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# Israel: Selected Issues and Statistical Appendix

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INTERNATIONAL MONETARY FUND

ISRAEL

**Selected Issues and Statistical Appendix**

Prepared by a staff team consisting of Philip Gerson, Janet Kong
and Mario Mesquita (all EU1)

Approved by European I Department

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# I. RECENT TRENDS IN ISRAELI INTEREST RATES: A LOOK AT THE EVIDENCE[1]

## A. Introduction

1.      The stance of monetary policy, specifically as measured by the level of real interest rates, has been object of lively debate in Israel in the last few years. Some observers contend that monetary policy has been responsible for unnecessarily high real interest rates, whereas others deem that the level of real interest rates is mostly a result of Israel's sizable public debt and the economy's inflationary past. The paper intends first to explore the issue of the level of real interest rates in Israel and then to examine what factors have determined recent real interest rate trends. This section provides background on the recent behavior of interest rates in Israel, while Section B presents an empirical analysis of such interest rate trends. Section C contains econometric evidence on real interest rate determination in a broader context, namely a panel of advanced economies in the last 20 years. Conclusions are presented in Section D.

2.      The real interest rate, that is, the difference between nominal return on assets and expected inflation, is a key macroeconomic variable affecting (and being affected by) household and firms spending decisions, and also government finances and the balance of payments. As with all real variables, the real interest rate is endogenous and cannot be directly and reliably controlled by the monetary authorities. Yet, policymakers adjust nominal interest rates in order to achieve a desired level of real interest rates, which is consistent with their macroeconomic objectives.[2] While it is typically the case that aggregate demand is more responsive to *long real* rates, in practice central banks control *short nominal* rates.[3] Policy is therefore formulated under the assumptions that: (a) by changing short nominal rates the authorities can affect short real rates; (b) short real rates have a reasonably stable relation with long real rates.

3.      The first assumption can be expected to hold empirically, except in economies where inflation expectations are extremely volatile. In high inflation episodes, increases in nominal interest rates are usually perceived as signaling that the authorities expect inflation to rise, rather than as an attempt to raise the real interest rates. That may have been the case in the Latin American hyperinflation episodes or in Israel in the 1980s, but it is not the case in Israel now, as will be seen below. The second assumption is based on the notion that the return on a long-term instrument is the sum of a liquidity premium plus the average short-term interest rates that are expected to prevail over the life of the asset. This assumption has little empirical support, but the evidence suggests that financial markets may have a short-time horizon, so the correlation between ex ante, or expected, short and long real rates is stronger than the one between ex post,

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[1] Prepared by Mario Mesquita.

[2] See, for instance, Blinder (1996).

[3] In the case of Israel, the Bank of Israel discount rate.

actual, short and long rates.[4] Moreover, as it is quite difficult to measure long-term expected inflation, construction of series of long real interest rates is not trivial.[5]

4.      Given these elements, it seems reasonable to focus the analysis here on the behavior of short ex ante real interest rates. However, there is no unique real interest rate (or nominal, for that matter) in any given economy, but rather several rates that apply to different maturities, instruments, lenders, and borrowers. Thus, the focus will be on two sets of series, namely short ex ante deposit rates and short ex ante lending rates—data sources are presented in the appendix. Construction of ex ante real interest rate data demands some assumption about expected inflation. While rationality would require agents to use a forward-looking information set in forming inflation expectations, it appears that for most advanced economies expected inflation is at least partly adaptive, in that it tracks closely recent movements in inflation.[6] Thus, it was decided to use as expected inflation in period t the centered moving average of actual inflation in t-1, t, and t+1. This assumption is, therefore, consistent with both adaptive and rational, forward-looking expectation hypotheses.[7] The work relies on headline CPI inflation, which is more readily available for most countries and is the ultimate object of monetary policy—in addition, the CPI is the relevant deflator in household spending decisions. In sum, the evidence will be examined through analysis of the behavior of short real interest rate series defined as actual, short annual nominal interest rates in month t deflated by expected annual inflation in that period.

5.      Figure 1a below shows the behavior of real interest rates in Israel since 1991. The plot includes nominal deposit interest rates (NDIR), expected inflation (EXPI), as defined above, real deposit interest rates (RDIR), and a linear trend line for the real interest rate. Figure 1b is the lending rate analogue. Specifically, nominal deposit rates are rates for short-term sheqel deposits, and lending rates correspond to the overall cost of unindexed sheqel credit. Both figures suggest that nominal rates have not been adjusted automatically to changes in expected inflation, so that the estimated real interest series are quite variable. Moreover, the trend lines indicate that real interest rates have been increasing over time in the 1990s, providing at least partial support to the notion that current interest rates are "high." The graphs also illustrate the endogenous character of real interest rates, which is particularly clear in the 1998 episode of monetary policy reversal,

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[4] Blinder (1996).

[5] Barro and Sala-i-Martin (1990). The econometric analysis of Section C will examine the behavior of the real yield on long-term instruments.

[6] Note that if inflation in the short run follows a random walk, then this adaptive behavior is perfectly rational.

[7] Baig and Goldfajn (1998). Moreover, this measure is highly correlated with the bond-market derived measure of inflation expectations to which Israeli central bankers and market analysts tend to attach great importance.

Figure 1a: Nominal and Real Deposit Rates, 1992-1999.
(in percent per year)
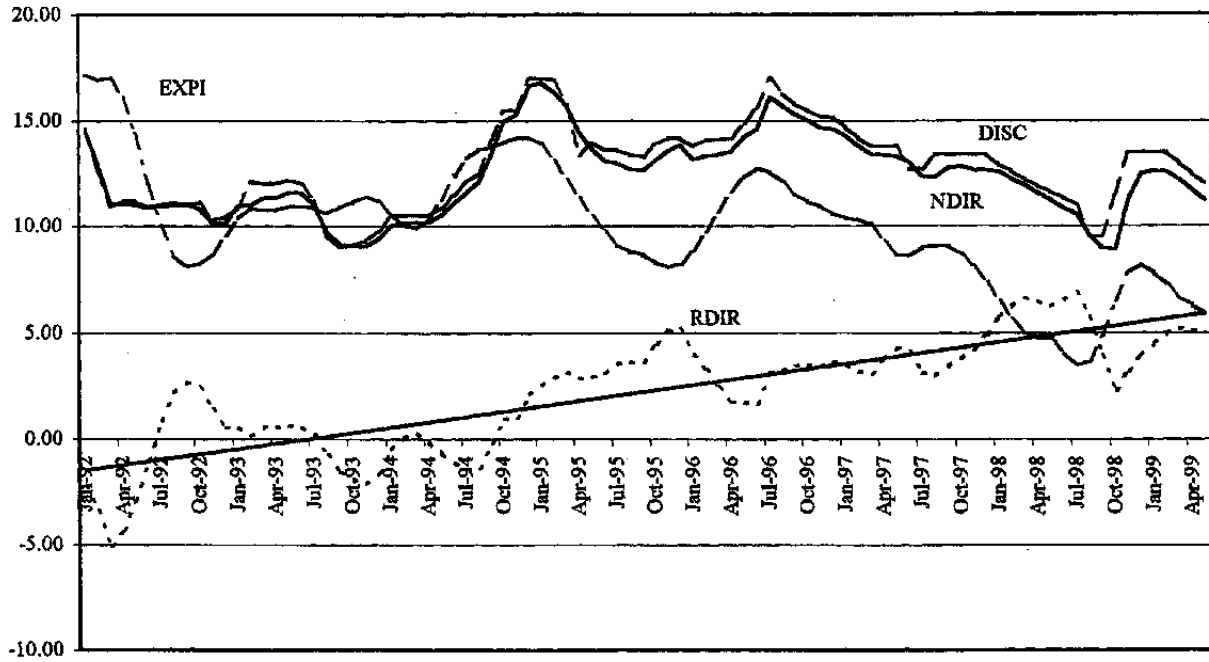


Figure 1b: Nominal and Real Lending Rates, 1992-1999.
(in percent per year)
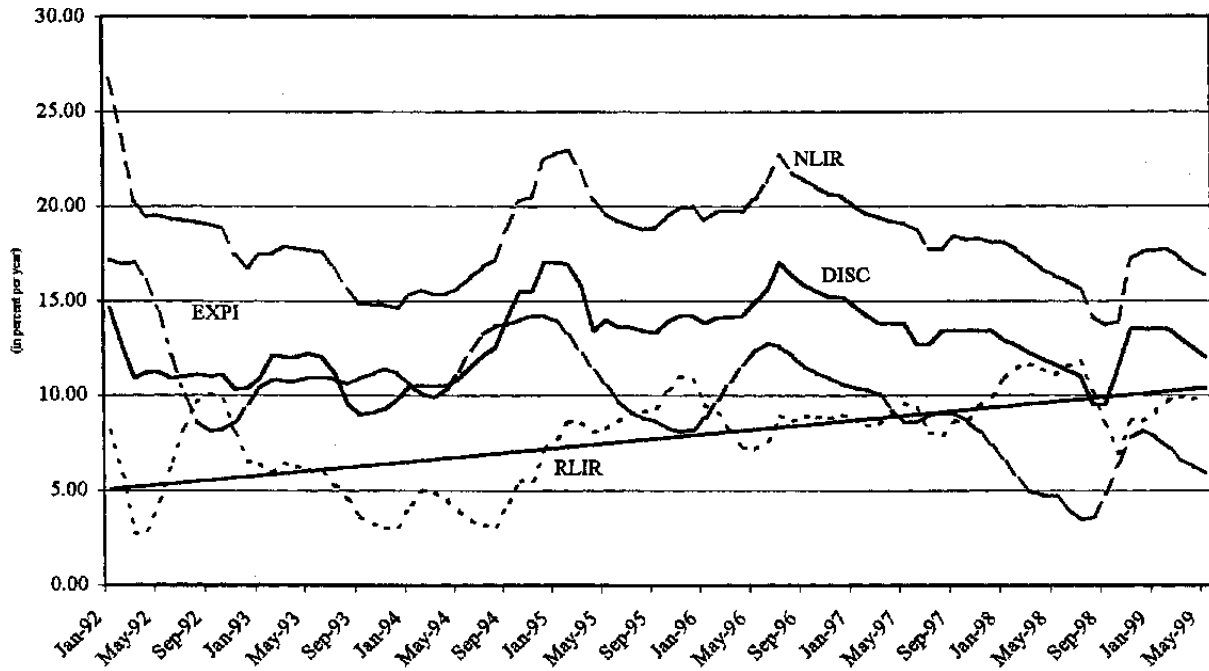
when nominal rates were raised abruptly in the wake of a sharp increase in inflation expectations which for a while had reduced real rates substantially.

6.      The graphs also show that monetary policy, through changes in the discount rate (DISC) that affect deposit and lending rates, has had, at least in the short term, a large impact on real interest rates.[8] This point is uncontroversial in Israel, and the empirical analysis of Sections B and C will focus on nonmonetary factors that may contribute, in addition to monetary policy, to determine the recent path of real interest rates.

7.      *Prima-facie* evidence that current real Israeli interest rates are high in both time series and cross-section senses is presented in Tables 1 and 2. Table 1 shows real deposit rates in Israel, its main trading partners, and a group of economies that (in common with the Israeli) have successfully disinflated in the 1990s. Trading partners real rates are weighted according to the scheme used to construct the currency basket that is a key element of Israel's crawling band regime.[9] The set of disinflating economies consists of Chile, Greece, New Zealand, and Portugal.[10] Table 2 shows data on real lending rates. The Israeli credit market was deregulated in 1990, so the sample period covered in Table 2 runs from 1991 to the first half of 1999, while Table 1 covers the 1988–99 period.[11]

8.      Table 1 shows that real deposit rates in Israel went through three stages in the last 11 years. In the late 1980s, rates were significantly negative, then they increased to close to zero in 1992–94, and became positive and significantly higher in 1995–99. These movements are clearly related to monetary policy shifts and to the trend toward capital account and exchange regime liberalization—in 1993–94 Israel completely liberalized current account payments and capital inflows, and in January 1998 various restrictions on capital outflows were lifted.[12] It is

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[8] In fact, pairwise Granger causality tests between discount, deposit, and lending rates show that the hypotheses that the discount rate does *not* Granger cause both deposit and lending rates can be rejected quite comfortably whereas deposit and lending rates do not Granger cause the discount rate. This supports the view that the discount rate has been an exogenous monetary policy instrument.

[9] Specifically, at the end of 1998 the weights were 62 percent for the U.S. dollar, 19.7 percent for the deutsche mark, 4.8 percent for the French franc, 8.2 percent for sterling, and 5.3 percent for Japanese yen.

[10] These countries had double-digit inflation in the 1980s, ranging on average from 12 percent to 21 percent per year, but ended the 1990s with inflation in the low single digits.

[11] Leiderman and Bufman (1994).

[12] Until 1987 Israel had an extensive system of foreign exchange controls, whereby all foreign currency transactions were forbidden unless explicitly permitted.

Table 1. Real Short-Term Deposit Interest Rates in Israel and Selected Countries, 1988-99

(In percent per year)

| | Israel | United States | Germany | United Kingdom | Japan | France | Basket 1/ | Spread 2/ | Disinflating Economies 3/ |
|------|--------|--------|---------|--------|-------|--------|-----------|-----------|----------|
| 1988 | -1.6 | 3.5 | 2.1 | 3.4 | 1.1 | 1.7 | 3.0 | -4.6 | 2.3 |
| 1989 | -4.9 | 4.1 | 2.5 | 3.5 | -0.3 | 1.0 | 3.3 | -8.2 | 4.2 |
| 1990 | -2.4 | 2.7 | 4.3 | 2.8 | 0.5 | 1.1 | 2.8 | -5.2 | 4.1 |
| 1991 | -4.2 | 1.5 | 5.8 | 4.1 | 0.9 | 1.3 | 2.5 | -6.7 | 2.5 |
| 1992 | -0.8 | 0.6 | 2.8 | 3.6 | 1.6 | 2.1 | 1.4 | -2.2 | 4.2 |
| 1993 | -0.4 | 0.2 | 1.8 | 2.3 | 0.9 | 2.4 | 0.8 | -1.2 | 4.6 |
| 1994 | -0.1 | 2.0 | 1.7 | 1.2 | 1.0 | 2.8 | 1.8 | -1.9 | 4.5 |
| 1995 | 3.6 | 3.0 | 2.0 | 0.7 | 1.0 | 2.7 | 2.5 | 1.1 | 5.0 |
| 1996 | 2.9 | 2.4 | 1.3 | 0.6 | 0.2 | 1.6 | 1.9 | 1.0 | 4.9 |
| 1997 | 3.7 | 3.2 | 1.0 | 0.5 | -1.4 | 2.3 | 2.2 | 1.5 | 4.5 |
| 1998 | 5.3 | 3.8 | 1.9 | 1.0 | -0.4 | 2.5 | 2.9 | 2.4 | 5.3 |
| 1999 | 4.9 | 3.0 | 2.0 | 2.0 | 0.3 | 2.7 | 2.5 | 2.4 | 5.1 |

Sources: Fund staff estimates based on *IFS* data (see appendix).

Note: Monthly average ex ante real interest rates. Inflation expectations assumed to equal a three-month centered moving average of actual annualized CPI inflation. Data for 1999 refer to the first half of the year.

1/ Weights as in the Israeli currency basket.
2/ Difference between Israeli real rates and currency basket real rates.
3/ Simple average of real deposit rates in Chile, Greece, New Zealand, and Portugal.

## Table 2. Real Short-Term Lending Interest Rates in Israel and Selected Countries, 1991-99

(In percent per year)

|      | Israel | United States | Germany | United Kingdom | Japan | France | Basket 1/ | Spread 2/ | Disinflating Economies 3/ |
|------|--------|---------------|---------|----------------|-------|--------|-----------|-----------|----------------------------|
| 1991 | 6.3    | 4.0           | 7.6     | 5.3            | 4.2   | 6.8    | 5.0       | 1.3       | 9.2                        |
| 1992 | 6.9    | 3.1           | 5.2     | 5.5            | 4.3   | 7.4    | 4.0       | 2.9       | 9.6                        |
| 1993 | 5.0    | 3.0           | 4.5     | 4.2            | 3.7   | 6.7    | 3.6       | 1.4       | 9.9                        |
| 1994 | 4.6    | 4.4           | 4.1     | 2.9            | 3.4   | 6.1    | 4.2       | 0.3       | 10.0                       |
| 1995 | 9.1    | 5.9           | 4.2     | 3.2            | 3.5   | 6.2    | 5.2       | 4.0       | 10.0                       |
| 1996 | 8.5    | 5.2           | 3.3     | 3.4            | 2.5   | 4.7    | 4.5       | 4.0       | 10.0                       |
| 1997 | 8.9    | 6.0           | 2.9     | 3.4            | 0.7   | 5.1    | 4.8       | 4.0       | 9.9                        |
| 1998 | 10.2   | 6.7           | 3.8     | 3.7            | 1.7   | 5.8    | 5.5       | 4.7       | 9.8                        |
| 1999 | 9.7    | 5.7           | 4.7     | 3.5            | 2.4   | 6.2    | 5.2       | 4.5       | 8.1                        |

Source: Fund staff estimates based on *IFS* data (see appendix).

Note: Monthly average ex ante real interest rates. Inflation expectations assumed to equal a three-month centered moving average of actual annualized CPI inflation.

1/ Weights as in the Israeli currency basket.
2/ Difference between Israeli real rates and currency basket real rates.
3/ Simple average of real lending rates in Chile, Greece, New Zealand, and Portugal.

interesting to note that, as should be expected, deposit rates in the currency basket economies were in general significantly lower than the rates prevailing in the disinflating economies. The penultimate column in the table presents the real spread (difference) between deposit rates in Israel and the set of industrial economies and shows that, indeed, Israeli rates became higher by about 1995, and increasingly so in 1998, but declined slightly in 1999. The table indicates that interest rates in industrial economies were relatively high in the late 1980s, declined to very low levels in the mid-1990s, and then increased somewhat in the last few years.

9.     Israeli lending rates presented in Table 2 replicate the upward trend observed in Table 1 from 1995. Rates were positive throughout the decade, but declined significantly in 1993 and 1994, and then rose sharply. For industrial countries, rates were higher in the later part of the period, while for the disinflating economies real lending rates peaked in the mid-1990s and declined thereafter. The table shows a consistently large positive spread of Israeli lending rates relative to the major industrial economies, and also a substantial increase in Israeli rates relative to the rates observed in the group of disinflating economies.

10.     Real lending rates are higher than real deposit rates for all countries and groups of countries presented, as one would expect, but the real banking spread seems higher in Israel than elsewhere—in fact, the average real banking spread in Israel was 2½ times the size of the average spreads prevailing in the United States or the United Kingdom, but not substantially higher than the average spread in disinflating economies. Large banking spreads may be a sign of an uncompetitive credit market, which seems to fit the stylized facts for the Israeli case.[13]

11.     These tables provide some inference on two potential explanations for the increase in Israeli real rates. First, it may have been precipitated by an increase in U.S. real rates from the very low levels observed in the early 1990s. Second, the rise in Israeli rates has been a necessary component of the disinflation process. Information on real deposit rates suggest that indeed, real interest rates in Israel started, after the beginning of the process of exchange and capital account liberalization, to move in line with international trends, especially the United States. Israeli real lending rates also seem to move in line with basket rates in 1995–99. Thus, there is some support for the first explanation. In addition, it is interesting to note that Israeli real rates increased significantly in 1994–95, *before* the onset of the emerging market difficulties in Asia and Russia, so, although the Russia/LTCM crisis certainly had an impact on the Israeli economy, it does not seem reasonable to explain the high real rates observed in Israel as basically a result of increased risk premia for holding emerging markets' instruments.

12.     An alternative explanation is that the increase in real rates was policy induced. There is certainly evidence that monetary policy played a key role in driving real rates upward since the early 1990s. As can be seen in Figure 2, which plots the nominal discount rate and the real

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[13] See IMF Selected Issues paper, *Soundness, Profitability, and Structure of the Banking Sector in Israel*, IMF Staff Country Report No. 99/40 (1999).

Figure 2: Nominal and Real Bank of Israel Discount Rate, 1992-1999
(in percent per year)
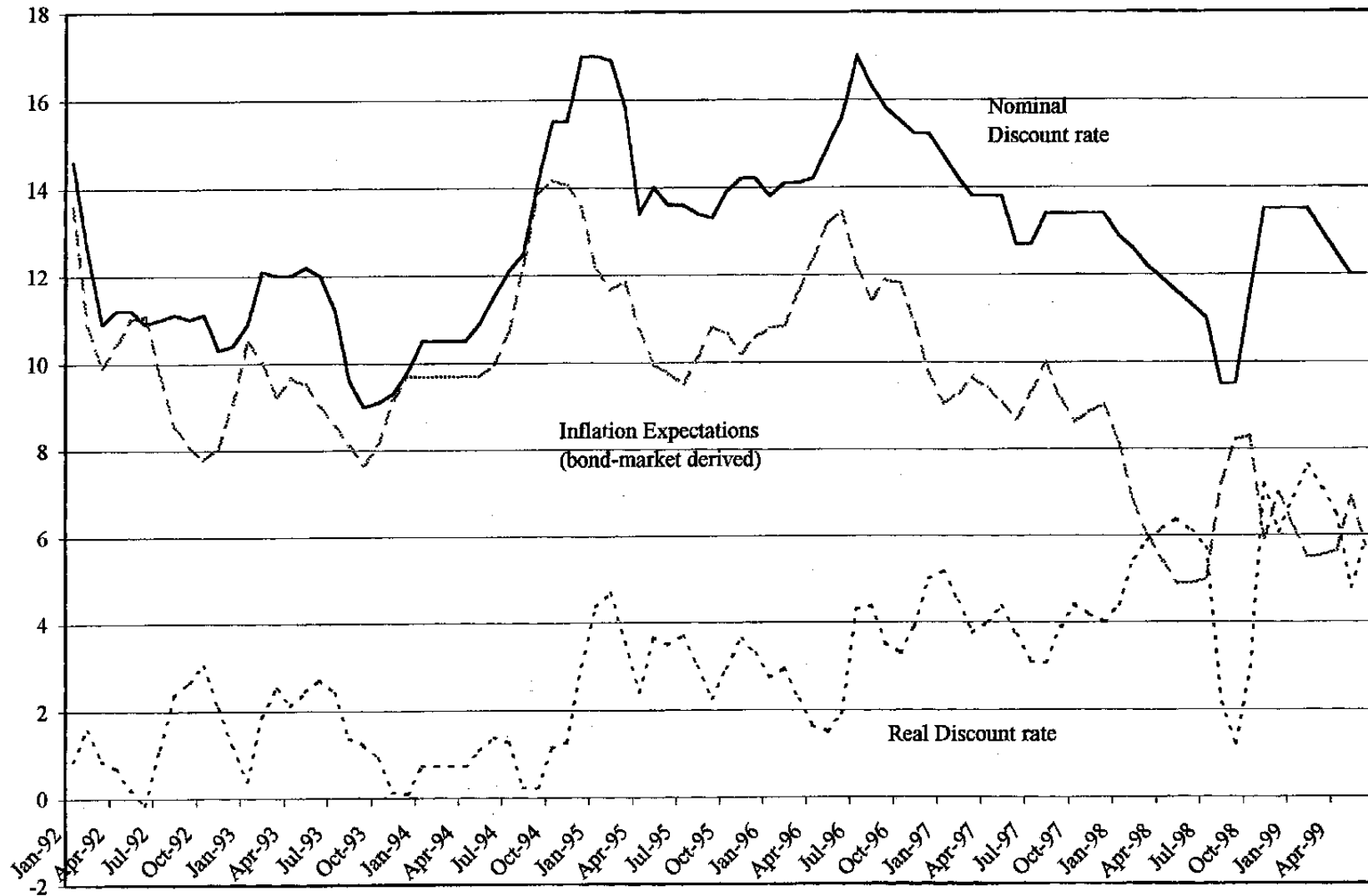
discount rate, that is, the nominal rate deflated by the bond market derived measure of inflation expectations, the Bank of Israel tightened policy quite substantially to contain a resurgence of inflation in 1994, and drove the real discount rate to 3 percent by the end of the year, compared with just ¼ percent in September. Monetary policy was prematurely eased in 1995 and the early part of 1996, and inflation again threatened to accelerate, which prompted a period of renewed and sustained tightening, this time accompanied by fiscal retrenchment, which succeeded in bringing inflation, and inflation expectations, down from about 13 percent in mid-1996 to about 5 percent in mid-1998. In hindsight, it appears that the 1994 tightening was a defensive move, aimed at keeping inflation in the 10 percent neighborhood at which it had settled since 1992, whereas the 1996 tightening represented an aggressive move to complete the protracted disinflation process that had began with the 1985 stabilization program. In the second monetary tightening episode, the real discount rate was kept at 3–5 percent and increased sharply in early 1998 as inflation was declining precipitously. The Israeli economy was thereafter hit by the Russia/LTCM crisis, which prompted a significant depreciation of the sheqel, renewed inflationary pressures, and the consequent monetary policy response, which involved renewed tightening and a quite successful containment of the pass-through of the depreciation to domestic inflation.

13.     Cross-section evidence, shown in the last columns of Tables 1 and 2, also suggests that real rates are generally higher in countries undergoing disinflation. This must clearly be the case *during* the process, but also for some time after inflation has declined to the rates observed in industrial economies, as agents' inflation memory (and the resulting risk premia required to hold nominal assets) may persist for a protracted period until the credibility of the new low inflation regime becomes firmly entrenched.

14.     This section, thus, confirms the notion that in recent years Israeli real interest rates have been high both relative to past levels and to levels observed in other countries. It suggests that increased capital account openness and relaxation of foreign exchange controls may have played a role in explaining the upward sloping real interest rate path, and highlights the clear short-term effect of monetary policy over real interest rates, particularly in the context of the disinflation process.

## B. Determinants of Real Interest Rates: Empirical Evidence for Israel

15.     There are various theories of the determinants of real interest rates. In the short run, given sticky inflation expectations, real interest rates are mostly determined by changes in monetary policy that affect deposit and lending rates. In the long run, the real interest rate (marginal product of capital) that prevails when the stock of capital is at its steady state level or path, that is, the level that maximizes steady state per capita consumption, is the equilibrium or *golden rule* real interest rate.[14] Whenever actual rates are above (below) this golden rule level they could be deemed too high (low). But the (modified) golden rule rate is itself determined by some key

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[14] On the golden rule see, for instance, Romer (1996) and Blanchard and Fischer (1989).

structural parameters, such as the aggregate rate of time preference and long-term population growth.

16.     The Wicksellian interest rate theory posits, on the other hand, that market determined interest rates should adjust so as to equate savings and investment at full employment.[15] So, in order to examine empirically the (medium- and short-term) determinants of real interest rates, one must analyze developments in the components of aggregate savings and investment. This will be the approach followed below, and follows Blanchard and Summers (1984) and Barro and Sala-i-Martin (1990).

17.     A third approach, suggested by Blinder (1996) is to focus on he *neutral real interest rate*, that is, the rate that equates actual and potential output along the steady state IS curve. This rate would be consistent with constant (not necessarily zero) inflation, and higher (lower) real rates would characterize tight (easy) monetary policy. A difficulty with this concept is that estimating the neutral rate would in principle require solving a full macro-econometric model for the Israeli economy, the construction of which is beyond the scope of this paper. Alternatively, Blinder suggests averaging actual real rates over a long period, including many cycles, such as 30 to 50 years. However, this is not feasible in the case of a country as "young" as Israel, which underwent deep changes in its monetary policy framework in the last ten years and significant structural changes, including massive immigration in the early 1990s. In the following subsections the paper therefore focuses on the golden rule and savings-investment approaches.[16]

18.     This approach does not imply neglect for the role of monetary policy in determining the short-term behavior of real interest rates. Rather, the working assumption is that real interest rate variations that cannot be reasonably explained by domestic nonmonetary factors were caused by either shifts in domestic monetary policy and/or by changes in "world" interest rates.[17]

**The golden rule**

19.     According to the Solow growth model, the golden rule interest rate is equal to the sum of population growth, growth of "knowledge" or effectiveness of labor, and the rate of depreciation of the capital stock.[18] Assuming that technology is constant and abstracting from depreciation, the

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[15] Ciocca and Nardozzi (1996).

[16] The golden rule and savings-investment views are not mutually exclusive, and will indeed be combined in the econometric analysis of Section D.

[17] The presumption is that, over the time horizon that is relevant for economic policy, there is no full convergence of real interest rates across countries, although international trends may sometimes be important. This notion is firmly grounded on empirical evidence, see for example, Breedon, Henry, and Williams (1999).

[18] Romer (1996).

golden rule interest rate would simply be given by the rate of population growth, and the modified golden rule by the sum of the rates of population growth and time preference.[19]

20.     Interestingly, a rough calculation of the modified golden rule interest rate suggests that indeed one should expect rates in Israel to be higher than in other advanced economies. The reason is that Israel has had a very high (for an advanced economy) rate of population growth, 2.7 percent per year in average, since 1960, compared with just about 1 percent in the United States and Japan, and 0.5 percent in European countries. Table 3 presents estimates of golden rule interest rates for Israel and the countries in the Israeli currency basket. The estimates are just approximations, in that they rely on the assumption of a uniform rate of time preference across countries and time of 2 percent.[20] These rough approximations would appear to suffice to illustrate the fact that given its high rate of population growth, Israel's golden rule interest rate will, ceteris paribus, be significantly higher than that observed in most advanced economies.

**The savings-investment balance**

21.     Several factors could upset the ex ante balance between savings and investment, thereby causing a shift in real interest rates. Here the effects of changes in public and private saving will be considered, plus the potential effects of changes in profitability.

*High real interest rates in Israel: the role of fiscal policy*

22.     An increase in the fiscal deficit is a natural potential explanation for a negative shift in overall savings. This would appear to be a factor in the case of Israel, which only recently has pursued fiscal consolidation on a sustained basis. Larger public dissaving creates an imbalance that will be reflected in higher real interest rates, given an unchanged monetary policy stance. The effect of a change in the fiscal stance would be larger if the increase is seen as permanent, and even in the case of a transitory widening of the fiscal deficit, real interest rates may fail to decline after the deficit has been reduced if the transitory shock led to a significant accumulation of public debt.[21] Such a negative shift in saving raises the expected return of all forms of capital assets, including equities. Thus, one may expect the *real* stock market return to increase in the future, often, but not necessarily always, through a initial decline in stock prices. Moreover, a larger fiscal

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[19] See Blanchard and Fischer (1989), pp. 45.

[20] This is the long-run estimated rate of time preference for the United States. See Lawrence (1991).

[21] Blanchard and Summers (1984). Estimates from MULTIMOD III indicate that temporary tax cut that increases the U.S. debt/GDP ratio by 10 percentage points implies an increase in the long U.S. real interest rate of about ½ percent in a one to five year interval, and an increase of 10 basis points in steady state.

Table 3: Comparative Golden Rule Interest Rate Estimates 1960-98

(In percent per year)

| Period | Israel | United States | Germany | United Kingdom | Japan | France |
|---|---|---|---|---|---|---|
| | | | Modified golden rule estimates 1/ | | | |
| 1960-69 | 5.4 | 3.3 | 2.9 | 2.6 | 3.0 | 3.0 |
| 1970-79 | 4.8 | 3.1 | 2.2 | 2.1 | 3.3 | 2.7 |
| 1980-89 | 3.8 | 2.9 | 2.1 | 2.2 | 2.6 | 2.5 |
| 1990-98 | 5.0 | 3.0 | 2.6 | 2.3 | 2.3 | 2.4 |
| Average | 4.7 | 3.1 | 2.4 | 2.3 | 2.8 | 2.6 |

Source: Fund staff estimates based on data from the WEO database.

1/ Rate of population growth plus assumed uniform rate of time preference or 2 percent.

deficit is often associated with an increase in the demand for nontradable goods, and can, in the Mundell-Fleming framework, be expected to generate a real exchange rate appreciation.

23.     Table 4 presents various indicators of fiscal policy behavior in Israel, including the operational balance, which is used by the authorities in their fiscal policy framework, a cyclically adjusted operational balance, a measure of the fiscal impulse, the conventional (all-inclusive) balance, and the ratios of gross government debt to GDP.[22] A negative (positive) fiscal impulse for any given year indicates that policy was tighter (looser) than in the preceding year. Thus, the data in Table 4 indicate that fiscal policy was relatively tight in 1992–93, loose in 1994–95, and tight, in general, since 1996. The fiscal expansion hypothesis seems to be supported by the significant increase in real interest rates in 1995, the second year of the mid-1990s fiscal expansion, and the cycle of real exchange rate appreciation that began by about 1994 (see Table 5). On the other hand, real interest rates continued to increase, albeit modestly, in 1996–97, years of continuous progress in fiscal consolidation. Fiscal policy does not appear to have been a major factor in the increase in real interest rates and the sizeable real exchange rate appreciation observed in those years, as all fiscal policy indicators improved in 1996–97 relative to 1995, in spite of a widening output gap. Fiscal policy continued to be tight in 1998, but even before the August–October sheqel crisis, real interest rates were quite high, namely 6½ percent and 11½ percent, on average, for deposit and lending rates, respectively, in the first seven months of the year. Nevertheless, it is a plausible conjecture that real rates would have declined in the second half of 1998 and 1999 if not for the currency crisis, which forced the Bank of Israel to depart from its policy of monetary easing.

24.     The evidence is, therefore, mixed. Fiscal policy appears to be a significant factor for the increase of real interest rates in 1994–95, but not in 1996–98. However, the effects of fiscal policy are not immediate, and quantitative empirical analysis of the Israeli economy is constrained by the fact that one cannot observe the interaction of fiscal and monetary policies over several cycles, given the major regime shift implied by the 1985 stabilization program. In this regard, the panel data econometric evidence presented in Section C provides more robust evidence as it relies on a data set that augments the observations for the Israeli economy with information from 27 other advanced economies.

*Shifts in private saving and profitability*

25.     Table 5 shows the behavior of private savings, investment, the stock market, and the real exchange rate. There is apparently a trend towards declining private saving in Israel since the early 1990s. This could be a result of the changed composition of the population in the wake of the very high immigration wave of the early1990s. Such a trend would certainly create upward pressure on real interest rates. In addition, the infrastructure needs associated with the absorption

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[22] The fiscal impulse is the first difference of the cyclically adjusted balance.

## Table 4: Fiscal Policy Indicators for Israel, 1988-99

(In percent of GDP)

| Year | Operational Balance 1/ | Output Gap 2/ | Cyclically Adjusted Balance 3/ | Fiscal Impulse 4/ | Conventional Deficit 5/ | Public Debt | Government Spending |
|------|------|------|------|------|------|------|------|
| 1988 | -8.0 | 0.2 | -7.9 | ... | -17.1 | 147.0 | 60.9 |
| 1989 | -4.0 | -1.1 | -3.3 | -4.6 | -23.4 | 143.0 | 60.2 |
| 1990 | -4.3 | 0.0 | -4.1 | 0.9 | -19.5 | 132.0 | 59.3 |
| 1991 | -6.1 | -1.2 | -5.3 | 1.2 | -19.9 | 127.0 | 59.6 |
| 1992 | -3.6 | -0.3 | -3.3 | -2.0 | -12.6 | 124.0 | 57.8 |
| 1993 | -2.5 | -1.4 | -1.6 | -1.7 | -10.8 | 122.0 | 55.7 |
| 1994 | -2.4 | 0.0 | -2.3 | 0.7 | -10.3 | 115.0 | 55.1 |
| 1995 | -4.1 | 0.2 | -4.2 | 1.9 | -10.4 | 109.0 | 56.1 |
| 1996 | -3.7 | 0.0 | -3.7 | -0.5 | -14.1 | 107.0 | 55.7 |
| 1997 | -2.7 | -1.0 | -2.2 | -1.4 | -10.9 | 107.0 | 54.4 |
| 1998 | -2.3 | -1.8 | -1.5 | -0.8 | -7.6 | 111.0 | 54.7 |
| 1999 | -2.3 | -3.5 | -0.6 | -0.9 | -7.4 | 112.4 | 56.0 |

Sources: Bank of Israel; and Fund staff estimates and projections (based on current policies).

1/ Israeli definition, excludes the nominal component of interest on government debt.
2/ In percent of potential output.
3/ Adjusts revenue and expenditure to account for the impact of the cycle on the operational balance.
4/ Annual change in the cyclically adjusted operational balance (1994 base year).
5/ Includes all interest on government debt.

Table 5. Indicators of Shifts in the Savings-Investment Balance, 1988-99

(Percentage change relative to previous year, unless indicated otherwise)

| Year | Private Savings 1/ | Investment 1/ | Stock Prices | Real Stock Market Return 2/ | Real Exchange Rate 3/ |
|------|------|------|------|------|------|
| 1988 | 17.8 | 17.3 | 1.4 | -12.9 | 9.2 |
| 1989 | 21.6 | 19.3 | 76.1 | 46.5 | 0.7 |
| 1990 | 23.1 | 20.8 | 15.1 | -1.7 | -2.4 |
| 1991 | 24.4 | 23.8 | 54.6 | 29.8 | 1.9 |
| 1992 | 23.0 | 24.0 | 91.6 | 71.2 | -1.9 |
| 1993 | 21.1 | 25.5 | 41.0 | 27.2 | -1.8 |
| 1994 | 19.0 | 24.4 | -39.4 | -46.0 | 1.1 |
| 1995 | 18.7 | 23.8 | 14.0 | 3.6 | 0.8 |
| 1996 | 19.3 | 23.1 | -1.0 | -11.0 | 5.9 |
| 1997 | 17.4 | 20.3 | 35.2 | 23.9 | 7.0 |
| 1998 | 18.0 | 18.2 | 3.0 | -2.2 | -3.0 |
| 1999 | 18.5 | 19.1 | 64.4 | 62.3 | -3.8 |

Source: WEO database.
1/ Percent of GDP at current prices.
2/ Deflated by the CPI.
3/ Increase indicates real effective appreciation.

of the immigrants caused an investment boom in the early to mid-1990s, which would tend to require temporarily, high real interest rates. Data on components of real aggregate demand in Table 6 support the notion that there was a sustained decline in private savings in the 1990s, but this seems to have almost fully compensated for a decline in public consumption, while investment boomed and then tailed off somewhat in the last few years. In any case, net imports of goods and services in real terms increased from an average of 9 percent of GDP in 1988–90 to 17 percent of GDP in 1994–96, reflecting excess domestic absorption. Taken together, these factors suggest that even in the absence of restrictive monetary policies, real interest rates would have trended higher in the 1990s.

26.     The stock market boomed in 1991–93, but has behaved in a much more erratic fashion since 1994.[23] This indicates that there was no sustained increase in the profitability of Israeli companies, which would have implied an increase in required returns of capital and hence of real interest rates. It is possible that the high-tech sector boom obscured lackluster performance in other sectors, so that on the whole overall profitability remained stable. Aggregate data does not, in sum, support the increased profitability hypothesis, although it must be noted that a proper test of this proposition would probably require analysis of disaggregated data, such as on sector-segmented stock returns.

## C. Econometric Evidence

27.     The preceding sections examined the role of several factors that may have affected the savings-investment balance in Israel in the 1990s, thereby requiring equilibrium shifts in real interest rates. Although a comprehensive analysis of the determinants of real interest rates is beyond the scope of this paper, inference drawn from a sample of advanced economies would help establish some important "stylized facts" about real interest rate determination and to place the discussion of the Israeli experience in context. The analysis that follows focuses on five possible determinants of real interest rates: profitability, population growth, inflation memory, monetary policy, and fiscal policy (domestic and worldwide).

28.     Following Barro and Sala-i-Martin (1990), the econometric analysis is based on a reduced form equation for the ex ante real interest rate which reflects the various factors affecting the national savings-investment balance:

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[23] Note that in 1999 the Tel Aviv stock market indices soared to record levels, in line with the behavior of comparable U.S. indices.

Table 6. Indicators of Shifts in the Savings-Investment Balance, 1988-98.

(Ratios to GDP at 1995 prices)

| Year | Private Consumption | Government Consumption | Consumption | Private Investment 1/ | Government Investment | Investment | External sector |
|------|------|------|------|------|------|------|------|
| 1988 | 55.5 | 39.1 | 94.6 | 13.3 | 2.4 | 15.7 | -10.3 |
| 1989 | 56.8 | 35.3 | 92.0 | 12.8 | 2.4 | 15.2 | -7.2 |
| 1990 | 55.6 | 35.7 | 91.3 | 15.4 | 2.3 | 17.7 | -9.2 |
| 1991 | 55.8 | 35.2 | 91.0 | 20.8 | 2.6 | 23.3 | -15.0 |
| 1992 | 56.9 | 33.4 | 90.3 | 20.2 | 3.3 | 23.5 | -14.0 |
| 1993 | 58.8 | 33.7 | 92.5 | 20.4 | 3.5 | 23.8 | -16.6 |
| 1994 | 60.8 | 31.4 | 92.2 | 20.7 | 3.7 | 24.4 | -16.7 |
| 1995 | 61.6 | 29.5 | 91.1 | 21.5 | 3.8 | 25.3 | -16.4 |
| 1996 | 61.8 | 29.8 | 91.6 | 22.1 | 3.7 | 25.8 | -17.4 |
| 1997 | 62.7 | 29.6 | 92.2 | 20.2 | 3.7 | 23.9 | -15.9 |
| 1998 | 63.5 | 29.7 | 93.2 | 18.3 | 3.4 | 21.7 | -14.6 |

Source: WEO database.

$$S_t = + \alpha_1 R^e_t + \alpha_2 GOV_{t-1} + \alpha_3 MON_{t-1} + e_t \quad (1)$$

$$I_t = \beta_0 + \beta_1 STX_{t-1} - \beta_2 \Delta R^e_t + \beta_3 INF_{t-1} + \beta_4 POP_{t-1} + \xi_t \quad (2)$$

where the alphas and betas are assumed to be positive, and $e$ and $\xi$ are stochastic error terms. Savings are thus expected to increase with the real interest rate ($R^e$), the government balance (GOV), and monetary growth (MON), whereas investment is assumed to respond positively to a q-like factor (captured in the second and third elements of equation (2)), population growth (POP), and a term accounting for a country's inflation history (INF). Under the assumption of imperfect international capital mobility, the real interest rate for a given country is determined by the equilibrium in the domestic market for capital, that is, the equality between savings and investment, which yields the following relation:

$$R^e_t = 1/\lambda_0 [\lambda_1 + \beta_1 STX_{t-1} + \beta_2 R^e_{t-1} + \beta_3 INF_{t-1} + \beta_4 POP_{t-1} - \alpha_2 GOV_{t-1} - \alpha_3 MON_{t-1} + (\xi_t - e_t)] \quad (3)$$

where $\lambda_0 = (\alpha_1 + \beta_2)$ and $\lambda_1 = (\beta_0 - \alpha_0)$.

