried out two transactions: the conversion of foreign into Israeli currency, and the purchase of foreign currency with the proceeds. A traveller who has no TAMAM deposit must buy foreign currency with IL, thus reducing the means of payment. By using the foreign currency at his disposal the TAMAM depositor prevents a reduction in the means of payment, and the effect on aggregate demand is equivalent to the effect of an increase. It should be noted that the purchase of foreign securities with TAMAM funds often did involve conversion when the depositor wanted to obtain more than the official rate for his dollar on the free securities market.²

The relation between ΔX_{4t} (the addition to stock of deposits) and Y_t (conversion), the identity $\Delta X_{4t} \equiv X_{1t} - Y_t$, means that the variable X_4 cannot be regarded as purely exogenous since it is to some extent determined within the system. In order to obtain unbiased estimates of the parameters we therefore employed the instrumental variable method³ using the restitution receipts of the preceding 12 months as the instrumental variable (X_5).

The regression yielded the following results ⁴ (with t omitted):

$$(1a) \quad Y_{0.14} = 1.5961 + 0.5141 X_1 - 0.0057 X_4$$

The sampling errors of the coefficients are:

$$Sb_{01.4} = 0.137 \quad \text{and} \quad Sb_{04.1} = 0.00875,$$

where $b_{01.4}$ is the estimate of β_1 and $b_{04.1}$ the estimate of β_2 . Since the coefficients were estimated with the aid of an instrumental variable the full coefficient of determination, $R_{0.14}^2$, is meaningless.

² Chapter 2, p. 25.

³ See, for example, J. Johnston *Econometric Methods* (New York: McGraw-Hill, 1963), pp. 165-68.

⁴ See Appendix Table 8 for detailed figures.

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The coefficient of X_1 represents the proportion of current restitution receipts converted in the same month. The coefficient of X_4 is the proportion of the stock of deposits at the beginning of the month converted during the month. The coefficient of X_1 (significant at a level of $P = 0.01$), shows that some 51 per cent of current restitution receipts were being converted each month. The coefficient of X_4 is not significant.

We should have expected the coefficient of X_4 to be positive, since *ex hypothesi* the greater a person's stock of deposits the more of his current restitution receipts he is likely to convert. A negative coefficient means that the greater the stock of deposits the less the depositor tends to convert. Although negative, the coefficient is in fact very small and not significantly different from zero; this means that, contrary to what we expected, the stock of deposits did not affect the extent of conversions.

Using the direct least-squares method, larger estimates were obtained for both coefficients (which are however biased because of the problem involved in X_4). The equation obtained by this method was:

$$(1b) \quad Y'_{0.14} = 0.8045 + 0.6886 X_1 - 0.0165 X_4.$$

The sampling errors of the (biased!) coefficients were:

$S'b_{0.14} = 0.0921$ and $S'b_{04.1} = 0.0064$. The coefficient of determination was $R'^2_{0.14} = 0.6733$.

The coefficient of X_4 is negative because of the relation between Y and X_4 discussed above. If there happens to be a relatively high conversion rate in two adjacent periods then in the second a negative correlation is obtained between X_4 and Y : the high conversion rate in t , Y_t , results in a low initial stock of deposits [$X_{4(t+1)}$] in $t+1$; if in $t+1$ the conversion rate is again relatively high, and is associated in the equation with a low X_4 during the period, the correlation between the two variables is negative. As seen from (1a) we did not succeed in eliminating the bias by using an instrumental variable.

In view of the difficulties of using the stock of deposits as an exogenous variable we have tried out an alternative model where this variable was replaced. The stock of deposits in a given period is equal to the cumulated non-converted restitution receipts in all preceding periods. Using the same symbols, if the stock of deposits at the beginning of the period t is X_{4t} and restitution receipts during the period t are X_{1t} , then $X_{4t} = \gamma_0 + \gamma_1 X_{1(t-1)} + \gamma_2 X_{1(t-2)} + \gamma_3 X_{1(t-3)} + \dots$. Conversion during period t (Y_t), presented as a function of current restitution payments

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and the beginning-of-period stock of deposits ($Y_t = \alpha_0 + \alpha_1 X_{1t} + \alpha_2 X_{4t}$),⁵ can instead be presented as a function of restitution payments in period t , $t-1$, $t-2$, etc., by substituting the full expression for X_{4t} :

$$\begin{aligned} Y_t &= \alpha_0 + \alpha_1 X_{1t} + \alpha_2 [\gamma_0 + \gamma_1 X_{1(t-1)} + \gamma_2 X_{1(t-2)} + \gamma_3 X_{1(t-3)} + \dots] = \\ &= \alpha_0 + \alpha_1 X_{1t} + \alpha_2 \gamma_0 + \alpha_2 \gamma_1 X_{1(t-1)} + \alpha_2 \gamma_2 X_{1(t-2)} + \alpha_2 \gamma_3 X_{1(t-3)} + \dots \end{aligned}$$

Then,

$$(2) \quad Y_t = \beta_0 + \beta_1 X_{1t} + \beta_2 X_{1(t-1)} + \beta_3 X_{1(t-2)} + \dots$$

where $\beta_0 = \alpha_0 + \alpha_2 \gamma_0$

$$\beta_1 = \alpha_1$$

$$\beta_i = \alpha_2 \gamma_{i-1} \quad (i = 2, 3, \dots).$$

The equation we shall now estimate contains the first three terms of (2) omitting the others.

The hypothesis is

$$(2a) \quad Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2$$

where X_2 is restitution receipts in period $t-1$, i.e. $X_2 \equiv X_{1(t-1)}$.

Using the direct least squares method we get:

$$(2b) \quad Y_{0.12} = 1.6963 + 0.3613 X_1 + 0.1033 X_2$$

$$Sb_{0.12} = 0.1071 \quad Sb_{02.1} = 0.1046 \quad R_{0.12}^2 = 0.6024.$$

The coefficient of X_1 is significant at a level of $P = 0.01$; the coefficient of X_2 is not significant. The meaning of the coefficients is that 36 per cent of receipts tend to be converted in the month they are received and another 10 per cent in the following month (but the latter estimate is not significant).