29.     Profitability is approximated by real stock market returns, STX, and the presumption is that in periods of high actual and expected profits, investment will tend to increase, which will require an increase in real interest rates to induce the formation of additional savings. The lagged real interest rate term enters the equation as the discount factor of profitability in period t-1.[24] The discussion in Section B suggests that population growth should have a positive relation with real interest rates—fast population growth stimulates investment and can be associated with a relatively young population, a correspondingly high dependency ratio, and low savings. On the other hand, a history of high inflation may lead agents to demand additional risk premia for holding nominal assets, so the analysis also considers the possible contribution of inflation memory to real interest rates, captured by a moving average of inflation.

30.     It is assumed that faster money growth leads to higher expected inflation, erodes the stock of real money, and thus causes an increase in desired saving for a given level of the real interest rate. Finally, in the absence of full Ricardian equivalence, an increase in the fiscal balance leads to higher national savings, and thus to lower real interest rates. As capital mobility across advanced economies has become quite high in the last 20 years, it is reasonable to presume that worldwide fiscal policy shifts would have an impact on domestic real interest rates. In order to assess this

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[24] Barro and Sala-i-Martin (1990) indicate that given the difference between average and marginal q, the need to take into account changes in the market value of bonds and the depreciation of capital stocks, and as the stock market does not value portions of a country's capital stock that are included in total investment, such as residential and public investment, the best estimate of changes in the q variable would depend inversely on the change in real interest rates for a given value of $STX_{t-1}$.

possible international transmission effect, the models include measures of worldwide fiscal balance (WFB) as well as domestic fiscal balance (GGB) in the set of regressors.

31.     The sample consists of a panel of annual data from 28 advanced economies in the 1979–98 period. The selection of countries reflects the fact that it would seem reasonable to focus the analysis on a group of economies that are similar to Israel's, although inference from some of the major developing economies could also be interesting. As credit and capital market controls were prevalent, even in advanced economies (and particularly in Israel) in the 1960s and 1970s, the sample period must focus on the last two decades of relative capital market liberalization. Most of the data used in the estimation come from the World Economic Outlook (WEO) database—sources and definitions are given in the appendix. STX is simply the nominal increase in a country's stock market index deflated by consumer prices, POP is the rate of growth of the population in a given country/year, MON is the rate of growth of broad money, assumed to reflect exogenous shifts in monetary policy, GGB is the ratio of general government balance to each country's respective GDP, and WFB is the ratio of G-7 fiscal balance to GDP. The dependent variable is an ex ante, or expected, real interest rate (RIR), estimated by deflating the yield on long-term bonds by an index of expected inflation (as defined in Section A).

32.     Four models were estimated under both the common intercepts and the fixed effects assumptions, namely: a model where the real interest rate is assumed to depend only on structural factors such as profitability, population growth, and inflation memory; a model that tests the influence of worldwide fiscal policy; a model that examines the effects of domestic policies; and a model that combines structural and domestic policy elements. The common intercepts approach ignores cross-section information and is equivalent to treating each country's data as components of a single augmented "stack" of data. On the other hand, the fixed effects specification allows unrestricted estimation of intercepts for each country, but still imposes the restriction that the other regression coefficients are the same across countries.[25]

33.     The results are presented in Table 7. The first model, seen in columns (1) and (5), excludes policy variables, which are included in models (2)–(4) and (6)–(8). Table 7 shows that real interest rates exhibit substantial persistence, which is in line with previous empirical analyses. The results support the notion that profitability has a positive effect on real interest rates, and indicate that inflation memory in particular does appear to have a significant role in determining real interest rates, whereas population growth does not seem to have had any significant impact, although it enters the estimated equations with the expected sign. The domestic fiscal policy variable appears with small but significant negative coefficients in models (3)–(4), and (7)–(8), confirming the presumption that larger surpluses (deficits) contribute to lower (higher) real interest rates. Moreover, international fiscal policy appears to be highly significant (and exhibits the correct sign), which reflects the significant degree of capital mobility prevalent among the

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[25] Thus, both approaches should ideally be used only on data sets that include relatively homogeneous groups of countries.

## Table 7. Models of the Ex Ante Long Term Real Interest Rate

| | Common Intercepts | | | | Fixed Effects Estimator | | | |
|---|---|---|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) | (6) | (7) | (8) |
| Constant | 0.82 | 0.14 | 0.83 | 0.80 | ... | ... | ... | ... |
| t-statistic | 5.68 | 0.78 | 6.39 | 5.12 | | | | |
| STXt-1 | 0.01 | ... | ... | 0.01 | 0.01 | ... | ... | 0.01 |
| t-statistic | 3.99 | | | 4.37 | 4.07 | | | 4.20 |
| POPt-1 | 0.00 | ... | ... | | 0.21 | ... | ... | |
| t-statistic | 0.03 | | | | 0.00 | | | |
| INFt-1 | 0.02 | ... | ... | 0.02 | 0.05 | ... | ... | 0.04 |
| t-statistic | 2.79 | | | 2.69 | 3.74 | | | 3.46 |
| WFBt-1 | ... | -0.20 | ... | ... | ... | -0.21 | ... | |
| t-statistic | | -4.16 | | | | -4.35 | | |
| GGBt-1 | | | -0.03 | -0.03 | | | -0.04 | -0.05 |
| t-statistic | | | -2.65 | -1.98 | | | -2.37 | -2.21 |
| DBMt-1 | | | 0.00 | 0.00 | | | -0.01 | -0.01 |
| t-statistic | | | -0.38 | -0.58 | | | -1.20 | -1.19 |
| RIRt-1 | 0.79 | 0.83 | 0.80 | 0.78 | 0.76 | 0.78 | 0.74 | 0.74 |
| t-statistic | 32.39 | 42.75 | 34.38 | 28.93 | 28.39 | 33.85 | 26.52 | 24.06 |
| R-squared | 0.82 | 0.84 | 0.83 | 0.81 | 0.83 | 0.85 | 0.84 | 0.82 |
| S.E. of regression | 1.13 | 1.50 | 1.47 | 1.13 | 1.13 | 1.51 | 1.48 | 1.12 |
| Mean dep. variable | 5.13 | 5.91 | 6.02 | 5.34 | 5.16 | 5.98 | 6.10 | 5.34 |
| Sample | 1979-98 | 1979-98 | 1979-98 | 1979-98 | 1979-98 | 1979-98 | 1979-98 | 1979-98 |
| Total panel observations | 402 | 499 | 446 | 380 | 402 | 499 | 446 | 380 |

Note: Estimated by generalized least squares with cross-section weights.

economies in the sample. Domestic broad money growth does not appear to have had any impact on long-term real rates, although it is possible that different monetary aggregates could have significant impact in particular countries.

34.     These results are roughly in line with Ford and Laxton's (1999) finding that worldwide fiscal policy was a major factor in the increase in real interest rates observed in some OECD countries since the 1970s. However, their analysis focuses on the effect of OECD government debt, whereas here "world" fiscal policy is captured by G7 fiscal balance. The estimates also find evidence of a significant positive relation between corporate profitability and real interest rates, which is consistent with the earlier analysis in both Blanchard and Summers (1984) and Barro and Sala-i-Martin (1990).

35.     Clearly, the empirical analysis of real interest rate determination could be refined by considering different proxies for the relevant variables, different estimation methods, and possibly examination of distinct or perhaps augmented samples.[26] Yet the estimates included in Table 7 do present support for the proposition that fiscal policy can contribute to reduce real interest rates, and indicate the various real and structural factors, such as profitability and inflationary memory, that affects long-run real rates.

### D.  Conclusion

36.     The paper suggests that several factors, besides tight monetary policy, may well have contributed to the high real interest rates that have been observed in Israel. First, it is not surprising that with capital account liberalization, domestic real interest rates cannot remain negative for a long period and tend to move together with rates observed in the main industrial economies, notably the United States, where real rates appear to have trended upwards in recent years; second, simple golden rule estimates highlight the potential link between high population growth and high real interest rates in Israel; third, fiscal policy seems to have contributed to higher rates in the mid-1990s, but less so in recent years; and fourth, reduced private savings and a temporary investment boom may have contributed to the increase in real interest rates though 1996 and into 1997. But since then, with resumed fiscal restraint, falling investment, moderation of consumption growth, and a slowdown in export growth, tight monetary policy has been the major factor.

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[26] An interesting approach would be to consider the role of domestic debt. Estimates using the Maastricht ratio of gross debt to GDP did not yield significant results, but it is reasonable to assume that the relevant indicator is *net* rather than gross debt, as argued by Ford and Laxton (1999). A problem, however, is that it may be difficult to obtain a consistent series of net government debt for all or most advanced economies.

37.     Econometric estimates for the group of advanced economies suggest that fiscal policy appears to have a significant impact on real interest rates, which is consistent both with the European and the United States experience of the 1990s. The estimates also suggest that profitability and inflationary memory have played a significant role in determining the path of real interest rates.

List of economies included in econometric estimate (samples adjusted for missing observations): Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Greece, Hong Kong SAR, Iceland, Ireland, Israel, Italy, Japan, Korea, Luxembourg, the Netherlands, New Zealand, Norway, Portugal, Singapore, Spain, Sweden, Switzerland, Taiwan Province of China, the United Kingdom, and the United States.

List of variables:

STX: real stock market return, nominal returns deflated by the consumer price index. Stock market indices are from the *IFS* database, while CPIs are from the WEO database.

POP: average population growth in 1960–98, from the *IFS* database.

INF: 10-year lagged moving average of inflation from the WEO database.

WFB: Ratio of G-7 fiscal balances (General Government Balance) to GDP, from the WEO database.

GGB: Ratio of General Government Balance to GDP, from WEO database.

MON: Rate of growth of Broad Money, from WEO database.

RIR: Nominal long-term bond yield, from WEO database, deflated by centered moving average of CPI inflation.

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## II. EFFECTS OF MONETARY POLICY IN ISRAEL[1]

1.      Since 1992 Israel has operated in an inflation targeting framework in which the primary goal of monetary policy is to achieve a specified inflation target. Typically, this target is specified as a range of acceptable outcomes. At times, the Bank of Israel may find that inflation is likely to exceed the target, and the question arises as to the extent to which interest rates would need to be raised in order to ensure that inflation comes in within or below target. In this connection, it is useful to have some sense of the order of magnitude of the short-run impact that such a monetary tightening would have on output. At other times, the Bank of Israel may find that inflation is likely to come in below (or at the lower end of) the inflation target at the same time as output is below its potential level. Under these circumstances, would a small, temporary cut in nominal interest rates likely have a positive effect on growth in the short term? Just as importantly, would it generate inflationary effects that are incompatible with the paramount goal of achieving the inflation target? How rapidly would these effects be realized, if at all? This paper seeks to contribute to the debate over these issues by examining empirically the influence of interest rates on prices, the exchange rate, output and other variables.

2.      Section A of the paper provides some details on the behavior of inflation, interest rates and other key variables in the post-stabilization period. Section B reviews the relevant literature on the impact of monetary policy on output, inflation and the exchange rate in Israel and selected other countries. Section C contains the empirical work, which makes use of structural vector autoregression (VAR) involving a number of macroeconomic variables to investigate the interaction of key variables in Israel. Section D concludes.

### A.  Inflation In Israel: Macroeconomic Background

3.      Over the last decade Israel has transformed itself from a high- to a low-inflation economy. Annual CPI inflation peaked at 373 percent in 1984, before a successful stabilization program reduced its level to 5.2 percent in 1999 and to just 1.3 percent on a 12-month basis as of January 2000. The stabilization program undertaken by the authorities in mid-1985 consisted of several elements: a substantial reduction of the fiscal deficit via cuts in expenditure and increases in taxation; a tightening of monetary policy, featuring increases in reserve requirements and the discount rate and the elimination of central bank financing of the budget deficit; the establishment of a nominal anchor for the sheqel (of NIS 1.5 per U.S. dollar); and the temporary suspension of wage indexation accompanied by a three-month freeze on the prices of virtually all goods and services.[2] Inflation fell rapidly following the introduction of the package, dropping to just 20 percent on a 12-month basis by the second half of 1986. Since then the decline in the inflation rate has been very slow, with inflation generally remaining in the range of 15-20 percent between

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[1] Prepared by Philip Gerson.

[2] See Fischer and Orsmond (1999) for more information on the stabilization program.

1986 and 1991, dropping to about 10 percent between 1992 and 1997, and finally falling to the mid-single digits since mid-1997 (see Figure 1).

4.      Figures 1 through 5 provide information on consumer price inflation, real output growth, inflation in imported goods prices (in U.S. dollar terms), interest rates, the nominal and real exchange rate versus the U.S. dollar, and the unemployment rate over the period 1989–99. As shown in Figure 1, real output growth has been fairly high over the period, averaging about 4½ percent on an annual basis, but has also been subject to considerable variation, reaching peaks of about 10 percent in the first quarter of 1992 and the third quarter of 1995, both of which were short-lived. The very rapid rates of growth achieved in the early 1990s reflect in part the very rapid influx of immigrants during that period. Figure 1 also suggests that since the early 1990s there has been some tendency for output growth and consumer price inflation to move together. This trend was particularly pronounced in period 1992–93, when inflation and output growth both declined sharply, and in the period since about 1996, when inflation and output growth have both been on a downward trend. With the exception of two isolated instances in 1991 and 1995, import price inflation has been moderate (Figure 2). From mid-1996 through mid-1999 import prices actually fell, which may in part explain the improved overall inflation performance during those years, but import prices have rebounded sharply since then with no attendant increase in domestic inflation.

5.      Figure 3 shows the behavior of the nominal interest rate differential relative to the United States, which is defined here as the difference between the Bank of Israel's discount rate and the Fed Funds rate in the United States. The nominal differential remained in the neighborhood of around 8 percent over much of the period, but since mid-1996 has been on a downward path (although this was temporarily reversed in late 1998 in the wake of the Russia/LTCM crisis). The chart also shows the behavior of the real Bank of Israel discount rate, defined here as the interest rate at time $t$ minus the actual 12-month rate of consumer price inflation in period $t+4$. The nominal exchange rate has generally depreciated smoothly over the period 1989–99, although the Russia/LTCM crisis did lead to a sharp increase in the rate of depreciation at the end of 1998, part of which was subsequently offset (Figure 4). However, the real effective exchange rate (CPI-based) appreciated over much of the period, other than in the fourth quarter of 1998.[3] Finally, following a steady rise in unemployment in the early 1990s, the unemployment rate declined steadily from a peak of 11.4 percent in the first quarter of 1992 to 6.4 percent in the second quarter of 1996 (Figure 5). Since then, and coincident with the slowdown in real output growth, the rate of unemployment has tended to increase.

## B.  Literature Review

6.      The link from interest rate policy to economic activity and inflation has long been a subject of interest for both academic economists and policy makers. In principle, changes in interest rates

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[3] In the figure, an increase in the index is equivalent to a depreciation.

**Figure 1. Israel: Consumer Price Inflation and Real Output Growth, 1989-99**
**(12-month rate of change)**
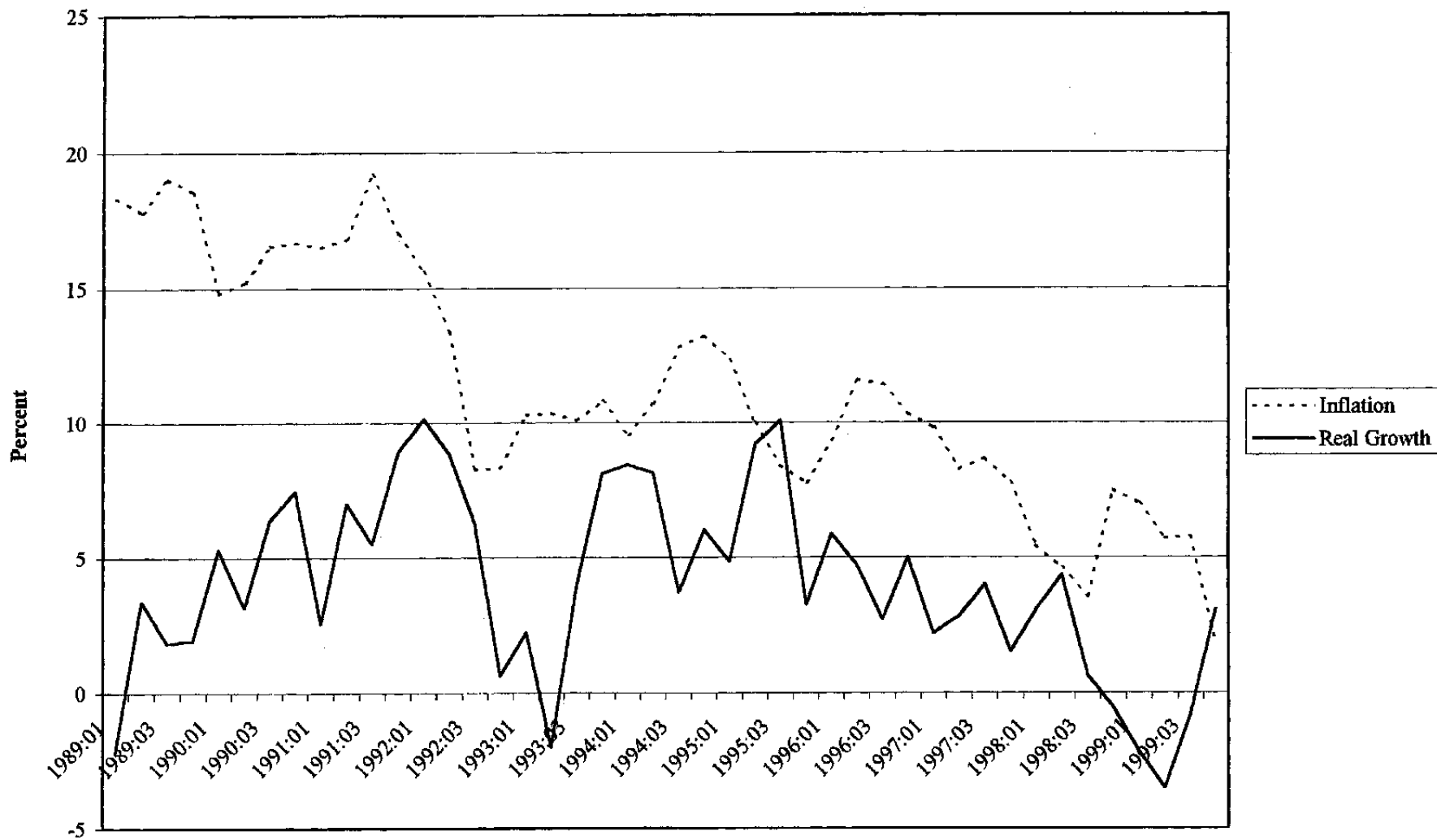
**Figure 2. Israel: Changes in Import Prices, 1989-98**
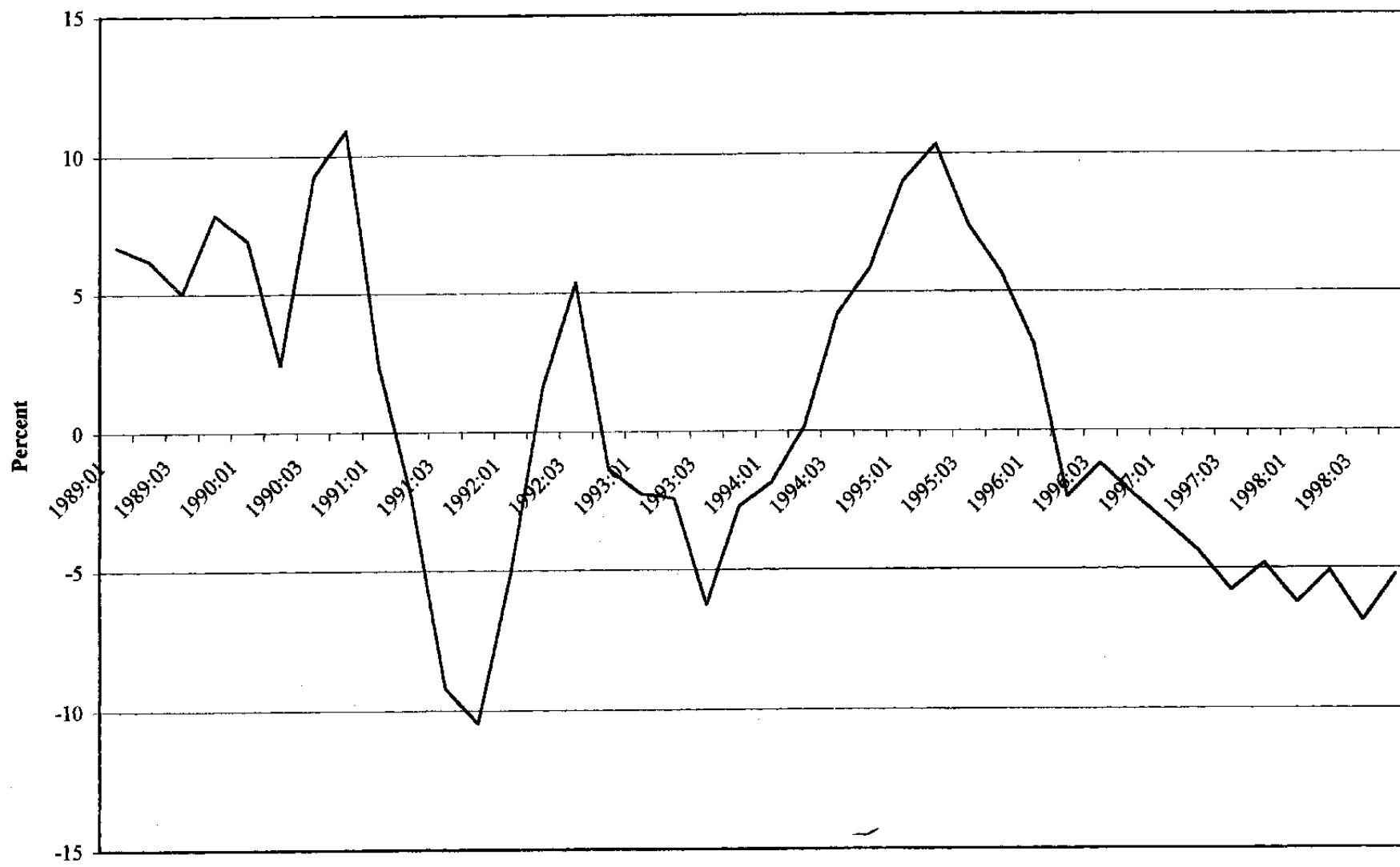
## Figure 3. Israel:Nominal Interest Rate Differential vs. United States and Real Interest Rate, 1989-99
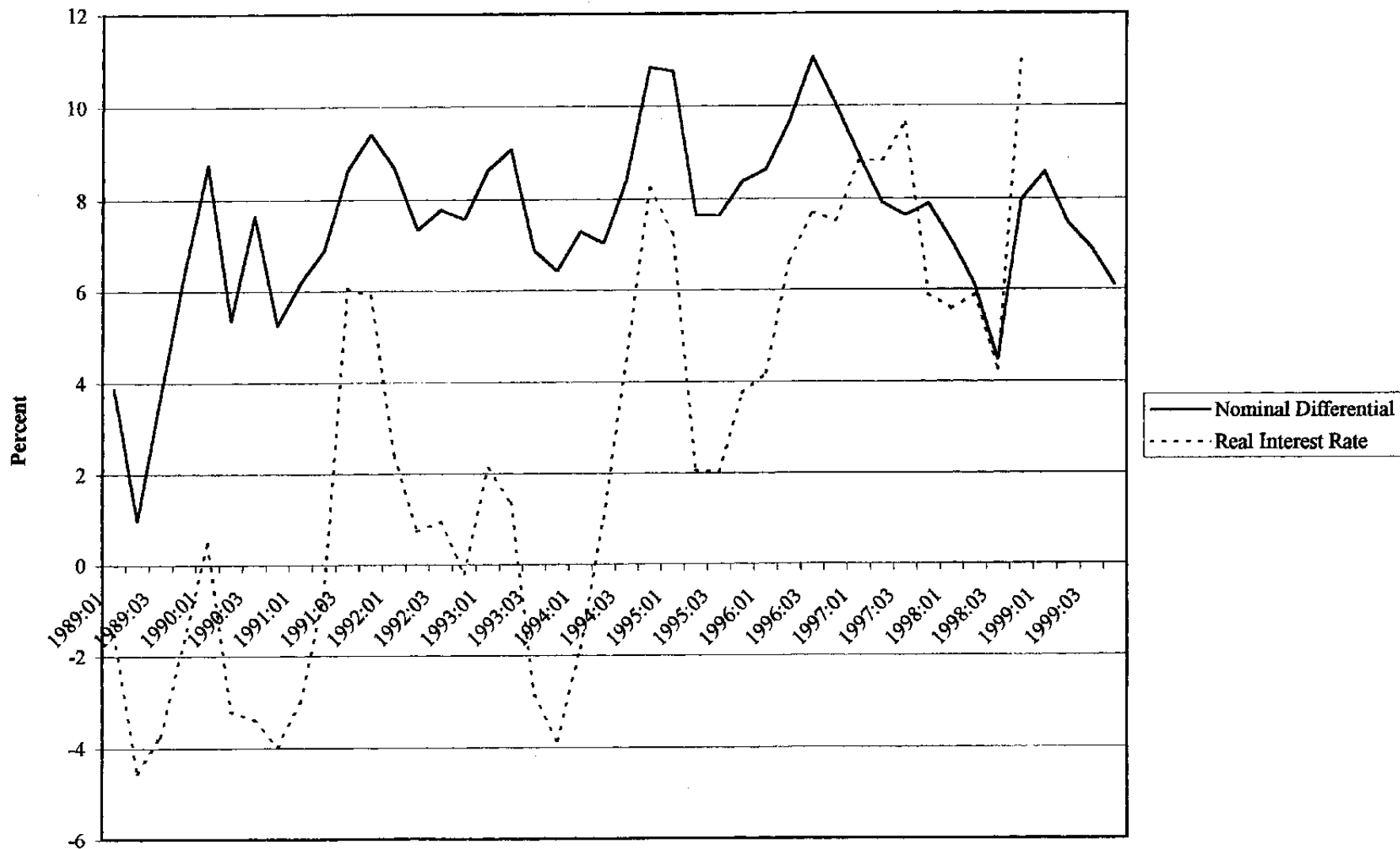
**Figure 4. Israel: Nominal and Real Exchange Rate versus US dollar, 1989-99**
(1988:4=1)
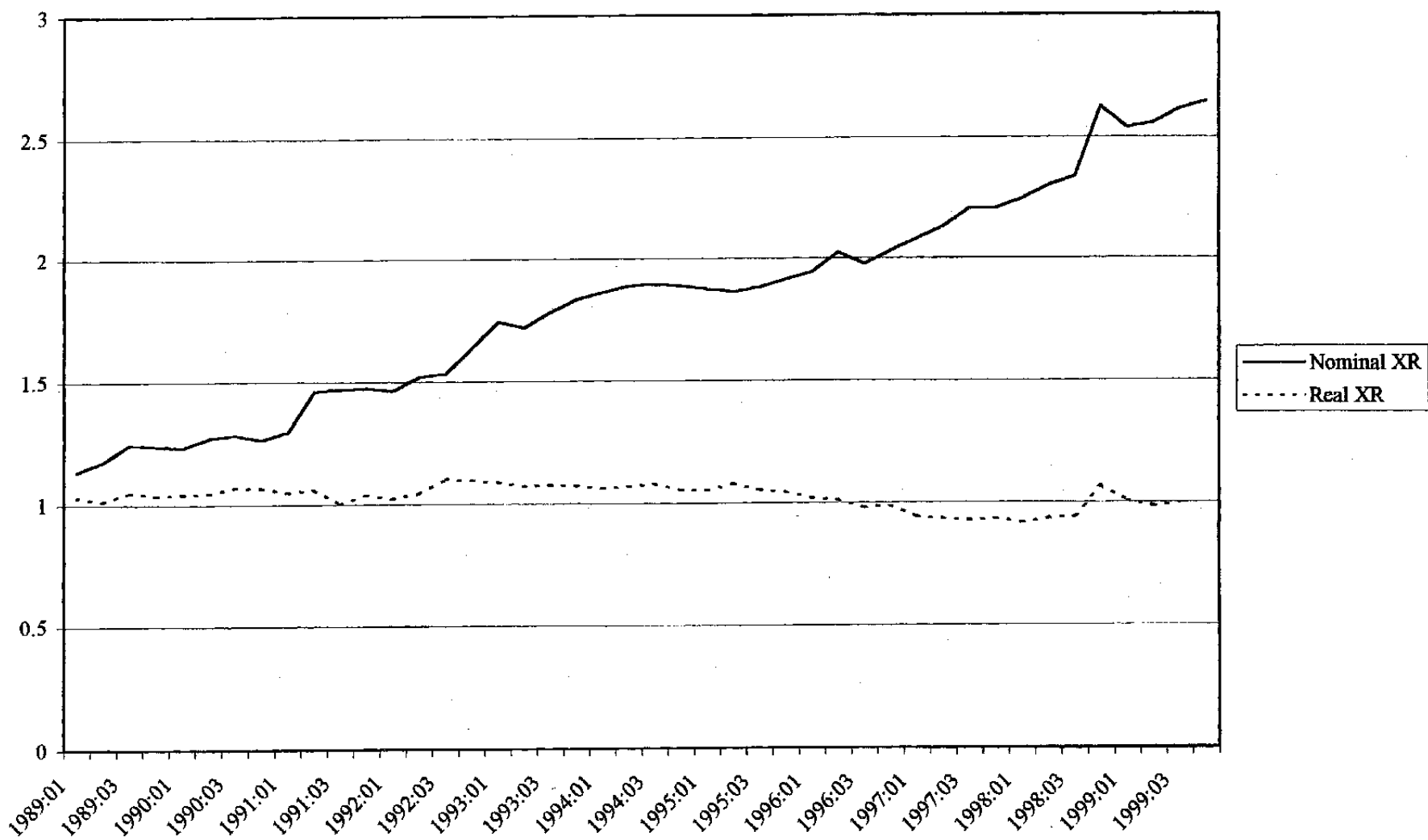
Figure 5. Israel: Unemployment Rate, 1989-99
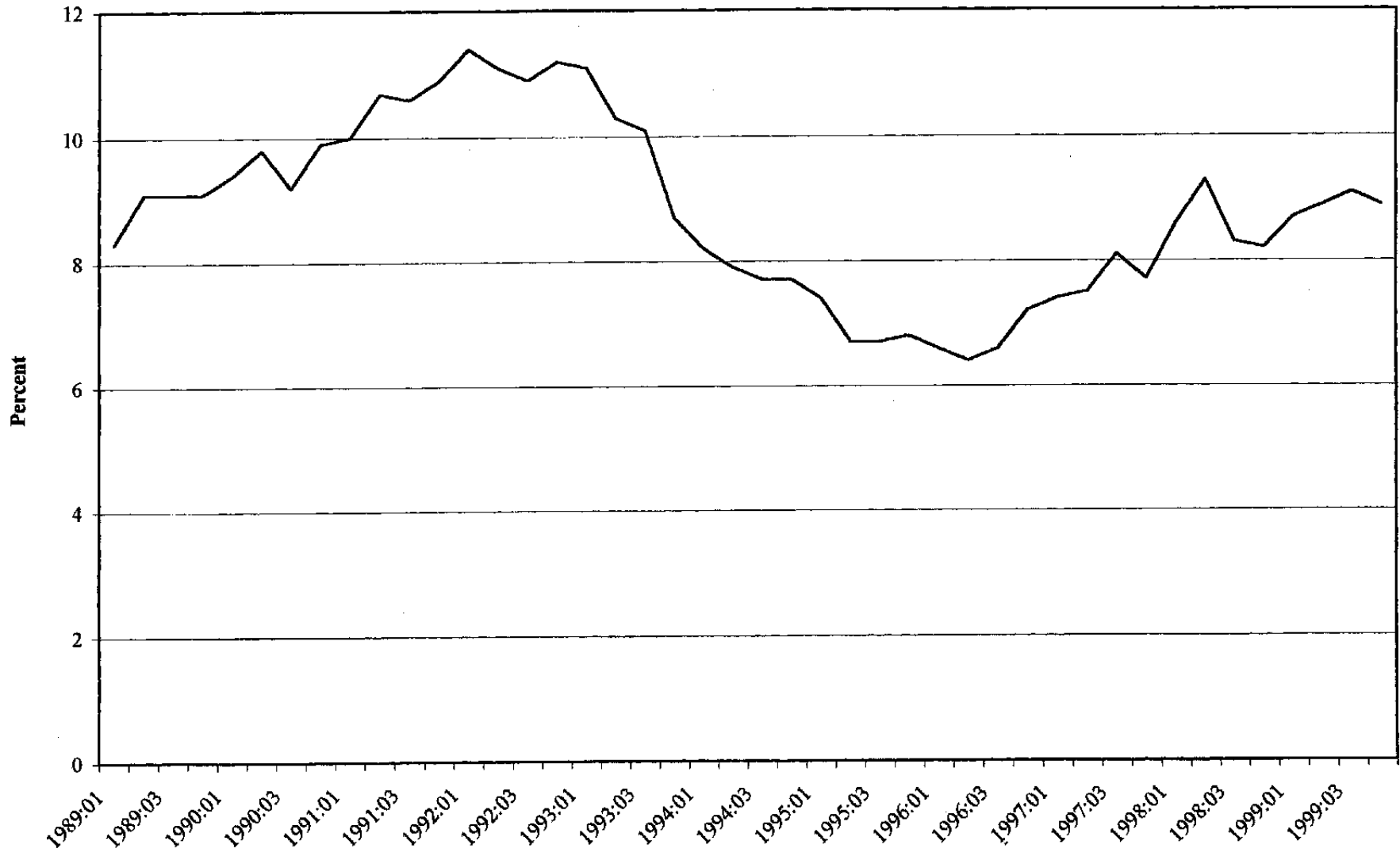
can affect prices and real output through a variety of channels, which are known collectively as the "transmission mechanism."[4] In general, changes in policy-determined interest rates can affect real output through three channels. First, higher real interest rates affect demand directly through a variety of ways. For example, an increase in interest rates reduces fixed and inventory investment by firms and makes debt-financed expenditures (such as for consumer durables) by individuals more expensive. It also increases the return to saving and produces a negative wealth effect by reducing the value of household and firm assets (the future returns from which are now discounted at a higher interest rate), both of which will reduce consumer expenditure. Second, an increase in interest rates will tend to lead to an appreciation of the exchange rate in foreign currency markets, shifting relative prices in favor of imported goods, with negative repercussions for domestic output. Finally, changes in official interest rates can affect output by altering individuals' expectations about the future course of the economy, which obviously will have implications for their spending and investment decisions.

7.     Similarly, the transmission mechanism from real interest rates to inflation works through more than one channel. First, as noted above, an increase in domestic interest rates will tend to lead to an appreciation of the exchange rate, making imported goods cheaper (and possibly forcing domestic producers of tradables to reduce their prices as well). This will have a direct, negative impact on the domestic price level. Second, to the extent that higher interest rates lead to a reduction in domestic output and demand (for the reasons discussed above), this will tend to put downward pressure on domestic employment and hence wages, also contributing to a reduction in prices. Finally, as was the case with output, increases in interest rates may have an impact on the expectations of individuals and firms regarding the future course of the economy, which would also affect the price level and inflation.

8.     Studies of the transmission mechanism, and of the impact on monetary policy on output and prices more generally, tend to concentrate on two related questions. First, what impact, if any, does monetary policy (and especially unanticipated changes in monetary policy) have on key variables? Second, how long is the lag between changes in monetary policy and changes in output, inflation, and other variables of interest? Summarizing the now substantial body of work addressing these questions, Christiano and others (1998) state

> [T]here is considerable agreement about the qualitative effects of a monetary policy shock in the sense that the inference is robust across a large subset of the identification schemes that have been considered in the literature. The nature of this agreement is as follows: after a contractionary monetary policy shock, short-term [nominal] interest rates rise, aggregate output, employment, profits and monetary aggregates fall, the aggregate price level responds very slowly, and various measures of wages fall, albeit by very modest amounts. In addition, there is agreement that

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[4] See Bank of England (May 1999) and Reifschneider and others (1999) for nontechnical descriptions of the transmission mechanism of monetary policy.

monetary policy shocks account for only a very modest percentage of the volatility of aggregate output; they account for even less of the movements in the aggregate price level. (page 4).

The increase in domestic interest rates would also be expected to lead to an appreciation of domestic currency in foreign exchange markets, a result that is confirmed by Eichenbaum and Evans (1995) for the United States, Clarida and Gertler (1997) and Smets and Wouters (1999) for Germany, and Cushman and Zha (1997) for Canada.

9.      With respect to the lags in the transmission mechanism, Christiano and others (1998) find that it takes about two quarters for a monetary policy shock to affect output in the United States, with the largest decline occurring about 18 months after the shock occurs. They also find that it takes about 18 months for the general price level (the GDP deflator) to begin to decline. Similarly, policy simulations undertaken by the Bank of England (1999) find that a monetary contraction leads reasonably quickly to a decline in output that reaches a maximum (of between 0.2 percent and 0.4 percent for each 100 basis points increase in interest rates) after about five quarters. Inflation does not begin to decline until the second year following a monetary contraction, and the maximum impact—a decline of between 0.2 and 0.4 percent in the inflation rate for each 100 basis points increase in interest rates—does not occur until the ninth quarter after the policy shock. Eichenbaum and Evans (1995) find the U.S. dollar exchange rate appreciates for a long period of time following a monetary policy tightening, with the maximum impact being felt 24 to 39 months following the monetary contraction, depending on the particular exchange rate being examined. By contrast, Cushman and Zha (1997) find that for Canada, a monetary tightening leads to an immediate appreciation of the nominal and real exchange rates vis-à-vis the U.S. dollar, but that most of the appreciation has worn off after 12 months.

10.     In simulations conducted using the macroeconometric models maintained by the central banks of a number of euro-area countries (reported in BIS, 1995), cuts in nominal policy interest rates in Germany, Italy, and France are found to have their maximum impact on real output in the year following the interest rate cut, with a temporary 100 basis point cut in short-term interest rates leading to an increase in output of 0.4-0.5 percent of GDP. The maximum impact on inflation (which as in the United Kingdom is on the order of 0.2–0.4 percentage point for a 100 basis point interest rate cut) occurs two years after the cut in Germany and France, but in the same year as the interest rate cut in Italy. The difference presumably reflects the fact that the interest rate cut affects the exchange rate much more rapidly in Italy than in the other two countries: the maximum impact of an interest rate cut is felt in the same year as the cut in Italy, but only in the following year in Germany and France.

11.     A number of papers have examined empirically the impact of interest rates on other variables in Israel. Azoulay and Elkayam (1999) develop a structural model of the Israeli economy using quarterly data covering the period 1988 to 1996. They find that an increase in real interest rates (defined as the nominal interest rate minus expected inflation, itself a function of lagged inflation rates) leads to a temporary reduction in inflation. In addition, an increase in real interest rates leads in the short term to a reduction in output growth but in the medium term to higher

output growth. However, this latter result likely reflects the fact that the authors hold the nominal exchange rate constant in their analysis: the fixed nominal exchange rate combined with the decrease in the inflation rate induces a real depreciation of the sheqel that serves to spur output growth. Leiderman and Bar-Or (1999) estimate a reduced-form equation for inflation (using data from the period 1990 to 1998) that includes current and lagged real interest rates, here defined as the nominal rate minus expected inflation derived from the difference between the yield on inflation-indexed and noninflation-indexed sovereign debt. They find that a permanent 1 percentage point increase in real interest rates leads to a decline of about 1.7 percentage points in the inflation rate.[5] Leiderman and Bar-Or also find that the pass-through from the nominal exchange rate to the price level is about one-half or that a 1 percent depreciation of the sheqel vis-à-vis the dollar leads to a 0.5 percent increase in the price level. However, the extent of the pass-through is sensitive to the business cycle, with the impact of nominal depreciations on the price level being somewhat lower when the economy is at less than full employment.