In practice, we are not interested in current conversion out of the current month's receipts, but in the amount currently converted out of the receipts of several months—a year for instance. It is therefore the sum of the two coefficients that we require rather than each of them separately. Assuming constant monthly restitution receipts of \bar{X} , the equation obtained is:

$$Y = \beta_0 + \beta_1 \bar{X} + \beta_2 \bar{X} = \beta_0 + (\beta_1 + \beta_2) \bar{X}$$

and we are interested in the coefficient of X ($\beta_1 + \beta_2$) which is

⁵ Hypothesis (1) above, with β replaced by α .

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$b_{01.2} + b_{02.1} = 0.4646$. The sampling error of this aggregate estimate is $S(b_{01.2} + b_{02.1}) = 0.1491$ and the estimate is significant at the 0.01 level.

It may be concluded from this model that on the average over a longer period, recipients of personal restitutions tend to convert 46 per cent of their current receipts every month (in addition to the 'constant level' of \$1.7 million per month).

To get closer to equation (2) we tried adding the receipts of month $t-2$ (X_3). The adjusted model thus obtained is

$$(2c) \quad Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_3 X_3.$$

This regression hardly improves the coefficient of determination (which has gone up only from 0.6024 to 0.6063) and the sum of the coefficients remains the same. The equation obtained was

$$(2d) \quad Y_{0.123} = 1.7352 + 0.3720 X_1 + 0.1650 X_2 - 0.0801 X_3$$

$$R_{0.123}^2 = 0.6063.$$

The sum of the three coefficients is 0.46, the same as the sum of the two coefficients in (2b). Since the addition of a third month adds nothing to the explanation or the estimate, we assumed that the inclusion of earlier months would also have no effect, and that the best result would be that obtained from equation (2b).

The coefficient of determination of equation (2b) is, as stated, $R_{0.12}^2 = 0.6024$. This means that the equation explains 60 per cent of the variance of Y (conversion). We tried to account for at least part of the remaining 40 per cent. Figure I in the text describes the deviations of actual conversions from conversions computed according to equation (2b). Since, as stated, the regression was computed from pre-devaluation data only, the deviations from February 1962 on are meaningful only if the parameters ($b_{01.2}$, $b_{02.1}$ and $b_{0.12}$) continue to behave as they did before devaluation.

As may be seen from the diagram there are periods when all or almost all deviations are positive, i.e. when conversion was higher than can be explained by the restitution receipts in the current and the preceding month. There are also periods when most deviations are negative and conversion is lower than explained by the two variables. Our hypothesis, to be proved below, is that these systematic deviations are to a large extent due to expectations of devaluation which prevailed at certain periods and not at others.

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As the criterion of expectations of devaluation we took the black market rate of the dollar, assuming that it rises as expectations intensify, and that as it rises, conversion declines. Using this rate might introduce some bias, since its fluctuations could reflect variables other than expectations of devaluation (e.g. increased demand for dollars during the tourist season, or of people who want to conceal their income from the Treasury). The government may also have manipulated the rate by direct intervention on the black market (increasing supply when the price tended to rise). The other variables will tend to weaken any correlation between the rate of the dollar and the deviations from the regression; the effect is thus a downward bias and our result will as it were constitute a lower limit for the correlation.

In Figure 2 the rate of the dollar is compared with the deviations from regression (2b).⁶ The good correspondence obtained between the two series tends to confirm our hypothesis. When the black market price of the dollar rises, indicating rising expectations of devaluation, conversions are lower than estimated from restitution receipts, and when black market prices fall the conversion rate is above the norm.⁷

Accordingly, we incorporated the black dollar rate in the regression, and got:

$$(3) \quad Y = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \beta_6 X_6$$

where X_6 represents the black dollar rate.

The results obtained are:

$$\begin{aligned} (3a) \quad Y_{0.126} &= 9.5031 + 0.3700 X_1 + 0.1399 X_2 - 3.2260 X_6 \\ S_{b_{0.126}} &= 0.0923; \quad S_{b_{0.16}} = 0.0904; \quad S_{b_{0.12}} = 0.7050 \\ R_{0.126}^2 &= 0.7078. \end{aligned}$$

The coefficient of X is again not significant. The coefficients of X_1 and X_6 are significant at the 0.01 level.

The incorporation of the new variable raised the coefficient of determina-

⁶ In Figure II, the deviations shown in Figure I have been smoothed out by using 3-month moving averages.

⁷ The first continuous period of negative deviations, when the amount converted was below the regression estimate, occurred in 1959. In 1960 positive deviations predominated. The Bank of Israel's *Annual Reports* for these years suggested that in 1959 there were strong expectations of devaluation (*Annual Report 1959*, p. 233) which waned in 1960 (*Annual Report 1960*, p. 238).

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tion (R^2) from 0.60 to 0.70. This means that expectations of devaluation account for 25 per cent of the unexplained variance in equation (2b).

It should be noted that one month—March 1961—'spoils' the regression. The amount converted in that month was for some reason very low and the large deviation from the estimated value magnifies the variance and the sampling errors of the entire regression. If this month is disregarded, the following results are obtained:

$$\begin{aligned} (3b) \quad Y'_{0.126} &= 12.5531 + 0.3870 X_1 + 0.1547 X_2 - 4.4912 X_6 \\ S'b_{01.26} &= 0.0724; \quad S'b_{02.16} = 0.0709; \quad S'b_{06.12} = 0.6191 \\ R^2_{0.126} &= 0.8525 \end{aligned}$$

The coefficient of determination increases by another 15 per cent and the sampling errors of all coefficients are much lower, the coefficient of X_2 becoming significant at the 0.05 level. It should be emphasized, however, that our analysis uses equation (2b) which includes data for March 1961.

Figure III compares the deviations from the regression, not including the black dollar rate (from Figure II) and the deviations including the black dollar rate.⁸ As can be seen, incorporation of the black market dollar price improved the equation. Deviations are generally closer to the zero line than when this variable is not included; the black market dollar price thus apparently accounts for some of the non-random deviations from the first regression. As the trend of the deviations still remains systematic this variable does not, however, account for all non-random deviations, perhaps because (in view of the reservations mentioned earlier) it is not a perfect yardstick of devaluation expectations.

⁸ Both series are presented as 3-month moving averages.