12. Swagel (2000) estimates a structural VAR involving real output, the real exchange rate, and the margin between real interest rates in the United States and Israel, among other variables.[6] He finds that a 100-basis point increase in real interest rates leads to a decline of about ¼ percent in the price level, to an appreciation of about 1 percent in the sheqel-dollar exchange rate, and to a decline of about 0.2 percent in real output. He also finds that about 20 percent of the impact of a depreciation of the sheqel is passed through to higher prices. Using a different approach—the "narrative approach" as developed by Romer and Romer (1989)—De Fiore (1998) examines the impact of three episodes of monetary tightening in Israel during the 1990s.[7] Comparing actual levels of industrial production, the exchange rate, and other variables after the tightening to those that would have been forecasted in the absence of the policy tightening, she finds that monetary policy had relatively small effects on industrial production and that a tightening of monetary policy was always followed by an appreciation of the nominal exchange rate, although only in two of the three episodes that she studied did an appreciation of the real exchange rate also occur.

13. Beenstock and others (1994), using a structural model of the Israeli economy covering the period 1962-90, find that some 80 percent of the impact of a nominal devaluation is passed through to higher prices. Idiosyncrasies in their model result in interest rate policy having little

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[5] They state that when nominal interest rates and inflation expectations enter the regression separately, the coefficients on the two variables are similar to that obtained on the real interest rate variables, suggesting that an increase in nominal rates would have a roughly identical impact on inflation.

[6] A preliminary summary of his results is contained as an appendix to Fischer and Orsmond (1999).

[7] Specifically, she looks at episodes of monetary tightening in October 1991, September 1994, and May 1996, all of which she identifies as occurring in response to excessive inflation.

impact on real output. Leiderman and Razin (1988) use a VAR to examine the interaction of the trade deficit, the exchange rate, the inflation rate and the money supply. They find that nominal exchange rate shocks have temporary effects on the inflation rate and permanent effects on the price level.

### C. Modeling the Economy Using Vector Autoregression Methods

14. VARs have become the tool of choice for investigations of the monetary transmission mechanism, and are the technique adopted in this paper as well. One of the advantages of the VAR approach is that it eliminates the need to specify a specific structural model of the economy by modeling every endogenous variable in the system as a function of its own lagged values and those of the other endogenous and exogenous variables, as well as any deterministic variables included in the model. A VAR with $k$ endogenous variables, and $p$ lags can be expressed in the form:

$$Z_t = \Pi_1 Z_{t-1} + \Pi_2 Z_{t-2} + \ldots + \Pi_p Z_{t-p} + A\varepsilon_t \tag{1}$$

where $Z_i$ is a $k \times 1$ vector of endogenous variables, $\Pi_i$ is a $k \times k$ matrix of regression coefficients, $A$ is a $k \times k$ matrix whose diagonal elements are normalized to equal 1 but which may have arbitrary off-diagonal elements, and $\varepsilon_t$ is a $k \times 1$ vector of orthogonal error terms.

15. The analysis of the model consists of three stages. In the first stage, a decision is made about the variables and number of lags to include in the model, and estimation is conducted using ordinary least squares. Once the model is estimated, the resulting $\Pi$ matrices can be inverted to express $Z_t$ as a function of current and lagged regression errors $u$:

$$Z_t = \sum_{s=0}^{m} G_s u_{t-s} + H_m Y_{t-m} \tag{2}$$

Here the row i, column j element of $G_s$, $G_{ij,s}$ gives the response of $Z_{i,t+s}$ to a unit shock to $u_{j,t}$. In practice, the meaning of the regression errors $u_t$ is likely to be ambiguous because the possibility of contemporaneous correlation among variables included in the model means that each of the $u_{i,t}$ may potentially reflect the effects of all of the fundamental shocks $\varepsilon_{i,t}$ that are assumed actually to be driving variations in the economy. The second step of the analysis is therefore to make assumptions about which variables are contemporaneously correlated, and use these assumptions to decompose the regression errors into the orthogonal (i.e., independent) errors $\varepsilon_t$. Accordingly, although the use of VARs eliminates the need to specify a full model of the economy, it is not the case that the technique allows the researcher to be completely agnostic about how the variables of interest interact. The final step of the analysis is then to construct impulse response functions that chart the responses of variables over time to unit increases in the elements of $\varepsilon_t$.[8] We interpret a

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[8] See Bernanke (1986) or Sims (1986) for more details on the VAR methodology. See Cooley and Leroy (1985) for a critique of the methodology.

non-zero realization of the orthogonal error term related to the nominal interest rate differential as an unanticipated, temporary monetary policy shock: an increase or decrease in the interest rate differential that could not have been predicted based on the information available at time $t-1$. Even though the increase or decrease in the rate may persist for more than one period because of the autoregressive structure of the model, the shock itself is temporary because the error terms are assumed to be serially uncorrelated.

16.    The specification examined in this paper includes nine variables, and can be thought of as encompassing five equations (although in keeping with the VAR structure, all endogenous variables are regressed on lagged values of all the variables in the system):

$$XR = XR(PISR, PUSA, RDIFF) \tag{3}$$

$$PISR = P(W, XR, PM) \tag{4}$$

$$M = M(PISR, Y, RDIFF) \tag{5}$$

$$W = W(U, PISR) \tag{6}$$

$$Y = Y(PISR, PUSA, XR, RDIFF) \tag{7}$$

where    $XR$ equals the nominal exchange rate vis-à-vis the U.S. dollar;

$PISR$ equals the consumer price index in Israel;

$PUSA$ equal the consumer price index in the United States;

$RDIFF$ equals the nominal interest rate differential between the Israel and the United

States;

$W$ equals the nominal wage in Israel;

$PM$ equals the price of Israeli imports in U.S. dollars;

$M$ equals the money stock;

$Y$ equals real output in Israel; and

$U$ equals the unemployment rate in Israel.

Thus, Equation 3 describes the evolution of the nominal exchange rate vis-à-vis the US dollar as a function of prices in the United States and Israel and the nominal interest rate differential. In Equation 4, the price level in Israel is modeled as a markup over wages and imported goods prices (themselves a function of the exchange rate and the dollar price of imported goods). In Equation

5, money demand is modeled as a function of prices, real output, and the interest rate differential, while wages are modeled in Equation 6 via a Phillips' Curve relationship with prices and the unemployment rate. Finally, Equation 7 states that real output is a function of the real exchange rate and the real interest rate differential. The model thus contains nine variables: consumer prices in Israel and the United States; the nominal differential between the Bank of Israel's discount rate and the Fed Funds rate in the United States; the nominal NIS-U.S. dollar exchange rate; M1; nominal wages; the seasonally-adjusted rate of unemployment;[9] real GDP; and the unit value (expressed in dollar terms) of imported goods.

17.     In the model, the primary transmission mechanism from interest rates to inflation is the exchange rate: an increase in the interest rate differential between Israel and the United States leads to an appreciation of the exchange rate (through Equation 3), reducing the price of imported goods and the overall price level. In addition, higher interest rates affect output through two channels: directly, through the influence of interest rates on investment and consumption; and indirectly, through an appreciation of the exchange rate that makes imports less expensive and exports more costly. Lower output, in turn, would put downward pressure on wages, which should further reduce the price level. The relative openness of the Israeli economy suggests that the transmission mechanism from interest rates to prices and output should operate fairly rapidly, as the tradables sector accounts for a large share of GDP and the consumption basket.

18.     Most previous studies of the impact of monetary policy on inflation and real variables in Israel have examined the effect of increases in real interest rates. By contrast, in this chapter we examine the impact of a tightening of nominal rates. The decision to concentrate on the impact of an increase in the nominal interest rate differential rather than the real rate differential reflects the fact that the policy instrument available to the authorities is in fact the nominal interest rate. Presuming that the authorities have the ability to manipulate the real interest rate begs the question of the impact of changes in the interest rate on inflation, which in fact is one of the key issues examined here. However, including the nominal interest rate in the VAR framework introduces complications of its own. Specifically, by including the nominal interest rate differential in the VAR, we are modeling it as an endogenous variable that responds to changes in other variables over time. At the same time, we want to treat the Bank of Israel's discount rate (and the associated differential versus the exogenous Fed Funds rate) as a policy variable that is manipulated by the authorities, and to chart the response of other variables to an autonomous shift in the differential. It is important to recognize at the outset that there may be some tension between the way the nominal interest rate differential is modeled and the way we wish to interpret it. This problem does not arise in studies that use the real interest rate differential as a variable, because even if the nominal differential is exogenous, the real differential will be endogenous due to the endogeneity of inflation.

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[9] No unadjusted data on unemployment were available.

19.     Augmented Dickey-Fuller Tests were conducted to determine the order of integration of each of the variables. While the nominal interest rate differential was found to be stationary, all other variables were found to be integrated of order 1. Subsequently, two-step Engle-Granger tests were conducted to look for cointegrating relationships among the other variables included in the model. The results of these tests (which are not reported here) indicate the presence of cointegrating relationships in all of the equations of the model except for that linking Israeli prices, wages, and the unemployment rate. Thus, all of the endogenous variables included in the model are either stationary or are cointegrated with at least one other variable with the exception of the unemployment rate.[10] This left three options: to include the unemployment rate in the VAR anyway; to drop the unemployment rate entirely from the model; or to difference the unemployment rate to make it stationary.[11] In the event, all three options were pursued and produced results that were generally equivalent. In what follows we report only the version in which the first difference of the log of the unemployment rate is included in the VAR.

20.     Based on the assumption that developments in Israel have limited impact on the economy of the United States and other large industrial economies, the U.S. price level and the unit value of imports in dollar terms are treated as exogenous in the analysis. In other words, while price developments in the United States are allowed to have an impact on the Israeli economy, changes in the modeled variables are treated as having no impact on domestic or export prices in the United States.

21.     The model was estimated using quarterly data covering the period 1988–98, to restrict attention to the post—stabilization period.[12] In addition to the variables listed above, a constant term and three seasonal dummies were included in the regression. In addition, following the specification contained in Swagel (2000) a dummy term was included to allow for a break in the mean starting in the first quarter of 1992 as a result of the wave of Russian immigration. With the

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[10] The nominal wage is cointegrated with Israeli prices, the exchange rate, and import prices in the markup equation.

[11] The issue of whether stationarity or cointegration of variables is necessary in a VAR framework is unsettled, but most empirical studies have tended to opt for differencing when data are not stationary and cointegrating relationships are not present.

[12] The use of quarterly data was motivated by practical considerations. First, data on real output and unemployment are available only on a quarterly basis. Secondly, when the VAR was estimated using monthly data (including interpolated monthly observations for the output and unemployment series) the resulting impulse response functions did not display sensible behavior among variables of interest, presumably because of noise in the monthly series.

exception of the dummies and the nominal interest rate differential, all variables were expressed in natural logarithms.[13]

22.     As noted above, creating impulse response functions that chart the impact on a set of variables from innovations in another requires moving from the vector of regression errors $u(t)$ to the vector $\varepsilon(t)$ of orthogonal error terms (or "innovations") that are assumed actually to be driving variations in the economy. Carrying out this decomposition of error terms requires the imposition of restrictions on the contemporaneous interactions among variables. One common set of restrictions is to apply a recursive ordering of the variables. Instead, following Bernanke (1986) and Sims (1986), we make assumptions about which variables are likely to display contemporaneous correlation, and use these restrictions to decompose the errors. Specifically, we assume that prices respond to innovations in the exchange rate and in wages within the same quarter, while output is affected contemporaneously by unemployment innovations.[14] The exchange rate is assumed to respond within the same quarter to innovations in all variables except the unemployment rate, while wages respond to within-quarter innovations in only the price level

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[13] Given the relatively short sample period and the large number of variables included in the estimation, selecting the appropriate number of lags requires striking a balance between accurately reflecting the dynamics of the system and preserving degrees of freedom. The 42 observations covered by the sample period could in principle allow the inclusion of up to two lags on each of the endogenous variables. In the version in which the unemployment rate is excluded from the analysis, up to three lags could be included. However, impulse response functions for the variables of main interest were not substantially affected by the number of lags included in the estimation, suggesting that the relationships of interest are robust to the exact specification adopted, and the results in the remainder of this section are based on a VAR with one lag.

Jarque-Berra tests for residual normality, Ljung-Box tests for residual autocorrelation, and Lagrange multiplier tests for residual autocorrelation and a residual autoregressive conditional heteroscedasticity did not reject the null hypotheses of normality and no residual autocorrelation at 5 percent significance levels, with the exception of the normality tests for the inflation differential, where normality of the residuals was decisively rejected. This rejection may reflect the short sample period. Alternatively, it could reflect the fact that the interest rate differential is not fully endogenous.

F and $\chi^2$ tests rejected at least the 5 percent significance level the null hypotheses that the coefficients on the constant term, on the seasonal dummies, and on the dummy for the structural break in 1992 were equal to zero in each of the regressions, and these deterministic regressors were therefore retained.

[14] Modifying this assumption so that output is contemporaneously uncorrelated with unemployment has no impact on the results that follow. Likewise, allowing output shocks to contemporaneously affect unemployment does not meaningfully alter the results.

and unemployment. Thus, all variables have a contemporaneous impact on the price level either directly (in the case of wages and the exchange rate), or indirectly via their effect on wages and/or the exchange rate. Current period money demand is directly affected by innovations in prices, output, and the interest rate differential, while the interest rate differential and the unemployment rate respond to innovations in other variables with a one period lag. A $\chi^2$ test of the 8 overidentifying restrictions has a p-value of 43 percent, meaning that the restrictions are not rejected at a moderate significance level.

23. The estimated contemporaneous coefficients (with standard errors in parentheses) are as follows:

### Prices

$$P = \underset{(0.131)}{0.007}XR - \underset{(0.980)}{0.193}W + e_P \tag{8}$$

### Exchange rate

$$XR = \underset{(0.492)}{1.133}P + \underset{(0.279)}{0.333}W - \underset{(0.002)}{0.004}RDIFF - \underset{(0.192)}{0.023}Y + \underset{(0.125)}{0.090}M + e_{XR} \tag{9}$$

### Wages

$$W = \underset{(0.978)}{0.551}P + \underset{(0.035)}{0.041}U + e_W \tag{10}$$

### Output

$$Y = \underset{(0.054)}{0.008}U + e_Y \tag{11}$$

### Money demand

$$M = -\underset{(0.360)}{0.396}P - \underset{(0.001)}{0.010}RDIFF + \underset{(0.216)}{0.618}Y + e_M \tag{12}$$

### Interest rates

$$RDIFF = e_{RDIFF} \tag{13}$$

### Unemployment

$$U = e_U \tag{14}$$

Where   XR equals innovations in the exchange rate;

$P$ equals innovations in the price level;

$RDIFF$ equals innovations in the nominal interest rate differential;

$W$ equals innovations in the nominal wage;

$U$ equals innovations in the unemployment rate;

$Y$ equals innovations in real output; and

$M$ equals innovations in nominal M1.

As an aid in interpreting these results, the first equation states that innovations in the price level are found to depend positively on innovations in the exchange rate and negatively on innovations in wages as well as on the error term $e_P$ ; the second states that innovations in the exchange rate are found to depend on innovations in prices (positively), wages (positively), the interest rate (negatively), output (negatively), and money (positively), as well as on the error term $e_{XR}$ .

24.     Most of the contemporaneous correlations are of the expected sign, although many are not statistically significant. The low t-statistics imply that there is a large region of parameter space that implies a covariance matrix for the VAR innovations similar to that found in the data. Nevertheless, there are some interesting results. Innovations in the domestic price level are found to contemporaneously correlate positively with innovations in the nominal exchange rate (i.e., with depreciations of the sheqel) and vice versa, while innovations in the nominal interest rate differential (which can be interpreted as a tightening of monetary policy) are found to correlate negatively with innovations in the exchange rate (or positively with exchange rate appreciations). Money demand innovations are found to correlate positively with real output innovations and negatively with real interest rate innovations. Two puzzling correlations involve the unemployment rate, which is found to correlate positively (albeit weekly and not significantly) with real output and wages. These findings could reflect the changing composition of the labor force with the shift of production toward more high technology areas, as wages and output rise overall but lower-skilled workers experience greater unemployment. The negative (albeit statistically insignificant) correlation between wage shocks and price level shocks in Equation 8 is also counterintuitive, although price level innovations do have a positive contemporaneous impact on wages in Equation 10.

25.     Figures 6 and 7 illustrate the response of the exchange rate, money demand, inflation and output growth to an unanticipated monetary tightening, as represented by a positive realization of $e_{RDIFF}$ . The figures represent the dynamic effects of the contemporaneous correlations identified in Equations 8 through 14, augmented by the impact on each of the variables of changes in lagged variables. The results are consistent with the characterization of the transmission mechanism in the description of the model. As expected, higher nominal interest rates lead to an appreciation of the sheqel that tends to drive down the price level. In addition, higher interest rates reduce the

Figure 6. Israel. Impulse Responses of Variables to 1 Percentage Point Increase in Nominal Interest Rates
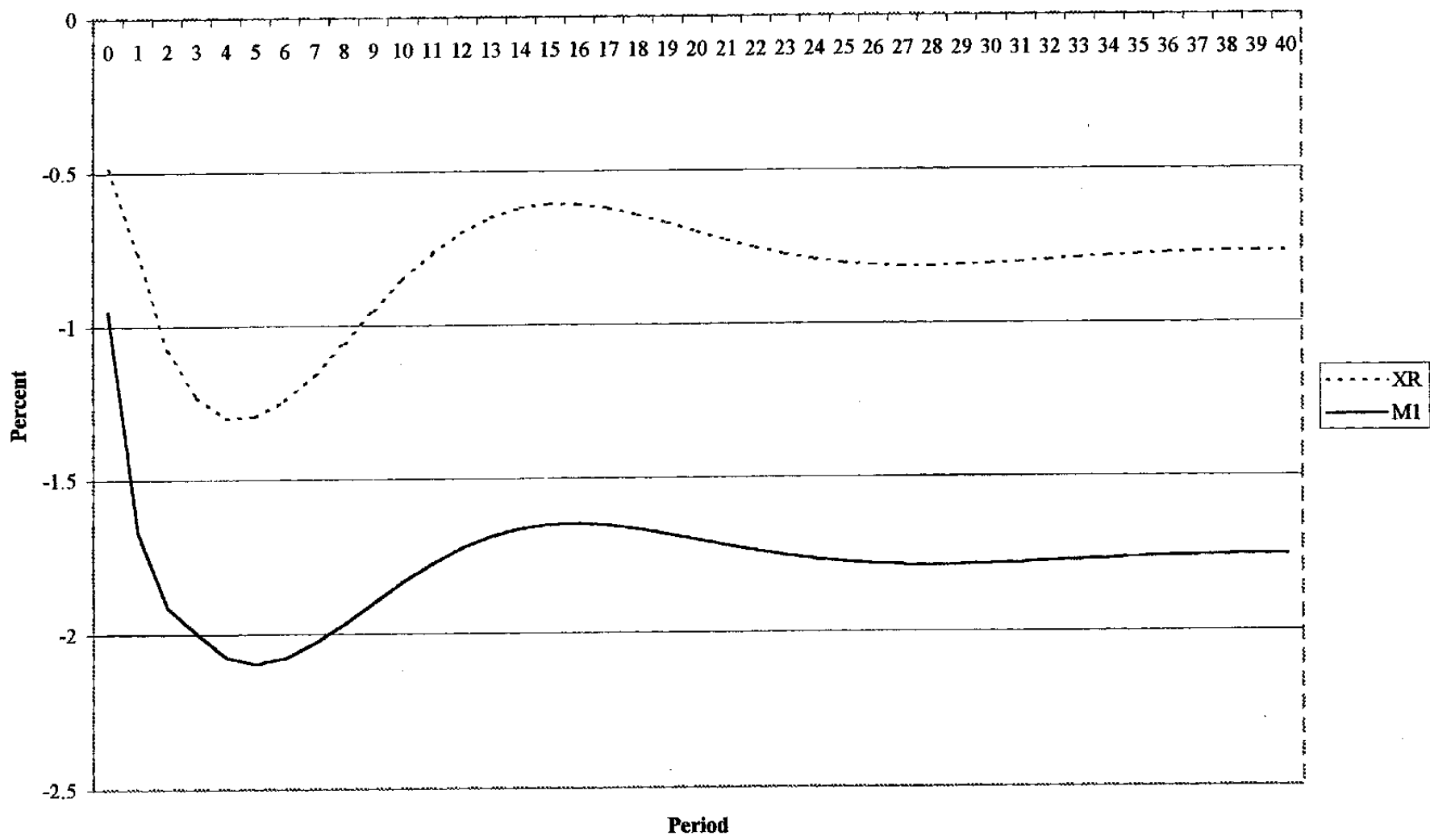
Figure 7. Israel. Impulse Responses of Inflation and Real Output Growth to 1 Percentage Point Increase in Nominal Interest Rates
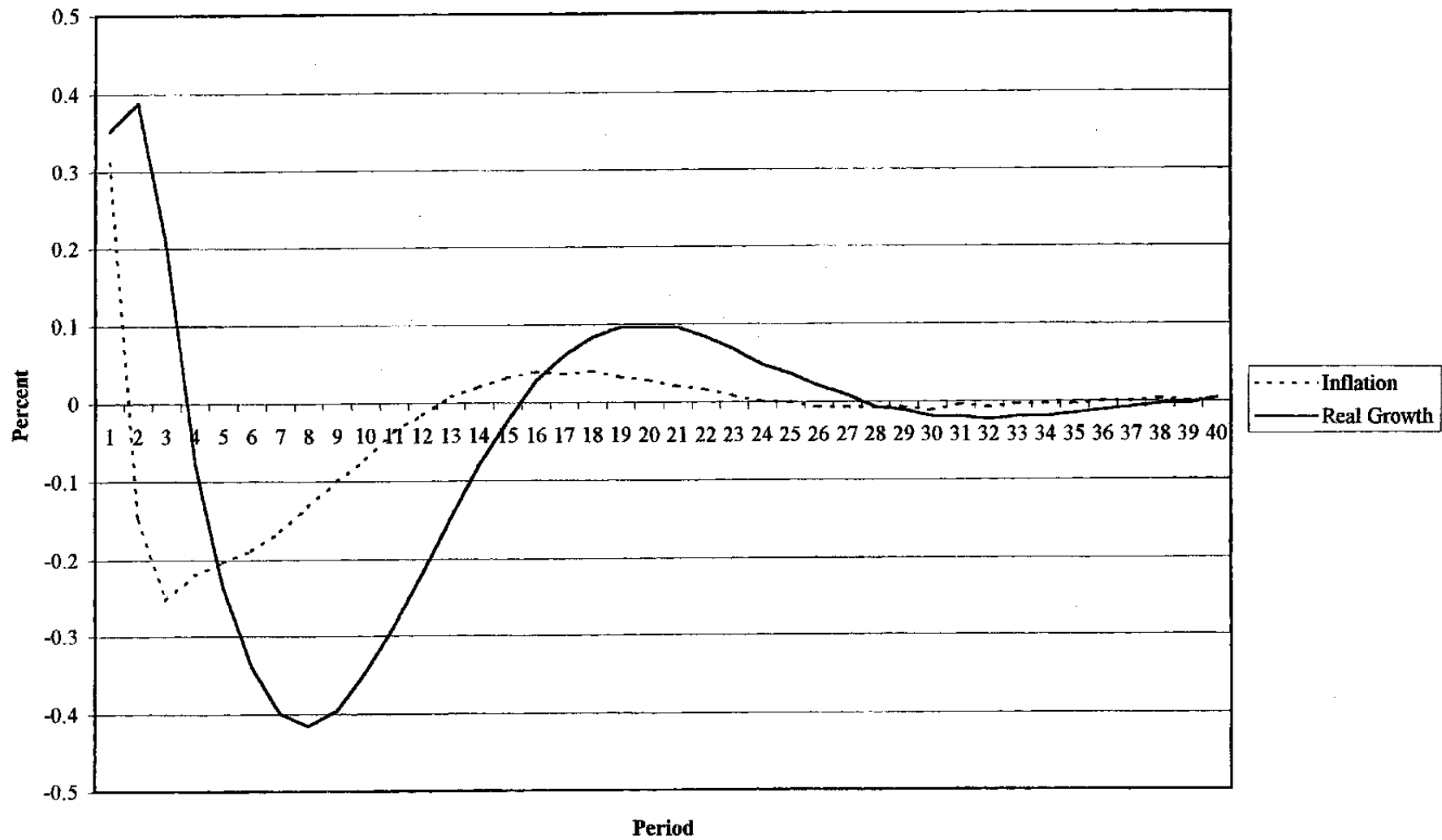
demand for money. More specifically, the results suggest that a one percentage point (100 basis points) increase in the nominal interest rate differential between Israel and the United States leads to an immediate appreciation of the nominal exchange rate of 0.5 percent and an immediate 1 percent decrease in the demand for money. By the first quarter following the monetary tightening, the exchange rate has appreciated by nearly ¾ of a percentage point, while money demand has declined by about 1.7 percent. Some 12 quarters following the interest rate increase, the nominal exchange rate has appreciated by about ¾ percentage point, and money demand has fallen by about 1¾ percent.

26.     After an initial increase, the inflation rate declines with the annual rate of inflation falling by about ¼ percentage point three quarters following the shock. The impact of a monetary tightening on *inflation* is essentially zero by the tenth quarter following the shock. The initial jump in the inflation rate following an increase in nominal interest rates may reflect reverse causality: the monetary authorities are likely to respond to an increase in the inflation rate by raising nominal interest rates, resulting an a positive short-run correlation between the two. The fact that the impact on inflation turns negative by the second quarter—with the maximum impact being felt in the third quarter—suggests that the transmission mechanism from interest rates to inflation operates somewhat more rapidly in Israel than in France, Germany, the United States and the United Kingdom, where other studies have found that it can take up to two years for an interest rate hike to have its maximum impact on the price level. The more rapid operation of the transmission mechanism in Israel could reflect a number of factors, including the very open nature of the economy (and the consequent importance of the exchange rate in determining the price level) and the relatively high level of wage indexation that persists as a legacy of the high inflation past.

27.     Real output growth is positive in the first three quarters following an increase in interest rates (Figure7), but turns negative by the fourth quarter following the monetary tightening. Again, this may reflect in part reverse causality, in the sense that the authorities may tighten monetary policy when output growth accelerates, leading to a short-run positive correlation between interest rates and output growth. The fact that it takes until the fourth quarter following a tightening for output growth to turn negative suggests that the transmission mechanism from interest rates to real output growth is somewhat slower than that from interest rates to inflation, a finding that differs from those of studies of other countries, where the transmission mechanism from interest rates to output has typically been found to operate more rapidly than that to prices. The maximum impact of a tightening of monetary policy on output occurs 7–9 quarters  following the policy shock (during which the growth rate of real output is about 0.4 percent reduced), which is slightly slower than in other countries, where the maximum effect was found to occur after 5–6 quarters. The impact of monetary policy on real output growth is transitory, falling essentially to zero after about 28 quarters.

28.     Figure 8 provides information on the implied impulse responses of real variables. A 1 percentage point increase in nominal interest rates leads to an immediate increase in the real

Figure 8. Israel. Impulse Responses of Variables to 1 percentage Point Increase in Nominal Interest Rates
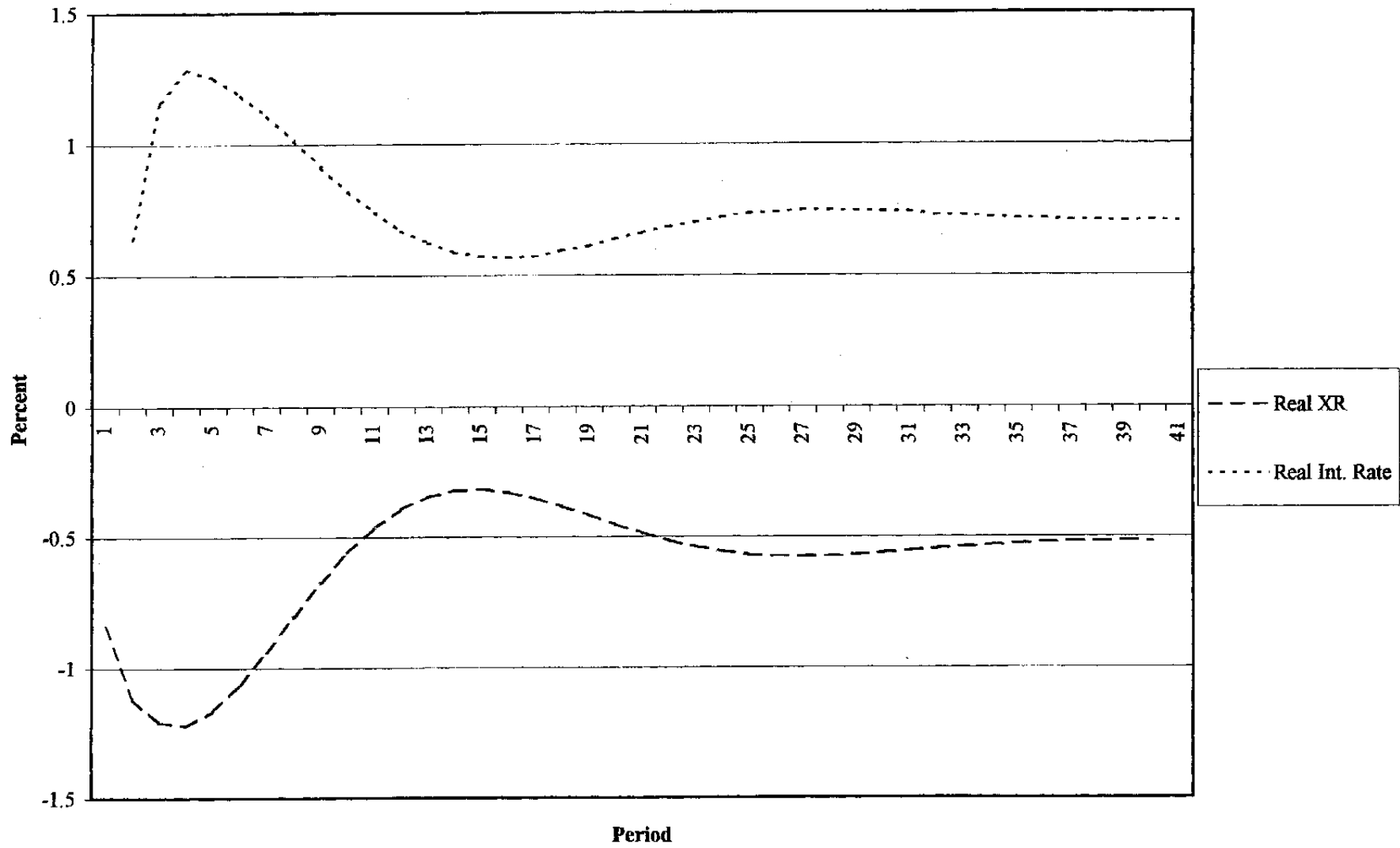
interest rate differential[15] (that briefly exceeds 1 percentage point) and to a sharp appreciation of the real exchange rate. Some 12 quarters following the nominal interest rate rise, the real exchange rate has appreciated by about ½ percent and the real interest rate differential has increased by about 2/3 percentage point.

29.     Moving to the impact of a shock to the exchange rate, the results indicate that a 1 percentage point increase in the exchange rate (i.e., a depreciation of 1 percentage point in the sheqel-dollar exchange rate) leads in the period immediately following to an increase of 0.1 percent in the price level. The pass-through of the exchange rate depreciation to the domestic price level proceeds for several following quarters, reaching a cumulative 40 percent (that is, an increase of 0.40 percentage points in the price level) after 12 quarters. The impact on inflation dies out by the twelfth quarter following the shock. The depreciation has a mild, positive impact on real output, albeit with a lag, with output growing by a cumulative one-third of a percentage point after 12 quarters (see Figure 9).

30.     Again, these results are consistent with the transmission mechanism from interest rates to output outlined in the description of the model. First, as expected, higher real interest rates lead to an appreciation of the exchange rate and a decline in real money balances (while both $M$ and $PISR$ fall, money demand falls more rapidly than the price level so $M/PISR$ declines by about 1½ percent). Higher interest rates are also associated with a decline in real output growth, meaning that the net impact of all these factors on output growth is indeed negative. Moreover, the impact of an exchange rate appreciation on output growth is negative, while positive liquidity shocks are expansionary. These results suggest that the specification of the model captures the impact of monetary policy on real output relatively well.

31.     Overall, the results of the VAR suggest that monetary policy can affect real interest rates, the real exchange rate, and real money demand. While the short-run impact of monetary policy on real output in the VAR is anomalous—with monetary tightening leading to faster output growth—increases in interest rates are also associated with lower real output growth in the medium term. However, the estimated elasticities are relatively small: for example, it would take nearly a 200 basis point shock to nominal interest rates to achieve an immediate 1 percent appreciation of the sheqel versus the dollar. Over a longer-term horizon, uncovered interest parity holds approximately, as the increase in the interest rate differential in the periods following the shock is approximately equal to the appreciation of the exchange rate of the sheqel.

32.     As expected, the results also suggest that monetary policy has an impact on reducing inflation and the price level. However, once again the estimated impact of a monetary tightening on the price level is rather small, with a 100 basis point tightening of interest rates leading to a decline in the inflation rate of about 0.3 percentage point three quarters later. Such a finding may appear difficult to reconcile with the sharp decline in inflation that has occurred over the last

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[15] With real rates defined as nominal rates minus the annualized rate of inflation in a given quarter.

Figure 9. Israel. Impulse Responses of Variables to a 1 Percent Depreciation of the Sheqel
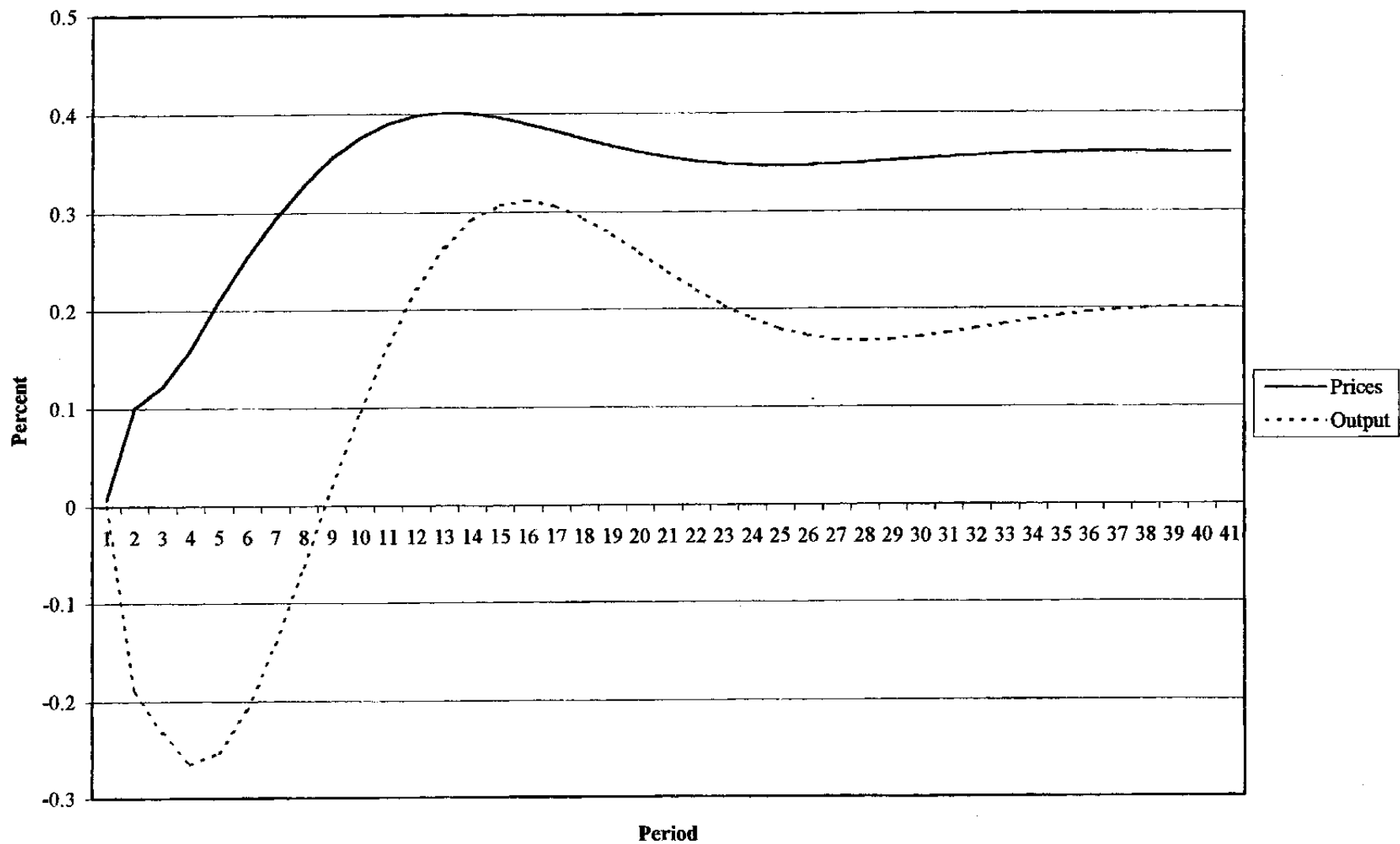


Period

decade and that has largely been attributed to the tight monetary policy pursued over that period. To be sure, other factors besides monetary policy have been at work in influencing the decline in inflation that occurred over the last decade. Among these may be variables that are not well-captured by the VAR setup but are likely to be of importance, including improvements in the credibility of macroeconomic policy or reductions in inflationary expectations that are independent of changes in the variables included in the study. Although the sample period was chosen to minimize the degree of structural change in the economy, structural changes may also have played a role in reducing the rate of inflation. For example, it has been conjectured that the widening of the sheqel's exchange rate band and the Bank of Israeli's policy of not intervening in the foreign exchange market has played an important role in containing inflation by reducing the sensitivity of prices to exchange rate movements.[16] To argue that other factors have also influenced the decline in inflation in no way implies that monetary policy did not also play an important role. More generally, the analysis conducted in this paper examines the impact of temporary and unanticipated shocks to monetary policy. The impact of permanent changes to the systematic components of monetary policy that seek to achieve a permanent, secular decline in the rate of inflation may be quite different from the short-term effects examined here.

33.     The results of the VAR are quite similar to those obtained by Swagel (2000), who finds that a one percentage point increase in *real* interest rates leads to a sustained decrease of about ¼ percentage point in the price level, a 1 percentage point appreciation of the exchange rate, and a 0.2 percent decline in the growth rate of output. He also finds that about 20 percent of the impact of a depreciation is passed through to higher prices. The results are similar as well to those of Bufman and Leiderman (1997), Leiderman and Bar-Or (1999) and Azoulay and Elkayam (1999), who also find that higher real interest rates lead to declines in the price level. The rate of pass-though is similar to that obtained by Leiderman and Bar-Or (1999), who report an average pass-though of about 45 percent. Leiderman and Razin (1988) find that a nominal exchange rate shock leads to a temporary increase in inflation and a permanent increase in the price level, which is also consistent with the results obtained here. Beenstock and others (1994) find that some 80 percent of the impact of a nominal devaluation is passed through to higher prices, twice the rate of pass-through found in this study. The higher rate of pass-through they find compared to that obtained in this study and in Swagel (2000) and Leiderman and Bar-Or (1999) could constitute some evidence in support of the hypothesis that changes in the Bank of Israel's exchange rate policy have led to a reduction in the sensitivity of inflation to movements in the exchange rate. De Fiore (1998) finds that interest rate increases have only a minor impact on real output, and that monetary tightening leads to an appreciation of the nominal exchange rate, consistent with the results obtained here. In general, the results are also consistent with those of studies of the transmission mechanism in G7 countries (see Christiano and others (1998) and BIS (1995), for

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[16] This argument asserts that while in the past producers could be certain that any depreciation of the sheqel would be permanent and therefore could immediately be reflected in prices, there is now a greater likelihood that depreciations will be temporary, and producers are therefore more hesitant to pass them along into prices.

example, as well as the other references in paragraphs 9 and 10) with respect to the magnitude of the impact of an interest rate shock on inflation and output although, as noted above, the transmission mechanism appears to operate somewhat more rapidly with respect to prices and more slowly with respect to output in Israel than in these other countries.

34.     Concerns about the treatment of the nominal interest rate differential as both an endogenous and a policy variable are alleviated to some extent by the empirical results. By assumption, shocks to the other variables have no contemporaneous impact on the nominal interest rate differential. However, even lagged values of the other endogenous variables have little feedback on the nominal interest rate differential: four quarters after a 100 basis point tightening of nominal rates, the nominal interest rate differential stands at 103 basis points. Even after 40 quarters, the differential remains above 70 basis points, suggesting that the nominal interest rate is only weakly affected by the other variables (consistent with its interpretation as a policy variable).

## D.  Conclusions

35.     This paper has examined the impact of unanticipated changes in nominal interest rates—monetary policy "shocks"—on a number of variables in Israel. The results suggest an unanticipated monetary tightening will generate temporary declines in both inflation and real output growth and a nominal and real appreciation of the exchange rate. The results also suggest that about 40 percent of the impact of an exchange rate depreciation are passed on in higher consumer prices. These results (and their magnitudes) are broadly consistent with those obtained by other authors in studies not only of Israel but also of a number of G7 countries. However, the maximum impact on inflation in Israel is felt just three quarters following the policy shock, much more rapidly than has been found in studies of France, Germany, the United Kingdom and the United States. On the other hand, the maximum impact on output is felt about two years after the interest rate hike, slightly later than in these other countries.

36.     These results have some important implications for the conduct of monetary policy in Israel. First, the very rapid transmission of interest rate movements to inflation means the Bank of Israel is in a better position to use interest rate hikes to counteract inflationary impulses than may be the case for central banks in countries where the transmission mechanism takes longer to operate. In addition, the relatively small impact of interest rates on inflation means that when output is well below potential and inflation is expected to be below or at the bottom end of the inflation target, there may be scope for the central bank to implement a cautious easing of monetary policy to provide some mild support to output growth without necessarily compromising the inflation target.

37.     Recent events contribute a sort of natural experiment (conveniently falling almost entirely outside the sample period for the empirical work) that broadly confirms the magnitudes of the estimated relationships among interest rates, inflation and the exchange rate. In November 1998 the nominal interest rate differential between Israel and the United States increased by 425 basis points, as the Bank of Israel raised the discount rate by 400 basis points in response to a spike in

inflation following the Russia/LTCM crisis, while the U.S. Federal Reserve reduced the fed funds rate by some 25 basis points. Nine months later, the rate of consumer price inflation had fallen by about 2 percentage points (from 8.2 percent to 6.3 percent on a year-on-year basis), compared to the 1 percent decline predicted by the VAR. The underlying rate of inflation—which excludes housing and fruits and vegetables—fell by exactly 1 percentage point (from 7.5 percent to 6.5 percent on a year-on-year basis). In the first quarter following the policy tightening the nominal sheqel-dollar exchange rate appreciated by about 3.8 percent (from an average of NIS 4.23 per dollar in November to NIS 4.07 per dollar in February), compared to an estimated appreciation of 3.2 percent in the VAR. Of course, the experience of 1998–99 does not precisely replicate the experiment conducted in this paper. First, some of the increase in the nominal interest rate differential may have been anticipated by agents. Perhaps more importantly, while the experiment in this paper traces the impact of a shock to monetary policy in an environment free of subsequent shocks to any variable, in fact all variables experience shocks—and react to those occurring to other variables—all the time. Nevertheless, the broad similarity of the empirical estimates of the impact of monetary policy on inflation and the exchange rate to the rough ratios calculated from the experience of late 1998 and 1999 do provide some additional evidence in support of the empirical findings.

38.     While the impact of monetary policy on real output is found to be small, the implied short-term trade off between output and inflation (the "sacrifice ratio") appears less so: according to the empirical results, an increase in interest rates sufficient to reduce the inflation rate by, say, 5 percentage points would lead to a cumulative decline in output on the order of about 8 percent. Does this result imply that in the absence of the roughly 10 percentage point decline in the annual inflation rate that occurred between 1993 and 1999, output would be 15 percent higher today than its current level? Such an inference would not be warranted. First, it is worth reemphasizing that while monetary policy was the main driving force behind the decline in inflation, other factors not well captured by the VAR were no doubt also at work. More fundamentally, however, it is important to recognize that the empirical work in this paper looked only at the impact of a one-time shock to monetary policy. The impact of such a temporary shock is likely to be quite different from that of a systematic and sustained policy of disinflation. Finally, while the empirical results suggest that the short run output costs of reducing high inflation are relatively large, in the long run such costs are likely to be zero or even negative, as agents fully adapt to the new, low inflation environment. While the empirical results do provide some insight into some of the ways that systematic, tight monetary policy may have contributed to the secular decline in inflation, for example by helping to stabilize and appreciate the exchange rate, one cannot use the sacrifice ratio arising from a one-time shock to monetary policy to assess the impact of a protracted policy of disinflation on output.

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## III. MONETARY POLICY PROCEDURES IN ISRAEL[1]

1.    This paper examines the procedures underlying the conduct of monetary policy in Israel by estimating a monetary policy reaction function. The period under examination is the era since 1991 which marked a significant reduction in inflation and an explicit inflation-targeting regime. This paper examines current monetary policy procedures in light of the literature on inflation targeting, especially the role of a capital-market-based measure of inflation expectations. In addition, the paper measures the volatility of the monetary policy instrument—the discount rate—under two policy reaction rules.

2.    Section A of the paper describes the current procedure of inflation targeting in Israel and one important element in its implementation, a market measure of inflation expectations. Section B assesses the statistical property of this inflation expectations measure and discusses the implication of pure inflation-expectation targeting using a nonstructural method. Section C presents the estimates of a monetary policy reaction function and rolling regression forecasts of the monetary policy variable based on an alternative monetary policy rule. Section D concludes.

### A.   The Monetary Policy in Israel

3.    Monetary policy in Israel was characterized by an excessively accommodative stance in the late 1970s and early 1980s which led to the triple digit inflation. The government launched a massive stabilization program in mid 80s, including a drastic reduction in the fiscal deficit, a significant tightening of monetary policy and the adoption of a nominal anchor. The move successfully brought inflation down to double-digit levels in the early 1990s. With the eruption of a series of exchange rate attacks in 1988 —1991 mainly reflecting the still high inflation differential between Israel and other industrial economies that was inconsistent with the fixed exchange rate, the Bank of Israel (BoI) gradually relaxed the nominal exchange rate anchor by widening the trading band around a fixed exchange rate against a currency basket and adopted explicit inflation targeting following the example of several other industrial countries.[2]

4.    The major policy change was initiated in December 1991 when Israel moved from an adjustable band to a preannounced crawling band. The band was widened in several steps to about ±18 percent around the midpoint rate in late 1999. The rate of crawl is asymmetric: 2 percent per year for the appreciated edge of the band and 4 percent per year for the depreciated edge. Even though inflation targeting is the main objective of the BoI, the interest rate that is consistent with the inflation objective may not be consistent with the crawling band of the exchange rate. Since 1991 tight monetary policy to achieve the inflation target had led to large capital inflows which in

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[1] Prepared by Janet Kong.

[2] For example, Canada, Australia and the United Kingdom. For detail, see Archer (1997), King (1997), Haldane (1995), Leiderman and Svensson (1995), and Jonsson (1999).

turn caused the exchange rate to appreciate. As adjusting interest rates downward would have jeopardized the inflation target, in order to maintain the band the BoI had to intervene in the foreign exchange market on several occasions since 1993 to keep the sheqel within the band and large-scale sterilization was taken to reverse the monetary impact (Leiderman and Bar-Or (1999), Bufman and Leiderman (1998)). However, with the current very wide band the exchange rate is essentially freely floating, the conflict of using one instrument supporting two nominal anchors is no longer an issue.[3]

5.      Inflation targeting has a number of advantages relative to the traditional monetary aggregates targeting: it reduces the instability in the relationship between the target variable and the policy variable, it provides a more transparent guide to monetary policy, and it provides the commitment, discipline, and accountability which make it easier to judge whether policy actions were taken to ensure that the target is achieved. However, successful inflation targeting requires good inflation forecasting. In reality, inflation targeting is conducted by adjusting the monetary policy instruments whenever there is a deviation of the inflation forecast from the inflation target.[4]

6.      In Israel, the discount rate is the most important tool used by the BoI to influence the inflation rate. According to the current BoI law, the governor makes the decision on the direction of the interest rate, based on the inputs from his staff concerning future movements in inflation. In the Inflation Report published by the BoI semiannually, the "inflation environment" is referred to as the important element in the interest rate decision. In the absence of an official or commonly used inflation forecast formulated by the BoI (see Bufman and Leiderman 1998), the inflation environment is the asset-market-based inflation expectation measure along with other macroeconomic variables such as GDP growth rates, the fiscal performance, and the capital market developments.

7.      This inflation expectation measure is derived as the difference between the yields on a nonindexed bond (usually the Makam treasury bill) and that on inflation indexed bonds (usually the Gali or Sagi bond) of similar maturity. The BoI's measure corrects for the inflation differential actually accrued during the life of an indexed bond and that was compensated for by employing detailed information on the bonds' coupon and inflation payment and its maturity. However, the usually published measure simply takes the difference between the yield to maturity of the treasury bill and the real yield to maturity on an indexed bond of similar remaining maturity as a proxy for inflation expectations.

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[3] The recent appreciation since late 1999 may bring renewed attention to this issue.

[4] See Debelle (1997), Green (1996), Svensson (1997), Svensson (1998), and Taylor (1999).

## B. Measurement Errors in the Inflation Expectation Measure and the Implication of Pure Inflation Targeting Based on Nonstructural Inflation Expectations

8.      There appear to be several measurement problems with this capital-market-based measure of inflation expectations.[5] First, these two types of instruments are not perfect substitutes because of the differential tax treatment on the capital gains from them and because of the liquidity difference between the treasury bill and the bond markets.[6] Second, the yield differential also embeds the risk premium for holding a nominal asset versus a real asset and it is likely that the risk premium itself is correlated with the inflation expectation. Given the high inflation history in Israel, the risk premium is likely positive and hence the inflation expectation measure would tend to overstate actual future inflation.[7]

9.      In addition, the inflation expectation measure derived from the capital market is highly adaptive and does not appear to be a good predictor of ex post inflation. Figure 1 plots the inflation expectation at time t, the 12-month past inflation at time t and the actual ex post inflation at time t+12. It is clear from the figure that the 12-month inflation expectation measure is highly correlated with the past inflation at time t and thus follows the movement of the past inflation. It also appears evident that the ex post 12-month inflation does not have a close relation with the ex ante expected 12-month inflation. In short, the figure reveals that the current inflation expectation measure that is used as an input in the monetary policy decision process by the BoI is very adaptive and appears not to be a very reliable predictor of future inflation.[8]

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[5] Additional insights can be gleaned from looking at the experience of the United Kingdom, Canada, and the United States. These three countries now have traded indexed bonds. However, given the lack of liquidity in the indexed bond market, it is still difficult to use the yield differential as a true gauge for inflation expectations due to the liquidity premium built in. The U.K. has made more headway in estimating the inflation expectation from the indexed and unindexed instruments, with its use mostly reference rather than guide post (Yariv (1998)).

[6] The capital gains from the treasury bill is tax exempt, while that on the bond is subject to tax depending on whether the investor is an institution, a provident fund or a pension fund. The bond market also has less liquidity, especially with the individual series.

[7] The risk premium is assumed to be constant and zero under the BoI model for calculating the inflation expectation. However, it is argued that the risk premium is likely to be small and stable for short-end instrument. In addition, as monetary policy analysis is based on the trend of the inflation expectation, the exact size of the risk component would not distort the use of this measure as an input for policy analysis (Yariv (1998)).

[8] Yariv (1998) and Leiderman and Bar-Or (1999) also pointed out that the inflation expectation measure is very adaptive.

10. Simple regressions from the beginning of 1991 to mid-1999 confirm that the inflation expectation measure is significantly correlated with past inflation and with a coefficient larger than one (Table 1). This seems to suggest that the inflation expectation measure tends to react more than proportionately to the past inflation development; hence, a measure that tends to exaggerate expected inflation. Another regression of the inflation expectation measure on the ex post 12-month inflation indicates that the correlation between these two variables is significant at 5 percent confidence level but the magnitude of the correlation is small. In other words, a simple regression points out that the inflation expectation measure does not have much predictive power about the future inflation. The correlation coefficient between actual inflation and the inflation expectation measure is 0.88, while the correlation coefficient between the expectation measure and ex post 12-month inflation is only 0.22. These observations reinforce each other and indicate that the inflation expectation measure does not possess the required statistical properties for a good predictor for inflation. This is in addition to the measurement errors inherent in its construction as discussed in paragraph 8.



Figure 1. Inflation and the 12-month Inflation Expectation Measure
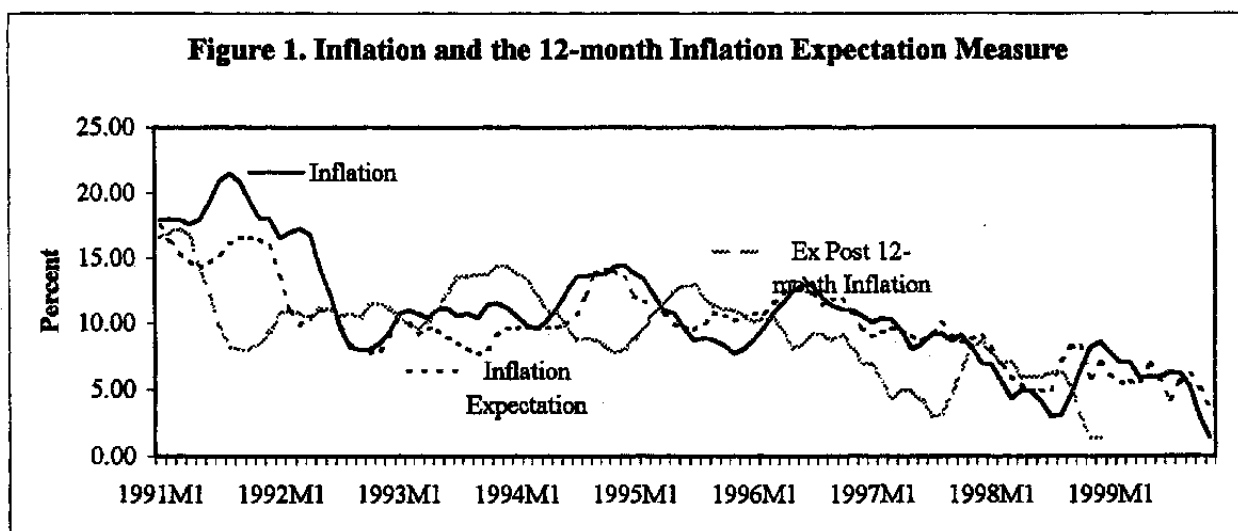
Table 1. Correlation Between Actual Inflation and Inflation Expectation Measure

|  | Current Inflation | Ex post 12-month Inflation |
|---|---|---|
| Inflation Expectation | 1.30 (17.5) 1/ | 0.24(2.13) |
| Adjusted R-squared | 0.76 | 0.04 |
| Correlation Coefficient | 0.88 | 0.22 |

1/ t-ratio in parenthesis

11. Inflation targeting has gained momentum in recent years, led by several successful examples, such as Australia, Canada, Sweden and the United Kingdom. The two main advantages of inflation targeting compared to the traditional monetary aggregate is that it is more direct: it avoids the unstable relationship between the intermediate target like M2 and the policy target. Moreover, it is more transparent and easier for the public to understand. For example, the inflation report published by the Bank of England details its policy reaction function and how different inflation expectation measures are derived and related. However, as the path of future inflation is unobservable, inflation targeting in practice usually is conducted by targeting some form of inflation forecast.

12. A large number of academic and policy studies have been done on the merits and appropriateness of inflation targeting (Taylor (1999)). One development warranting particular attention comes out of the studies done by Bernanke and Woodford (1997) and Svensson (1997). Bernanke and Woodford (1997) address the issue of existence and uniqueness of rational expectation equilibria when the central bank targets an inflation forecast that is based on asset market or private forecasts. Using a dynamic rational expectation models, they are able to demonstrate that if the central bank only targets an inflation forecast which is not derived from a structural model of the economy, then the equilibrium outcome may be undetermined or nonexistent. This implies that, the inflation forecast, whether it is an asset-market-based measure, a consensus forecast, or a naïve forecast, may contain useful information for the monetary authority, but too much reliance on it could lead to possible excess volatility in the policy variable and excess volatility in the macroeconomic environment. The indeterminacy in the equilibrium outcome and excess volatility can be avoided by using a structural forecast of inflation derived from a structural model and adopting an appropriate monetary policy reaction function in which the inflation forecast is not the sole significant argument.

## C. The Monetary Policy Reaction Function and an Alternative Rule

13. In this section, we estimate a monetary policy reaction for Israel and evaluate its appropriateness in light of the studies cited above. An in-sample rolling regression forecast of the BoI's discount rate based on an alternative rule similar to the one proposed by Bernanke and Woodford (1997) is compared to the actual interest rate.

**Policy reaction function**

14. The study focuses on the period from the end of 1991 to the end of 1998 both because of data availability and because this is the period during which an explicit inflation-targeting framework was adopted.[9] Monthly data on 12-month inflation, 12-month inflation expectations,

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[9] BoI stopped the monthly issuance of treasury bonds in 1999, which makes it harder to find indexed and nonindexed bonds with similar remaining maturity. The inflation expectation measure calculated for 1999 has to be adjusted for this change. To ensure consistency, the analysis only used the data before 1999.

industrial production index, industrial employment index, money growth, and credit growth are used in the study.[10] Trend industrial production and employment are estimated by the H-P filter; the deviation of actual production and employment from this trend is defined as the output gap and employment gap, respectively.[11]

15.    Augmented Dickey-Fuller tests on all the variables with a constant and a trend term indicate that except for inflation, all other variables are stationary. Further tests of inflation without the trend term show that the unit root hypothesis can be rejected at the 10 percent significance level. Given the low power of the standard unit root test, the evidence supports the hypothesis of the stationarity of the data.

16.    Following Clarida, Gali and Gertler (1998a, 1998b), a monetary policy reaction function is estimated for Israel using the following variables: inflation, inflation expectation, and GDP and employment gaps. Generalized Method of Moment (GMM) estimators are estimated.[12] Specifically, the model is of the following form:

$$ i_t^* = \alpha + \beta\left(E[\pi_{t+k} \mid \Omega_t] - \pi_t^*\right) + \gamma E[y_{t+l} \mid \Omega_t] \tag{1} $$

where $i_t^*$ is the policy interest rate (discount rate) set by the BoI, $\pi_{t+k}$ denotes inflation in period $t+k$, $y_{t+l}$ denotes the output gap or employment gap at time $t+l$. E is the expected value operator, and $\Omega_t$ is the information set at time $t$. The equilibrium nominal interest rate is denoted by $\alpha$.

The implied real interest rate rule is then:

$$ r_t^* = \overline{\alpha} + (\beta-1)(E[\pi_{t+k} \mid \Omega_t] - \pi_t^*) + \gamma E[y_{t+l} \mid \Omega_t] \tag{2} $$

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[10] Due to data availability industrial production index is used to proximate for output in the economy. Since the index is widely used as a barometer for economic strength, it is highly correlated with the actual output. Given the high comovement between this index and the underlying economic strength, our analysis will likely to pick up the right correlation between the various variables. Others have also used similar index in their analysis (Leiderman and Bar-Or (1999)).

[11] Estimating trend output is never easy, many methods are experimented such as the production function method and H-P filter method in the literature. Here we follow the practices of estimating trend output by H-P filter by many including Elkayam and Sokoler (1999).

[12] GMM is usually used when there is high order of correlation in the residual. However, in small samples, GMM could possibly suffer from inefficiency. Given the high significance of the estimates in our analysis, it is less a concern.

where $\bar{\alpha} = \alpha - \pi^*$ is the equilibrium real interest rate. This real interest rule implies that the response of the real interest rate to changes in expected inflation depends on whether $\beta$ is greater or less than one.

However, given that the interest rate is likely affected by factors other than those included in the monetary policy reaction function derived in (1), and as the central bankers want to keep a relatively smooth path of interest rate, the following is assumed to be the actual interest rate process:[13]

$$i_t = (1-\rho)i_t^* + \rho\, i_{t-1} + \varepsilon_t \tag{3}$$

which assumes a partial adjustment of the deviation of interest rate from its target level. The error term embeds other shocks and factors that influence the interest rate.

Combining the policy rule with the partial adjustment in interest rate, we obtain the following interest rate reaction function:

$$i_t = (1-\rho)\alpha + (1-\rho)\beta(\pi_{t+k} - \pi_t^*) + (1-\rho)\gamma y_{t+l} + \rho i_{t-1} + \omega_t \tag{4}$$

where $\omega_t = -(1-\rho)[\beta(\pi_{t+k} - E[\pi_{t+k} \mid \Omega_t]) + \gamma(y_{t+l} - E[y_{t+l} \mid \Omega_t])] + \varepsilon_t$. It is a linear combination of the forecasting errors of inflation and output and the shock from equation 3. By construction, $w_t$ is orthogonal to any variable in the information set at time t, i.e., there is no correlation between the error term and variables in the information set. In equation 4, the inflation target $\pi^*$ is not included into the constant term because in Israel the inflation target changes from year to year. Therefore, the yearly target was subtracted from the inflation series as indicated by the model.[14] A variant of equation (4) is obtained by replacing the expected inflation at time t+k with the inflation expectation measure $\tilde{\pi}_{t+k}$ derived from the capital markets:

$$i_t = (1-\rho)\alpha + (1-\rho)\beta(\tilde{\pi}_{t+k} - \pi_t^*) + (1-\rho)\gamma y_{t+l} + \rho i_{t-1} + \omega_t \tag{5}$$

In equation (5), $\omega_t = -(1-\rho)[\beta(\tilde{\pi}_{t+k} - E[\pi_{t+k} \mid \Omega_t]) + \gamma(y_{t+l} - E[y_{t+l} \mid \Omega_t])] + \varepsilon_t$. Thus $\omega_t$ is the linear combination of the forecasting error of the capital market based inflation expectation

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[13] See Clarida, Gali and Gertler (1997) and Taylor (1999), where it is assumed that central bankers would like to avoid excessive fluctuations in the policy instrument.

[14] Another caveat is that the inflation targeting horizon in Israel is from December-to-December for a period of 12 months, and it is not strictly inflation targeting rather price level targeting in practice. One possibility to take this fact into account is to convert the annual inflation target into a rolling average inflation target.

measure from the expected inflation based on rational expectation, the output forecasting error, and the error from equation (3). Assuming that the market is efficient in pricing in all information, the first term in $\omega_t$ should be close to zero. Thus, $\omega_t$ should also be orthogonal to the information at time t.

17.     We estimated the monetary policy reaction function in three different ways. First, we estimate a Taylor type of backward-looking rule based on current inflation and expected one-period-ahead output or employment. Second, a forward-looking reaction function of the form of equation (4) is estimated with the 12-month lead inflation and with the output or employment one period ahead. Third, the measure of inflation expectation is used as in equation (5). Implicitly we assume a shorter forecasting horizon for real variables. Here the forecasting horizon for inflation is 12 months ahead, while that for the output is one month ahead.[15] According to the Augmented Dickey-Fuller test both the inflation and the inflation expectation measure are trend-stationary, so they are detrended before the estimation.[16] The instrument sets include the lagged output or employment, lagged inflation or inflation expectation, lagged money growth and credit growth and lagged interest rates, up to 3 lags. As there are more instruments than the parameters, the over-identifying test is performed and none of the models is rejected at the conventional significance level.[17] The following table presents the estimation results, t-statistics in parenthesis.

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[15] Change this forecasting horizon will not affect the result much.

[16] Others have put a trend term in the regression to capture the gradual tightening of the monetary policy(Leiderman and Bar-Or (1999)). Estimation of the reaction function aims to exploit the impact of the marginal change of inflation around the mean on policy decision. Detrending the variable would avoid the small changes around mean be distorted by the major downward drift in inflation since the beginning of last decade. Without detrending, most results still hold but with less statistical significance.

[17] We also estimated a version of the reaction function where no interest rate smoothing is assumed, i.e., the coefficient $\rho$ is set to zero. However, the chi-square test comparing this model to the one with interest rate smoothing strongly rejects the model without interest rate smoothing. Consequently, we only report results from the interest rate smoothing models.

Table 2. Estimates of Monetary Policy Reaction Function

| | Current Inflation | | 12-Month Lead Inflation | | Inflation Expectation | |
|---|---|---|---|---|---|---|
| | Output | Employment | Output | Employment | Output | Employment |
| $\alpha$ | 13.48 (31.3) | 9.89 (3.47) | 14.13 (19.8) | 10.75 (5.88) | 13.65 (60.3) | 13.55 (40.7) |
| $\beta$ | 0.28 (3.97) | 0.10 (0.39) | 1.41 (3.17) | 1.71 (1.88) | 0.68 (9.32) | 0.68 (6.06) |
| $\gamma$ | 0.03 (0.15) | -1.71 (-0.51) | -0.34 (-0.79) | -1.48 (-0.51) | 0.26 (1.43) | -1.22 (-1.48) |
| $\rho$ | 0.84 (18.2) | 0.93 (18.6) | 0.68 (5.48) | 0.90 (17.68) | 0.64 (17.91) | 0.65 (13.8) |

18.     First, all the models suggest that the interest rate series is highly auto-regressive, the interest rate-smoothing coefficient $\rho$ is highly significant in most cases and below one. Second, the coefficient $\gamma$ has the wrong sign in most cases, when the expected output is above the trend then the interest rate will be raised, but when the future employment is strong then the interest rate will be cut. But $\gamma$ is never significant at any conventional significance level, suggesting that the Central Bank of Israel has consistently adopted a pure inflation targeting strategy during the sample period. This finding would appear to be consistent with the stated objective of the BoI of bringing inflation down over this period to the level close to that in industrial countries. Lastly, coefficient $\alpha$, which should proximate the average interest rate during the sample period, is highly significant. The highly significant policy reaction coefficient $\beta$ warrants more discussion below.

19.     We can see that $\beta$ remains well below one when the current realized inflation is used in the reaction function and when the 12-month inflation expectation measure is used.[18] This indicates that the central bank does not raise discount rate one to one to the deviations of inflation from its targeted level. So when there is a surge in past inflation or inflation expectation, the real interest rate based on these inflation measures will decline even after the interest rate increase. However, the picture is quite different when the reaction function was estimated with 12-month ahead actual inflation, which exploits the relation between the ex post 12-month inflation and ex ante policy

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[18] When the past inflation is used, the reaction function is essentially similar to the one proposed by Taylor, which is backward-looking. Leiderman and Bar-Or (1999) have obtained similar results using the inflation expectation measure.

action. In this case, the β coefficient is well above one and statistically significant.[19] We interpret this result as indicating that even though ex ante the central bank did not appear to raise the interest rate more than proportionately to preempt inflation, the ex post inflation performance suggests that the increase was more than enough to compensate the inflation shock 12 months later. This is entirely consistent with the fact that the inflation expectation measure tends to overstate the actual inflation, as discussed in Section B. One implication of this finding would appear to be that a decision based on this overstated measure ex ante may lead to aggressive inflation reduction ex post.

20.     To summarize, our estimates seem to confirm the view of the BoI itself (Leiderman (1999, 2000), BoI (1999)) that the BoI is pursuing a pure inflation targeting regime. Moreover, to the extent that there is reliance on the inflation expectation measure derived from the capital markets, the findings by Bernanke and Woodford (1998) would apply. They showed that a central bank policy reaction rule with pure inflation targeting on a non-structural inflation expectation measure could lead to indeterminacy in the rational expectation equilibrium outcomes and very likely, to excess volatility in the policy variable and macroeconomic outcome. However, as Leiderman (2000) notes, the monetary policy reaction of the BoI at times has been quite rapid to departure of inflation from targeted levels. He argues that in an economy where there is uncertainty about the persistence of inflation shocks and only partial credibility of monetary policy, aggressive policy responses to deviation of inflation can be more effective than gradual policy actions in bringing inflation back to target. Hence, what appears to be "excess volatility" can in fact be an appropriate policy response.[20]

### In-sample forecast based on an alternative policy rule

21.     This section follows Bernanke and Woodford (1998) to develop an alternative policy rule which is derived from a dynamic structural model. In their paper, they showed that a policy rule based on the past value of the interest rate itself, its expectation, observed values of output or unemployment and other macroeconomic variables, and the inflation measure will lead to an efficient equilibrium outcome. If we adopt a version of the sticky-price dynamic model used by many others in the literature, e.g., Taylor(1999) and Clarida, Gali and Gertler(1998), and linearize the equilibrium conditions along the steady state, we obtain the following interest rate policy rule which is very similar to the one proposed by Bernanke and Woodford (1998).

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[19] However, the coefficient is not significantly different from one because of high variance estimate. Due to the high order of forecasting horizon, the efficiency of the estimator could be compromised in small sample which could lead to less sharp estimates.

[20] A staff background paper for 1997 Article IV consultation demonstrated that the interest rate in Israel is considerably more variable than other industrial countries. This finding may reflect not only the factor described above but also the greater number of large shocks to the Israeli economy.

$$i_t = \alpha + \beta(\pi_t - \pi^*) + \gamma y_{t-1} + \rho i_{t-1} + \lambda m_{t-1} + \eta l_{t-1} + \omega_t \qquad (6)$$

where $m_{t-1}$ and $l_{t-1}$ are the observed money growth and credit growth in last period, with other variables defined as above.

22.    The alternative rule along with the estimated monetary policy rule as in equation (5) are also estimated using GMM with four lags of each of the variables in the model. The baseline estimation was done with data from the first month of 1992 to November 1995. This sub-sample was chosen to ensure sufficient observations in the estimation for accurate estimates, and at the same time to leave enough data for in-sample forecasts. Rolling regression is used to continuously update the estimation of the model whenever there is "new" information. One step ahead forecasts of the interest rate are obtained from the estimates of the model. Two measures of inflation are used in the forecasting, one is the current observed past 12-month inflation, the other is the current 12-month inflation expectation measure derived from the capital markets. The comparisons between the actual interest rate and the forecasted interest rates based on the alternative models is tabulated in Table 3, where:

|  | Alternative Model Eq. 6 | Estimated Policy Rule Eq. 5 |
|---|---|---|
| Actual Inflation | Prediction 1 | Prediction 4 |
| Inflation Expectation Measure | Prediction 2 | Prediction 3 |

The four in-sample forecasts and the actual interest rate series are also plotted together in Figure 2.

Table 3. In-Sample Forecasts of Interest Rate vs. the Actual Interest Rate

|  | Prediction1 | Prediction2 | Prediction3 | Prediction4 | Actual Interest Rate |
|---|---|---|---|---|---|
| Mean | 13.38 | 13.51 | 13.58 | 13.55 | 13.48 |
| Median | 13.43 | 13.60 | 13.56 | 13.60 | 13.50 |
| Maximum | 15.14 | 15.71 | 16.61 | 16.70 | 17.00 |
| Minimum | 11.20 | 11.22 | 10.56 | 10.34 | 9.50 |
| Std. Dev. | 1.01 | 1.16 | 1.44 | 1.49 | 1.71 |
| Skewness | -0.37 | -0.15 | -0.11 | -0.07 | -0.36 |
| Kurtosis | 2.57 | 2.49 | 2.74 | 2.81 | 3.12 |
| Observations | 36 | 36 | 36 | 36 | 36 |

23.    The statistics in table 2 indicate that the four forecasted interest rates all have lower standard deviations than the actual interest rate. Some statistical tests are performed to check if the differences are statistically significant. We cannot reject the null that the variances of the five

series are equal, neither can we reject the null of equal variance among predictions based on the estimated monetary reaction function as in equation (5) and the interest rate. But the hypothesis of equal variance between the alternative model described by equation (6) and the actual interest rate is strongly rejected.[21] The test results are reported in Table 3.



Figure 2. Forecasts of Interest Rate and Actual Interest Rate
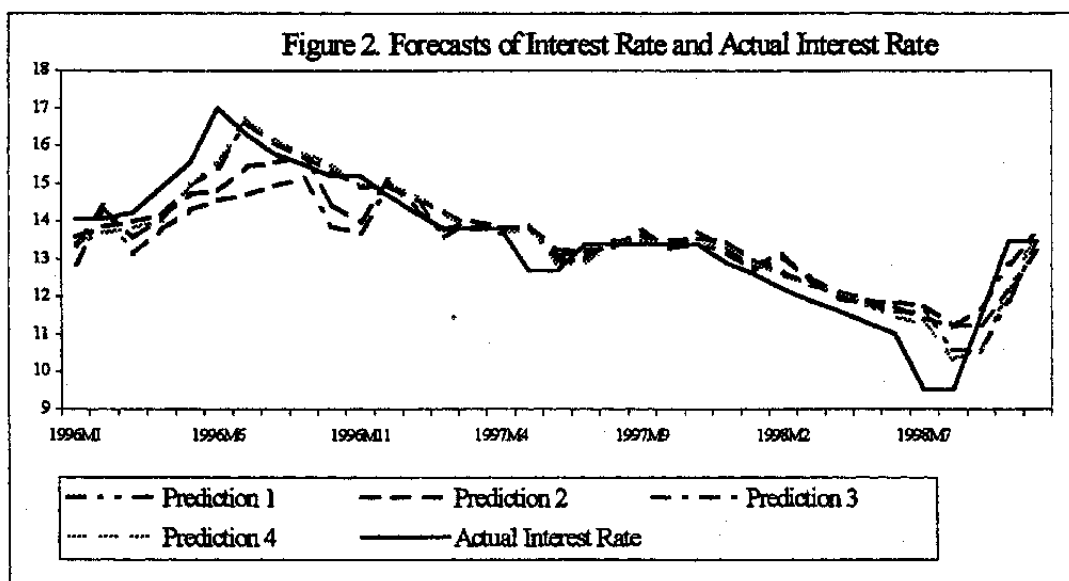
24.     The results seem to suggest that the alternative model does produce smoother interest rate reactions to shocks in the economy, and the difference is statistically significant. While the estimated monetary policy rule as in equation (5) generates a smaller variance in interest rate forecasts than that of the actual interest rate, the difference is not significant. Using the actual observed inflation in the two forecasting models also generates statistically different interest rate forecasts. These results provide evidence in favor of the view that an alternative policy rule as specified in equation (6) does produce a smoother interest rate outcome than a pure inflation targeting rule, especially if the targeted inflation forecast is not generated from a structural model.

25.     The finding that the alternative monetary policy rule produces a smoother policy reaction is consistent with the result from Bernanke and Woodford(1998). When a structural model is used in formulating inflation forecast and based on which policy response is then generated, the additional information contained in the structural forecast helps to smooth the policy reaction. However, a smoother policy reaction to shocks may not coincide with an optimal policy reaction to shocks. Given the inherent tradeoff between the variability in output and in inflation, the

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[21] Further tests are conducted to check the pairwise difference between the two predicted series and the actual interest rate also, the null hypothesis of equal variance is also strongly rejected at all conventional significance levels.

conduct of monetary policy must balance the costs and benefits of departure of inflation and output from their target levels. To evaluate whether the alternative policy reaction rule in equation (6) is "better" than the estimated one as in equation (5), one has to compare the tradeoff between the variability of output and inflation implied by these two rules, termed the efficiency frontier of policy reaction functions. For any given level of inflation variability, the reaction function that leads to the lowest output variability on the efficiency frontier is considered a "better" policy reaction function. There is a body of research in this area, as demonstrated by the work of Clark, Laxton and Rose (1997) and more comprehensively, Black, Macklem and Rose (1998), Drew and Hunt (1999) and Taylor (1999). This line of work is beyond the scope of this paper, but provides an interesting line of investigation for future analysis of alternative reaction functions.

Table 4. Test of Equal Variance Among the Interest Rate Predictions From the Alternative Model and the Actual Interest Rate[22]

| Method | Degree of freedom | Statistic Value | Probability |
|---|---|---|---|
| Bartlett | 2 | 10.6 | 0.00 |
| Levene | (2,105) | 3.09 | 0.05 |
| Brown-Forsythe | (2,105) | 3.07 | 0.05 |

Test of equal variance among the predictions from the estimated model and the interest rate

| Method | Degree of freedom | Statistic Value | Probability |
|---|---|---|---|
| Bartlett | 2 | 1.18 | 0.55 |
| Levene | (2, 105) | 0.34 | 0.71 |
| Brown-Forsythe | (2, 105) | 0.34 | 0.71 |

Test of equal variance between the two predictions based on the actual inflation

| Method | Degree of freedom | Statistic Value | Probability |
|---|---|---|---|
| F-test | (35, 35) | 2.18 | 0.02 |
| Bartlett | 1 | 5.12 | 0.02 |
| Levene | (1, 70) | 2.88 | 0.09 |
| Brown-Forsythe | (1, 70) | 2.88 | 0.09 |

Test of equal variance between the two predictions based on the inflation expectation measure

| Method | Degree of freedom | Statistic Value | Probability |
|---|---|---|---|
| F-test | (35, 35) | 1.51 | 0.22 |
| Bartlett | 1 | 1.46 | 0.22 |
| Levene | (1, 70) | 0.74 | 0.39 |
| Brown-Forsythe | (1, 70) | 0.76 | 0.38 |

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[22] The Bartlett test compares the logarithm of the weighted average variance with the weighted sum of the logarithms of the variances. Under the joint null hypothesis that the subgroup variances are equal and that the sample is normally distributed, the test statistic is approximately distributed as $\chi^2$. The Levene test is based on an ANOVA of the absolute difference from the mean. The F-statistic for the test has an approximate F-distribution. The Brown-Forsythe test is a modified Levene test, which replaces the absolute mean difference with the absolute median difference and appears to be more robust and powerful.

## D. Conclusion

26.     The study has provided evidence that the inflation expectation measure derived from the capital markets tends to overstate the trend in actual inflation, is a highly adaptive measure of inflation, and does not appear to be a very reliable predictor of future inflation.

27.     The estimated monetary reaction function seems to indicate that the BoI was actively pursuing a "pure" inflation targeting policy. Bernanke and Woodford (1998) demonstrated that a monetary reaction function targeting only the inflation expectation measure that is not derived from a structural model could lead to volatile policy reactions. We showed that the interest rate response based on an alternative rule is smoother than the actual interest rate. Because the inflation expectation measure tends to overstate actual inflation, the policy response based on the inflation expectation measure, which appears accommodative, becomes preemptive ex post.

28.     However, caution needs to be exercised when interpreting these results. A smoother interest rate response does not necessarily imply a better policy outcome in terms of the tradeoff between the output and inflation. To address the issues of the optimal policy response, one has to simulate the efficiency frontier between the variance of output and inflation (see Clark, Laxton and Rose (1997), Black, Marklem and Rose (1998), Drew and Hunt (1999)). This could be a natural next step from this study.

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ISRAEL: DEVELOPMENTS IN EXCHANGE RESTRICTIONS

1.　　　Since 1987, the extensive system of foreign exchange controls in Israel has been gradually eased. Before that time, all foreign currency transactions were forbidden unless explicitly permitted. *Current account restrictions* focused, inter alia, on limiting foreign currency travel allowances (including through use of credit cards) and wage payments and unilateral transfers abroad. *Capital account restrictions* focused on both inflows and outflows, but later the emphasis was more on restricting outflows due to a concern that, if left unrestricted, resident portfolio diversification would greatly outweigh the magnitude of foreign inflows. There were also multiple currency practices, such as the 4 percent tax on imports of tourism services levied at the time of the exchange transaction and the exchange rate insurance scheme for exporters.

2.　　　The gradual easing of these restrictions over time—including elimination of the multiple currency practices—led to the acceptance by Israel of the International Monetary Fund's Article VIII, Sections 2, 3, and 4 in September 1993. Further, by 1994 all restrictions on capital inflows had been eliminated, including foreign borrowing by Israeli residents.

3.　　　During 1998, three further steps were taken in the liberalization program. The first went into effect on January 1, 1998 and included:

- Israeli residents were permitted to purchase freely foreign currency with local currency and to deposit it in foreign currency deposits in Israeli banks.

- Israeli residents were permitted to transfer money and foreign securities held in custody deposit between foreign currency deposits within the domestic banking system.

- All restrictions on mutual funds' investments in foreign securities were abolished.

- The limit of 5 percent of turnover or 10 percent of capital on holdings of foreign securities and foreign currency abroad by Israeli companies was abolished.

- Israeli residents, except insurers and pension funds, were permitted to freely engage in NIS/foreign currency derivatives, and provident funds could engage in such derivatives within the limit on foreign currency financial investments.

- All restrictions on forward transactions between foreign currencies, cross rates, interest rates on foreign-currency assets or liabilities, commodity and securities prices, were removed.

4.　　　Additional changes went into effect on February 12, 1998, namely:

- Israeli residents and nonresidents traveling abroad were permitted to purchase US$1,000 on leaving the country without having to produce documents or personal identification.

- Israeli residents living abroad were permitted to open bank accounts there regardless of the length of stay.

- Israeli residents was permitted to freely engage in selling foreign securities short, while a foreign resident was permitted to sell Israeli securities short.

- All time limits regarding payments for imports and submittance of receipts for exports were abolished.

5.      Finally, on May 14, 1998, all activities and transactions in foreign currency and between Israeli residents and nonresidents were permitted (instead of the previous negative list). Following this declaration, the sheqel is now fully convertible. Individuals are allowed to invest freely abroad (including in real estate and land), to manage bank accounts abroad, to hold, make payments, or receive foreign exchange, to undertake any kind of unilateral transfer, and to make transactions directly with foreign financial intermediaries as well as authorized domestic dealers (there is an obligation by these parties to report on the nature of the transaction). The **remaining restrictions** are on institutional investors and derivatives made with nonresidents, as follows (and the government has committed to remove them over time):

- A provident fund may not: (i) hold foreign exchange or foreign securities and make forward transactions involving payment or receipts in foreign exchange in an amount of more than 5 percent of the provident fund's total assets; (ii) hold 5 percent or more of a given security issued by a nonresident corporation; or (iii) buy or hold other kinds of foreign assets.

- A pension fund or insurance company may not: (i) buy foreign currency and hold it in cash or deposit; (ii) accept foreign currency from another resident; (iii) engage in forward transactions involving payment or receipt of foreign exchange; (iv) buy or hold foreign securities unless issued by the State of Israel or by an Israeli resident company registered for trading on a foreign stock exchange or over the counter; and (v) buy or hold other kinds of foreign assets.

- A resident may not undertake with a nonresident a derivatives transaction of any kind in which one of the underlying assets is local currency and which involves payment or receipt of foreign currency, unless the transaction is a forward transaction at a pre-set price for a period of no more than 30 days.

6.      In addition to the above, various other changes were implemented during 1998 and the beginning of 1999:

- On June 22, 1998, in accordance with the regulations of the Ministry of Finance, the definition of a nonresident was extended to include: residents of the Palestinian Autonomy who are not Israeli residents; diplomats; UN personnel; foreign air crews; and diplomatic and consular representatives of foreign countries.

- As of October 1, 1998, insurers were permitted to purchase foreign currency to hold in cash or in a bank account in Israel (not a bank account abroad), and to receive foreign currency from an Israeli resident.