APPENDIX C

STATISTICAL TABLES

APPENDIX TABLE 1. *The Increase in GNP and Resources: 1962*
(millions of 1962 IL)

	<i>Actual increase</i>	<i>Assuming per capita consumption^a</i>	
		<i>remains constant</i>	<i>rises by 3 per cent</i>
Gross investment	254	254	254
Private consumption	469	177	301
Public consumption	138	56	95
Total resources at disposal of economy	861	487	650
GNP	703	703	703
Resources available for reducing import surplus	-158	216	53

^a Private and public.

SOURCE: Bank of Israel, *Annual Report 1965*, p. 12, Table II-2; Central Bureau of Statistics, *Statistical Abstract of Israel 1966*, No. 17, p. 20, Table B/1.

APPENDIX TABLE 2. *Sources of Change in the*

	<i>January</i>	<i>February</i>	<i>March</i>	<i>April</i>	<i>May</i>
<i>Sources of increase</i>					
1. Assets abroad	393	405	444	473	488
2. Bank of Israel credit	391	393	373	364	360
a. To the public	51	57	58	55	54
b. To the government	340	336	315	309	306
3. Commercial bank credit	578	600	624	620	627
a. To the public	536	558	578	576	580
b. To the government	42	42	46	44	47
4. Other accounts (net)	-83	-86	-90	-91	-90
5. Total sources of increase	1,279	1,312	1,351	1,366	1,385
<i>Sources of decrease</i>					
6. Foreign currency deposits of the public	193	198	212	216	219
7. Local currency time deposits	180	184	186	190	191
8. Total sources of decrease	373	382	398	406	410
<i>Net sources (5. less 8.)</i>	906	930	953	960	975
<i>Means of payment</i>					
9. Cash held by public	307	320	342	335	336
10. Demand deposits of the public	599	610	611	625	639
11. Total means of payment	906	930	953	960	975

Footnotes and sources at end of table.

Means of Payment: I. 1961 and January 1962^a

(IL million)

<i>June</i>	<i>July</i>	<i>August</i>	<i>Septem- ber</i>	<i>October</i>	<i>Novem- ber</i>	<i>Decem- ber</i>	<i>January 1962 (at IL 1.8/\$ 1)</i>
515	514	493	505	503	507	525	570
356	350	382	383	375	383	358	314
53	50	51	52	53	53	57	63
303	300	331	331	322	330	301	251
649	670	670	686	692	673	656	670
603	626	630	651	654	642	626	637
46	44	40	35	38	31	30	33
-100	-97	-97	-104	-112	-108	-105	-103
1,420	1,437	1,448	1,470	1,458	1,455	1,434	1,451
228	243	258	268	273	278	284	298
192	196	194	196	197	190	182	178
420	439	452	464	470	468	466	476
1,000	998	996	1,006	988	987	968	975
344	346	348	355	351	353	343	343
656	652	648	651	637	634	625	632
1,000	998	996	1,006	988	987	968	975

APPENDIX TABLE 2 (cont.) *Sources of Change in the*

	<i>January (at IL 3.0/\$ 1)</i>	<i>February</i>	<i>March</i>	<i>April</i>	<i>May</i>
<i>Sources of increase</i>					
1. Assets abroad	950	973	1,031	1,106	1,153
2. Bank of Israel credit	104	113	87	53	33
a. To the public	96	91	81	66	66
b. To the government	8 ^b	22	6	-13	-33
3. Commercial bank credit	698	703	715	726	730
a. To the public	664	669	675	685	691
b. To the government	34	34	40	41	39
4. Other accounts (net)	-103 ^b	-104	-116	-117	-123
5. Total sources of increase	1,649	1,685	1,717	1,768	1,793
<i>Sources of decrease</i>					
6. Foreign currency deposits of the public	496	508	509	515	517
7. Local currency time deposits	178	175	174	173	173
8. Total sources of decrease	674	683	683	688	690
<i>Net sources (5. less 8.)</i>	975	1,002	1,034	1,080	1,103
<i>Means of payment</i>					
9. Cash held by public	343	347	349	359	361
10. Demand deposits of the public	632	655	685	721	742
11. Total means of payment	975	1,002	1,034	1,080	1,103

^a End of month data.

^b Takes account of Bank of Israel devaluation gains transferred to the government. The transfer, which reduced the Bank's net credit to the government, was actually carried out in March 1962, but is here shown in the end-January figure because we consider it an automatic effect of devaluation.

Means of Payment: II. 1962 and January 1963^a

(IL million)

<i>June</i>	<i>July</i>	<i>August</i>	<i>September</i>	<i>October</i>	<i>November</i>	<i>December</i>	<i>January 1963</i>
1,162	1,192	1,199	1,207	1,222	1,233	1,256	1,405
38	27	46	47	64	61	62	-39
54	46	60	59	68	72	72	28
-16	-19	-14	-12	-4	-11	-10	-67
752	758	766	790	797	826	813	832
713	724	724	750	756	769	773	784
39	34	42	40	41	57	40	48
-127	-123	-126	-120	-135	-144	-130	-144
1,825	1,854	1,885	1,924	1,948	1,976	2,001	2,054
520	526	527	539	551	558	561	577
172	173	175	177	179	184	189	193
692	699	702	716	730	742	750	770
1,133	1,155	1,183	1,208	1,218	1,234	1,251	1,284
370	378	386	409	404	408	404	411
763	777	797	799	814	826	847	873
1,133	1,155	1,183	1,208	1,218	1,234	1,251	1,284

SOURCES : *Bank of Israel Bulletin*, No. 19 (November 1963), 140-51 (assets and liabilities of Bank of Israel, commercial banks, and credit cooperative societies). The January-March 1961 figures are from *Bank of Israel Bulletin*, No. 18 (March 1963), 106-10 (assets and liabilities of commercial banks and credit cooperative societies).

Unpublished Bank of Israel data on deposits of foreign residents, and on Bank of Israel and commercial bank credit to foreign residents.

The compilation of the table is explained in Appendix Table 6.

APPENDIX TABLE 3. *Monthly Changes in the Means of Payment*

	<i>February</i>	<i>March</i>	<i>April</i>	<i>May</i>
<i>Sources of increase</i>				
1. Assets abroad	12	39	29	15
2. Bank of Israel credit	2	-20	-9	-4
a. To the public	6	1	-3	-1
b. To the government	-4	-21	-6	-3
3. Commercial bank credit	22	24	-4	7
a. To the public	22	20	-2	4
b. To the government	0	4	-2	3
4. Other accounts (net)	-3	-4	-1	1
5. Total sources of increase	33	39	15	19
<i>Sources of decrease</i>				
6. Foreign currency deposits of the public	5	14	4	3
7. Local currency time deposits	4	2	4	1
8. Total sources of decreases	9	16	8	4
<i>Net sources (5. less 8.)</i>	24	23	7	15
<i>Means of payment</i>				
9. Cash held by public	13	22	-7	1
10. Demand deposits of the public	11	1	14	14
11. Total means of payment	24	23	7	15

and the Sources of Change: I. February 1961–January 1962

(IL million)

<i>June</i>	<i>July</i>	<i>August</i>	<i>September</i>	<i>October</i>	<i>November</i>	<i>December</i>	<i>January 1962</i>
27	-1	-21	12	-2	4	18	45
-4	-6	32	1	-8	8	-25	-44
-1	-3	1	1	1	0	4	6
-3	-3	31	0	-9	8	-29	-50
22	21	0	16	6	-19	-17	14
23	23	4	21	3	-12	-16	11
-1	-2	-4	-5	3	-7	-1	3
-10	3	0	-7	-8	4	3	2
35	17	11	22	-12	-3	-21	17
9	15	15	10	5	5	6	14
1	4	-2	2	1	-7	-8	-4
10	19	13	12	6	-2	-2	10
25	-2	-2	10	-18	-1	-19	7
8	2	2	7	-4	2	-10	0
17	-4	-4	3	-14	-3	-9	7
25	-2	-2	10	-18	-1	-19	7

APPENDIX TABLE 3 (cont.) *Monthly Changes in the Means of*

	<i>Devaluation differential</i>	<i>February</i>	<i>March</i>	<i>April</i>	<i>May</i>
<i>Sources of increase</i>					
1. Assets abroad	380	23	58	75	47
2. Bank of Israel credit	-210	9	-26	-34	-20
a. To the public	33	-5	-10	-15	0
b. To the government	-243	14	-16	-19	-20
3. Commercial bank credit	28	5	12	11	4
a. To the public	27	5	6	10	6
b. To the government	1	0	6	1	-2
4. Other accounts (net)	0	-1	-12	-1	-6
5. Total sources of increase	198	36	32	51	25
<i>Sources of decrease</i>					
6. Foreign currency deposits of the public	198	12	1	6	2
7. Local currency time deposits	0	-3	-1	-1	0
8. Total sources of decrease	198	9	0	5	2
<i>Net sources (5. less 8.)</i>	0	27	32	46	23
<i>Means of payment</i>					
9. Cash held by public	0	4	2	10	2
10. Demand deposits of the public	0	23	30	36	21
11. Total means of payment	0	27	32	46	23

SOURCE: Appendix Table 2.

Payment and the Sources of Change: II. February 1962–January 1963
(IL million)

<i>June</i>	<i>July</i>	<i>August</i>	<i>September</i>	<i>October</i>	<i>November</i>	<i>December</i>	<i>January 1963</i>
9	30	7	8	15	11	23	149
5	-11	19	1	17	-3	1	-101
-12	-8	14	-1	9	4	0	-44
17	-3	5	2	8	-7	1	-57
22	6	8	24	7	29	-13	19
22	11	0	26	6	13	4	11
0	-5	8	-2	1	16	-17	8
-4	4	-3	6	-15	-9	14	-14
32	29	31	39	24	28	25	53
3	6	1	12	12	7	3	16
-1	1	2	2	2	5	5	4
2	7	3	14	14	12	8	20
30	22	28	25	10	16	17	33
9	8	8	23	-5	4	-4	7
21	14	20	2	15	12	21	26
30	22	28	25	10	16	17	33

APPENDIX TABLE 4. Sector Distribution of Foreign Assets:
January 1961–January 1963^a
(IL million)

	<i>Households and firms</i>	<i>Commercial banks</i>	<i>Government</i>	<i>Bank of Israel</i>	<i>Total foreign balances</i>
<i>1961</i>					
January	123	26	28	216	393
February	118	30	30	227	405
March	135	25	33	251	444
April	138	22	58	255	473
May	132	29	60	267	488
June	138	35	64	278	515
July	154	28	71	261	514
August	175	25	52	241	493
September	187	29	50	239	505
October	192	27	52	232	503
November	198	19	62	228	507
December	197	25	70	233	525
January 1962					
(at IL 1.8/\$ 1)	206	22	121	221	570
<i>1962</i>					
January					
(at IL 3.0/\$ 1)	344	36	201	369	950
February	356	25	193	399	973
March	356	21	208	446	1,031
April	372	13	266	455	1,106
May	370	15	289	479	1,153
June	393	14	286	469	1,162
July	406	17	292	477	1,192
August	395	23	294	487	1,199
September	409	15	275	508	1,207
October	407	23	272	520	1,222
November	420	16	244	553	1,233
December	428	18	238	572	1,256
January 1963	490	17	280	618	1,405

^a End of month figures.

SOURCES : See sources to Appendix Table 2. The compilation of the table is explained in Appendix Table 6.

APPENDIX TABLE 5. *Sector Distribution of Foreign Assets:*
Monthly Changes, February 1961–January 1963
(IL million)

	<i>Households and firms</i>	<i>Commercial banks</i>	<i>Government</i>	<i>Bank of Israel</i>	<i>Total foreign balances</i>
<i>1961</i>					
February	-5	4	2	11	12
March	17	-5	3	24	39
April	3	-3	25	4	29
May	-6	7	2	12	15
June	6	6	4	11	27
July	16	-7	7	-17	-1
August	21	-3	-19	-20	-21
September	12	4	-2	-2	12
October	5	-2	2	-7	-2
November	6	-8	10	-4	4
December	-1	6	8	5	18
January 1962	9	-3	51	-12	45
<i>1962</i>					
Devaluation differential	138	14	80	148	380
February	12	-11	-8	30	23
March	0	-4	15	47	58
April	16	-8	58	9	75
May	-2	2	23	24	47
June	23	-1	-3	-10	9
July	13	3	6	8	30
August	-11	6	2	10	7
September	14	-8	-19	21	8
October	-2	8	-3	12	15
November	13	-7	-28	33	11
December	8	2	-6	19	23
January 1963	62	-1	42	46	149

SOURCE: Appendix Table 4.