- On November 10, 1998, the Currency Control Law was amended, so that the authority of the Controller of Foreign Exchange to require reports as a condition of granting permits was stated specifically in the Law. The purpose was to ensure the proper flow of information that would enable the Bank of Israel to respond promptly to exceptional capital flows. The Law also included an article to ensure the preservation of secrecy regarding information received as a result of the Law.

- Until November 9, 1998, an Israeli resident was defined as someone who was not a nonresident. As of November 10, 1998, a resident was defined as someone satisfying one of a list of specific alternatives, and a nonresident was defined as someone who is not a resident. The change also determined that an Israeli citizen permanently residing abroad is a nonresident.

- On January 1, 1999, the requirements regarding reporting on transactions with residents of the Palestinian Autonomy were changed. As a result, banks are required to classify local- and foreign-currency accounts of residents of the Autonomy as a separate group, and report transactions between Israeli residents and residents of the Autonomy—in local and in foreign currency—along the same principles that apply to reporting of transactions with nonresidents.

- On April 15, 1999, the list of those obliged to report to the Controller of Foreign Exchange was extended to include individuals and non-profit organizations, in addition to companies.

Table 1. Israel: GDP by Expenditure Components in Current Prices, 1994-99

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Est. 1/ |
|---|---|---|---|---|---|---|
| | (In millions of new sheqalim; current prices) | | | | | |
| Consumption | 204,995 | 236,809 | 276,267 | 308,464 | 335,897 | 362,815 |
| Private | 141,176 | 158,434 | 183,996 | 206,789 | 225,555 | 242,565 |
| Public | 63,819 | 78,375 | 92,271 | 101,675 | 110,342 | 120,250 |
| Gross domestic capital formation | 54,234 | 67,221 | 75,209 | 74,847 | 73,189 | 83,503 |
| Fixed capital formation | 52,014 | 62,607 | 71,203 | 74,042 | 75,367 | 82,248 |
| Increase in stocks | 2,220 | 4,614 | 4,006 | 805 | -2,178 | 1,255 |
| Total domestic demand | 259,229 | 304,030 | 351,476 | 383,311 | 409,086 | 446,318 |
| Exports of goods and nonfactor services | 72,090 | 81,698 | 93,794 | 107,386 | 121,926 | 143,280 |
| Imports of goods and nonfactor services | 105,225 | 121,424 | 137,282 | 145,760 | 154,905 | 184,823 |
| Foreign balance | -33,136 | -39,726 | -43,488 | -38,374 | -32,979 | -41,543 |
| GDP | 226,093 | 264,304 | 307,988 | 344,937 | 376,107 | 404,775 |
| | (In percent of GDP; current prices) | | | | | |
| Consumption | 90.7 | 89.6 | 89.7 | 89.4 | 89.3 | 89.6 |
| Private | 62.4 | 59.9 | 59.7 | 59.9 | 60.0 | 59.9 |
| Public | 28.2 | 29.7 | 30.0 | 29.5 | 29.3 | 29.7 |
| Gross domestic capital formation | 24.0 | 25.4 | 24.4 | 21.7 | 19.5 | 20.6 |
| Fixed capital formation | 23.0 | 23.7 | 23.1 | 21.5 | 20.0 | 20.3 |
| Increase in stocks | 1.0 | 1.7 | 1.3 | 0.2 | -0.6 | 0.3 |
| Total domestic demand | 114.7 | 115.0 | 114.1 | 111.1 | 108.8 | 110.3 |
| Exports of goods and nonfactor services | 31.9 | 30.9 | 30.5 | 31.1 | 32.4 | 35.4 |
| Imports of goods and nonfactor services | 46.5 | 45.9 | 44.6 | 42.3 | 41.2 | 45.7 |
| Foreign balance | -14.7 | -15.0 | -14.1 | -11.1 | -8.8 | -10.3 |
| GDP | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Sources: Central Bureau of Statistics, *Monthly Bulletin of Statistics;* and *1998 Statistical Abstract of Israel.*

1/ Estimate by the Central Bureau of Statistics.

Table 2. Israel: GDP by Expenditure Components in Constant Prices, 1994-99 1/

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Est. 1/ |
|---|---|---|---|---|---|---|
| | (In millions of new sheqalim; constant 1995 prices) | | | | | |
| Consumption | 225,980 | 236,808 | 249,370 | 257,927 | 265,862 | 272,657 |
| Private | 146,789 | 158,434 | 166,982 | 173,944 | 180,203 | 185,049 |
| Public | 79,191 | 78,374 | 82,387 | 83,983 | 85,659 | 87,608 |
| Gross domestic capital formation | 60,779 | 67,223 | 71,391 | 66,503 | 61,170 | 68,686 |
| Fixed capital formation | 57,360 | 62,608 | 67,453 | 65,867 | 63,264 | 64,878 |
| Increase in stocks | 2,668 | 4,615 | 3,939 | 520 | -1,469 | 3,301 |
| Total domestic demand | 285,381 | 304,031 | 320,761 | 324,693 | 327,630 | 341,701 |
| Exports of goods and nonfactor services | 75,113 | 81,698 | 87,111 | 93,824 | 99,702 | 106,693 |
| Imports of goods and nonfactor services | 112,964 | 121,424 | 131,336 | 133,767 | 136,095 | 152,286 |
| Foreign balance | -37,851 | -39,726 | -44,225 | -39,943 | -36,393 | -45,593 |
| GDP | 247,381 | 264,305 | 276,536 | 284,613 | 290,932 | 296,880 |
| | (Annual percentage change) | | | | | |
| Consumption | 5.9 | 4.8 | 5.3 | 3.4 | 3.1 | 2.6 |
| Private | 9.6 | 7.9 | 5.4 | 4.2 | 3.6 | 2.7 |
| Public | -0.5 | -1.0 | 5.1 | 1.9 | 2.0 | 2.3 |
| Gross domestic capital formation | 8.4 | 10.6 | 6.2 | -6.8 | -8.0 | 12.3 |
| Fixed capital formation | 13.3 | 9.1 | 7.7 | -2.4 | -4.0 | 2.6 |
| Total domestic demand | 7.0 | 6.0 | 5.5 | 1.2 | 0.9 | 4.3 |
| Exports of goods and nonfactor services | 12.9 | 8.8 | 6.6 | 7.7 | 6.3 | 7.0 |
| Imports of goods and nonfactor services | 10.8 | 7.5 | 8.2 | 1.9 | 1.7 | 11.9 |
| GDP | 7.0 | 6.8 | 4.6 | 2.9 | 2.2 | 2.0 |

Sources: Central Bureau of Statistics, *Monthly Bulletin of Statistics;* and *1998 Statistical Abstract of Israel.*

1/ Estimates in 1995 prices derived by chaining each categories growth rate computed at different base year prices; hence totals do not reflect the sum of their components.

2/ Estimate of the Central Bureau of Statistics.

Table 3. Israel: Investment, 1994-99

| | In millions of new sheqalim | Percentage change at constant prices | | | | | |
|---|---|---|---|---|---|---|---|
| | 1998 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Est. 1/ |
| Gross domestic capital formation | 73,189 | 8.4 | 10.6 | 6.2 | -6.8 | -8.0 | 12.3 |
| Gross fixed capital formation | 75,367 | 13.3 | 9.1 | 7.7 | -2.4 | -4.0 | 2.6 |
| Machinery, transport, and other equipment | 31,426 | 22.5 | 0.4 | 10.3 | -5.1 | -2.3 | 17.1 |
| Land transport equipment | 5,872 | 19.1 | -8.4 | 14.4 | -13.4 | -11.8 | 5.5 |
| Other machinery and equipment | 25,342 | 19.9 | 4.1 | 9.9 | -3.1 | 2.9 | 9.4 |
| Ships and aircraft | 213 | 184.9 | -20.7 | -9.3 | 8.5 | -75.3 | 1255.8 |
| Construction | 41,895 | 5.3 | 17.8 | 5.6 | -1.3 | -5.6 | -9.0 |
| Residential | 22,912 | 4.0 | 25.0 | 6.0 | -0.1 | -6.7 | -9.0 |
| Private | 18,894 | 15.6 | 20.6 | 3.7 | 1.8 | -4.2 | -4.9 |
| Public | 4,018 | -30.9 | 47.2 | 15.7 | -7.1 | -16.9 | -28.3 |
| Nonresidential | 18,983 | 6.8 | 10.3 | 5.2 | -2.7 | -4.2 | -9.1 |

Sources: Central Bureau of Statistics, *Monthly Bulletin of Statistic;* and *1998 Statistical Abstract of Israel.*

1/ Estimate of the Central Bureau of Statistics.

Table 4. Israel: Consumption, 1994-99

| | In millions of new sheqalim | Percentage change at constant prices | | | | | |
|---|---|---|---|---|---|---|---|
| | 1998 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Est. 1/ |
| Private consumption | 225,555 | 9.6 | 7.9 | 5.4 | 4.2 | 3.6 | 2.7 |
| Consumption by Israeli households | | | | | | | |
| Household consumption in the domestic market | 224,435 | 8.6 | 7.6 | 4.5 | 3.5 | 2.8 | 2.6 |
| Food, beverages, and tobacco | 47,955 | 8.6 | 6.5 | 4.8 | 2.2 | -0.2 | 0.1 |
| Fuel and electricity | 9,601 | 6.8 | 6.4 | 5.8 | 3.3 | 3.2 | 1.4 |
| Clothing, footwear, and personal effects | 10,213 | 13.9 | 7.8 | -1.8 | -4.0 | -2.2 | -1.4 |
| Other goods | 12,051 | 9.4 | 10.5 | 4.4 | -1.2 | 7.7 | -0.4 |
| Durable goods | 25,380 | 11.9 | 15.5 | 7.2 | 4.8 | 2.7 | 0.1 |
| *Of which* | | | | | | | |
| Passenger cars | 6,952 | 11.1 | 8.8 | 5.3 | -6.3 | -6.3 | 1.0 |
| Housing | 53,785 | 3.2 | 3.1 | 4.2 | 4.6 | 4.4 | 3.4 |
| Other services | 65,451 | 10.9 | 8.7 | 4.6 | 5.8 | 4.0 | 6.5 |
| *Plus:* Consumption by Israelis abroad | 11,730 | 19.7 | -6.3 | 13.1 | 6.3 | 8.9 | 10.6 |
| *Less:* Consumption by nonresidents | 7,869 | 7.6 | -4.1 | -4.7 | -5.0 | -6.8 | 10.1 |
| Consumption by nonprofit institutions | 4,980 | 17.6 | -1.0 | 4.9 | 5.4 | 3.1 | 5.6 |
| | | | | | | | |
| Public consumption (excluding net defense imports) | 102,466 | 4.6 | 0.5 | 3.6 | 1.6 | 1.5 | 3.0 |
| Civilian | 75,442 | 7.0 | 1.3 | 4.3 | 2.3 | 1.9 | 3.3 |
| Compensation of employees | 50,863 | 2.4 | 2.7 | 3.7 | 2.3 | 0.8 | 2.8 |
| Indirect taxes on salaries | 3,816 | 2.9 | 1.9 | 4.2 | 2.4 | 0.8 | 3.0 |
| Other current purchases | 20,178 | 20.7 | -2.4 | 6.0 | 2.1 | 4.0 | 4.4 |
| Domestic defense | 27,024 | -0.3 | -1.2 | 1.9 | -0.2 | 0.4 | 2.2 |
| Compensation of employees | 15,400 | 0.3 | -0.6 | -0.9 | -0.1 | -0.2 | 0.1 |
| Indirect taxes on salaries | 848 | -0.5 | 0.0 | -0.3 | 0.1 | -0.3 | 0.1 |
| Other current purchases | 11,624 | -1.2 | -2.0 | 5.9 | -0.3 | 1.1 | 5.0 |
| | | | | | | | |
| Memorandum items: | | | | | | | |
| Net defense imports | 8,232 | -41.2 | -23.2 | 32.5 | 6.2 | 9.5 | -6.8 |
| Defense imports | 8,533 | -32.1 | -12.7 | 25.2 | 5.6 | 8.1 | -5.9 |
| *Less:* Sales | 657 | 7.4 | 35.5 | -16.7 | -0.9 | -7.9 | 5.0 |
| Public consumption including net defense imports | 110,342 | -0.5 | -1.0 | 5.1 | 1.9 | 2.0 | 2.3 |

Sources: Central Bureau of Statistics, *Monthly Bulletin of Statistics;* and *1998 Statistical Abstract of Israel*.

1/ Estimate of the Central Bureau of Statistics.

Table 5. Israel: Gross Private Income and Savings, 1994–99

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Est. 1/ |
|---|---|---|---|---|---|---|
| | (In millions of new sheqalim; at current prices) | | | | | |
| GNP at market prices | 221,949 | 259,709 | 301,452 | 336,050 | 368,311 | 396,408 |
| *Plus:* | 4,876 | 3,324 | 3,159 | 3,104 | 3,085 | 3,116 |
| Subsidies on domestic production | 4,456 | 2,961 | 2,864 | 2,915 | 2,947 | 3,050 |
| Subsidies on government loans | 420 | 363 | 295 | 189 | 138 | 66 |
| *Less*: | | | | | | |
| Indirect taxes on domestic production | 31,431 | 36,839 | 43,745 | 49,890 | 53,946 | 58,592 |
| GNP at factor cost | 195,394 | 226,194 | 260,866 | 289,264 | 317,450 | 340,932 |
| *Plus:* | | | | | | |
| Net private transfers from abroad | 9,400 | 7,302 | 7,731 | 7,997 | 8,343 | 9,739 |
| Net transfers to domestic households | | | | | | |
| and private nonprofit institutions | 32,524 | 39,791 | 46,128 | 52,894 | 59,363 | 63,929 |
| *Less:* | | | | | | |
| Public sector income from property | | | | | | |
| and entrepreneurship | 2,434 | 3,593 | 3,234 | 1,056 | 2,412 | -1,324 |
| Public sector consumption of fixed capital | 2,865 | 3,245 | 3,605 | 4,019 | 4,401 | 4,740 |
| Private income | 232,019 | 266,449 | 307,886 | 345,080 | 378,343 | 411,184 |
| *Less:* Direct taxes 2/ | 44,669 | 53,565 | 59,060 | 71,139 | 77,575 | 82,834 |
| Gross private disposable income | 187,350 | 212,884 | 248,826 | 273,941 | 300,768 | 328,350 |
| Private consumption | 141,176 | 158,434 | 183,996 | 206,789 | 225,555 | 242,565 |
| Private savings | 46,174 | 54,449 | 64,829 | 67,152 | 75,213 | 85,785 |
| | (Percent of gross private disposable income) | | | | | |
| Private consumption | 75.4 | 74.4 | 73.9 | 75.5 | 75.0 | 73.9 |
| Private savings | 24.6 | 25.6 | 26.1 | 24.5 | 25.0 | 26.1 |

Sources: Central Bureau of Statistics, *Current Briefings in Statistics*; and data provided by the Bank of Israel.

1/ Estimate of the Central Bureau of Statistics.
2/ Including contribution to National Insurance Institute.

Table 6. Israel: National Savings, Foreign Savings, and Investment, 1994–98

|                              | 1994 | 1995 | 1996 | 1997 | 1998 |
|------------------------------|------|------|------|------|------|
|                              | (In percent of total income) 1/ | | | | |
| Gross national savings       | 17.8 | 18.0 | 17.5 | 17.0 | 17.5 |
| General government           | -0.7 | -0.9 | -2.0 | -1.1 | -1.0 |
| Private sector               | 18.6 | 18.9 | 19.4 | 18.1 | 18.5 |
| Foreign savings              | 4.0  | 5.4  | 5.1  | 3.2  | 0.5  |
| Current account              | -1.8 | -3.2 | -3.1 | -1.2 | 1.1  |
| Civilian import surplus      | 9.0  | 8.8  | 8.3  | 6.4  | 3.9  |
| Unilateral transfers         | 7.1  | 5.5  | 5.2  | 5.3  | 5.0  |
| Transfers on capital account | 2.2  | 2.1  | 2.0  | 2.1  | 1.7  |
| Gross investment             | 21.9 | 23.4 | 22.5 | 20.2 | 18.0 |
| Inventories                  | 0.9  | 1.6  | 1.2  | 0.2  | -0.5 |
| Fixed residential            | 15.4 | 15.2 | 14.9 | 13.7 | 12.9 |
| Fixed nonresidential         | 5.5  | 6.5  | 6.5  | 6.3  | 5.6  |

Source: Data provided by the Bank of Israel.

1/ Total income defined as GNP plus unilateral transfers from abroad.

Table 7. Israel: Industrial Production Indices, 1994-99

| | Weight | Percentage change at constant prices | | | | | |
|---|---|---|---|---|---|---|---|
| | | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Jan. - Jul. |
| Food, beverages, and tobacco | 12.7 | 6.3 | 8.3 | -0.1 | 3.0 | 1.0 | 0.2 |
| Textiles, clothing, and leather | 6.7 | 10.1 | 2.5 | -5.8 | -5.1 | 0.1 | -2.1 |
| Wood, furniture, paper, and printing | 12.1 | 6.7 | 3.8 | 3.0 | -0.3 | -1.4 | -2.5 |
| Chemicals, rubber, and plastics | 15.2 | 10.9 | 7.7 | 8.0 | 0.7 | 9.1 | 1.0 |
| Mining and nonmetallic minerals | 6.5 | 5.1 | 18.4 | 8.1 | -5.7 | -5.8 | -5.9 |
| Basic metals and metal products | 12.5 | 10.6 | 13.0 | 4.8 | 5.1 | -1.9 | -4.6 |
| Machinery and equipment (incl. electric) | 7.0 | 5.4 | 3.7 | 1.1 | -5.2 | 3.0 | -0.6 |
| Transport equipment | 5.7 | -8.0 | 0.4 | 5.6 | 6.8 | 6.2 | -0.4 |
| Electronic equipment | 19.9 | 8.3 | 9.2 | 10.8 | 8.5 | 6.7 | 2.0 |
| Jewelry and miscellaneous articles | 1.8 | 11.1 | 15.0 | 7.0 | -3.8 | -4.5 | -7.6 |
| Total industrial production | 100.0 | 7.4 | 8.4 | 5.4 | 1.7 | 2.9 | -0.4 |

Sources: Central Bureau of Statistics, *Monthly Bulletin of Statistics*; and data provided by the Bank of Israel.

Table 8. Israel: Labor Market Indicators, 1994–99 1/

| | In thousands | Percentage change | | | | | |
| | 1998 | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Est. 2/ |
|---|---|---|---|---|---|---|---|
| Israeli working-age population 3/ | 4,244 | 2.9 | 3.0 | 3.0 | 2.7 | 2.7 | 2.6 |
| Israeli civilian labor force | 2,269 | 4.3 | 4.0 | 2.2 | 2.5 | 2.8 | 2.8 |
| Total Israelis employed | 2,077 | 6.8 | 5.1 | 2.4 | 1.4 | 1.8 | 2.9 |
| Public services | 631 | 4.8 | 8.1 | 2.3 | 2.9 | 5.7 | 3.5 |
| Business sector | 1,446 | 7.7 | 3.9 | 2.5 | 0.7 | 0.2 | 2.6 |
| Workers from administered areas | 53 | -16.7 | -14.3 | -30.9 | 14.6 | 11.5 | 2.2 |
| Foreign workers 4/ | 141 | 74.3 | 78.3 | 49.1 | 4.1 | -1.6 | -2.4 |
| Total employed | 2,271 | 6.9 | 6.3 | 3.5 | 1.8 | 1.8 | 2.7 |
| Memorandum items: | | | | | | | |
| Participation rate (in percent of working-age population) | | 53.6 | 54.0 | 53.6 | 53.4 | 53.5 | 53.5 |
| Unemployment rate (in percent of civilian labor force) | | 7.8 | 6.8 | 6.6 | 7.5 | 8.5 | 8.7 |

Sources: Bank of Israel, *1998 Annual Report*; Central Bureau of Statistics, *Monthly Bulletin of Statistics*; and data provided by the Bank of Israel.

1/ Based on 1995 census estimates and on new inflation system.
2/ Semi-annual average of 1999 relative to same period in 1998.
3/ Aged 15 and above.
4/ Includes unreported foreign workers.

Table 9. Israel: Employment and Labor Input by Industry, 1994-99 1/

| | 1998 2/ | Annual percentage change | | | | | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | 1994 | 1995 | 1996 2/ | 1997 | 1998 | 1999 3/ |
| Employed persons 4/ | (In thousands) | | | | | | |
| Total 5/ | 2,077 | 6.8 | 5.1 | 2.4 | 1.4 | 1.8 | 2.9 |
| Agriculture | 47 | 1.6 | -11.7 | -11.0 | -4.2 | -1.5 | 3.2 |
| Industry | 387 | 6.7 | 2.2 | 0.2 | -1.7 | -2.1 | 1.7 |
| Public utilities | 20 | 15.3 | -5.4 | -3.7 | 2.2 | 7.0 | -4.5 |
| Construction | 132 | 21.2 | 3.3 | 6.7 | -2.5 | -10.5 | -14.4 |
| Commerce | 273 | 21.2 | 3.3 | 2.7 | 3.0 | 3.0 | 2.9 |
| Hotels and restaurants | 81 | 22.1 | 10.6 | -6.3 | -0.4 | 7.5 | 14.6 |
| Transport, storage, and communicatio | 123 | 3.0 | 2.0 | 8.2 | 0.0 | -0.2 | 10 |
| Banking, insurance, and finance | 73 | 6.4 | 4.0 | -0.3 | 8.9 | -0.3 | 0.5 |
| Business services | 217 | 12.5 | 11.9 | 9.9 | 5.6 | 6.0 | 3.6 |
| Community, social, and personal servi | 99 | 5.1 | 10.0 | 3.2 | 1.2 | 0.1 | -0.2 |
| Civil service | 113 | 7.3 | -0.7 | 0.6 | 5.3 | -0.5 | 3.4 |
| Education | 264 | 4.5 | 5.9 | 3.0 | 1.4 | 6.5 | 3.2 |
| Health and welfare | 204 | 6.3 | 7.0 | 4.1 | 2.6 | 10.2 | 5.3 |
| Private household services | 32 | 11.8 | 11.6 | 3.6 | -4.1 | -1.5 | 29.3 |
| Foreign organizations | 2 | 0.0 | 16.7 | -28.6 | 30.0 | 69.2 | -25.6 |
| Labor input | (In millions of man-hours) | | | | | | |
| Total 5/ | 77.1 | 8.6 | 5.6 | 2.4 | 1.6 | 0.2 | 1.9 |
| Agriculture | 1.9 | 2.9 | -7.9 | -11.0 | -3.7 | -3.1 | 6.7 |
| Industry | 16.2 | 7.3 | 3.7 | 0.5 | -1.2 | -2.6 | -1.2 |
| Public utilities | 0.8 | 19.2 | -4.3 | -0.9 | 0.0 | 5.7 | 2.1 |
| Construction | 5.5 | 24.7 | 5.9 | 5.9 | -3.0 | -13.2 | -15.9 |
| Commerce | 11.1 | 22.1 | 2.5 | 3.2 | 2.0 | 1.7 | 2.8 |
| Hotels and restaurants | 3.1 | 32.1 | 0.9 | -5.4 | -1.7 | 5.2 | 12.3 |
| Transport, storage, and communicatio | 5.0 | 6.6 | 1.7 | 8.7 | -1.9 | -0.6 | 11.9 |
| Banking, insurance, and finance | 2.7 | 7.8 | 3.4 | -0.8 | 8.9 | -0.3 | -1.4 |
| Business services | 8.3 | 13.4 | 11.9 | 10.7 | 6.1 | 3.5 | 4.5 |
| Community, social, and personal servi | 3.2 | 3.9 | 10.3 | 1.0 | 2.5 | -1.4 | 0.2 |
| Civil service | 4.4 | 9.3 | -0.2 | 2.1 | 3.7 | -0.8 | 4.9 |
| Education | 6.7 | 7.9 | 7.9 | 1.8 | 4.1 | 2.9 | 2.6 |
| Health and welfare | 6.7 | 6.0 | 7.0 | 6.7 | 3.2 | 9.6 | 2.4 |
| Private household services | 0.8 | 17.7 | 17.1 | 8.5 | 0.2 | 7.3 | 52.2 |
| Foreign organizations | 0.1 | 12.6 | 20.2 | -27.5 | 44.2 | 68.3 | -12.6 |

Sources: Central Bureau of Statistics, *Monthly Bulletin of Statistics;* and data provided by the Bank of Israel.

1/ Employment figures are annual averages; labor input figures are weekly averages.
2/ The Central Bureau of Statistics definitions and sample changed in 1994. The rows from 1996 on follow the new classification.
3/ Semi-annual average of 1999 relative to same period in 1998.
4/ Israeli employees.
5/ Data do not sum to total due to an "unknown" category.

Table 10. Israel: Real Wages, Labor Costs, and Productivity, 1994-99

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 1/ |
|---|---|---|---|---|---|---|
| | | | (Percentage change) | | | |
| Real wages per employee post 2/ | | | | | | |
| Total economy | 2.5 | 2.2 | 1.6 | 2.4 | 2.2 | 0.8 |
| Business sector | -0.4 | 0.6 | 1.5 | 3.5 | 3.0 | 1.9 |
| Public sector | 9.8 | 5.7 | 1.9 | 0.0 | 0.4 | -1.6 |
| Labor costs and productivity in the business sector | | | | | | |
| Labor productivity 3/ | -1.5 | 0.3 | 0.1 | 0.4 | 2.6 | ... |
| Unit labor costs 4/ | 1.8 | 0.0 | 1.9 | 2.0 | 0.0 | ... |

Sources: Bank of Israel, *1998 Annual Report*; and data provided by the Bank of Israel.

1/ Monthly average January to August of 1999 relative to same period in 1998.

2/ Real wages in the public sector and real consumption wages in the business sector are deflated by the consumer price index.

3/ Business sector net domestic product per man-hour estimated from the expenditure side.

4/ Ratio of labor cost per man-hour to labor productivity.

Table 11. Israel: Real Wage Indices, 1994-99 1/

|  | Public Services | Business Sector | Total |
|---|---|---|---|
|  |  | (1994=100) |  |
| 1994 | 100.0 | 100.0 | 100.0 |
| 1995 | 105.7 | 100.6 | 102.2 |
| 1996 | 107.7 | 102.1 | 103.8 |
| 1997 | 107.7 | 105.7 | 106.3 |
| 1998 | 108.1 | 108.8 | 108.6 |
| 1999 2/ | 106.9 | 111.4 | 109.8 |
| 1997 |  |  |  |
| I | 105.2 | 103.7 | 104.1 |
| II | 110.2 | 105.2 | 106.7 |
| III | 111.7 | 107.0 | 108.4 |
| IV | 103.8 | 106.8 | 105.9 |
| 1998 |  |  |  |
| I | 105.5 | 109.5 | 108.3 |
| II | 111.8 | 109.2 | 110.0 |
| III | 113.2 | 109.8 | 110.8 |
| IV | 101.9 | 106.8 | 105.3 |
| 1999 |  |  |  |
| I | 103.3 | 110.5 | 108.2 |
| II | 115.5 | 112.1 | 111.9 |

Source: Data provided by the Bank of Israel.

1/ Average monthly wage per employee post at constant prices, based on employers'
contributions to the National Insurance Institute, deflated by the consumer price index.
Data from 1994 are based on a new sample and a new definition of "public services;"
data from earlier years were connected via linking indices.
2/ Montly average January to August 1999; seasonally adjusted data.

Table 12. Israel: Consumer Price Index and its Main Components, 1994-99
(Percentage change, unless indicated otherwise, as of November 1999)

| | Weight in index | 1994 Annual average | 1994 During year | 1995 Annual average | 1995 During year | 1996 Annual average | 1996 During year | 1997 Annual average | 1997 During year | 1997 Annual average | 1997 During year | 1998 Annual average | 1998 During year | 1999 Annual average | 1999 During year |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| General index | 1000.0 | 12.3 | 14.5 | 10.0 | 8.1 | 11.3 | 10.6 | 11.0 | 8.6 | 9.0 | 7.0 | 5.4 | 8.6 | 5.3 | 1.8 |
| General index excluding agricultural products 1/ | 955.9 | 11.9 | 12.7 | 10.5 | 9.9 | 11.5 | 10.7 | 10.7 | 8.3 | 8.9 | 6.9 | 5.6 | 8.6 | 5.3 | 1.7 |
| Agricultural products | 44.1 | 16.6 | 50.7 | 0.4 | -23.6 | 6.4 | 7.9 | 17.1 | 15.9 | 12.2 | 7.7 | 2.3 | 9.8 | 4.2 | 3.4 |
| Fruits, vegetables and field crops | 37.0 | 23.6 | 63.3 | -0.5 | -27.3 | 4.0 | 5.2 | 17.4 | 18.0 | 12.3 | 8.5 | 2.1 | 10.9 | 4.0 | 3.0 |
| Fish and animal products | 7.1 | -19.8 | -18.1 | 7.6 | 17.4 | 24.0 | 24.8 | 15.0 | 4.2 | 11.4 | 2.9 | 3.5 | 3.7 | 5.7 | 6.1 |
| Industrial products | 381.5 | 7.2 | 8.5 | 8.5 | 8.2 | 9.3 | 8.6 | 7.6 | 4.6 | 6.6 | 5.3 | 4.1 | 8.4 | 5.9 | -0.5 |
| Food, beverages and tobacco | 141.5 | 9.5 | 9.4 | 9.3 | 10.0 | 11.5 | 10.1 | 10.7 | 11.5 | 9.2 | 9.3 | 6.5 | 9.1 | 7.5 | 2.0 |
| Clothing and textiles | 52.1 | 3.9 | 7.7 | 7.3 | 6.3 | 6.5 | 4.9 | 1.3 | -16.8 | 1.3 | -4.5 | 0.3 | 8.4 | 0.7 | -9.3 |
| Wood and wood products | 19.4 | 6.9 | 10.3 | 11.8 | 10.4 | 10.1 | 9.6 | 9.3 | 6.9 | 7.6 | 5.4 | 3.8 | 10.7 | 7.9 | -1.8 |
| Footwear, leather goods, rubber and plastic | 17.7 | 5.1 | 6.8 | 5.8 | 3.6 | 5.2 | 5.3 | 2.8 | -3.3 | 2.6 | -0.6 | -2.4 | 3.9 | 2.5 | -4.5 |
| Chemical and fuel products | 44.3 | 6.3 | 9.9 | 9.6 | 9.8 | 18.4 | 21.0 | 15.3 | 10.7 | 12.3 | 8.9 | 5.4 | 7.6 | 10.6 | 10.9 |
| Metals, machinery, transport and electronic equipment | 74.2 | 5.8 | 6.3 | 6.1 | 4.4 | 2.2 | 1.2 | 1.4 | 2.2 | 1.6 | 2.7 | 1.1 | 6.1 | 1.8 | -7.0 |
| Miscellaneous | 32.3 | 8.4 | 9.6 | 9.6 | 9.8 | 9.1 | 7.7 | 6.6 | 5.7 | 5.5 | 5.0 | 5.4 | 10.7 | 8.9 | 2.8 |
| Electricity and water | 27.1 | 8.5 | 8.7 | 10.0 | 9.1 | 8.2 | 10.5 | 9.4 | 3.6 | 7.8 | 4.7 | 2.6 | 5.7 | 5.5 | 3.5 |
| Building and housing services | 206.5 | 23.1 | 23.6 | 14.5 | 13.9 | 16.0 | 13.2 | 13.4 | 10.9 | 10.8 | 7.5 | 5.6 | 8.6 | 2.9 | 2.7 |
| Transportation and communications | 65.8 | 7.0 | 5.5 | 6.3 | 6.8 | 8.0 | 9.1 | 11.6 | 10.7 | 9.2 | 6.5 | 6.4 | 9.3 | 2.2 | -2.5 |
| Services | 275.0 | 12.3 | 13.2 | 11.2 | 9.9 | 11.6 | 11.8 | 12.4 | 11.0 | 10.3 | 9.2 | 7.7 | 9.1 | 7.6 | 5.5 |
| Municipal taxes and insurance | 61.8 | 15.0 | 15.5 | 12.4 | 10.7 | 11.8 | 11.6 | 13.2 | 9.8 | 10.7 | 8.5 | 7.0 | 8.3 | 4.3 | 0.5 |
| Public sector services | 105.8 | 12.8 | 14.9 | 11.8 | 9.8 | 12.4 | 13.0 | 12.6 | 11.1 | 10.7 | 9.4 | 7.3 | 7.8 | 7.6 | 7.0 |
| Education | 41.8 | 13.2 | 13.1 | 11.6 | 10.4 | 12.2 | 11.6 | 11.6 | 11.1 | 10.1 | 9.2 | 6.9 | 6.1 | 6.0 | 7.2 |
| Health | 64.0 | 12.5 | 16.5 | 12.4 | 8.9 | 12.7 | 14.9 | 14.0 | 11.3 | 11.5 | 9.9 | 8.0 | 10.2 | 10.0 | 7.0 |
| Personal services | 58.0 | 9.0 | 10.2 | 10.1 | 9.3 | 10.3 | 10.8 | 10.7 | 9.4 | 9.0 | 9.0 | 8.1 | 9.6 | 9.7 | 6.6 |
| Entertainment | 19.4 | 13.1 | 13.2 | 12.9 | 11.0 | 10.2 | 10.9 | 14.1 | 14.8 | 11.6 | 11.9 | 9.5 | 10.9 | 13.5 | 10.8 |
| Other | 38.6 | 7.0 | 8.5 | 8.6 | 8.4 | 10.3 | 10.7 | 8.8 | 6.5 | 7.7 | '7.3 | 7.2 | 8.7 | 7.0 | 3.6 |
| Hotels, guest accommodation | 41.7 | 11.5 | 9.7 | 8.6 | 9.9 | 11.5 | 11.8 | 13.9 | 15.2 | 11.3 | 10.3 | 9.4 | 12.5 | 10.1 | 9.4 |
| Business services | 7.7 | 14.5 | 14.1 | 10.7 | 9.7 | 11.8 | 9.9 | 10.3 | 10.3 | 8.7 | 8.4 | 5.7 | 7.2 | 4.9 | 3.0 |

Source: Central Bureau of Statistics data, as prepared and compiled by the Bank of Israel.

1/ In tables from previous years this component was calculated as "General Index excluding fruits and vegetables".

Table 13. Israel: Selected Price Indices, 1994-99
(Percent increase during the period, at annual rates, as of November 1999)

| | Weight 1/ | | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
| | 1998 2/ | 1999 | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | | | (Percent increase during the period, at annual rates) | | | | | |
| Consumer price index | | | | | | | | |
| General index | 1000.0 | 1000.0 | 14.5 | 8.1 | 10.6 | 7.0 | 8.6 | 1.8 |
| Controlled prices 3/ | 121.4 | 134.5 | 12.0 | 7.1 | 11.5 | 7.6 | 7.6 | 1.2 |
| Uncontrolled prices | 844.6 | 865.5 | 14.9 | 8.0 | 10.5 | 6.9 | 8.8 | 1.9 |
| Tradables | 380.4 | 402.2 | 9.0 | 7.7 | 8.3 | 5.8 | 8.7 | -1.1 |
| Nontradables | 585.6 | 597.8 | 18.0 | 8.4 | 12.0 | 7.7 | 8.6 | 3.7 |
| Of which: Housing | 207.7 | 214.2 | 23.6 | 13.6 | 13.2 | 7.5 | 8.8 | 2.7 |
| CPI excluding housing | 792.3 | 785.8 | 12.2 | 6.4 | 9.8 | 6.8 | 8.6 | 1.6 |
| CPI excluding housing and | | | | | | | | |
| fruits & vegetables | 750.0 | 750.4 | 9.7 | 8.8 | 10.1 | 6.7 | 8.5 | 1.5 |
| CPI excluding housing, fruits & | | | | | | | | |
| vegetables, controlled prices, | | | | | | | | |
| clothing & footwear | 535.1 | 569.9 | 9.3 | 9.2 | 10.2 | 7.8 | 8.8 | 2.6 |
| Wholesale price index of | | | | | | | | |
| industrial output | | | 9.7 | 10.0 | 7.0 | 5.9 | 8.2 | 3.5 |
| Exchange rates | | | | | | | | |
| Against the U.S. dollar | | | 1.8 | 3.1 | 5.0 | 7.9 | 18.2 | 2.5 |
| Against the currency basket | | | 5.4 | 5.8 | 3.0 | 3.7 | 20.6 | 0.5 |

Source: Central Bureau of Statistics data, as prepared and compiled by the Bank of Israel.

1/ The weights of the components in the Consumer Price Index were changed in 1999.

2/ The weights of the Controlled and Uncontrolled price indices and of the Tradable and Non-tradable product indices add up to 966.0.
The difference represents health tax (as of 1995) which necessitated the exclusion of Sick Fund services from the CPI.

3/ Public transport, communication services, education, medical serivices, municiple taxes, electricity, fuel, water, and meat.

Table 14.  Israel: Regulated Prices in the Consumer Price Index, 1998-99
(as of November 1999)

| | Weight 1/ (from 1000) | | | Weight 1/ (from 1000) | |
|---|---|---|---|---|---|
| | 1998 | 1999 | | 1998 | 1999 |
| A.  Controlled prices | | | B.  Prices under supervision | | |
| Public bus transportation | 14.7 | 9.6 | Flour | 1.5 | 1.0 |
| Meat | 7.8 | 4.4 | Margarine | 0.8 | 0.6 |
| Municipal taxes | 20.0 | 22.1 | Yogurt | 5.7 | 6.0 |
| Electricity (for domestic use) | 18.4 | 19.0 | Bread | 9.0 | 8.5 |
| Water (for domestic use) | 8.6 | 9.9 | Milk | 7.6 | 6.6 |
| Education fees | 22.7 | 30.4 | Cream | 1.1 | 1.0 |
| Sick Fund services | 8.1 | 6.9 | Butter | 0.5 | 0.5 |
| Train and domestic flight tickets | 0.3 | 0.5 | Cheese | 9.8 | 8.6 |
| Phone services | 20.3 | 31.2 | Refrigerators | 5.0 | -- |
| Mail services | 0.5 | 0.5 | School books | 4.4 | 3.5 |
| Total | 121.4 | 134.5 | Medicines | 4.2 | -- |
| | | | Gas (for domestic use) | 3.2 | 3.7 |
| | | | Oil and fuel (for domestic use) | 0.4 | 0.1 |
| | | | Taxi rides | 3.4 | 4.5 |
| | | | Total | 56.6 | 44.6 |

Source:  Data provided by the Bank of Israel.

1/ The composition and weights of the regulated prices in the Consumer Price Index were changed in 1999.

Table 15. Israel: Bank of Israel Accounts, 1994-99

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Nov. |
|---|---|---|---|---|---|---|
| | (In millions of new sheqalim; end of period) | | | | | |
| Total assets | 46,677 | 41,674 | 51,465 | 85,952 | 107,807 | 104,421 |
| Foreign assets | 20,507 | 25,576 | 37,126 | 70,970 | 94,325 | 90,018 |
| Domestic assets | -- | -- | -- | -- | 7,598 | 7,575 |
| Credit to the government (long term debt) | 8,080 | 7,773 | 7,448 | 7,109 | 6,760 | 6,762 |
| Loans and notes | 15,564 | 4,503 | 1,236 | 1,519 | 838 | 813 |
| Monetary | 15,011 | 4,009 | 957 | 1,426 | 796 | 784 |
| Other | 553 | 494 | 279 | 93 | 42 | 29 |
| Government securities | 1,896 | 3,045 | 4,856 | 5,090 | 5,528 | 5,853 |
| Other accounts | 630 | 777 | 799 | 1,264 | 356 | 975 |
| Total liabilities | 46,677 | 41,674 | 51,465 | 85,952 | 107,807 | 104,421 |
| Foreign liabilities | 1,366 | 1,242 | 724 | 613 | 714 | 305 |
| Allocations of SDRs | 467 | 996 | 996 | 508 | 626 | -- |
| Liabilities to international monetary organizations | 899 | 746 | 228 | 105 | 88 | -- |
| Currency in circulation | 6,454 | 7,916 | 9,222 | 10,373 | 11,935 | 12,989 |
| Deposits of the government | 17,456 | 19,325 | 23,013 | 26,509 | 39,407 | 35,483 |
| In Israeli currency | 6,682 | 16,828 | 15,670 | 13,914 | 18,824 | -- |
| In foreign currency | 10,774 | 2,497 | 7,343 | 12,595 | 20,583 | -- |
| Deposits of banking institutions | 19,603 | 11,126 | 16,484 | 46,154 | 52,709 | 58,463 |
| In Israeli currency | 3,190 | 1,007 | 8,502 | 38,521 | 44,778 | 49,805 |
| In foreign currency | 16,413 | 10,119 | 7,982 | 7,633 | 7,931 | 8,658 |
| Against resident deposits | 8,074 | 9,844 | 7,649 | 7,165 | 7,526 | 8,177 |
| Against nonresident deposits | 3,885 | -- | -- | -- | -- | -- |
| Free deposits of banking institutions | 4,454 | 275 | 333 | 468 | 405 | 481 |
| Other deposits and accounts | 1,478 | 1,745 | 1,952 | 3,328 | 2,722 | -3,139 |
| Capital and reserves | 320 | 320 | 70 | -1,025 | 320 | 320 |

Sources: Central Bureau of Statistics, *Monthly Bulletin of Statistics*; and data provided by the Bank of Israel.