APPENDIX TABLE 6. *Key to Table 2-1
and Appendix Tables 2, 3, 4, and 5*

I. List of relevant items in financial tables of Bank of Israel Bulletins

*a. Assets and liabilities of the Bank of Israel*¹

<i>Assets</i>	<i>Liabilities</i>
Gold and foreign currency	15. Capital and reserves
1. Gold	16. Notes and coins in circulation
2. Balances kept with banks abroad	Deposits of banking institutions
3. Clearing accounts	17. Demand deposits ²
4. Advances to foreign governments and banks	18. Time deposits
Government accounts	19. Foreign currency deposits of Israeli banks ³
5. Ordinary advances	20. Foreign currency deposits of foreign banks ³
6. Advances in foreign currency	21. Deposits of financial institutions
7. Other accounts	Government deposits
8. Treasury bills and land bills	22. Deposits of government depart- ments
9. Defense advance	23. Foreign currency deposits
10. Securities	24. Deposits of other institutions
11. Debt certificates	25. Foreign currency deposits of other institutions
Rediscounts	26. Deposits of foreign central banks and international financial institu- tions
12. In local currency	27. Clearing accounts
13. In foreign currency	28. Other accounts
14. Other accounts	

¹ Excluding mutually offsetting accounts.

² Includes deposits of investment banks and Post Office Bank.

³ For January-May 1961 items (19) and (20) appear as one item in the *Bulletin* tables. They have here been segregated according to the figures for commercial banks and credit cooperatives [item (19) less item (32)].

APPENDIX TABLE 6 (Cont.) Key to Table 2-1
and Appendix Tables 2, 3, 4, and 5

b. Assets and liabilities of commercial banks and cooperative credit societies¹

<i>Assets</i>		<i>Liabilities</i>	
30.	Bank notes and coins		Balances held for banking institutions
	Balances with the Bank of Israel	45.	In Israel
31.	In local currency	46.	Abroad
32.	In foreign currency		Deposits of the public
	Balances with banking institutions	47.	Demand deposits in local currency
33.	Domestic	48.	Demand deposits in foreign currency
34.	Foreign		Time deposits in local currency
	Credit granted to the public ²	49.	Time deposits in foreign currency
35.	To banking institutions	50.	Against liabilities in local currency
36.	To other customers in local currency	51.	Against liabilities in foreign currency
37.	To other customers in foreign currency	52.	Special deposits
38.	From Development Budget deposits	53.	Government accounts ²
	Credit to the government	54.	Demand deposits in local currency
39.	In local currency	55.	Demand deposits in foreign currency
40.	In foreign currency	56.	Time deposits and deposits for the granting of loans
	Investments	57.	Bank of Israel loans
41.	Government securities		Borrowings from banking institutions
42.	Other domestic securities	58.	Domestic
43.	Foreign securities	59.	Foreign
44.	Other accounts	60.	Equity capital
		61.	Other accounts

c. Items not in Bulletin tables³

70.	Rediscount abroad	72.	Foreign residents' deposits
71.	Credit abroad in foreign currency		(PATACH)

¹ Excluding mutually offsetting accounts.

² Excluding the mutually offsetting items 'credit granted against special deposits' and 'special deposits'.

³ Not included in the country's foreign currency assets.

APPENDIX TABLE 6 (Cont.) Key to Table 2-1
and Appendix Tables 2, 3, 4, and 5

II. Compilation of tables from items in panel I.

a. Table 2-1

1. Households	}	48 + 50 + 52 - 72
2. Firms		
3. Commercial banks		32 + 34 - 46 - 48 - 50 - 52
4. Government		23
5. Bank of Israel		1 + 2 + 3 - 19 - 23 - 26 - 27

b. Appendix Tables 2
and 3

1. Assets abroad	1 + 2 + 3 + 4 - 20 - 26 - 27 + 34 + 43 - 46 - 59 + + 70 + 71 - 72
2. Bank of Israel credit	
a. To the public	12 + 13 - 70
b. To the government	5 + 6 + 7 + 8 + 9 + 10 + 11 - 22 - 23
3. Commercial bank credit	
a. To the public	36 + 37 - 53 - 71
b. To the government	38 + 39 + 40 + 41 - 54 - 55 - 56
4. Other accounts (net) ¹	14 - 15 - 17 - 18 - 21 - 24 - 25 - 28 + 31 + 33 + + 35 + 42 + 44 - 45 - 57 - 58 - 60 - 61
6. Foreign currency deposits of the public	48 + 50 + 52 - 72
7. Local currency time deposits	49 + 51
9. Cash held by public	16 - 30
10. Demand deposits of the public	47

c. Appendix Tables 4
and 5

1. Households and firms	- (13 - 70) + 25 - (37 - 71) + 48 + 50 + 52 - 72
2. Commercial banks	32 + 34 + 37 + 40 + 43 - 46 - 48 - - 50 - 52 - 55 - 59
3. Government	- 6 + 23 - 40 + 55
4. Bank of Israel	1 + 2 + 3 + 4 + 6 + 13 - 19 - - 20 - 23 - 25 - 26 - 27

¹ Since item (17) includes a negligible amount of investment bank and Post Office Bank deposits, the two entries for deposits with the Bank of Israel of commercial banks and credit cooperatives [commercial bank asset items (31), (32), and Bank of Israel liability items (17), (18), (19)] do not cancel. The difference [(31) - (17) - (18)] is included in 'other accounts (net)'.

APPENDIX TABLE 7. *Conversions and Credit as Factors in the Growth of the Money Supply: February 1961–January 1963*
(IL million)

	<i>February 1961 –January 1962</i>	<i>February 1962 –January 1963</i>
1. Conversions by restitutions recipients	119	284
2. Other conversions	–47	90
3. Credit to the government	–98	–61
4. Credit to the public	113	52
5. Other factors	–18	–56
6. Total	69	309

SOURCE: Line 1—Summation of monthly data in Appendix Table 8, column (3), converted at IL 1.80/\$ 1 (February 1961–January 1962), and at IL 3.00/\$ 1 (February 1962–January 1963).