Table 16. Israel: Monetary Survey, 1995–99 1/

|  | 1995 | 1996 | 1997 | 1998 | 1999 Sept. |
|---|---|---|---|---|---|
|  | (In millions of new sheqalim; end of period) | | | | |
| Net foreign assets | 17,056 | 30,133 | 49,721 | 62,703 | 69,942 |
| Bank of Israel | 24,334 | 36,402 | 70,357 | 82,839 | 93,139 |
| DMBs | -7,278 | -6,269 | -20,636 | -20,136 | -23,197 |
| Net domestic assets | 228,532 | 268,574 | 250,058 | 264,986 | 321,335 |
| Domestic credit | 218,968 | 257,821 | 250,609 | 267,896 | 308,537 |
| Net claims on government | 34,774 | 39,286 | 34,104 | 24,635 | 18,902 |
| Total gross claims | 80,783 | 89,889 | 78,663 | 72,888 | 75,356 |
| Bank of Israel | 10,818 | 12,304 | 12,199 | 12,439 | 12,610 |
| DMB claims | 69,965 | 77,585 | 66,464 | 60,449 | 62,746 |
| Government bonds | 36,624 | 47,206 | 40,448 | 39,000 | 44,476 |
| From bank resources | 6,378 | 6,286 | 4,645 | 2,876 | 3,178 |
| Foreign currency credit | 2,030 | 1,226 | 1,373 | 1,200 | 1,089 |
| From earmarked deposits | 24,933 | 22,867 | 19,998 | 17,373 | 14,003 |
| Less: Government deposits held at: | 46,009 | 50,603 | 44,559 | 48,253 | 56,454 |
| Bank of Israel | 19,325 | 23,013 | 26,509 | 29,923 | 36,786 |
| DMBs | 26,684 | 27,590 | 18,050 | 18,330 | 19,668 |
| Mortgage banks | 18,128 | 24,352 | 24,360 | 27,157 | 34,976 |
| Private sector | 166,066 | 194,183 | 192,145 | 216,104 | 254,659 |
| Nondirected credit in Israeli currency | 124,562 | 144,442 | 125,096 | 134,892 | 154,019 |
| Nondirected credit in foreign currency | 34,332 | 42,506 | 59,918 | 73,663 | 92,475 |
| Directed credit in foreign currency | 327 | 152 | 2 | 5 | 0 |
| Credit from earmarked deposits | 5,812 | 6,142 | 6,100 | 6,404 | 7,045 |
| Securities | 1,033 | 941 | 1,029 | 1,140 | 1,120 |
| Other items, net | 9,564 | 10,753 | -551 | -2,910 | 12,798 |
| Monetary liabilities | 227,408 | 276,999 | 311,947 | 338,548 | 398,214 |
| M1 | 17,033 | 20,294 | 22,540 | 21,968 | 24,638 |
| Quasi-money | 210,375 | 256,705 | 289,407 | 316,580 | 373,576 |
| Time and saving deposits | 194,031 | 238,303 | 269,674 | 298,619 | 352,916 |
| Time deposits | 53,295 | 76,882 | 98,824 | 116,874 | 148,525 |
| Saving schemes | 61,501 | 76,949 | 84,997 | 88,400 | 100,196 |
| Long-term indexed deposits | 34,663 | 34,603 | 34,020 | 33,409 | 33,011 |
| Foreign currency deposits | 40,093 | 46,201 | 49,151 | 56,869 | 69,044 |
| Mortgage bank deposits | 4,479 | 3,668 | 2,682 | 3,067 | 2,140 |
| CDs | 16,344 | 18,402 | 19,733 | 17,961 | 20,660 |
| Earmarked deposits | 24,764 | 22,694 | 19,837 | 17,346 | 13,878 |

Source: Data provided by the Bank of Israel.

1/ Net foreign assets plus net domestic assets do not sum to monetary liabilities plus earmarked deposits as the data are drawn from different sources. /

Table 17. Israel: Financial Assets of the Public, 1995-99 1/

| | 1995 | 1996 | 1997 | 1998 | 1999 Sept. |
|---|---|---|---|---|---|
| | (In millions of new sheqalim; end of period) | | | | |
| Total assets in banks and government bonds | 302,023 | 358,704 | 418,182 | 451,378 | 518,982 |
| Broad money assets | 226,017 | 274,210 | 310,176 | 335,586 | 395,310 |
| Liquid financial assets (M3) | 109,973 | 145,098 | 174,950 | 195,807 | 243,761 |
| Money supply (M1) | 17,034 | 20,294 | 22,540 | 21,968 | 24,636 |
| Time deposits and negotiable CDs | 68,838 | 94,363 | 118,200 | 133,555 | 167,741 |
| Special deposits 2/ | 434 | 295 | 271 | 278 | 287 |
| Resident foreign currency | 23,667 | 30,146 | 33,939 | 40,006 | 51,097 |
| Medium-term assets | 116,044 | 129,112 | 135,226 | 139,779 | 151,549 |
| Restitution deposits | 16,403 | 16,039 | 15,204 | 16,853 | 17,935 |
| Saving schemes | 61,446 | 75,537 | 83,165 | 87,047 | 98,617 |
| Long-term linked deposits | 12,331 | 13,732 | 15,768 | 17,290 | 19,770 |
| Earmarked deposits | 25,864 | 23,804 | 21,089 | 18,589 | 15,227 |
| Short-term treasury bills | 7,393 | 8,934 | 13,369 | 16,094 | 18,865 |
| Tradable linked government bonds 3/ | 68,613 | 75,560 | 94,637 | 99,698 | 104,807 |
| Stocks | 114,500 | 116,600 | 163,900 | 167,228 | 224,231 |
| Total financial assets | 416,523 | 475,304 | 582,082 | 618,606 | 743,213 |
| Of which: Nonindexed short term assets | 93,266 | 123,591 | 154,108 | 171,575 | 211,242 |
| | (In percent of total financial assets) | | | | |
| Total assets in banks and government bonds | 72.5 | 75.5 | 71.8 | 73.0 | 69.8 |
| Broad money assets | 54.3 | 57.7 | 53.3 | 54.2 | 53.2 |
| Liquid financial assets (M3) | 26.4 | 30.5 | 30.1 | 31.7 | 32.8 |
| Money supply (M1) | 4.1 | 4.3 | 3.9 | 3.6 | 3.3 |
| Time deposits and negotiable CDs | 16.5 | 19.9 | 20.3 | 21.6 | 22.6 |
| Special deposits 2/ | 0.1 | 0.1 | -- | -- | -- |
| Resident foreign currency | 5.7 | 6.3 | 5.8 | 6.5 | 6.9 |
| Medium-term assets | 27.9 | 27.2 | 23.2 | 22.6 | 20.4 |
| Restitution deposits | 3.9 | 3.4 | 2.6 | 2.7 | 2.4 |
| Saving schemes | 14.8 | 15.9 | 14.3 | 14.1 | 13.3 |
| Long-term linked deposits | 3.0 | 2.9 | 2.7 | 2.8 | 2.7 |
| Earmarked deposits | 6.2 | 5.0 | 3.6 | 3.0 | 2.0 |
| Short-term treasury bills | 1.8 | 1.9 | 2.3 | 2.6 | 2.5 |
| Tradable linked government bonds 3/ | 16.5 | 15.9 | 16.3 | 16.1 | 14.1 |
| Stocks | 27.5 | 24.5 | 28.2 | 27.0 | 30.2 |
| Total financial assets | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Of which: Nonindexed short term assets | 22.4 | 26.0 | 26.5 | 27.7 | 28.4 |
| | (Real rate of growth) 4/ | | | | |
| Total assets in banks and government bonds | 5.2 | 7.4 | 9.0 | 3.1 | 9.2 |
| Broad money assets | 6.4 | 9.7 | 5.7 | 3.3 | 11.9 |
| Liquid financial assets (M3) | 17.6 | 19.3 | 12.7 | 6.9 | 18.2 |
| Money supply (M1) | 7.9 | 7.7 | 3.8 | -6.9 | 6.5 |
| Time deposits and negotiable CDs | 30.0 | 23.9 | 17.1 | 7.9 | 19.3 |
| Special deposits 2/ | 105.9 | -38.5 | -14.1 | -2.0 | -2.0 |
| Resident foreign currency | -3.8 | 15.2 | 5.2 | 12.6 | 21.3 |
| Medium-term assets | -2.3 | 0.6 | -2.1 | -1.3 | 3.0 |
| Restitution deposits | 4.7 | -11.6 | -11.4 | 5.9 | 1.1 |
| Saving schemes | 6.4 | 11.1 | 2.9 | 0.0 | 7.6 |
| Long-term linked deposits | -13.1 | 0.7 | 7.3 | 4.7 | 8.6 |
| Earmarked deposits | -17.1 | -16.8 | -17.2 | -15.8 | -22.2 |
| Short-term treasury bills | 60.5 | 9.3 | 39.9 | 15.0 | 11.3 |
| Tradable linked government bonds 3/ | -2.1 | -0.4 | 17.1 | 0.6 | -0.2 |
| Stocks | 7.2 | -7.9 | 31.4 | -2.5 | 27.3 |
| Total financial assets | 5.8 | 3.2 | 14.5 | 1.5 | 14.1 |
| Of which: Nonindexed short term assets | 27.2 | 19.8 | 16.5 | 6.3 | 16.9 |

Source: Data provided by the Bank of Israel.

1/ The public consists of individuals and corporations excluding the Government, Bank of Israel, ordinary banking corporations, and banks abroad. It includes social and life insurance funds but does not include the assets of these funds held out of the ordinary banking system.
2/ Noninterest-bearing deposits mandated by law to cover total subscriptions for securities flotations in the TASE.
3/ Defined to exclude bond holdings of pension funds and insurance companies.
4/ Nominal rate deflated by consumer price index. Year to September for 1999 figures.

Table 18. Israel: Commercial Bank Credit to the Private Sector, 1994-99 1/

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Sept. |
|---|---|---|---|---|---|---|
| | (In millions of new sheqalim; end of period) | | | | | |
| Total | 151,892 | 183,168 | 217,594 | 252,566 | 300,634 | 335,525 |
| Short-term credit | 79,013 | 100,470 | 116,439 | 139,234 | 177,062 | 198,703 |
| Nondirected credit | 78,522 | 100,143 | 116,287 | 139,232 | 177,062 | 198,703 |
| In Israeli currency 2/ | 62,633 | 65,565 | 73,118 | 77,860 | 94,782 | 104,336 |
| In U.S. dollars | 15,889 | 34,578 | 43,169 | 61,372 | 82,280 | 94,367 |
| Directed credit | 491 | 327 | 152 | 2 | 0 | 0 |
| Medium- and long-term credit | 72,879 | 82,698 | 101,155 | 113,332 | 132,572 | 136,822 |
| Of which: Indexed NIS credit | 57,139 | 64,989 | 84,019 | 95,411 | 110,198 | 122,534 |
| | (In percent of total) | | | | | |
| Total | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Short-term credit | 52.0 | 54.9 | 53.5 | 55.1 | 58.9 | 59.2 |
| Nondirected credit | 51.7 | 54.7 | 53.4 | 55.1 | 58.9 | 59.2 |
| In Israeli currency 2/ | 41.2 | 35.8 | 33.6 | 30.8 | 31.5 | 31.1 |
| In U.S. dollars | 10.5 | 18.9 | 19.8 | 24.3 | 27.4 | 28.1 |
| Directed credit | 0.3 | 0.2 | 0.1 | -- | -- | -- |
| Medium- and long-term credit | 48.0 | 45.1 | 46.5 | 44.9 | 44.1 | 40.8 |
| Of which: Indexed NIS credit | 37.6 | 35.5 | 38.6 | 37.8 | 36.7 | 36.5 |
| | (Nominal percentage increase) | | | | | |
| Total | 27.1 | 20.6 | 18.8 | 16.1 | 19.0 | 11.6 |
| Short-term credit | 23.0 | 27.2 | 15.9 | 19.6 | 27.2 | 12.2 |
| Nondirected credit | 23.0 | 27.5 | 16.1 | 19.7 | 27.2 | 12.2 |
| In Israeli currency 2/ | 22.3 | 4.7 | 11.5 | 6.5 | 21.7 | 10.1 |
| In U.S. dollars | 26.0 | 117.6 | 24.8 | 42.2 | 34.1 | 14.7 |
| Directed credit | 21.8 | -33.4 | -53.5 | -98.7 | -100.0 | -- |
| Medium- and long-term credit | 31.9 | 13.5 | 22.3 | 12.0 | 17.0 | 3.2 |
| Of which: Indexed NIS credit | 44.7 | 13.7 | 29.3 | 13.6 | 15.5 | 11.2 |
| | (Real percentage increase) 3/ | | | | | |
| Total | 11.1 | 11.6 | 7.4 | 8.5 | 13.7 | 10.0 |
| Short-term credit | 7.5 | 17.6 | 4.8 | 11.8 | 21.5 | 10.6 |
| Nondirected credit | 7.5 | 18.0 | 5.0 | 11.9 | 21.5 | 10.6 |
| In Israeli currency 2/ | 6.9 | -3.2 | 0.8 | -0.5 | 16.3 | 8.5 |
| In U.S. dollars | 10.1 | 101.3 | 12.9 | 32.9 | 28.0 | 13.0 |
| Directed credit | 6.5 | -38.4 | -58.0 | -98.8 | -100.0 | -- |
| Medium- and long-term credit | 15.3 | 5.0 | 10.6 | 4.7 | 11.7 | 1.7 |
| Of which: Indexed NIS credit | 26.5 | 5.2 | 16.9 | 6.1 | 10.3 | 9.6 |

Source: Data provided by the Bank of Israel.

1/ Includes credit to local authorities (the credit excludes deductions for loan-loss provisions).
2/ Includes indexation increments.
3/ Nominal rate deflated by consumer price index. Year to September for 1999 figures.

Table 19. Israel: Interest Rates, 1994-99

| | Inflation rate | Change in NIS/US$ exchange rate | Lending rates | | | Discount window loan, average cost 3/ | Monetary loan (maximum bracket) | Three-month Euro-dollar rate 4/ | Deposit rates | | Time deposits | Yield to maturity on treasury bills | Yield to maturity on 5-year bonds | Yield to maturity on 10-year bonds |
| | | | Overdraft facilities 1/ | Exceptional credit | Nondirected NIS credit 2/ | | | | Reserve deposits with BoI | Self Renewing Overnight | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | (Average annual rate) | | | | | | | (Nominal rates in percent per annum) 5/ | | | | | | |
| 1994 | 12.3 | 6.4 | 19.8 | 21.8 | 17.4 | 13.4 | 12.9 | 4.6 | 2.2 | 11.6 | 12.2 | 13.0 | 2.9 | 3.2 |
| 1995 | 10.0 | -- | 22.4 | 25.0 | 20.2 | 15.5 | 14.8 | 5.9 | 0.3 | 13.3 | 14.1 | 15.4 | 4.1 | 4.3 |
| 1996 | 11.3 | 5.9 | 23.0 | 24.9 | 20.7 | 16.1 | 15.3 | 5.4 | 3.8 | 13.8 | 14.5 | 15.6 | 4.4 | 4.5 |
| 1997 | 9.0 | 8.2 | 20.8 | 22.8 | 18.7 | 14.3 | 13.8 | 5.6 | 12.2 | 12.2 | 13.1 | 14.1 | 3.9 | 4.0 |
| 1998 | 5.4 | 10.2 | 18.3 | 20.4 | 16.2 | 12.1 | 12.0 | 5.5 | 7.8 | 10.3 | 11.0 | 12.2 | 5.0 | 4.8 |
| 1999 | | | 19.3 | 21.5 | 16.7 | 13.2 | 13.0 | 5.2 | 0.0 | 11.0 | 11.6 | 12.2 | 5.5 | 5.1 |
| | (Annualized rate) | | | | | | | (Percent increase over preceding month) | | | | | | |
| 1998 Jan. | 4.0 | 15.6 | 20.3 | 22.3 | 18.1 | 13.9 | 13.6 | 5.5 | 12.4 | 12.0 | 12.6 | 13.9 | 4.4 | 4.4 |
| Feb. | -0.8 | 5.9 | 19.7 | 21.5 | 17.7 | 13.3 | 12.9 | 5.5 | 11.9 | 11.4 | 12.2 | 13.4 | 5.1 | 4.7 |
| Mar. | -2.3 | -2.6 | 19.0 | 21.0 | 17.2 | 12.9 | 12.6 | 5.6 | 11.3 | 11.0 | 11.9 | 12.9 | 5.4 | 4.9 |
| Apr. | 17.7 | 48.0 | 18.8 | 20.7 | 16.7 | 12.6 | 12.3 | 5.6 | 10.9 | 10.7 | 11.5 | 12.7 | 5.0 | 4.8 |
| May | 4.7 | -12.2 | 18.5 | 20.5 | 16.3 | 12.2 | 11.9 | 5.6 | 10.5 | 10.4 | 11.2 | 12.1 | 5.4 | 4.8 |
| June | 4.7 | -0.3 | 18.3 | 20.3 | 16.0 | 11.8 | 11.6 | 5.6 | 10.2 | 10.0 | 10.8 | 11.9 | 5.9 | 5.1 |
| July | -1.5 | -1.3 | 17.9 | 19.9 | 15.6 | 11.5 | 11.3 | 5.6 | 9.9 | 9.8 | 10.6 | 11.5 | 5.6 | 5.2 |
| Aug. | 6.3 | 16.9 | 16.3 | 18.4 | 14.2 | 9.9 | 9.8 | 5.6 | 8.7 | 8.3 | 9.6 | 10.0 | 4.6 | 4.7 |
| Sep. | 18.2 | 54.6 | 15.9 | 18.0 | 13.7 | 9.6 | 9.6 | 5.4 | 8.3 | 8.0 | 8.9 | 9.9 | 4.4 | 4.6 |
| Oct. | 42.8 | 183.7 | 16.1 | 18.0 | 13.9 | 10.1 | 10.2 | 5.1 | 0.0 | 8.2 | 8.9 | 11.3 | 4.1 | 4.8 |
| Nov. | 16.5 | 9.7 | 19.1 | 21.4 | 17.2 | 13.2 | 13.4 | 5.2 | 0.0 | 11.0 | 11.2 | 13.4 | 4.6 | 4.9 |
| Dec. | 0.7 | -13.3 | 20.0 | 22.4 | 17.6 | 14.6 | 14.4 | 5.1 | 0.0 | 12.2 | 12.5 | 13.6 | 5.1 | 5.1 |
| 1999 Jan. | -5.4 | -24.5 | 20.2 | 22.5 | 17.7 | 14.6 | 14.3 | 4.9 | 0.0 | 12.2 | 12.6 | 13.4 | 5.6 | 5.3 |
| Feb. | -8.8 | -3.5 | 20.2 | 22.6 | 17.7 | 14.6 | 13.9 | 4.9 | 0.0 | 12.1 | 12.6 | 13.3 | 5.3 | 5.2 |
| Mar. | -2.3 | -10.3 | 19.7 | 22.1 | 17.2 | 14.0 | 13.9 | 4.9 | 0.0 | 11.6 | 12.2 | 12.8 | 5.9 | 5.0 |
| Apr. | 3.5 | 9.4 | 19.2 | 21.5 | 16.7 | 13.5 | 13.3 | 4.9 | 0.0 | 11.0 | 11.7 | 12.3 | 5.4 | 4.9 |
| May | 5.9 | 18.1 | 19.1 | 21.3 | 16.4 | 12.9 | 12.7 | 4.9 | 0.0 | 10.5 | 11.2 | 12.0 | 5.1 | 4.9 |
| June | 3.5 | -8.0 | 19.1 | 21.4 | 16.4 | 12.9 | 12.8 | 5.1 | 0.0 | 10.5 | 11.2 | 12.0 | 5.4 | 5.1 |
| July | 3.5 | 2.2 | 19.0 | 21.0 | 16.3 | 12.9 | 12.7 | 5.2 | 0.0 | 10.5 | 11.1 | 11.7 | 5.5 | 5.1 |
| Aug. | 5.9 | 35.9 | 18.5 | 20.7 | 15.7 | 12.3 | 12.2 | 5.3 | 0.0 | 10.1 | 10.7 | 11.3 | 5.3 | 5.2 |
| Sep. | 5.8 | 13.3 | 18.5 | 20.6 | 15.8 | 12.3 | 12.2 | 5.4 | 0.0 | 10.1 | 10.7 | 11.8 | 5.5 | 5.3 |
| Oct. | 8.2 | 5.0 | ... | ... | ... | 12.3 | 12.1 | 6.1 | 0.0 | ... | ... | 11.7 | 5.7 | 5.3 |

Source: Data provided by the Bank of Israel.

1/ Includes basic interest rate, commitment fees and the higher interest charged for drawings in excess of approved ceiling.
2/ Includes interest on overdraft facilities.
3/ The interest specified here is the weighted average of Bank of Israel auctions on monetary loans.
4/ The base for interest on dollar loans is the euro expressed in dollar terms for three months.
5/ Monthly rates compounded annually. Average of available monthly rates for 1999.

Table 20. Israel: Interest Rates on Various Types of Credit and the Public's Assets, 1994-99

| | 1994 | 1995 | 1996 | 1997 | 1998 | | | | 1999 | | |
|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | | | I | II | III | IV | I | II | III |

(Annual rates in percent, before tax)

**Nominal interest rates**

| | 1994 | 1995 | 1996 | 1997 | I | II | III | IV | I | II | III |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Short-term bank credit to the private sector 1/ | 15.5 | 17.8 | 17.6 | 17.3 | 15.5 | 16.5 | 21.7 | 32.4 | 4.4 | 14.5 | 20.0 |
| Nondirected credit | 15.6 | 17.8 | 17.6 | 17.3 | 15.5 | 16.6 | 21.7 | 32.5 | 4.3 | 14.5 | 20.0 |
| In Israeli currency | 17.4 | 20.2 | 20.7 | 18.7 | 17.7 | 16.4 | 14.5 | 16.2 | 17.6 | 16.5 | 15.9 |
| Overdraft facilities | 19.8 | 22.4 | 23.0 | 20.8 | 19.7 | 18.5 | 16.7 | 18.4 | 20.0 | 19.1 | 18.7 |
| Fixed-term credit | 15.6 | 18.4 | 18.8 | 17.0 | 16.2 | 14.9 | 13.1 | 14.8 | 16.1 | 15.0 | 14.4 |
| Self-renewing overnight deposit | 11.6 | 13.3 | 13.8 | 12.2 | 11.5 | 10.4 | 8.7 | 10.5 | 11.9 | 10.7 | 10.2 |
| Time deposits 2/ | 12.2 | 14.1 | 14.5 | 13.1 | 12.2 | 11.2 | 9.7 | 10.9 | 12.5 | 11.4 | 10.9 |
| One-month treasury bills | 13.0 | 15.4 | 15.6 | 14.1 | 13.4 | 12.2 | 10.5 | 11.9 | 13.4 | 12.3 | 11.8 |

**Real actual interest rates 3/**

| | 1994 | 1995 | 1996 | 1997 | I | II | III | IV | I | II | III |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Short-term bank credit to the private sector 1/ | 0.9 | 9.0 | 6.3 | 9.6 | 15.0 | 6.8 | 13.3 | 21.9 | -2.4 | 8.1 | 14.0 |
| Nondirected credit | 1.0 | 9.0 | 6.3 | 9.6 | 15.0 | 6.9 | 13.3 | 22.0 | -2.5 | 8.1 | 14.0 |
| In Israeli currency | 2.6 | 11.2 | 9.1 | 11.0 | 17.2 | 6.7 | 6.6 | 7.0 | 9.9 | 10.0 | 10.1 |
| Overdraft facilities | 4.7 | 13.2 | 11.2 | 12.9 | 19.2 | 8.6 | 8.7 | 9.0 | 12.1 | 12.5 | 12.7 |
| Fixed-term credit | 1.0 | 9.5 | 7.4 | 9.3 | 15.7 | 5.3 | 5.3 | 5.7 | 8.5 | 8.6 | 8.6 |
| In foreign currency (euro) 4/ | -7.0 | 1.0 | 0.1 | ... | 11.6 | 5.6 | 19.1 | 23.2 | -3.7 | 6.6 | 16.6 |
| CDs | -2.5 | 4.8 | 2.9 | 4.9 | 11.0 | 1.2 | 1.2 | 1.7 | 4.6 | 4.5 | 4.7 |
| Time deposits 2/ | -2.0 | 5.5 | 3.5 | 5.7 | 11.8 | 1.9 | 2.1 | 2.1 | 5.1 | 5.2 | 5.3 |
| One-month treasury bills | -1.3 | 6.7 | 4.5 | 6.6 | 12.9 | 2.8 | 2.9 | 3.0 | 6.0 | 6.0 | 6.2 |
| Indexed 5-year government bon | 2.9 | 4.1 | 4.4 | 3.9 | 4.0 | 5.4 | 4.8 | 4.8 | 4.8 | 4.8 | 4.8 |
| Interest rate spread 5/ | 7.5 | 8.2 | 8.2 | 7.8 | 7.4 | 7.5 | 7.4 | 7.4 | 7.4 | 7.4 | 7.4 |

Source: Data provided by the Bank of Israel.

1/ Includes directed credit and nondirected foreign currency linked credit.
2/ Average for all time deposits, overdrafts, and the rate on certificates of deposit.
3/ Nominal rate deflated by consumer price index. In the case of quarterly data, the rate of inflation used is the annualized quarterly rate.
4/ Euro expressed in dollar terms for three months is the base for interest on dollar loans, excluding public companies.
5/ Interest rate differential defined as the gap in nominal percentage points on an annual basis between the effective rate on overdrafts and the rate on certificates of deposit.

Table 21. Israel: Reserve Requirements on Deposits and Interest Brackets, 1994-99

| | Demand deposits | Time deposits | | |
|---|---|---|---|---|
| | | (In percent) | | |
| | | (November 2, 1991 to December 28, 1994) | | |
| | | 1-6 days | 1 week-3 months | Over 3 months |
| Reserve requirement | | | | |
| Domestic holdings | 8 | 8 | 6 | 4 |
| Foreign holdings | | | | |
| Percentage of reserve requirement on which interest is paid | | | | |
| by the Bank of Israel | 0 | 0 | 33.3 | 50 |
| | | (from December 29, 1994) | | |
| | | 1-6 days | 1 week-1 year | Over 1 year |
| Reserve requirement | 6 | 6 | 3 | 0 |
| Domestic holdings | 6 | 6 | 3 | 0 |
| Foreign holdings | 6 | 6 | 3 | 0 |
| Percentage of reserve requirement on which interest is paid | | | | |
| by the Bank of Israel | 0 | 0 | 0 | 0 |

Source: Bank of Israel.

Table 22. Israel: Sources of Changes to the M3 Base, 1994-99 1/

| | 1994 | 1995 | 1996 | 1997 | 1998 | | | | 1999 | | |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| | | | | | I | II | III | IV | I | II | III |
| | (In millions of new sheqalim) | | | | | | | | | | |
| Public sector injection 2/ | 4,940 | 2,841 | 8,582 | 3,485 | 23 | 612 | 51 | 2,620 | 1,752 | 532 | -1,184 |
| Total public sector domestic deficit | 6,098 | 11,428 | 16,429 | 11,204 | 1,224 | 2,009 | 2,478 | 7,902 | 2,245 | 3,234 | 1,727 |
| *Less:* Amount absorbed by net | | | | | | | | | | | |
| borrowing 3/ | 1,158 | 8,587 | 7,847 | 7,719 | 1,201 | 1,397 | 2,427 | 5,282 | 493 | 2,702 | 2,911 |
| Bank of Israel injection | -4,188 | -21,975 | -10,534 | -22,631 | -2,780 | 61 | 2,457 | -3,865 | 1,690 | -2,349 | 407 |
| Monetary loans | -1,490 | -11,002 | -3,052 | 470 | -629 | -5 | 58 | -55 | 657 | -300 | -345 |
| Swaps | -- | -5,146 | -917 | 1,112 | -69 | -106 | -262 | -454 | 193 | -68 | -222 |
| Open market operations | 1,386 | -3,061 | 890 | 157 | -1,044 | -15 | -48 | -309 | -876 | -865 | 1,135 |
| Other factors 4/ | -4,084 | -2,766 | -7,455 | -24,370 | -1,038 | 189 | 2,709 | -3,047 | 1,716 | -1,116 | -161 |
| Total liquidity injection | 752 | -19,134 | -1,952 | -19,146 | -2,757 | 673 | 2,508 | -1,245 | 3,442 | -1,817 | -777 |
| Net foreign currency purchases | | | | | | | | | | | |
| by private sector | -1,151 | -18,413 | -5,753 | -22,817 | -1,476 | 116 | 182 | 116 | 348 | -51 | 94 |
| Additions to money base | 1,903 | -720 | 3,801 | 3,670 | -1,281 | 558 | 2,326 | -1,361 | 3,093 | -1,766 | -871 |

Source: Data provided by the Bank of Israel.

1/ Excluding changes resulting from the revaluation of government bonds and Patam deposits.
2/ Includes the injection of the Jewish Agency and interest payments on internal debt. Sale of tradable bonds is not considered as absorption.
3/ Net government borrowing from the private sector less early redemption of State of Israel bonds.
4/ Consists mostly of absorption/injection generated by various items in the Bank of Israel's balance sheet (such as interest paid on liquid assets in local and foreign currency).

Table 23. Israel: Factors Affecting the M3 Base, 1994-99

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Oct. |
|---|---|---|---|---|---|---|
| | (In millions of new sheqalim; end of period) | | | | | |
| M3 base | 11,184 | 10,858 | 14,843 | 18,198 | 24,077 | 20,399 |
| Narrow money base 1/ | 9,643 | 8,923 | 12,724 | 16,394 | 16,636 | 18,406 |
| Reserve requirements on | | | | | | |
| Patam deposits | 1,541 | 1,935 | 2,119 | 1,804 | 7,442 | 1,992 |
| | (Real percentage increase during the period) 2/ | | | | | |
| M3 base | -3.5 | -10.2 | 23.6 | 14.6 | 21.8 | -17.7 |
| Narrow money base 1/ | 8.9 | -14.4 | 28.9 | 20.4 | -6.6 | 7.5 |
| Reserve requirements on | | | | | | |
| Patam deposits | -43.6 | 16.2 | -1.0 | -20.4 | 279.8 | -74.0 |
| | (In percent) | | | | | |
| Percent of increase in narrow liquid asset base due to: | | | | | | |
| Revaluation increments | 1.5 | -22.1 | 1.9 | 4.3 | 19.0 | -1.2 |
| Nonrevaluation increments | 98.5 | 122.1 | 98.1 | 95.7 | 81.0 | 101.2 |
| | (In millions of new sheqalim; flows) | | | | | |
| Memorandum items: | | | | | | |
| Increase in M3 base | 1,058 | -327 | 3,986 | 3,355 | 5,879 | -3,679 |
| Of which: | | | | | | |
| Revaluation increments on Patam | | | | | | |
| deposits' reserve requirements | 16 | 72 | 76 | 145 | 1,116 | 43 |
| Nonrevaluation increments | 1,041 | -399 | 3,910 | 3,210 | 4,763 | -3,721 |

Source: Data provided by the Bank of Israel.

1/ Currency held by public and liquid assets of banking institutions.
2/ Nominal rate deflated by consumer price index. Year to October for 1999 figure.

Table 24. Israel: The Israeli Capital Market, 1998

| | Total | Shares 1/ | Tradable bonds 2/ | Indexed earmarked bonds | Treasury bills 2/ | Other assets held by institutions |
|---|---|---|---|---|---|---|
| | (In billions of new sheqalim; end of period) | | | | | |
| **Institutions** | | | | | | |
| Provident funds | 135.2 | 16.0 | 63.8 | 10.2 | 2.6 | 42.5 |
| Old Pension funds | 100.2 | -- | 0.6 | 95.2 | -- | 4.4 |
| New Pension funds | 3.2 | -- | 0.6 | 2.2 | -- | 0.4 |
| Life insurance | 57.5 | 2.0 | 9.9 | 31.8 | -- | 13.8 |
| Mutual funds 3/ | 22.0 | 5.7 | 11.6 | -- | 3.4 | 1.4 |
| | | | | | | |
| Households and firms | 79.7 | 42.6 | 26.4 | -- | 10.6 | -- |
| Nonresidents | 33.5 | 32.3 | 0.9 | -- | 0.3 | -- |
| Banks | 44.9 | -- | 38.3 | -- | 6.6 | -- |
| | | | | | | |
| Total | 476.2 | 98.6 | 152.1 | 139.4 | 23.5 | 62.5 |
| | (Real percentage change from 1997) | | | | | |
| **Institutions** | | | | | | |
| Provident funds | -3.0 | -6.6 | -3.6 | -20.9 | -28.2 | 7.8 |
| Old Pension funds | 5.2 | -- | 51.0 | 5.3 | -- | 0.2 |
| New Pension funds | 54.6 | -- | 52.4 | 61.8 | -- | 25.8 |
| Life insurance | 10.4 | -4.4 | 44.3 | 3.5 | -- | 11.1 |
| Mutual funds 3/ | 5.4 | -24.6 | 17.5 | -- | 25.3 | 71.6 |
| | | | | | | |
| Households and firms | 2.2 | 8.0 | -13.3 | -- | 31.7 | -- |
| Nonresidents | -3.2 | -3.4 | -2.8 | -- | 13.8 | -- |
| Banks | 1.1 | -- | 4.3 | -- | -14.4 | -- |
| | | | | | | |
| Total | 2.2 | -1.0 | 0.2 | 3.0 | 5.1 | 10.5 |
| | | | | | | |
| Real change in price (in percent) | -2.1 | -7.5 | -2.3 | -0.3 | -- | 1.0 |
| Real change in quantity (in percent) | 4.4 | 7.0 | 2.6 | 3.3 | 5.1 | 9.4 |

Source: Data provided by the Bank of Israel.

1/ Excluding double counting and government-owned quoted companies.
2/ Excluding securities held by the Bank of Israel.
3/ Adjusted for provident funds' and nonresidents' holdings in mutual funds.

Table 25. Israel: Principal Stock Market Indicators, 1994–98

|  | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| | (In millions of 1996 new sheqalim) | | | | |
| Private sector issues (excluding privatizations) 1/ | 5,936 | 1,708 | 1,117 | 5,933 | 5,689 |
| Market value 2/ | 120,960 | 127,405 | 116,629 | 153,182 | 148,702 |
| Volume of stock exchange trade 3/ | 92,467 | 30,397 | 25,825 | 46,136 | 48,889 |
| | (In percent) | | | | |
| Annual turnover ratio 4/ | 0.6 | 0.3 | 0.2 | 0.3 | 0.3 |
| Real overall rate of return 5/ on all shares | -46.0 | 3.6 | -11.0 | 26.4 | -5.1 |

Sources: Data provided by the Bank of Israel; and Central Bureau of Statistics.

1/ Shares, convertible securities, and exercised options.
2/ End-of-year figures.
3/ Volume of trade on and off the floor.
4/ Ratio of monthly volume of trade (on and off the floor) to average monthly market value of the stock of shares.
5/ Deflated by end-of-month CPI.

Table 26. Israel: Principal Bond Market Indicators, 1994–98

|  | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
|  | (In millions of 1996 new sheqalim, unless otherwise indicated) | | | | |
| **Market value of listed bonds** | | | | | |
| Government | 109,500 | 117,103 | 122,766 | 125,981 | 125,821 |
| Corporate 1/ | 13,251 | 11,351 | 9,678 | 9,656 | 9,706 |
| Total | 122,751 | 128,454 | 132,444 | 135,637 | 135,527 |
| *Of which:* | | | | | |
| Percentage held by: | | | | | |
| Public | 26 | 25 | 30 | 31 | 30 |
| Commercial banks | 21 | 27 | 28 | 23 | 24 |
| Social insurance funds | 50 | 45 | 38 | 42 | 42 |
| Bank of Israel | 2 | 3 | 4 | 4 | 4 |
| **Volume of stock exchange trade** | | | | | |
| Government | 16,881 | 17,678 | 26,003 | 22,340 | 31,626 |
| Corporate 1/ | 1,406 | 1,005 | 757 | 730 | 752 |
| Total | 18,287 | 18,683 | 26,760 | 23,070 | 32,378 |
| Bank of Israel intervention 2/ | | | | | |
| (in percent) | 1.8 | 2.9 | 3.0 | 1.3 | 1.1 |
| **Net issues of tradable bonds (issues less redemptions)** | | | | | |
| Government | -3,640 | 5,971 | 1,685 | -5,173 | -1,973 |
| Private 1/ | -2,362 | -1,641 | -1,594 | -2,330 | -1,001 |
| Total | -6,002 | 4,330 | 91 | -7,503 | -2,974 |
| **Annual turnover 3/** | | | | | |
| Government | 0.15 | 0.17 | ... | ... | ... |
| Private 1/ | 0.10 | 0.09 | ... | ... | ... |
| Total | 0.15 | 0.16 | ... | ... | ... |
|  | (In percent) | | | | |
| **Real overall rate of return** | | | | | |
| CPI-indexed bonds | -2.0 | -0.7 | 2.0 | 4.0 | -1.2 |
| Exchange-rate indexed bonds | -10.0 | -0.6 | -1.1 | 6.0 | 12.0 |
| Nominal bonds | -1.8 | 6.6 | 5.1 | 8.7 | 2.7 |

Sources: Data provided by the Bank of Israel; and Central Bureau of Statistics.

1/ Including public sector corporations.
2/ Ratio of the central bank's sales and purchases in the secondary market to total volume of stock exchange trade in bonds.
3/ Ratio of monthly volume of trade (on and off the floor) to market value of the stock of bonds. Calculated from monthly ratios.

Table 27. Israel: Institutional Investor Indicators, 1994–98

|  | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| Mutual funds |  |  |  |  |  |
| Total assets (in 1996 NIS billions) | 23,067 | 17,520 | 13,176 | 19,029 | 19,699 |
| Real growth rate of total assets (in percent) | -53.7 | -24.0 | -24.8 | 44.4 | 3.5 |
| Real annual rate of return (in percent) | -29.0 | 2.8 | -2.9 | 15.0 | 1.4 |
| Percent of total tradable assets: |  |  |  |  |  |
| Bonds | 9.0 | 6.0 | 5.0 | 7.0 | 8.0 |
| Stocks | 9.0 | 6.0 | 5.0 | 5.0 | 4.0 |
| Provident funds |  |  |  |  |  |
| Total assets (in 1996 NIS billions) | 126 | 122 | 109 | 119 | 116 |
| Real growth rate of total assets (in percent) | -6.1 | -3.1 | -10.6 | 9.5 | -2.6 |
| Real annual rate of return (in percent) | -8.3 | 2.5 | 1.4 | 6.7 | 0.5 |
| Percent of total tradable assets: |  |  |  |  |  |
| Tradable government bonds | 50.7 | 50.3 | 46.4 | 51.3 | 51.9 |
| Corporate bonds | 62.1 | 62.8 | 65.1 | 70.6 | 66.3 |
| Stock | 11.6 | 10.7 | 9.7 | 9.7 | 13.1 |
| Treasury bills | 6.9 | 18.6 | 11.2 | 24.3 | 15.0 |
| Pension funds' assets (in 1996 NIS billions) | 70 | 74 | 77 | 84 | 89 |
| Real growth rate of total assets (in percent) | 4.7 | 6.4 | 3.0 | 9.2 | 5.7 |

Sources: Data provided by the Bank of Israel; and Central Bureau of Statistics.