Line 2—Residual.

Lines 3 through 6—Table 3–1 as follows: Credit to government, lines 2b and 3b; credit to public, lines 2a and 3a; other factors, lines 4 and 7; total, line 8.

APPENDIX TABLE 8. *Monthly Data Underlying*

	Actual data				Black market rate of the dollar ^a (IL per dollar)
	\$ million				
	Restitution receipts in month t	Pazak and Tamam deposits at beginning of month t	Conversion during month t	Restitution receipts cumulated for 12 months end- ing with t	
	X _{1t} (1)	X _{4t} (2)	Y _t ^c (3)	X _{5t} (4)	X _{6t} (5)
1957					
January	2.5	2.0	2.1		2.67
February	2.5	2.4	2.0		2.77
March	3.3	2.9	2.9		2.60
April	3.2	3.3	2.9		2.52
May	3.8	3.6	3.2		2.51
June	3.4	4.2	3.1		2.46
July	3.6	4.5	3.1		2.44
August	5.0	5.0	4.4		2.45
September	4.4	5.6	3.8		2.49
October	4.7	6.2	4.1		2.46
November	4.3	6.8	3.7		2.43
December	4.6	7.4	3.9	45.3	2.40
1958					
January	5.4	8.1	4.5	48.2	2.34
February	5.7	9.0	5.0	51.4	2.32
March	5.0	9.7	4.2	53.1	2.31
April	5.4	10.5	4.6	55.3	2.30
May	5.0	11.3	4.5	56.5	2.30
June	5.6	11.8	5.1	58.7	2.30
July	6.6	12.3	6.2	61.7	2.36
August	5.1	12.7	4.4	61.8	2.41
September	5.3	13.4	4.6	62.7	2.45
October	6.1	14.1	5.1	64.1	2.44
November	5.1	15.1	4.4	64.9	2.51
December	6.0	15.8	4.4	66.3	2.51

^a $Y_{0.12} = 1.6963 + 0.3613X_1 + 0.1033X_2$ [equation (2b)].^b $Y_{0.126} = 9.5031 + 0.3700X_1 + 0.1399X_2 - 3.2260X_6$ [equation (3a)].

Regressions, and Results of Regression: 1957-63

Computed from regression (2b) ^a			Computed from regression (3a) ^b		
Computed conversion for month t	Deviations from regression		Computed conversion for month t	Deviations from regression	
	Monthly	3-month moving averages		Monthly	3-month moving averages
$Y_{0.12t}$ (6)	$Y_t - Y_{0.12t}$ (7)	(8)	$Y_{0.126t}$ (9)	$Y_t - Y_{0.126t}$ (10)	(11)
3.15	-0.25		2.68	0.22	
3.20	-0.30	-0.25	3.01	-0.11	0.02
3.40	-0.20	-0.24	3.26	-0.06	-0.14
3.32	-0.22	-0.22	3.35	-0.25	-0.22
3.35	-0.25	0.02	3.44	-0.34	-0.05
3.88	0.52	0.09	3.95	0.45	0.04
3.81	-0.01	0.25	3.80	0.00	0.21
3.85	0.25	0.07	3.92	0.18	-0.01
3.74	-0.04	0.10	3.91	-0.21	-0.06
3.80	0.10	0.14	4.06	-0.16	-0.15
4.13	0.37	0.38	4.59	-0.09	-0.05
4.32	0.68	0.38	4.89	0.11	-0.16
4.10	0.10	0.40	4.70	-0.50	-0.19
4.17	0.43	0.32	4.78	-0.18	-0.29
4.07	0.43	0.57	4.69	-0.19	-0.04
4.24	0.86	0.94	4.85	0.25	0.38
4.66	1.54	0.86	5.11	1.09	0.40
4.22	0.18	0.73	4.54	-0.14	0.43
4.14	0.46	0.43	4.27	0.33	0.22
4.45	0.65	0.45	4.63	0.47	0.35
4.17	0.23	0.29	4.14	0.26	0.27
4.40	0.00	-0.05	4.33	0.07	0.13

^c $Y_t = X_{1t} + X_{4t} - X_{4t+1}$

^d Arithmetic means of weekly rates.

APPENDIX TABLE 8 (cont.) *Monthly Data Underlying*

	Actual data				Black market rate of the dollar ^d (IL per dollar)
	\$ million				
	Restitution receipts in month t	Pazak and Tamam deposits at beginning of month t	Conversion during month t	Restitution receipts cumulated for 12 months end- ing with t	
	X_{1t} (1)	X_{4t} (2)	Y_t^c (3)	X_{5t} (4)	
1959					
January	4.9	17.4	3.7	65.8	2.64
February	5.7	18.6	4.3	65.8	2.64
March	4.9	20.0	3.7	65.7	2.68
April	4.8	21.2	3.4	65.1	2.57
May	4.9	22.6	3.9	65.0	2.56
June	5.7	23.6	4.3	65.1	2.57
July	5.3	25.0	3.6	63.8	2.63
August	5.6	26.7	3.9	64.3	2.75
September	6.1	28.4	3.8	65.1	2.78
October	6.3	30.7	3.1	65.3	2.74
November	7.9	33.9	4.6	68.1	2.66
December	8.8	37.2	4.9	70.9	2.61
1960					
January	6.7	41.1	4.2	72.7	2.58
February	7.7	43.6	4.5	74.7	2.54
March	8.4	46.8	4.7	78.2	2.49
April	8.2	50.5	7.4	81.6	2.47
May	9.9	51.3	7.6	86.6	2.47
June	8.4	53.6	6.6	89.3	2.45
July	8.0	55.4	5.9	92.0	2.45
August	8.0	57.5	6.4	94.4	2.43
September	7.8	59.1	5.8	96.1	2.43
October	8.9	61.1	6.3	98.7	2.40
November	9.3	63.7	6.2	100.1	2.37
December	9.3	66.8	6.9	100.6	2.37

See notes on pp. 96-97.

Regressions, and Results of Regressions: 1957-63

<i>Computed from regression (2b)^a</i>			<i>Computed from regression (3a)^b</i>		
<i>Computed conversion for month t</i>	<i>Deviations from regression</i>		<i>Computed conversion for month t</i>	<i>Deviations from regression</i>	
	<i>Monthly</i>	<i>3-month moving averages</i>		<i>Monthly</i>	<i>3-month moving averages</i>
$Y_{0.12t}$ (6)	$Y_t - Y_{0.12t}$ (7)	(8)	$Y_{0.126t}$ (9)	$Y_t - Y_{0.126t}$ (10)	(11)
4.09	-0.39	-0.12	3.63	0.07	0.22
4.27	0.03	-0.24	3.78	0.52	0.28
4.06	-0.36	-0.29	3.46	0.24	0.16
3.94	-0.54	-0.32	3.68	-0.28	0.05
3.97	-0.07	-0.19	3.72	0.18	0.06
4.27	0.03	-0.21	4.01	0.29	0.10
4.20	-0.60	-0.31	3.78	-0.18	0.19
4.27	-0.37	-0.55	3.44	0.46	0.17
4.48	-0.68	-0.85	3.57	0.23	-0.02
4.61	-1.51	-0.93	3.84	-0.74	-0.21
5.20	-0.60	-0.97	4.72	-0.12	-0.47
5.70	-0.80	-0.74	5.45	-0.55	-0.45
5.03	-0.83	-0.77	4.89	-0.69	-0.61
5.17	-0.67	-0.78	5.10	-0.60	-0.75
5.53	-0.83	0.12	5.66	-0.96	0.03
5.53	1.87	0.84	5.74	1.66	0.65
6.13	1.47	1.40	6.34	1.26	1.14
5.75	0.85	0.92	6.10	0.50	0.64
5.46	0.44	0.76	5.74	0.16	0.44
5.42	0.98	0.62	5.74	0.66	0.32
5.35	0.45	0.67	5.67	0.13	0.32
5.73	0.57	0.41	6.14	0.16	-0.02
5.98	0.22	0.56	6.54	-0.34	0.04
6.02	0.88	0.57	6.59	0.31	0.04

APPENDIX TABLE 8 (cont.) *Monthly Data Underlying*

	Actual data				Black market rate of the dollar ^a (IL per dollar)
	\$ million				
	Restitution receipts in month t	Pazak and Tamam deposits at beginning of month t	Conversion during month t	Restitution receipts cumulated for 12 months end- ing with t	
	X_{1t} (1)	X_{4t} (2)	Y_t^c (3)	X_{5t} (4)	X_{6t} (5)
1961					
January	8.1	69.2	6.2	102.0	2.40
February	8.0	71.1	5.5	102.3	2.38
March	8.2	73.6	2.5	102.1	2.44
April	8.2	79.3	6.0	102.1	2.45
May	9.4	81.5	6.1	101.6	2.50
June	9.8	84.8	6.7	103.0	2.72
July	8.9	87.9	4.9	103.9	2.77
August	7.7	91.9	4.4	103.6	2.70
September	7.9	95.2	5.1	103.7	2.68
October	12.3	98.0	5.7	107.1	2.64
November	12.0	104.6	7.9	109.8	2.68
December	10.8	108.7	6.9	111.3	2.68
1962					
January	8.7	112.6	4.6	111.9	2.67
February	8.7	116.7	6.3		
March	12.2	119.1	9.1		
April	11.7	122.2	7.5		
May	14.0	126.4	10.0		
June	12.2	130.4	8.8		
July	11.9	133.8	8.7		
August	10.5	137.0	6.5		
September	10.5	141.0	7.1		
October	11.9	144.4	7.3		
November	13.2	149.0	8.6		
December	12.3	153.6	7.0		

See notes on pp. 96-97.

Regressions, and Results of Regression: 1957-63

<i>Computed from regression (2b)^a</i>			<i>Computed from regression (3a)^b</i>		
<i>Computed conversion for month t</i>	<i>Deviations from regression</i>		<i>Computed conversion for month t</i>	<i>Deviations from regression</i>	
	<i>Monthly</i>	<i>3-month moving averages</i>		<i>Monthly</i>	<i>3-month moving averages</i>
$Y_{0.12t}$ (6)	$Y_t - Y_{0.12t}$ (7)	(8)	$Y_{0.126t}$ (9)	$Y_t - Y_{0.126t}$ (10)	(11)
5.59	0.61	0.52	6.06	0.14	0.01
5.43	0.07	-0.77	5.91	-0.41	-1.18
5.49	-2.99	-0.81	5.78	-3.28	-1.16
5.51	0.49	-0.78	5.78	0.22	-1.01
5.95	0.15	0.38	6.06	0.04	0.47
6.21	0.49	-0.13	5.54	1.16	0.29
5.93	-1.03	-0.51	5.22	-0.32	0.12
5.40	-1.00	-0.76	4.89	-0.49	-0.19
5.35	-0.25	-0.84	4.85	0.25	-0.39
6.96	-1.25	-0.31	6.64	-0.94	-0.07
7.31	0.59	-0.20	7.01	0.89	0.11
6.84	0.06	-0.24	6.53	0.37	0.08
5.96	-1.36		5.62	-1.02	
5.74	0.56				
7.01	2.09				
7.19	0.31				
7.97	2.03				
7.56	1.24				
7.26	1.44				
6.72	-0.22				
6.57	0.53				
7.08	0.22				
7.70	0.90				
7.50	-0.50				

APPENDIX TABLE 8 (cont.) Monthly Data Underlying

	Actual data				Black market rate of the dollar ^a (IL per dollar)
	\$ million				
	Restitution receipts in month t	Pazak and Tamam deposits at beginning of month t	Conversion during month t	Restitution receipts cumulated for 12 months end- ing with t	
	X_{1t} (1)	X_{4t} (2)	Y_t^c (3)	X_{5t} (4)	X_{6t} (5)
1963					
January	9.8	158.9	7.9		
February	10.9	160.8	7.6		
March	11.4	164.1	9.0		
April	11.8	166.5	9.0		
May	14.0	169.3	10.5		
June	12.1	172.8	10.9		
July	11.5	174.0	10.9		
August	10.8	174.6	10.0		
September	11.5	175.4	9.3		
October	13.5	177.6	10.0		
November	12.5	181.1	8.5		
December	13.2	185.1	10.8		
1964					
January		187.5			

See notes on pp. 96-97.