Table 28. Israel: State Budget Balance and Financing, 1994-2000

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Budget | 2000 Budget |
|---|---|---|---|---|---|---|---|
| | | | | (In millions of new sheqalim) | | | |
| Total revenue | 90,120 | 104,637 | 116,648 | 132,770 | 142,258 | 158,258 | 165,777 |
| Total expenditure | 103,411 | 120,516 | 141,099 | 153,591 | 163,525 | 178,056 | 188,927 |
| Budget balance before foreign grants | -13,291 | -15,879 | -24,451 | -20,821 | -21,268 | -19,798 | -23,150 |
| Foreign grants | 8,018 | 5,126 | 12,985 | 11,387 | 12,572 | 11,808 | 12,260 |
| Budget balance after foreign grants | -5,273 | -10,753 | -11,466 | -9,434 | -8,696 | -7,990 | -10,890 |
| | | | | | | | |
| Total financing | 5,273 | 10,753 | 11,466 | 9,434 | 8,696 | 7,990 | 10,890 |
| Foreign (net) | 86 | 3,912 | 3,450 | -1,562 | -1,494 | 884 | 1,695 |
| Gross | 5,489 | 9,397 | 9,486 | 4,542 | 4,973 | 9,676 | 10,076 |
| Repayment | 5,403 | 5,485 | 6,036 | 6,104 | 6,468 | 8,792 | 8,381 |
| Domestic (net) | 5,187 | 6,841 | 8,016 | 10,996 | 10,190 | 7,106 | 9,195 |
| Nonbank borrowing (net) | -323 | 6,440 | 7,923 | 784 | 3,995 | 2,623 | 5,244 |
| Gross | 20,358 | 24,206 | 34,006 | 28,043 | 35,689 | 32,495 | 38,442 |
| Repayment | 20,681 | 17,766 | 26,083 | 27,259 | 31,694 | 29,872 | 33,198 |
| Bank of Israel credit (net) | 4,242 | -1,405 | 765 | 10 | 472 | 0 | 0 |
| Sale of assets | 703 | 1,798 | 349 | 8,467 | 5,094 | 4,590 | 3,500 |
| Lending (net) (-) | 564 | 181 | -807 | 1,757 | 1,260 | -97 | 1,521 |
| Gross (-) | -2,825 | -3,555 | -4,507 | -3,610 | -3,467 | -5,244 | -5,249 |
| Of which : housing (-) | -2,334 | -2,797 | 3,264 | -2,845 | -2,725 | -4,194 | -4,346 |
| Repayment | 3,389 | 3,736 | 3,699 | 5,367 | 4,728 | 5,147 | 6,770 |
| Residual | 1 | -173 | | -23 | -632 | -10 | -1,070 |
| | | | | | | | |
| Memorandum items: | | | | | | | |
| Primary balance | 8,731 | 4,906 | 6,472 | 10,236 | 12,905 | 12,306 | 11,959 |
| Current balance | 932 | -4,467 | -3,989 | -2,613 | -1,608 | 8,305 | 3,265 |
| Domestic balance | -4,372 | -8,529 | -13,952 | -10,654 | -11,142 | -10,550 | -13,535 |
| Foreign balance | -901 | -2,224 | 2,486 | 1,220 | 2,447 | 2,560 | 2,645 |
| | | | | (In percent of GDP) | | | |
| Total revenue | 39.9 | 39.6 | 37.9 | 38.5 | 37.8 | 39.1 | 38.8 |
| Total expenditure | 45.7 | 45.6 | 45.8 | 44.5 | 43.5 | 44.0 | 44.2 |
| Budget balance before foreign grants | -5.9 | -6.0 | -7.9 | -6.0 | -5.7 | -4.9 | -5.4 |
| Foreign grants | 3.5 | 1.9 | 4.2 | 3.3 | 3.3 | 2.9 | 2.9 |
| Budget balance after foreign grants | -2.3 | -4.1 | -3.7 | -2.7 | -2.3 | -2.0 | -2.5 |
| | | | | | | | |
| Total financing | 2.3 | 4.1 | 3.7 | 2.7 | 2.3 | 2.0 | 2.5 |
| Foreign (net) | 0.0 | 1.5 | 1.1 | -0.5 | -0.4 | 0.2 | 0.4 |
| Gross | 2.4 | 3.6 | 3.1 | 1.3 | 1.3 | 2.4 | 2.4 |
| Repayment | 2.4 | 2.1 | 2.0 | 1.8 | 1.7 | 2.2 | 2.0 |
| Domestic (net) | 2.3 | 2.6 | 2.6 | 3.2 | 2.7 | 1.8 | 2.2 |
| Nonbank borrowing (net) | -0.1 | 2.4 | 2.6 | 0.2 | 1.1 | 0.6 | 1.2 |
| Gross | 9.0 | 9.2 | 11.0 | 8.1 | 9.5 | 8.0 | 9.0 |
| Repayment | 9.1 | 6.7 | 8.5 | 7.9 | 8.4 | 7.4 | 7.8 |
| Bank of Israel credit (net) | 1.9 | -0.5 | 0.2 | 0.0 | 0.1 | 0.0 | 0.0 |
| Sale of assets | 0.3 | 0.7 | 0.1 | 2.5 | 1.4 | 1.1 | 0.8 |
| Lending (net) (-) | 0.2 | 0.1 | -0.3 | 0.5 | 0.3 | 0.0 | 0.4 |
| Gross (-) | -1.2 | -1.3 | -1.5 | -1.0 | -0.9 | -1.3 | -1.2 |
| Of which : housing (-) | -1.0 | -1.1 | 1.1 | -0.8 | -0.7 | -1.0 | -1.0 |
| Repayment | 1.5 | 1.4 | 1.2 | 1.6 | 1.3 | 1.3 | 1.6 |
| | | | | | | | |
| Memorandum items: | | | | | | | |
| Primary balance | 3.9 | 1.9 | 2.1 | 3.0 | 3.4 | 3.0 | 2.8 |
| Current balance | 0.4 | -1.7 | -1.3 | -0.8 | -0.4 | 2.1 | 0.8 |
| Domestic balance | -1.9 | -3.2 | -4.5 | -3.1 | -3.0 | -2.6 | -3.2 |
| Foreign balance | -0.4 | -0.8 | 0.8 | 0.4 | 0.7 | 0.6 | 0.6 |

Source: Data provided by the Ministry of Finance.

Table 29. Israel: State Budget Revenue, 1994-2000

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Budget | 2000 Budget |
|---|---|---|---|---|---|---|---|
| | | | | (In millions of new sheqalim) | | | |
| Total tax revenue | 72,650 | 82,819 | 93,941 | 106,536 | 114,560 | 126,460 | 132,870 |
| Taxes on income and profits | 33,302 | 37,832 | 42,421 | 49,897 | 54,207 | 59,681 | 61,780 |
| Companies | 9,121 | 9,082 | 9,597 | 12,522 | 12,817 | 13,100 | 14,000 |
| Individuals | 24,181 | 28,750 | 32,824 | 37,375 | 41,390 | 45,200 | 47,780 |
| Wage & salary | 18,691 | 22,247 | 26,175 | 30,154 | 33,390 | 36,950 | 38,730 |
| Self-employed | 5,490 | 6,503 | 6,649 | 7,221 | 8,000 | 8,250 | 9,050 |
| Payroll tax (nonprofit) | 697 | 914 | 1,265 | 948 | 1,343 | 1,130 | 1,240 |
| Taxes on property | 3,299 | 3,622 | 3,634 | 2,935 | 2,847 | 3,240 | 3,760 |
| Real-estate purchase tax | 1,474 | 1,549 | 1,574 | 1,357 | 1,349 | 1,460 | 2,130 |
| Land betterment tax | 1,136 | 1,287 | 1,149 | 889 | 914 | 970 | 1,240 |
| Property tax | 689 | 786 | 911 | 689 | 584 | 810 | 390 |
| Taxes on goods and services | 34,759 | 40,203 | 45,825 | 51,594 | 56,162 | 60,609 | 65,410 |
| VAT | 24,313 | 28,938 | 32,506 | 37,135 | 39,962 | 42,170 | 46,320 |
| Domestic expenditure & civilian imports | 20,567 | 24,217 | 27,872 | 30,816 | 33,134 | 35,530 | 38,570 |
| Nonprofit entities | 2,634 | 3,257 | 2,865 | 4,501 | 4,910 | 5,050 | 5,400 |
| Financial institutions | 687 | 836 | 874 | 999 | 1,050 | 1,380 | 1,190 |
| Defense imports | 425 | 628 | 895 | 819 | 868 | 210 | 1,160 |
| Excises | 3,821 | 4,196 | 5,647 | 6,556 | 6,960 | 7,360 | 8,440 |
| Fuel | 2,715 | 3,110 | 4,159 | 4,959 | 5,238 | 5,650 | 6,570 |
| Tobacco | 565 | 586 | 737 | 848 | 940 | 910 | 1,010 |
| Stamp | 541 | 500 | 751 | 749 | 782 | 800 | 860 |
| Purchase tax | 6,625 | 7,069 | 7,672 | 7,903 | 8,069 | 8,610 | 9,310 |
| Domestic | 654 | 705 | 718 | 742 | 754 | 530 | 860 |
| Imports | 5,970 | 6,364 | 6,954 | 7,161 | 7,315 | 8,080 | 8,450 |
| Customs duties | 845 | 970 | 1,060 | 1,162 | 1,171 | 1,180 | 1,340 |
| Adjustment to budget frame | -252 | -722 | -264 | 0 | 0 | 0 | 0 |
| Total nontax revenue | 17,470 | 21,818 | 22,707 | 26,234 | 27,698 | 31,798 | 32,907 |
| Interest | 1,709 | 2,914 | 2,465 | 2,556 | 2,823 | 3,540 | 3,490 |
| Domestic | 1,528 | 1,973 | 2,224 | 2,263 | 2,487 | 2,828 | 2,660 |
| Foreign | 181 | 941 | 241 | 293 | 336 | 712 | 830 |
| Loans from National Insurance Institute | 4,750 | 4,965 | 5,370 | 5,785 | 5,550 | 6,320 | 5,490 |
| Fees, royalties, pension provisions, & misc. | 3,011 | 4,875 | 5,618 | 7,758 | 11,176 | 12,571 | 13,223 |
| Income from Israel Land Administration | 1,808 | 1,643 | 1,715 | 975 | 1,003 | 1,201 | 1,050 |
| Revenue for revenue-dependent expenditure | 6,192 | 7,421 | 7,539 | 9,161 | 7,146 | 8,167 | 9,654 |
| Total revenue | 90,120 | 104,637 | 116,648 | 132,770 | 142,258 | 158,258 | 165,777 |
| Foreign grants | 8,018 | 5,126 | 12,985 | 11,387 | 12,572 | 11,808 | 12,260 |
| Total revenue and grants | 98,138 | 109,763 | 129,633 | 144,157 | 154,830 | 170,066 | 178,037 |
| Memorandum items: | | | | | | | |
| Domestic revenue | 89,079 | 101,923 | 113,749 | 129,020 | 136,905 | 151,425 | 157,091 |
| Foreign revenue and grants | 9,059 | 7,840 | 15,884 | 15,137 | 17,925 | 18,641 | 20,946 |
| | | | | (In percent of GDP) | | | |
| Total tax revenue | 32.1 | 31.3 | 30.5 | 30.9 | 30.5 | 31.2 | 31.1 |
| Taxes on income and profits | 14.7 | 14.3 | 13.8 | 14.5 | 14.4 | 14.7 | 14.5 |
| Companies | 4.0 | 3.4 | 3.1 | 3.6 | 3.4 | 3.2 | 3.3 |
| Individuals | 10.7 | 10.9 | 10.7 | 10.8 | 11.0 | 11.2 | 11.2 |
| Payroll tax (nonprofit) | 0.3 | 0.3 | 0.4 | 0.3 | 0.4 | 0.3 | 0.3 |
| Taxes on property | 1.5 | 1.4 | 1.2 | 0.9 | 0.8 | 0.8 | 0.9 |
| Taxes on goods and services | 15.4 | 15.2 | 14.9 | 15.0 | 14.9 | 15.0 | 15.3 |
| VAT | 10.8 | 10.9 | 10.6 | 10.8 | 10.6 | 10.4 | 10.8 |
| Excises | 1.7 | 1.6 | 1.8 | 1.9 | 1.9 | 1.8 | 2.0 |
| Purchase tax | 2.9 | 2.7 | 2.5 | 2.3 | 2.1 | 2.1 | 2.2 |
| Customs duties | 0.4 | 0.4 | 0.3 | 0.3 | 0.3 | 0.3 | 0.3 |
| Adjustment to budget frame | -0.1 | -0.3 | -0.1 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total nontax revenue | 7.7 | 8.3 | 7.4 | 7.6 | 7.4 | 7.9 | 7.7 |
| Total revenue | 39.9 | 39.6 | 37.9 | 38.5 | 37.8 | 39.1 | 38.8 |
| Foreign grants | 3.5 | 1.9 | 4.2 | 3.3 | 3.3 | 2.9 | 2.9 |
| Total revenue and grants | 43.4 | 41.5 | 42.1 | 41.8 | 41.2 | 42.0 | 41.7 |
| Memorandum items: | | | | | | | |
| Domestic revenue | 39.4 | 38.6 | 36.9 | 37.4 | 36.4 | 37.4 | 36.8 |
| Foreign revenue and grants | 4.0 | 3.0 | 5.2 | 4.4 | 4.8 | 4.6 | 4.9 |

Sources: Data provided by the Ministry of Finance.

Table 30. Israel: State Budget Expenditure (Economic Classification), 1994-2000

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Budget | 2000 Budget |
|---|---|---|---|---|---|---|---|
| | (In millions of new sheqalim) | | | | | | |
| Current expenditure | 97,206 | 114,230 | 133,622 | 146,771 | 156,438 | 161,761 | 174,772 |
| Wages | 20,937 | 25,494 | 29,576 | 32,503 | 32,874 | 33,943 | 38,454 |
| Of which: defense | 8,036 | 9,475 | 10,629 | 11,216 | 12,921 | 12,860 | 14,746 |
| Goods and services | 21,641 | 24,873 | 28,685 | 31,452 | 33,398 | 33,230 | 36,890 |
| Of which: defense | 13,332 | 15,530 | 17,369 | 19,675 | 21,854 | 21,072 | 22,782 |
| Interest | 15,713 | 18,573 | 20,403 | 22,226 | 24,424 | 23,836 | 26,339 |
| Domestic | 11,098 | 13,739 | 14,425 | 16,736 | 18,550 | 18,131 | 19,883 |
| Foreign | 4,615 | 4,834 | 5,978 | 5,490 | 5,874 | 5,705 | 6,456 |
| Subsidies and transfers | 36,579 | 42,471 | 51,729 | 56,819 | 61,420 | 66,011 | 67,994 |
| Subsidies | 4,595 | 4,982 | 5,156 | 5,268 | 4,989 | 5,544 | 5,870 |
| Nonexport | 1,524 | 1,572 | 1,771 | 1,613 | 1,478 | 1,448 | 1,842 |
| Export | 86 | 0 | 0 | | 0 | 0 | 0 |
| Investment grants | 2,985 | 3,410 | 3,385 | 3,656 | 3,511 | 4,096 | 4,028 |
| Transfers | 31,984 | 37,489 | 46,572 | 51,550 | 56,431 | 60,468 | 62,124 |
| To local authorities | 4,605 | 5,780 | 7,072 | 8,490 | 8,653 | 9,059 | 8,735 |
| To National Insurance Institute | 12,711 | 15,260 | 17,830 | 14,289 | 15,178 | 16,684 | 18,134 |
| To nonprofit institutions | 13,168 | 14,678 | 19,691 | 25,466 | 29,106 | 32,118 | 33,782 |
| To defense | 1,500 | 1,771 | 1,980 | 3,306 | 3,494 | 2,606 | 1,474 |
| Repayment to National Insurance Institute | 2,336 | 2,819 | 3,230 | 3,772 | 4,323 | 4,741 | 5,095 |
| Capital expenditure | 6,205 | 6,286 | 7,477 | 6,820 | 7,087 | 9,164 | 9,743 |
| Of which: housing | 1,863 | 1,843 | 2,139 | 1,771 | 1,813 | 2,076 | 2,367 |
| Reserve | -- | -- | - | - | 0 | 7,131 | 4,412 |
| Total expenditure | 103,411 | 120,516 | 141,099 | 153,591 | 163,525 | 178,056 | 188,927 |
| | | | | | | | |
| Memorandum items: | | | | | | | |
| Domestic expenditure | 93,451 | 110,452 | 127,701 | 139,674 | 148,047 | 161,975 | 170,626 |
| Foreign expenditure | 9,960 | 10,064 | 13,398 | 13,917 | 15,478 | 16,081 | 18,301 |
| | (In percent of GDP) | | | | | | |
| Current expenditure | 43.0 | 43.2 | 43.4 | 42.5 | 41.6 | 40.0 | 40.9 |
| Wages | 9.3 | 9.6 | 9.6 | 9.4 | 8.7 | 8.4 | 9.0 |
| Goods and services | 9.6 | 9.4 | 9.3 | 9.1 | 8.9 | 8.2 | 8.6 |
| Interest | 6.9 | 7.0 | 6.6 | 6.4 | 6.5 | 5.9 | 6.2 |
| Domestic | 4.9 | 5.2 | 4.7 | 4.9 | 4.9 | 4.5 | 4.7 |
| Foreign | 2.0 | 1.8 | 1.9 | 1.6 | 1.6 | 1.4 | 1.5 |
| Subsidies and transfers | 16.2 | 16.1 | 16.8 | 16.5 | 16.3 | 16.3 | 15.9 |
| Repayment to National Insurance Institute | 1.0 | 1.1 | 1.0 | 1.1 | 1.1 | 1.2 | 1.2 |
| Capital expenditure | 2.7 | 2.4 | 2.4 | 2.0 | 1.9 | 2.3 | 2.3 |
| Of which: housing | 0.8 | 0.7 | 0.7 | 0.5 | 0.5 | 0.5 | 0.6 |
| Reserve | -- | -- | -- | - | 0.0 | 1.8 | 1.0 |
| Total expenditure | 45.7 | 45.6 | 45.8 | 44.5 | 43.5 | 44.0 | 44.2 |
| | | | | | | | |
| Memorandum items: | | | | | | | |
| Domestic expenditure | 41.3 | 41.8 | 41.5 | 40.5 | 39.4 | 40.0 | 39.9 |
| Foreign expenditure | 4.4 | 3.8 | 4.4 | 4.0 | 4.1 | 4.0 | 4.3 |

Sources: Data provided by the Ministry of Finance.

Table 31. Israel: State Budget Expenditure (Functional Classification), 1994-2000

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 Budget | 2000 Budget |
|---|---|---|---|---|---|---|---|
| | | | (In millions of new sheqalim) | | | | |
| General public service | 7,594 | 9,657 | 11,763 | 13,072 | 14,696 | 15,731 | 17,641 |
| General administration | 5,135 | 6,626 | 8,242 | 9,219 | 10,467 | 10,466 | 11,748 |
| Public order | 2,459 | 3,031 | 3,521 | 3,853 | 4,229 | 5,265 | 5,893 |
| Defense | 22,050 | 26,926 | 30,852 | 34,410 | 37,909 | 36,426 | 39,138 |
| Education | 13,564 | 15,661 | 20,211 | 22,295 | 23,769 | 26,258 | 28,013 |
| Of which: Universities | 2,383 | 2,747 | 3,649 | 3,889 | 4,011 | 4,782 | 5,250 |
| Health | 6,146 | 6,828 | 8,802 | 15,190 | 14,951 | 15,031 | 16,088 |
| Labor and welfare | 15,469 | 18,636 | 21,891 | 18,827 | 19,144 | 21,008 | 22,834 |
| Other social services | 10,056 | 10,707 | 12,389 | 11,493 | 11,595 | 14,188 | 15,039 |
| Of which: Housing | 7,898 | 8,173 | 9,226 | 8,130 | 7,985 | 10,186 | 10,799 |
| Immigrant absorption | 1,244 | 1,241 | 1,377 | 1,424 | 1,536 | 1,752 | 1,945 |
| Economic services | 7,289 | 8,717 | 9,792 | 9,907 | 9,860 | 12,115 | 12,826 |
| General | 545 | 698 | 731 | 725 | 814 | 776 | 879 |
| Agricultural | 732 | 971 | 1,399 | 1,131 | 1,052 | 1,257 | 1,321 |
| Manufacturing | 2,460 | 3,075 | 3,290 | 3,465 | 3,329 | 4,039 | 3,926 |
| Water and energy | 772 | 824 | 726 | 997 | 1,073 | 1,334 | 1,347 |
| Transport and communications | 1,960 | 2,025 | 2,181 | 2,376 | 2,780 | 3,098 | 3,795 |
| Other | 821 | 1,124 | 1,465 | 1,214 | 812 | 1,611 | 1,558 |
| Unallocable and other functions | 17,713 | 20,392 | 22,980 | 22,869 | 26,019 | 32,657 | 31,781 |
| Interest | 15,910 | 18,574 | 20,403 | 22,226 | 24,424 | 23,836 | 26,339 |
| Interest and loan subsidy | 420 | 365 | 297 | 189 | 139 | 29 | 41 |
| Subsidy for basic products | 1,725 | 1,633 | 1,839 | 1,803 | 1,675 | 1,946 | 2,377 |
| Export market development | 86 | 0 | 0 | -- | 0 | 0 | 0 |
| General transfers | 2,961 | 3,556 | 4,142 | 4,018 | 4,510 | 4,577 | 4,294 |
| Reserves | 0 | 0 | 0 | -- | 0 | 7,417 | 4,449 |
| Repayment of loans (-) | -3,389 | -3,736 | -3,699 | -5,367 | -4,728 | -5,147 | -5,720 |
| Total expenditure and net lending | 99,881 | 117,524 | 138,680 | 148,064 | 157,943 | 173,413 | 183,361 |
| | | | (Percent of GDP) | | | | |
| General public service | 3.4 | 3.7 | 3.8 | 3.8 | 3.9 | 3.9 | 4.1 |
| Defense | 9.8 | 10.2 | 10.0 | 10.0 | 10.1 | 9.0 | 9.2 |
| Education | 6.0 | 5.9 | 6.6 | 6.5 | 6.3 | 6.5 | 6.6 |
| Health | 2.7 | 2.6 | 2.9 | 4.4 | 4.0 | 3.7 | 3.8 |
| Labor and welfare | 6.8 | 7.1 | 7.1 | 5.5 | 5.1 | 5.2 | 5.3 |
| Other social services | 4.4 | 4.1 | 4.0 | 3.3 | 3.1 | 3.5 | 3.5 |
| Of which: Housing | 3.5 | 3.1 | 3.0 | 2.4 | 2.1 | 2.5 | 2.5 |
| Immigrant absorption | 0.6 | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.5 |
| Economic services | 3.2 | 3.3 | 3.2 | 2.9 | 2.6 | 3.0 | 3.0 |
| Unallocable and other functions | 7.8 | 7.7 | 7.5 | 6.6 | 6.9 | 8.1 | 7.4 |
| Interest | 7.0 | 7.0 | 6.6 | 6.4 | 6.5 | 5.9 | 6.2 |
| Interest and loan subsidy | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 | 0.0 | 0.0 |
| Subsidy for basic products | 0.8 | 0.6 | 0.6 | 0.5 | 0.4 | 0.5 | 0.6 |
| Export market development | 0.0 | 0.0 | 0.0 | -- | 0.0 | 0.0 | 0.0 |
| General transfers | 1.3 | 1.3 | 1.3 | 1.2 | 1.2 | 1.1 | 1.0 |
| Reserves | 0.0 | 0.0 | 0.0 | -- | 0.0 | 1.8 | 1.0 |
| Repayment of loans (-) | -1.5 | -1.4 | -1.2 | -1.6 | -1.3 | -1.3 | -1.3 |
| Total expenditure and net lending | 44.2 | 44.5 | 45.0 | 42.9 | 42.0 | 42.8 | 42.9 |

Source: Data provided by the Ministry of Finance.

Table 32. Israel: General Government Balance and Financing (National Accounts), 1994-98

| | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| | (In millions of new sheqalim) | | | | |
| Total receipts (including foreign receipts) | 117,229 | 136,670 | 154,401 | 173,701 | 192,181 |
| Total expenditure (including foreign expenditure) | 124,565 | 148,336 | 171,672 | 187,568 | 205,688 |
| Overall balance | -7,336 | -11,666 | -17,271 | -13,867 | -13,507 |
| Total financing | 7,336 | 11,666 | 17,271 | 13,867 | 13,507 |
| Change in monetary base | 1,903 | -720 | 3,801 | 3,670 | 242 |
| Foreign borrowing (net) | -2,372 | -15,018 | -2,867 | -29,009 | -8,431 |
| Domestic borrowing (net) | 1,823 | 23,976 | 17,583 | 33,779 | 16,415 |
| Through government (net) | 1,158 | 8,587 | 7,847 | 7,719 | 10,307 |
| Through Bank of Israel (net) | -1,191 | 14,446 | 8,529 | 24,884 | 5,016 |
| Through local authorities | 1,856 | 943 | 1,207 | 1,176 | 1,092 |
| Sale of assets | 696 | 1,075 | 352 | 6,350 | 4,075 |
| Residual 1/ | 5,286 | 2,353 | -1,598 | -923 | 1,206 |
| Memorandum items: | | | | | |
| Current balance (net saving) | -2,550 | -5,859 | -10,024 | -8,246 | -8,638 |
| Current balance + depreciation (gross saving) | 315 | -2,614 | -6,418 | -4,227 | -4,237 |
| Domestic balance | -8,947 | -13,524 | -19,365 | -16,782 | -17,411 |
| Foreign balance | 1,611 | 1,858 | 2,094 | 2,915 | 3,904 |
| | (In percent of GDP) | | | | |
| Total receipts (including foreign receipts) | 51.8 | 51.7 | 50.1 | 50.4 | 51.1 |
| Total expenditure (including foreign expenditure) | 55.1 | 56.1 | 55.7 | 54.4 | 54.7 |
| Overall balance | -3.2 | -4.4 | -5.6 | -4.0 | -3.6 |
| Total financing | 3.2 | 4.4 | 5.6 | 4.0 | 3.6 |
| Change in monetary base | 0.8 | -0.3 | 1.2 | 1.1 | 0.1 |
| Foreign borrowing (net) | -1.0 | -5.7 | -0.9 | -8.4 | -2.2 |
| Domestic borrowing (net) | 0.8 | 9.1 | 5.7 | 9.8 | 4.4 |
| Through government (net) | 0.5 | 3.2 | 2.5 | 2.2 | 2.7 |
| Through Bank of Israel (net) | -0.5 | 5.5 | 2.8 | 7.2 | 1.3 |
| Sale of assets | 0.3 | 0.4 | 0.1 | 1.8 | 1.1 |
| Residual | 2.3 | 0.9 | -0.5 | -0.3 | 0.3 |
| Memorandum items: | | | | | |
| Current balance (net saving) | -1.1 | -2.2 | -3.3 | -2.4 | -2.3 |
| Current balance + depreciation (gross saving) | 0.1 | -1.0 | -2.1 | -1.2 | -1.1 |
| Domestic balance | -4.0 | -5.1 | -6.3 | -4.9 | -4.6 |
| Foreign balance | 0.7 | 0.7 | 0.7 | 0.8 | 1.0 |

Sources: Bank of Israel, *Annual Report 1998* ; and revised BCS data from October 1999.

1/ The deficit is calculated on the basis of flows rather than on a cash basis, so there are timing discrepancies between certain items. The financing of the deficit relates to the central government and not the rest of the public sector.

Table 33. Israel: General Government Receipts (National Accounts), 1994-98

| | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| | | (In millions of new sheqalim) | | | |
| Total domestic receipts | 105,109 | 124,490 | 139,800 | 156,754 | 171,826 |
| Current receipts | 95,635 | 113,918 | 128,415 | 145,237 | 158,203 |
| Taxes and fees | 89,626 | 105,892 | 120,056 | 138,538 | 149,748 |
| Indirect taxes | 44,957 | 52,327 | 60,996 | 67,399 | 72,173 |
| Domestic production | 31,431 | 36,839 | 43,745 | 49,890 | 53,946 |
| Civilian imports | 13,526 | 15,488 | 17,251 | 17,509 | 18,227 |
| Direct taxes and fees | 34,105 | 38,607 | 41,650 | 50,625 | 54,962 |
| National insurance income 1/ | 10,564 | 14,958 | 17,410 | 20,514 | 22,613 |
| Of which: health tax | 0 | 4,711 | 6,256 | 7,140 | 7,874 |
| Transfer payments | 3,530 | 4,433 | 5,125 | 5,643 | 6,043 |
| Of which: imputed pensions | 3,036 | 3,850 | 4,456 | 4,886 | 5,253 |
| Property income/tax | 2,479 | 3,593 | 3,234 | 1,056 | 2,412 |
| Capital receipts | 9,474 | 10,572 | 11,385 | 11,517 | 13,623 |
| Transfer payments | 6,609 | 7,327 | 7,779 | 7,498 | 9,222 |
| Depreciation | 2,865 | 3,245 | 3,606 | 4,019 | 4,401 |
| Total foreign receipts | 12,120 | 12,180 | 14,601 | 16,947 | 20,355 |
| Current receipts | 11,561 | 11,575 | 13,969 | 16,339 | 19,637 |
| Interest | 671 | 1,386 | 1,554 | 2,707 | 4,008 |
| Transfer payments | 10,890 | 10,189 | 12,415 | 13,632 | 15,629 |
| Intergovernmental | 8,894 | 7,978 | 10,014 | 11,283 | 12,868 |
| National and nonprofit institutions | 1,996 | 2,211 | 2,401 | 2,349 | 2,761 |
| Capital receipts | 559 | 605 | 632 | 608 | 718 |
| Total receipts | 117,229 | 136,670 | 154,401 | 173,701 | 192,181 |
| | | (In percent of GDP) | | | |
| Total domestic receipts | 46.5 | 47.1 | 45.4 | 45.4 | 45.7 |
| Current receipts | 42.3 | 43.1 | 41.7 | 42.1 | 42.1 |
| Taxes and fees | 39.6 | 40.1 | 39.0 | 40.2 | 39.8 |
| Indirect taxes | 19.9 | 19.8 | 19.8 | 19.5 | 19.2 |
| Domestic production | 13.9 | 13.9 | 14.2 | 14.5 | 14.3 |
| Civilian imports | 6.0 | 5.9 | 5.6 | 5.1 | 4.8 |
| Direct taxes and fees | 15.1 | 14.6 | 13.5 | 14.7 | 14.6 |
| National insurance income 1/ | 4.7 | 5.7 | 5.7 | 5.9 | 6.0 |
| Transfer payments | 1.6 | 1.7 | 1.7 | 1.6 | 1.6 |
| Of which: Imputed pensions | 1.3 | 1.5 | 1.4 | 1.4 | 1.4 |
| Property income/tax | 1.1 | 1.4 | 1.1 | 0.3 | 0.6 |
| Capital receipts | 4.2 | 4.0 | 3.7 | 3.3 | 3.6 |
| Transfer payments | 2.9 | 2.8 | 2.5 | 2.2 | 2.5 |
| Depreciation | 1.3 | 1.2 | 1.2 | 1.2 | 1.2 |
| Total foreign receipts | 5.4 | 4.6 | 4.7 | 4.9 | 5.4 |
| Current receipts | 5.1 | 4.4 | 4.5 | 4.7 | 5.2 |
| Interest | 0.3 | 0.5 | 0.5 | 0.8 | 1.1 |
| Transfer payments | 4.8 | 3.9 | 4.0 | 4.0 | 4.2 |
| Intergovernmental | 3.9 | 3.0 | 3.3 | 3.3 | 3.4 |
| National and nonprofit institutions | 0.9 | 0.8 | 0.8 | 0.7 | 0.7 |
| Capital receipts | 0.2 | 0.2 | 0.2 | 0.2 | 0.2 |
| Total receipts | 51.8 | 51.7 | 50.1 | 50.4 | 51.1 |

Sources: Bank of Israel, Annual Report 1998; and revised BCS data from October 1999.

1/ Figures from 1995 onward include revenue from the health tax.

Table 34. Israel: General Government Expenditure (National Accounts), 1994-98

| | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| | (In millions of new sheqalim) | | | | |
| Total domestic expenditure | 114,056 | 138,014 | 159,165 | 173,536 | 189,237 |
| Current expenditure | 99,237 | 121,030 | 139,901 | 155,790 | 170,027 |
| Civilian 1/ | 40,989 | 53,823 | 63,172 | 69,783 | 75,442 |
| Defense | 16,979 | 19,224 | 21,942 | 23,876 | 25,519 |
| Transfer payments | 25,937 | 31,597 | 38,062 | 43,467 | 48,624 |
| Subsidies | 4,300 | 3,698 | 3,468 | 3,342 | 3,397 |
| Credit | 418 | 363 | 295 | 189 | 138 |
| Other | 3,882 | 3,335 | 3,173 | 3,153 | 3,259 |
| Interest | 11,032 | 12,688 | 13,257 | 15,322 | 17,045 |
| Capital expenditure | 14,819 | 16,984 | 19,264 | 17,746 | 19,210 |
| Investment | 8,075 | 9,626 | 11,384 | 10,753 | 13,235 |
| Capital grants | 6,744 | 7,358 | 7,880 | 6,993 | 5,975 |
| Total foreign (current) expenditure | 10,509 | 10,322 | 12,507 | 14,032 | 16,451 |
| Defense imports | 5,321 | 4,703 | 6,417 | 7,268 | 8,533 |
| Interest | 4,564 | 4,980 | 5,412 | 5,908 | 6,893 |
| Other | 624 | 639 | 678 | 856 | 1,025 |
| Total expenditure | 124,565 | 148,336 | 171,672 | 187,568 | 205,688 |
| | (In percent of GDP) | | | | |
| Total domestic expenditure | 50.4 | 52.2 | 51.7 | 50.3 | 50.3 |
| Current expenditure | 43.9 | 45.8 | 45.4 | 45.2 | 45.2 |
| Civilian 1/ | 18.1 | 20.4 | 20.5 | 20.2 | 20.1 |
| Defense | 7.5 | 7.3 | 7.1 | 6.9 | 6.8 |
| Transfer payments | 11.5 | 12.0 | 12.4 | 12.6 | 12.9 |
| Subsidies | 1.9 | 1.4 | 1.1 | 1.0 | 0.9 |
| Credit | 0.2 | 0.1 | 0.1 | 0.1 | 0.0 |
| Other | 1.7 | 1.3 | 1.0 | 0.9 | 0.9 |
| Interest | 4.9 | 4.8 | 4.3 | 4.4 | 4.5 |
| Capital expenditure | 6.6 | 6.4 | 6.3 | 5.1 | 5.1 |
| Investment | 3.6 | 3.6 | 3.7 | 3.1 | 3.5 |
| Capital grants | 3.0 | 2.8 | 2.6 | 2.0 | 1.6 |
| Total foreign (current) expenditure | 4.6 | 3.9 | 4.1 | 4.1 | 4.4 |
| Defense imports | 2.4 | 1.8 | 2.1 | 2.1 | 2.3 |
| Interest | 2.0 | 1.9 | 1.8 | 1.7 | 1.8 |
| Other | 0.3 | 0.2 | 0.2 | 0.2 | 0.3 |
| Total expenditure | 55.1 | 56.1 | 55.7 | 54.4 | 54.7 |

Sources: Bank of Israel, *Annual Report 1998*; and revised BCS data from October 1999.

1/ Figures from 1995 onward include expenditure arising from the Health Law.

Table 35. Israel: Structure of General Government Finances (National Accounts), 1994-98

| | 1994 | 1995 | 1996 | 1997 | 1998 |
|---|---|---|---|---|---|
| | (In millions of new sheqalim) | | | | |
| Receipts from the public | 117,990 | 137,814 | 155,110 | 174,684 | 191,746 |
| Central government | 93,834 | 106,816 | 118,818 | 133,596 | 146,132 |
| National Insurance Institute | 10,630 | 15,036 | 17,498 | 20,583 | 22,662 |
| National institutions | 1,550 | 1,640 | 2,122 | 1,627 | 1,925 |
| Local authorities | 9,012 | 10,824 | 12,677 | 14,616 | 16,202 |
| Public nonprofit associations | 2,964 | 3,498 | 3,995 | 4,262 | 4,825 |
| Expenditure on the public | 119,842 | 145,626 | 167,751 | 182,417 | 200,788 |
| Central government | 72,131 | 83,326 | 95,032 | 101,403 | 110,790 |
| National Insurance Institute | 16,290 | 19,941 | 23,848 | 27,959 | 31,764 |
| National institutions | 1,978 | 2,228 | 2,391 | 2,498 | 2,576 |
| Local authorities | 15,586 | 18,866 | 21,855 | 23,513 | 26,544 |
| Public nonprofit associations | 13,857 | 21,265 | 24,625 | 27,044 | 29,114 |
| Unilateral transfers to general government entities | 0 | 0 | 0 | 0 | 0 |
| Central government | 25,223 | 31,947 | 38,972 | 43,274 | 47,133 |
| National Insurance Institute | -7,657 | -7,305 | -8,129 | -9,240 | -11,213 |
| National institutions | 26 | 67 | 95 | 136 | 73 |
| Local authorities | -5,353 | -5,952 | -7,567 | -8,049 | -8,806 |
| Public nonprofit associations | -12,239 | -18,757 | -23,371 | -26,121 | -27,187 |
| Overall balance | -1,852 | -7,812 | -12,641 | -7,733 | -9,042 |
| Central government | -3,520 | -8,457 | -15,186 | -11,081 | -11,791 |
| National Insurance Institute | 1,997 | 2,400 | 1,779 | 1,864 | 2,111 |
| National institutions | -454 | -655 | -364 | -1,007 | -724 |
| Local authorities | -1,221 | -2,090 | -1,611 | -848 | -1,536 |
| Public nonprofit associations | 1,346 | 990 | 2,741 | 3,339 | 2,898 |
| | (In percent of GDP) | | | | |
| Receipts from the public | 52.2 | 52.9 | 51.1 | 50.6 | 51.0 |
| Central government | 41.5 | 41.0 | 39.1 | 38.7 | 38.9 |
| National Insurance Institute | 4.7 | 5.8 | 5.8 | 6.0 | 6.0 |
| National institutions | 0.7 | 0.6 | 0.7 | 0.5 | 0.5 |
| Local authorities | 4.0 | 4.2 | 4.2 | 4.2 | 4.3 |
| Public nonprofit associations | 1.3 | 1.3 | 1.3 | 1.2 | 1.3 |
| Expenditure on the public | 53.0 | 55.9 | 55.3 | 52.9 | 53.4 |
| Central government | 31.9 | 32.0 | 31.3 | 29.4 | 29.5 |
| National Insurance Institute | 7.2 | 7.6 | 7.9 | 8.1 | 8.4 |
| National institutions | 0.9 | 0.9 | 0.8 | 0.7 | 0.7 |
| Local authorities | 6.9 | 7.2 | 7.2 | 6.8 | 7.1 |
| Public nonprofit associations | 6.1 | 8.2 | 8.1 | 7.8 | 7.7 |
| Unilateral transfers to general government entities | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Central government | 11.2 | 12.3 | 12.8 | 12.5 | 12.5 |
| National Insurance Institute | -3.4 | -2.8 | -2.7 | -2.7 | -3.0 |
| National institutions | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Local authorities | -2.4 | -2.3 | -2.5 | -2.3 | -2.3 |
| Public nonprofit associations | -5.4 | -7.2 | -7.7 | -7.6 | -7.2 |
| Overall balance | -0.8 | -3.0 | -4.2 | -2.2 | -2.4 |
| Central government | -1.6 | -3.2 | -5.0 | -3.2 | -3.1 |
| National Insurance Institute | 0.9 | 0.9 | 0.6 | 0.5 | 0.6 |
| National institutions | -0.2 | -0.3 | -0.1 | -0.3 | -0.2 |
| Local authorities | -0.5 | -0.8 | -0.5 | -0.2 | -0.4 |
| Public nonprofit associations | 0.6 | 0.4 | 0.9 | 1.0 | 0.8 |

Source: Bank of Israel, *Annual Report 1998*.

Table 36. Israel: The Largest Government Companies
(as of December 31, 1998)

| | Total assets 1/ | Total revenues 2/ | Percentage direct and indirect government ownership 3/ |
|---|---|---|---|
| The Israel Electric Corporation | 10,735 | 2,237 | 100 |
| Bezeq - Telecommunication Corporation | 4,318 | 2,451 | 55 |
| Israel Chemicals | 3,412 | 1,963 | 2 |
| Mekorot - Water Corporation | 1,715 | 2,052 | 100 |
| Israel Aircraft Industries | 1,270 | 453 | 100 |
| Oil Refineries | 1,143 | 1,728 | 74 |
| El-Al Israel Airlines | 1,006 | 1,260 | 100 |

Source: Government Companies Authority.

1/ Converted to U.S. dollars using the exchange rate for December 31, 1998.
2/ Converted to U.S. dollars using the average exchange rate for 1998.
3/ As of December 31, 1998.

Table 37. Israel: Privatization and Raising of Capital from the Public by
Issuance of Shares and Convertible Securities
(1997 to October 30, 1999)

| | Total capital raised | Percentage sold | Percentage held by the State after sale |
|---|---|---|---|
| | (In millions of U.S. dollars) | | |
| **1997:** | | | |
| Israel Chemicals | 198.0 | 17.0 | 31.5 |
| R.D.C. | 4.3 | 50.1 | 49.9 |
| Yozma Risk Capital | 14.8 | 100.0 | – |
| Yozma Nitsanim Fund | 9.3 | 40.0 | – |
| Yozma J.P.V. Fund | 9.6 | 40.0 | – |
| Bezeq (Telecommunications) | 48.0 | 2.5 | 73.6 |
| The Israel School of Tourism | 0.3 | 77.9 | – |
| The Israel National Oil Company | 26.0 | 99.9 | – |
| Israel Discount Bank | 180.9 | 19.3 | 60.0 |
| Bank Leumi | 406.2 | 18.3 | 63.5 |
| United Mizrahi Bank | 128.7 | 25.0 | 49.0 |
| Bank Hapoalim 2/ | 1,368.0 | 43.0 | 33.8 |
| Total | 2,394.1 | | |
| | | | |
| **1998:** | | | |
| Bezeq (Telecommunications) | 461.7 | 19.2 | 54.3 |
| Weed Extermination Company | 1.8 | 84.0 | – |
| Yozma Gemini Fund | 9.2 | 26.7 | – |
| Yozma Polaris Fund | 9.5 | 40.0 | – |
| Yozma Inventec Fund | 9.6 | 40.0 | 2.9 |
| Bank Leumi | 52.0 | 2.0 | 61.4 |
| United Mizrahi Bank | 290.4 | 31.7 | 17.2 |
| Bank Hapoalim 2/ | 232.9 | 9.4 | 24.3 |
| Bank Leumi | 163.0 | 7.5 | 53.9 |
| United Mizrahi Bank (options ) | 36.5 | 10.5 | 6.7 |
| Israel Chemicals | 299.5 | 30.7 | 2.2 |
| Total | 1,566.1 | | |
| | | | |
| **1999:** | | | |
| Shikon Ovdim ( Construction ) | 4.3 | 1.8 | – |
| Yozma Euro Fund | 8.8 | 40.0 | – |
| Bank Leumi | 85.6 | 4.0 | 50.0 |
| Bank Hapoalim | 203.0 | 7.0 | 17.3 |
| Total | 301.7 | | |

Source: Government Companies Authority.

1/ The conversion to U.S. dollars was done using the exchange rate for the date of sale.
2/ The "percentage sold" figure refers to the percentage sold prior to the exercise of the
associated option. After the option is exercised, the State will hold 12.3 percent of the bank.
The associated option was not exercised.