SOURCES : Column (1)—Foreign Exchange Department, Ministry of Finance,
Column (2)—1959-63: Bank of Israel, *Annual Reports* as follows:
1959, p. 232, Table XIV-6; p. 234, Table XIV-7
1960, p. 236, Table XIV-7; p. 239, Table XIV-8
1961, p. 286, Table XIV-8; p. 288, Table XIV-9
1962, p. 316, Table XIV-7; p. 320, Table XIV-8

Regressions, and Results of Regression: 1957-63

<i>Computed from regression (2b)^a</i>			<i>Computed from regression (3a)^b</i>		
<i>Computed conversion for month t</i>	<i>Deviations from regression</i>		<i>Computed conversion for month t</i>	<i>Deviations from regression</i>	
	<i>Monthly</i>	<i>3-month moving averages</i>		<i>Monthly</i>	<i>3-month moving averages</i>
$Y_{0.12t}$ (6)	$Y_t - Y_{0.12t}$ (7)	(8)	$Y_{0.126t}$ (9)	$Y_t - Y_{0.126t}$ (10)	(11)
6.51	1.39				
6.65	0.95				
6.95	2.05				
7.14	1.86				
7.98	2.52				
7.52	3.38				
7.10	3.80				
6.79	3.21				
6.97	2.33				
7.77	2.23				
7.60	0.90				
7.76	3.04				

1963, p. 307, Table XV-7; p. 310, Table XV-8.

In each *Report* the first table cited gives PAZAK and the second gives TAMAM.

1957-58: unpublished data of the Bank of Israel Research Department.
Column (5)—Economic Research Department of Bank Leumi Le-Israel.



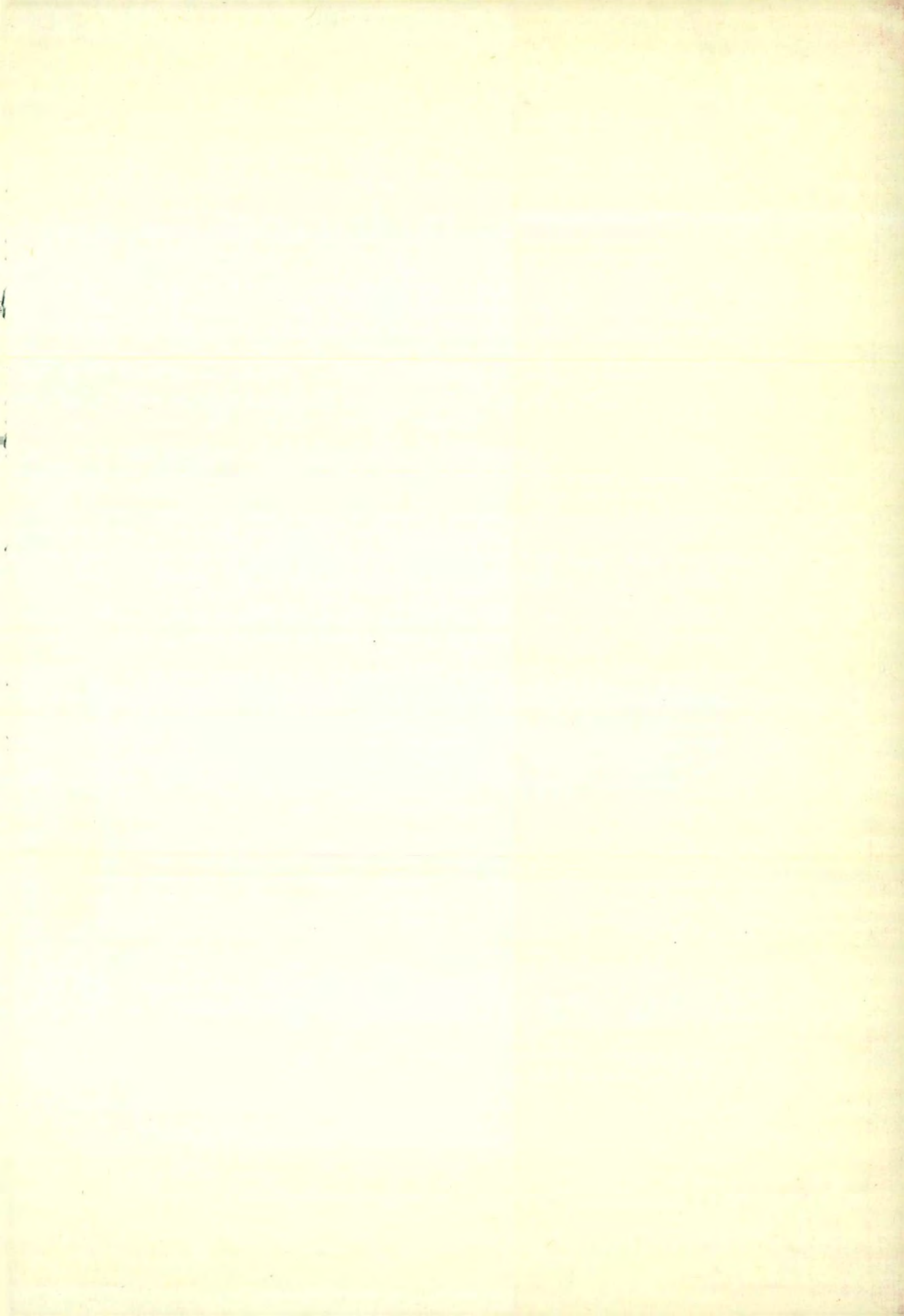
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ABOUT THE BOOK

This study, dealing with the monetary aspects of the 1962 devaluation, may clarify some of the important issues that arose as a result of the devaluation.

The author surveys the changes that followed the devaluation in factors determining the supply of money and analyzes their effect on economic development and the success or failure of the devaluation. A detailed discussion is devoted to the arrangements for premature redemptions of linked mortgages, one of the measures implemented to absorb money.

In summing up Mrs Beham finds that the steps taken by the authorities to reduce the liquidity of the public and banks were inadequate, and as a result the period following the devaluation saw an unprecedented leap in the means of payment. This increase found its expression in the commodities market, and was thus the most serious obstacle to attaining the aim of devaluation—diverting resources from domestic uses to exports.

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