Table 38. Israel: Privatization of Banks and Raising of Capital from the Public by
Issuance of Shares and Convertible Securities, 1991 to October 30, 1999

| Bank | Date | Total capital raised 1/ | Percentage sold | Percentage held by the State after sale |
|------|------|-------------------------|-----------------|------------------------------------------|
| | | (In millions of U.S. dollars) | | |
| I.D.B. Holdings | October 1991 | 229.7 | 25.0 | 42.0 |
| Israel General Bank | July 1992 | 15.6 | 25.0 | 0.0 |
| I.D.B. Holdings | November 1992 | 349.3 | 42.0 | 0.0 |
| Union Bank | May 1993 | 49.6 | 35.0 | 23.0 |
| Bank Hapoalim | May 1993 | 244.5 | 16.0 | 80.0 |
| Bank Leumi | August 1993 | 275.4 | 15.0 | 80.0 |
| Bank Hapoalim | November 1993 | 121.8 | 6.0 | 74.0 |
| United Mizrahi Bank 2/ | November 1994 | 110.0 | 26.0 | 74.0 |
| Israel Discount Bank 3/ | March 1996 | 80.0 | 7.8 | 79.1 |
| Israel Discount Bank | April 1997 | 182.6 | 19.1 | 60.0 |
| Bank Leumi | May 1997 | 407.8 | 18.4 | 63.5 |
| United Mizrahi Bank | July 1997 | 128.7 | 25.0 | 49.0 |
| Bank Hapoalim 4/ | September 1997 | 1,368.0 | 43.0 | 33.8 |
| Bank Hapoalim 4/ | Feb 1998 | 120.9 | 4.6 | 29.1 |
| Bank Leumi | April 1998 | 52.0 | 2.0 | 61.4 |
| United Mizrahi Bank | June 1998 | 290.4 | 31.7 | 17.2 |
| Bank Hapoalim 4/ | June 1998 | 65.0 | 1.8 | 27.3 |
| Bank Hapoalim 4/ | August 1998 | 47.0 | 3.0 | 24.3 |
| Bank Leumi 5/ | September 1998 | 163.0 | 7.5 | 53.9 |
| United Mizrahi Bank | December 1998 | 36.5 | 10.5 | 6.7 |
| Bank Leumi 5/ | Feb 1999 | 51.5 | 2.5 | 51.4 |
| Bank Leumi 5/ | March 1999 | 34.1 | 1.5 | 50.0 |
| Bank Hapoalim | April 1999 | 59.0 | 2.0 | 22.3 |
| Bank Hapoalim | July 1999 | 144.0 | 5.0 | 17.3 |

Source: Government Companies Authority.

1/ The conversion to U.S. dollars was done using the exchange rate for the date of sale.

2/ The purchasers of the controlling interest of United Mizrahi Bank (26 percent of its capital) were granted an option to purchase a further 25 percent on the basis of the market value (100 percent) of the bank, amounting to $23 million, plus linkage to the CPI and interest at the rate of 3 percent. The proceeds due to arise upon the exercise of warrant are not included here.

3/ The immediate revenue amounts to $80 million. Another $80 million in revenue is expected upon the exercise of the purchase warrants in Israel Discount Bank. The purchase warrants were not exercised.

4/ The "percentage sold" figure refers to the percentage sold prior to the exercise of the associated option. After the option is exercised, the State will hold 12.3 percent of the bank. The associated option were not exercised.

5/ On the assumption of all purchase options " Series 5 " being exercise by the end of 1999. The public will hold a further 8.35%. The State will receive a further 184 M$.

Table 39. Israel: Currency Basket of the Israeli Sheqel, 1994–99

| | Absolute amount of currency in basket as of Dec. 31, 1996 | Percentage distribution of currencies on the basis of market rates on: | | | | |
|---|---|---|---|---|---|---|
| | | 1994 Dec. 31 | 1995 Dec. 31 | 1996 Dec. 31 | 1997 Dec. 31 | 1998 Dec. 31 |
| U.S. dollar | 0.6741 | 0.5381 | 0.5583 | 0.6028 | 0.6296 | 0.6151 |
| Pound sterling | 0.0589 | 0.0939 | 0.0819 | 0.0895 | 0.0909 | 0.0894 |
| Deutschmark | 0.3588 | 0.2419 | 0.2424 | 0.2070 | 0.1870 | 0.1954 |
| Japanese yen | 6.5437 | 0.0692 | 0.0597 | 0.0505 | 0.0469 | 0.0525 |
| French franc | 0.2933 | 0.0569 | 0.0577 | 0.0502 | 0.0457 | 0.0476 |

| | Absolute amount of currency in basket as of Jan. 01, 1999 | Percentage distribution of currencies on the basis of market rates on: | |
|---|---|---|---|
| | | 1999 Jan. 04 | 1999 Nov. 26 |
| U.S. dollar | 0.6741 | 0.6136 | 0.6339 |
| Pound sterling | 0.0589 | 0.0888 | 0.0894 |
| Euro | 0.2282 | 0.2451 | 0.2177 |
| Japanese yen | 6.5437 | 0.0525 | 0.0591 |

Sources: IMF, *International Financial Statistics*; and data provided by the Bank of Israel.

Table 40.  Israel:  Exchange Rate Developments, 1994-99
(Index number 1986 = 100; period averages)

| | U.S.dollar/ sheqel | Pound sterling/ sheqel | Deutsche mark/ sheqel | Japanese yen/ sheqel | French franc/ sheqel | Currency basket |
|---|---|---|---|---|---|---|
| 1994 | 202.4 | 211.5 | 269.8 | 331.1 | 252.5 | 221.2 |
| 1995 | 202.4 | 217.8 | 304.7 | 361.2 | 280.2 | 231.4 |
| 1996 | 214.3 | 228.4 | 307.3 | 329.0 | 289.3 | 239.5 |
| 1997 | 231.9 | 259.2 | 288.6 | 320.9 | 274.5 | 249.9 |
| 1998 | 255.5 | 288.7 | 314.4 | 328.7 | 300.2 | 274.0 |
| | | | | | | |
| 1994 | | | | | | |
| I | 200.1 | 203.1 | 250.6 | 310.7 | 235.9 | 213.6 |
| II | 203.0 | 208.4 | 264.1 | 328.3 | 247.1 | 219.8 |
| III | 203.6 | 215.1 | 281.0 | 342.9 | 262.7 | 225.5 |
| IV | 203.0 | 219.4 | 283.7 | 342.8 | 264.6 | 226.1 |
| | | | | | | |
| 1995 | | | | | | |
| I | 201.6 | 217.6 | 294.2 | 350.4 | 269.7 | 227.7 |
| II | 200.5 | 218.3 | 309.3 | 395.9 | 281.4 | 232.7 |
| III | 202.1 | 216.9 | 304.5 | 360.4 | 282.1 | 231.3 |
| IV | 205.5 | 218.6 | 311.5 | 338.0 | 288.0 | 234.2 |
| | | | | | | |
| 1996 | | | | | | |
| I | 209.3 | 218.7 | 307.7 | 330.5 | 287.3 | 235.6 |
| II | 217.0 | 225.5 | 307.2 | 337.4 | 290.3 | 241.4 |
| III | 212.6 | 225.4 | 306.4 | 325.9 | 288.3 | 237.8 |
| IV | 218.2 | 243.3 | 307.8 | 323.2 | 291.4 | 243.3 |
| | | | | | | |
| 1997 | | | | | | |
| I | 223.3 | 248.7 | 291.5 | 308.5 | 276.5 | 243.3 |
| II | 229.5 | 256.0 | 288.8 | 320.9 | 274.2 | 248.0 |
| III | 237.1 | 263.1 | 283.3 | 335.8 | 269.3 | 253.2 |
| IV | 237.3 | 269.0 | 291.8 | 316.3 | 278.9 | 254.9 |
| | | | | | | |
| 1998 | | | | | | |
| I | 241.0 | 270.5 | 285.9 | 314.3 | 273.1 | 256.2 |
| II | 247.1 | 278.5 | 297.3 | 303.5 | 283.9 | 262.9 |
| III | 250.7 | 282.2 | 306.2 | 298.9 | 292.3 | 267.3 |
| IV | 282.2 | 322.4 | 366.1 | 395.7 | 349.5 | 308.0 |
| | | | | | | |
| 1999 | | | | | | |
| I | 272.8 | 304.0 | 338.3 | 391.5 | 322.9 | 294.3 |
| II | 274.9 | 301.2 | 320.0 | 380.1 | 305.5 | 291.2 |
| III | 281.0 | 307.0 | 325.1 | 415.2 | 310.4 | 298.2 |

Sources: IMF, *International Financial Statistics*; and data provided by the Bank of Israel.

Table 41. Israel: Overall Balance of Payments, 1994-99

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 I-III | 1999 IV-VI |
|---|---|---|---|---|---|---|---|
| | | | (In millions of U.S. dollars) | | | | |
| Current account balance | -3,387 | -5,197 | -5,316 | -3,398 | -667 | -769 | -502 |
| Trade balance | -5,554 | -7,566 | -7,185 | -5,174 | -3,225 | -875 | -1,080 |
| Exports, f.o.b. | 17,198 | 19,268 | 21,241 | 22,650 | 22,972 | 5,995 | 6,142 |
| Imports, f.o.b. | 22,752 | 26,834 | 28,426 | 27,824 | 26,197 | 6,870 | 7,222 |
| Civilian imports | 21,291 | 25,541 | 26,754 | 26,068 | 24,325 | 6,559 | 6,738 |
| Military imports (defence imports) | 1,461 | 1,293 | 1,671 | 1,756 | 1,872 | 310 | 483 |
| Civilian trade balance | -4,093 | -6,273 | -5,513 | -3,418 | -1,353 | -564 | -596 |
| Services balance | -1,122 | -623 | -1,178 | -963 | -776 | -65 | -138 |
| Exports | 6,579 | 7,759 | 8,093 | 8,419 | 9,049 | 2,395 | 2,524 |
| Imports | 7,701 | 8,382 | 9,271 | 9,382 | 9,825 | 2,460 | 2,662 |
| Income (factor income) balance | -2,356 | -2,774 | -3,225 | -3,474 | -2,809 | -856 | -646 |
| Exports | 1,219 | 1,738 | 1,839 | 2,119 | 2,985 | 475 | 694 |
| Imports | 3,575 | 4,512 | 5,064 | 5,593 | 5,794 | 1,331 | 1,340 |
| Current transfers | 5,645 | 5,766 | 6,272 | 6,213 | 6,143 | 1,027 | 1,362 |
| Capital and financial account balance | 3,342 | 4,504 | 4,319 | 2,275 | 1,404 | 1,345 | 1,465 |
| Capital transfers | 1,816 | 2,027 | 2,060 | 2,197 | 1,765 | 357 | 363 |
| Long-term capital | 2,976 | 2,785 | 5,140 | 5,449 | 3,511 | 1,197 | 1,100 |
| Short-term capital | -85 | -337 | 978 | -111 | -1,439 | -247 | -46 |
| Banking system | -1,283 | 1,099 | -471 | 4,065 | -576 | -84 | -98 |
| Change in bank of Israel total assets and liabilities | -82 | -1,070 | -3,388 | -9,325 | -1,857 | 122 | 146 |
| Statistical discrepancies | 46 | 693 | 997 | 1,124 | -736 | -576 | -964 |
| | | | (Growth rates in percent) 1/ | | | | |
| Memorandum items: | | | | | | | |
| Goods exports | 16.6 | 12.0 | 10.2 | 6.6 | 1.4 | 3.7 | 2.5 |
| Goods imports | 10.8 | 17.9 | 5.9 | -2.1 | -5.8 | 4.5 | 5.1 |
| Services exports | 10.3 | 17.9 | 4.3 | 4.0 | 7.5 | 6.5 | 5.4 |
| Services imports | 20.4 | 8.8 | 10.6 | 1.2 | 4.7 | 3.4 | 8.2 |
| Factor income exports | -3.4 | 42.6 | 5.8 | 15.2 | 40.9 | -47.9 | 46.1 |
| Factor income imports | 10.4 | 26.2 | 12.2 | 10.4 | 3.6 | -6.1 | 0.7 |

Sources: Bank of Israel; and Central Bureau of Statistics.

1/ The growth rate in percent is compared to same period the previous year.

Table 42. Israel: Balance of Payments—Services, 1994–99

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 I-III | 1999 IV-VI |
|---|---|---|---|---|---|---|---|
| | | | (In millions of U.S. dollars) | | | | |
| **Freight and transportation, net** | -1,395 | -1,667 | -1,878 | -1,816 | -1,849 | -438 | -478 |
| Receipts | 1,684 | 2,014 | 1,902 | 2,001 | 2,092 | 506 | 543 |
| Payments | -3,079 | -3,681 | -3,780 | -3,817 | -3,941 | -944 | -1,021 |
| **Travel, net** | 305 | 844 | 677 | 553 | 280 | 209 | 108 |
| Receipts | 2,440 | 2,964 | 2,955 | 2,836 | 2,656 | 685 | 829 |
| Payments | -2,135 | -2,120 | -2,278 | -2,283 | -2,376 | -476 | -721 |
| **Insurance, net** | -199 | -228 | -258 | -282 | -262 | -77 | -80 |
| Receipts | 13 | 18 | 13 | 15 | 17 | 5 | 5 |
| Payments | -211 | -246 | -271 | -297 | -279 | -82 | -85 |
| **Other, net** | 315 | 573 | 412 | 687 | 1,185 | 262 | 342 |
| Receipts | 2,412 | 2,717 | 3,162 | 3,496 | 4,214 | 1,176 | 1,127 |
| Payments | -2,097 | -2,144 | -2,750 | -2,809 | -3,029 | -914 | -784 |
| **Government, net** | -148 | -146 | -130 | -104 | -130 | -21 | -31 |
| Receipts | 30 | 46 | 62 | 71 | 69 | 22 | 20 |
| Payments | -178 | -192 | -192 | -175 | -199 | -43 | -51 |
| **Total services, net** | -1,122 | -624 | -1,177 | -962 | -776 | -66 | -138 |
| Receipts | 6,579 | 7,759 | 8,094 | 8,419 | 9,048 | 2,394 | 2,524 |
| Payments | -7,701 | -8,383 | -9,271 | -9,381 | -9,824 | -2,460 | -2,662 |
| **Total factor payments, excluding investment income, net** | -784 | -1,233 | -1,749 | -1,828 | -1,961 | -480 | -524 |
| Receipts | 135 | 178 | 158 | 173 | 168 | 41 | 33 |
| Payments | -919 | -1,411 | -1,907 | -2,001 | -2,129 | -520 | -557 |
| **Investment income, net** | -1,571 | -1,541 | -1,476 | -1,646 | -848 | -376 | -122 |
| Receipts | 1,084 | 1,560 | 1,681 | 1,946 | 2,817 | 434 | 661 |
| Payments | -2,656 | -3,101 | -3,157 | -3,592 | -3,665 | -810 | -783 |
| **Total factor payments, net** | -2,355 | -2,774 | -3,225 | -3,474 | -2,809 | -856 | -646 |
| Receipts | 1,219 | 1,738 | 1,839 | 2,119 | 2,985 | 475 | 694 |
| Payments | -3,575 | -4,512 | -5,064 | -5,593 | -5,794 | -1,331 | -1,340 |

Sources: Central Bureau of Statistics, *Monthly Bulletin of Statistics;* and data provided by the Bank of Israel.

Table 43. Israel: Export Volume and Price Indices, 1994-99
(Percentage change from previous period)

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 I | 1999 II |
|---|---|---|---|---|---|---|---|
| Volume indicators 1/ | | | | | | | |
| Agricultural products | 12.0 | 16.9 | 17.5 | 8.5 | 7.1 | 41.9 | -33.3 |
| Citrus fruit | -1.4 | 36.4 | -5.5 | 3.4 | -13.6 | 67.0 | -73.9 |
| Other fruits and vegetables | 0.4 | 22.1 | 33.0 | 1.0 | 20.3 | 43.7 | -46.2 |
| Other | 25.9 | 5.9 | 22.9 | 14.9 | 8.8 | 30.5 | -2.3 |
| Industrial products (excl. diamonds) | 13.9 | 3.5 | 7.5 | 13.9 | 11.6 | -8.9 | 7.2 |
| Ores and minerals | 18.6 | 1.5 | -7.3 | 9.5 | 0.7 | 0.4 | 18.7 |
| Food (incl. beverages and tobacco) | 5.4 | 3.0 | -3.6 | -12.9 | -5.7 | -11.0 | 11.6 |
| Textiles (incl. clothing and leather) | 8.1 | 3.5 | -4.5 | -1.6 | 3.7 | -1.2 | 3.6 |
| Other light industry products | 10.3 | 14.6 | 3.6 | -0.1 | 2.7 | -7.5 | 11.2 |
| Chemicals | 14.6 | 6.9 | 5.2 | 17.4 | 12.0 | -4.0 | 9.5 |
| Metals, machinery and electronics | 15.7 | 0.2 | 13.6 | 20.7 | 16.5 | -12.6 | 5.2 |
| Diamonds, net | 23.8 | 12.2 | 4.0 | -0.6 | -13.5 | 28.7 | -4.3 |
| Total, net | 15.7 | 6.6 | 8.0 | 9.7 | 4.7 | 0.4 | 0.8 |
| Total, excluding diamonds | 13.3 | 4.7 | 9.4 | 13.2 | 10.0 | -5.3 | 2.2 |
| Price indicators 2/ | | | | | | | |
| Agricultural products | -3.2 | 6.7 | -7.6 | -8.1 | -5.8 | 7.1 | -14.1 |
| Citrus fruit | 6.1 | 17.9 | -6.1 | -11.0 | 4.4 | 23.7 | -12.0 |
| Other fruits and vegetables | -4.5 | 7.9 | -12.9 | -5.8 | -2.8 | -4.2 | -1.6 |
| Other | -7.6 | 2.0 | -5.3 | -8.3 | -10.3 | 8.0 | -17.5 |
| Industrial products (excl. diamonds) | -0.6 | 5.4 | -1.2 | -3.0 | -3.3 | -1.0 | -0.7 |
| Ores and minerals | -1.2 | 13.1 | 3.9 | 5.0 | 3.9 | -1.6 | 0.7 |
| Food (incl. beverages and tobacco) | -0.6 | 7.0 | 2.4 | -0.5 | -4.3 | 2.9 | 0.2 |
| Textiles (incl. clothing and leather) | 1.3 | 3.4 | 1.0 | 1.5 | 2.8 | -4.3 | -2.4 |
| Other light industry products | -1.9 | 5.5 | 1.2 | 2.2 | -4.0 | -0.1 | 0.8 |
| Chemicals | -3.2 | 4.6 | -2.9 | -3.2 | -7.6 | -0.7 | 0.3 |
| Metals, machinery and electronics | 0.7 | 5.4 | -2.2 | -4.9 | -3.0 | -0.3 | -1.3 |
| Diamonds, net | -3.3 | 2.6 | 2.5 | 4.0 | -1.5 | -0.4 | 6.6 |
| Total, net | -1.5 | 4.6 | -0.4 | -1.2 | -2.9 | -0.2 | 1.5 |
| Total, excluding diamonds | -1.0 | 5.3 | -1.4 | -2.7 | -2.8 | -0.9 | 0.1 |

Sources: Central Bureau of Statistics, *Foreign Trade Statistics Quarterly;* and *Monthly Bulletin of Statistics.*

1/ Value data deflated by paasche unit value indices.
2/ Based on data in U.S. dollars.

Table 44. Israel: Commodity Composition of Exports, 1994-99 1/

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 I | II |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | (In millions of U.S. dollars) | | | | | | |
| Agricultural products | 594 | 741 | 804 | 802 | 809 | 297 | 170 |
| Citrus fruits | 126 | 203 | 180 | 166 | 150 | 75 | 17 |
| Other fruits and vegetables | 137 | 181 | 209 | 199 | 233 | 93 | 49 |
| Other | 330 | 357 | 415 | 437 | 426 | 129 | 104 |
| Industrial products (excl. diamonds) | 11,272 | 12,302 | 13,072 | 14,437 | 15,576 | 3,684 | 3,918 |
| Ores and minerals | 332 | 381 | 367 | 422 | 442 | 95 | 113 |
| Food (incl. beverages and tobacco) | 560 | 616 | 608 | 527 | 476 | 103 | 115 |
| Textiles (incl. clothing and leather) | 968 | 1,036 | 999 | 998 | 1,064 | 267 | 269 |
| Other light industry products | 1,304 | 1,577 | 1,653 | 2 | 1,665 | 415 | 465 |
| Chemicals | 2,120 | 2,370 | 2,421 | 2,751 | 2,848 | 672 | 738 |
| Metals, machinery and electronics | 5,890 | 6,219 | 6,913 | 7,932 | 8,965 | 2,106 | 2,185 |
| Diamonds, net | 4,014 | 4,622 | 4,929 | 5,097 | 4,345 | 1,280 | 1,306 |
| Other exports, n.e.s. | 171 | 232 | 444 | 533 | 472 | 126 | 114 |
| Total, net | 16,051 | 17,897 | 19,249 | 20,869 | 21,202 | 5,387 | 5,508 |
| | (In percent of total exports) | | | | | | |
| Agricultural products | 3.7 | 4.1 | 4.2 | 3.8 | 3.8 | 5.5 | 3.1 |
| Citrus fruits | 0.8 | 1.1 | 0.9 | 0.8 | 0.7 | 1.4 | 0.3 |
| Other fruits and vegetables | 0.9 | 1.0 | 1.1 | 1.0 | 1.1 | 1.7 | 0.9 |
| Other | 2.1 | 2.0 | 2.2 | 2.1 | 2.0 | 2.4 | 1.9 |
| Industrial products (excl. diamonds) | 70.2 | 68.7 | 67.9 | 69.2 | 2.1 | 1.8 | 2.1 |
| Ores and minerals | 2.1 | 2.1 | 1.9 | 2.0 | 2.1 | 1.8 | 2.1 |
| Food (incl. beverages and tobacco) | 3.5 | 3.4 | 3.2 | 2.5 | 2.2 | 1.9 | 2.1 |
| Textiles (incl. clothing and leather) | 6.0 | 5.8 | 5.2 | 4.8 | 5.0 | 5.0 | 4.9 |
| Other light industry products | 8.1 | 8.8 | 8.6 | 0.0 | 7.9 | 7.7 | 8.4 |
| Chemicals | 13.2 | 13.2 | 12.6 | 13.2 | 13.4 | 12.5 | 13.4 |
| Metals, machinery and electronics | 36.7 | 34.7 | 35.9 | 38.0 | 42.3 | 39.1 | 39.7 |
| Diamonds, net | 25.0 | 25.8 | 25.6 | 24.4 | 20.5 | 23.8 | 23.7 |
| Other exports, n.e.s. | 1.1 | 1.3 | 2.3 | 2.6 | 2.2 | 2.3 | 2.1 |
| Total, net | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Sources: Central Bureau of Statistics, *Foreign Trade Statistics Quarterly;* and *Monthly Bulletin of Statistics*.

1/ Excluding exports to the autonomy and administered areas.

Table 45. Israel: Destination of Exports, 1994-99
(In percent of total exports)

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 1/ |
|---|---|---|---|---|---|---|
| Exports | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Europe | 35.4 | 39.2 | 38.7 | 37.3 | 37.5 | 35.7 |
| *Of which:* | | | | | | |
| European Union | 29.2 | 32.3 | 32.0 | 30.0 | 30.8 | 29.8 |
| Austria | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.4 |
| Belgium | 5.3 | 5.3 | 5.4 | 4.9 | 4.7 | 5.4 |
| Denmark | 0.2 | 0.3 | 0.3 | 0.2 | 0.3 | 0.3 |
| Finland | 0.1 | 0.2 | 0.3 | 0.2 | 0.2 | 0.2 |
| France | 3.4 | 3.7 | 3.3 | 2.7 | 2.9 | 2.7 |
| Germany | 5.0 | 5.5 | 5.1 | 4.3 | 4.8 | 4.5 |
| Greece | 0.6 | 1.1 | 0.8 | 0.7 | 0.6 | 0.6 |
| Ireland | 0.2 | 0.2 | 0.4 | 0.9 | 0.8 | 1.3 |
| Italy | 3.0 | 3.0 | 2.7 | 2.8 | 3.2 | 2.7 |
| Luxembourg | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Netherlands | 3.7 | 4.2 | 4.3 | 4.3 | 4.8 | 3.9 |
| Portugal | 0.2 | 0.2 | 0.2 | 0.2 | 0.3 | 0.3 |
| Spain | 1.4 | 1.6 | 1.6 | 1.5 | 1.7 | 1.7 |
| Sweden | 0.4 | 0.5 | 0.6 | 0.5 | 0.5 | 0.4 |
| United Kingdom | 5.0 | 6.1 | 6.6 | 6.2 | 5.7 | 5.5 |
| EFTA countries 2/ | 2.2 | 2.0 | 1.7 | 1.9 | 1.8 | 1.6 |
| North, Central, and South America | 34.8 | 33.7 | 34.2 | 36.3 | 40.1 | 39.5 |
| *Of which:* | | | | | | |
| United States | 31.0 | 30.1 | 30.6 | 32.1 | 35.4 | 35.5 |
| Asia | 18.7 | 20.1 | 20.0 | 18.6 | 13.9 | 16.0 |
| *Of which:* | | | | | | |
| Japan | 5.8 | 6.9 | 5.9 | 4.5 | 3.2 | 3.3 |
| Other countries | 11.1 | 7.1 | 7.0 | 7.8 | 8.5 | 8.9 |

Source: Central Bureau of Statistics, *Monthly Bulletin of Statistics*.

1/ Until october.
2/ Iceland, Norway, and Switzerland.

Table 46. Israel: Civilian Import Volume and Price Indicators, 1994-99
(Percentage change from previous period)

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 I | 1999 II |
|---|---|---|---|---|---|---|---|
| **Volume indicators 1/** | | | | | | | |
| Consumer goods | 19.6 | 11.6 | 12.4 | 2.8 | 3.6 | 10.8 | -8.4 |
| Nondurables | 24.9 | 10.4 | 14.3 | 4.0 | 6.9 | 9.7 | -8.3 |
| Durables | 14.6 | 12.9 | 10.5 | 1.7 | 0.0 | 12.1 | -8.5 |
| Input goods | 9.6 | 12.8 | 4.5 | 2.9 | 0.4 | 9.0 | 3.7 |
| Diamonds | 11.2 | 19.9 | 2.5 | -0.6 | -17.3 | 40.4 | 4.0 |
| Fuel | -2.4 | 8.7 | -6.8 | 14.6 | 12.1 | -3.2 | -4.8 |
| Other | 11.4 | 10.5 | 6.9 | 2.0 | 4.8 | 1.8 | 5.5 |
| Investment goods | 23.7 | 3.6 | 10.4 | -2.8 | -3.5 | 17.0 | 9.0 |
| Machinery and equipment | 17.2 | 11.7 | 11.2 | -0.2 | 4.7 | 1.7 | 4.2 |
| Total imports, net | 13.3 | 10.8 | 6.7 | 1.9 | 0.1 | 10.7 | 3.3 |
| Total, excluding diamonds | 13.8 | 8.8 | 7.4 | 2.0 | 3.5 | 6.0 | 3.5 |
| **Price indicators 2/** | | | | | | | |
| Consumer goods | 0.5 | 7.5 | -4.1 | -4.4 | -3.5 | -2.6 | -2.2 |
| Nondurables | -0.8 | 8.0 | -2.8 | -2.9 | -3.0 | -2.7 | -1.4 |
| Durables | 1.9 | 7.1 | -5.5 | -6.0 | -4.3 | -2.4 | -3.2 |
| Input goods | 2.4 | 8.6 | 0.4 | -4.8 | -7.5 | -4.7 | 0.4 |
| Diamonds | 4.2 | -4.6 | 6.1 | -0.2 | -2.8 | -8.8 | -0.6 |
| Fuel | -2.5 | 10.9 | 14.9 | -7.9 | -28.9 | -3.8 | 23.2 |
| Other | 2.5 | 14.0 | -3.4 | -5.6 | -4.7 | -3.7 | -2.6 |
| Investment goods 3/ | 1.9 | 6.0 | -2.8 | -5.2 | -2.0 | -1.4 | -2.7 |
| Machinery and equipment | 0.2 | 4.9 | -2.0 | -5.7 | -1.7 | -1.5 | -2.6 |
| Total imports, net | 2.0 | 8.0 | -0.9 | -4.8 | -5.9 | -3.7 | -0.8 |
| Total, excluding diamonds 3/ | 1.7 | 10.6 | -2.2 | -5.7 | -6.0 | -3.4 | -0.9 |

Sources: Central Bureau of Statistics, *Foreign Trade Statistics Quarterly*; and *Monthly Bulletin of Statistics*.

1/ Value data deflated by paasche unit indices.
2/ Based on data in U.S. dollars.

Table 47. Israel: Commodity Composition of Civilian Imports (c.i.f), 1994-99 1/

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | |
| --- | --- | --- | --- | --- | --- | --- | --- |
| | | | | | | I | II |
| (In millions of U.S. dollars) | | | | | | | |
| Consumer goods | 3,047 | 3,657 | 3,941 | 3,876 | 3,875 | 1,015 | 908 |
| Nondurables | 1,549 | 1,846 | 2,051 | 2,070 | 2,146 | 565 | 510 |
| Durables | 1,498 | 1,811 | 1,890 | 1,806 | 1,729 | 450 | 398 |
| Input goods | 15,809 | 19,370 | 20,322 | 19,907 | 18,488 | 4,712 | 4,903 |
| Diamonds | 3,873 | 4,429 | 4,818 | 4,779 | 3,839 | 1,219 | 1,259 |
| Fuel | 1,658 | 1,999 | 2,141 | 2,260 | 1,800 | 376 | 441 |
| Other | 10,278 | 12,942 | 13,363 | 12,868 | 12,849 | 3,117 | 3,203 |
| Investment goods | 4,510 | 4,951 | 5,315 | 4,897 | 4,635 | 1,486 | 1,576 |
| Machinery and equipment | 2,962 | 3,468 | 3,780 | 3,558 | 3,661 | 1,063 | 1,079 |
| Other imports, n.e.s. | 3 | 4 | 4 | 3 | 12 | 3 | 3 |
| Total imports, net | 23,369 | 27,982 | 29,582 | 28,683 | 27,010 | 7,216 | 7,390 |
| Total, excluding diamonds | 19,496 | 23,553 | 24,764 | 23,904 | 23,171 | 5,997 | 6,131 |
| (In percent of total imports) | | | | | | | |
| Consumer goods | 13.0 | 13.1 | 13.3 | 13.5 | 14.3 | 14.1 | 12.3 |
| Nondurables | 6.6 | 6.6 | 6.9 | 7.2 | 7.9 | 7.8 | 6.9 |
| Durables | 6.4 | 6.5 | 6.4 | 6.3 | 6.4 | 6.2 | 5.4 |
| Input goods | 67.6 | 69.2 | 68.7 | 69.4 | 68.4 | 65.3 | 66.3 |
| Diamonds | 16.6 | 15.8 | 16.3 | 16.7 | 14.2 | 16.9 | 17.0 |
| Fuel | 7.1 | 7.1 | 7.2 | 7.9 | 6.7 | 5.2 | 6.0 |
| Other | 44.0 | 46.3 | 45.2 | 44.9 | 47.6 | 43.2 | 43.3 |
| Investment goods | 19.3 | 17.7 | 18.0 | 17.1 | 17.2 | 20.6 | 21.3 |
| Machinery and equipment | 12.7 | 12.4 | 12.8 | 12.4 | 13.6 | 14.7 | 14.6 |
| Other imports, n.e.s. | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | 0.0 |
| Total imports, net | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |

Sources: Central Bureau of Statistics, *Foreign Trade Statistics Quarterly* and *Monthly Bulletin of Statistics*.

1/ Excludes imports from the Autonomy and administered areas.

Table 48. Israel: Origin of Imports, 1994-99

|  | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 |
|---|---|---|---|---|---|---|
|  | (In percent of total imports) | | | | | |
| Imports | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 | 100.0 |
| Europe | 62.9 | 61.7 | 60.2 | 59.8 | 58.1 | 56.1 |
| *Of which:* | | | | | | |
| European Union | 53.7 | 52.4 | 51.7 | 51.1 | 48.5 | 46.2 |
| Austria | 0.5 | 0.6 | 0.5 | 0.5 | 0.4 | 0.4 |
| Belgium | 12.8 | 12.1 | 12.1 | 12.4 | 10.4 | 11.1 |
| Denmark | 0.6 | 0.6 | 0.5 | 0.5 | 0.6 | 0.4 |
| Finland | 0.5 | 0.8 | 0.7 | 0.9 | 0.9 | 0.9 |
| France | 4.5 | 4.1 | 3.9 | 3.8 | 4.1 | 4.0 |
| Germany | 10.4 | 9.8 | 9.4 | 9.6 | 8.8 | 8.1 |
| Greece | 0.5 | 0.5 | 0.5 | 0.4 | 0.5 | 0.4 |
| Ireland | 0.4 | 0.6 | 0.6 | 0.6 | 0.8 | 0.8 |
| Italy | 7.8 | 7.8 | 7.6 | 6.9 | 6.7 | 5.3 |
| Luxembourg | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 | 0.1 |
| Netherlands | 3.3 | 3.4 | 3.2 | 3.8 | 4.2 | 3.7 |
| Portugal | 0.5 | 0.4 | 0.4 | 0.4 | 0.4 | 0.3 |
| Spain | 1.7 | 1.9 | 2.1 | 2.1 | 2.3 | 1.9 |
| Sweden | 1.4 | 1.4 | 1.2 | 1.0 | 1.1 | 1.1 |
| United Kingdom | 8.7 | 8.3 | 8.8 | 8.3 | 7.5 | 7.6 |
| EFTA countries 1/ | 6.7 | 6.3 | 5.8 | 5.7 | 5.8 | 5.7 |
| North, Central, and South America | 19.8 | 20.2 | 21.5 | 20.8 | 22.1 | 22.9 |
| *Of which:* | | | | | | |
| United States | 18.0 | 18.6 | 20.0 | 18.7 | 19.6 | 20.7 |
| Asia | 9.7 | 10.0 | 10.2 | 10.8 | 12.4 | 13.2 |
| *Of which:* | | | | | | |
| Japan | 4.1 | 3.3 | 3.7 | 3.6 | 3.6 | 3.5 |
| Other countries | 7.6 | 8.1 | 8.1 | 8.5 | 7.3 | 7.8 |

Source: Central Bureau of Statistics, *Monthly Bulletin of Statistics*.

1/ Iceland, Norway, and Switzerland.

Table 49. Israel: Capital Account Transactions, 1994–99 1/
(In millions of U.S. dollars)

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 I-III | 1999 IV-VI |
|---|---|---|---|---|---|---|---|
| Net capital flows (excluding flows by | | | | | | | |
| the central monetary institutions) | 1,607 | 3,548 | 5,647 | 9,402 | 1,496 | 867 | 956 |
| | | | | | | | |
| Long-term capital | 2,976 | 2,785 | 5,140 | 5,449 | 3,511 | 1,197 | 1,100 |
| Loans | 2,621 | 1,209 | 3,130 | 2,706 | 1,717 | 471 | 388 |
| Public sector | 2,090 | 882 | 1,839 | 1,222 | 1,133 | -21 | 326 |
| Private nonfinancial sector | 531 | 327 | 1,291 | 1,484 | 584 | 492 | 62 |
| Direct investment | | | | | | | |
| In Israel | 432 | 1,337 | 1,382 | 1,622 | 1,850 | 594 | 1,076 |
| Abroad | -741 | -733 | -1,042 | -834 | -830 | -72 | -136 |
| Financial investment | | | | | | | |
| In Israel | 462 | 978 | 1,438 | 1,998 | 506 | 360 | -118 |
| Abroad | 202 | -6 | 232 | -44 | 268 | -156 | -109 |
| | | | | | | | |
| Short-term capital | -1,369 | 762 | 508 | 3,954 | -2,015 | -331 | -144 |
| Government | | | | | | | |
| Liabilities | 42 | 28 | -29 | -29 | -12 | -28 | 214 |
| Assets | -27 | -1,229 | 864 | -19 | -13 | -9 | -63 |
| Private | | | | | | | |
| Liabilities | 161 | 1,100 | -275 | 31 | -336 | -31 | 109 |
| Assets | -261 | -236 | 417 | -94 | -1,079 | -179 | -306 |
| Banking sector | | | | | | | |
| Liabilities | 999 | 1,218 | 611 | 2,352 | 1,525 | 349 | 650 |
| Assets | -2,283 | -119 | -1,082 | 1,713 | -2,101 | -433 | -748 |
| | | | | | | | |
| Foreign currency assets and liabilities | | | | | | | |
| of the central monetary institutions | -82 | -1,070 | -3,388 | -9,325 | -1,857 | 122 | 146 |
| Liabilities | 0 | -90 | -131 | -7 | -7 | -2 | -13 |
| Assets | -82 | -980 | -3,257 | -9,317 | -1,851 | 124 | 159 |

Source: Central Bureau of Statistics, *Monthly Bulletin of Statistics*.

Table 50. Israel: Indicators of External Indebtedness, 1994-99
(In millions of U.S. dollars)

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 I | 1999 II |
|---|---|---|---|---|---|---|---|
| Gross external liabilities | | | | | | | |
| Amount | 41,418 | 44,796 | 47,514 | 51,527 | 54,595 | 55,139 | 56,006 |
| Percentage increase | 10.4 | 8.2 | 6.1 | 8.4 | 6.0 | 3.4 | 4.9 |
| Percent of GDP | 55.2 | 51.0 | 49.2 | 51.5 | 55.2 | 57.6 | 56.4 |
| | | | | | | | |
| Gross external liabilities minus foreign assets of commercial banks | | | | | | | |
| Amount | 29,407 | 32,392 | 34,233 | 40,370 | 41,223 | 41,385 | 41,595 |
| Percentage increase | 4.6 | 10.2 | 5.7 | 17.9 | 2.1 | -0.1 | 1.1 |
| Percent of GDP | 39.2 | 36.9 | 35.4 | 40.4 | 41.7 | 43.3 | 41.9 |
| | | | | | | | |
| Net external liabilities 1/ | | | | | | | |
| Amount | 18,473 | 19,232 | 17,857 | 14,518 | 11,571 | 12,211 | 11,731 |
| Percentage increase | 5.9 | 4.1 | -7.2 | -18.7 | -20.3 | -13.6 | -11.8 |
| Percent of GDP | 24.6 | 21.9 | 18.5 | 14.5 | 11.7 | 12.8 | 11.8 |
| | | | | | | | |
| Memorandum items: | | | | | | | |
| Foreign assets | 22,945 | 25,564 | 29,657 | 37,009 | 43,024 | 42,928 | 44,275 |
| Of which: | | | | | | | |
| Commercial banks | 12,011 | 12,404 | 13,281 | 11,157 | 13,372 | 13,754 | 14,411 |
| Bank of Israel | 6,896 | 8,309 | 11,575 | 20,333 | 22,674 | 21,984 | 21,931 |

Sources: Central Bureau of Statistics, *Monthly Bulletin of Statistics*; and data provided by the Bank of Israel.

1/ Net of foreign assets of commercial banks, Bank of Israel's reserves, holdings of other monetary institutions, and nonfinancial private sector.

Note: The GDP data have been multiplied, so the ratio of stocks/flows is expressed in annual terms. Percentage change over the same period of pervious year.

Table 51. Israel: Indicators of Debt Service, 1994-99

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 | |
|---|---|---|---|---|---|---|---|
| | | | | | | I | II |
| | (In millions of U.S. dollars) | | | | | | |
| Investment income - imports | 2,655 | 3,101 | 3,157 | 3,592 | 3,665 | 810 | 783 |
| *Of which*: Gross interest payments | 2,379 | 2,940 | 2,865 | 3,137 | 3,323 | 718 | 666 |
| Interest receipts | 1,084 | 1,560 | 1,681 | 1,946 | 2,817 | 434 | 661 |
| Net interest payments 1/ | 1,294 | 1,379 | 1,184 | 1,190 | 506 | 284 | 5 |
| Principal repayments 2/ | 2,228 | 2,278 | 2,387 | 2,606 | 3,047 | 587 | 615 |
| Debt service 3/ | 4,607 | 5,218 | 5,251 | 5,743 | 6,371 | 1,305 | 1,280 |
| Net debt service 4/ | 3,523 | 3,657 | 3,571 | 3,797 | 3,553 | 871 | 620 |
| | (In percent of exports of goods and nonfactor services) | | | | | | |
| Gross interest payments | 10.0 | 10.9 | 9.8 | 10.1 | 10.4 | 8.6 | 7.7 |
| Net interest payments | 5.4 | 5.1 | 4.0 | 3.8 | 1.6 | 3.4 | 0.1 |
| Gross debt service | 19.4 | 19.3 | 17.9 | 18.5 | 19.9 | 15.6 | 14.8 |
| Net debt service | 14.8 | 13.5 | 12.2 | 12.2 | 11.1 | 10.4 | 7.2 |

Sources: Central Bureau of Statistics, *Monthly Bulletin of Statistics*; and data provided by the Bank of Israel.

1/ Gross interest payments minus interest receipts.
2/ Excludes short-term debt.
3/ Gross interest payments plus principal repayments.
4/ Debt service minus interest receipts.

Table 52. Israel: Assets and Liabilities in Foreign Currency, 1994-99

| | 1994 | 1995 | 1996 | 1997 | 1998 | 1999 I | 1999 II |
|---|---|---|---|---|---|---|---|
| | | | | | | | |
| | *(In millions of U.S. dollars; end of period)* | | | | | | |
| Gross liabilities | 41,418 | 44,796 | 47,514 | 51,527 | 54,595 | 55,139 | 56,006 |
| Government | 22,552 | 23,577 | 25,265 | 26,166 | 27,401 | 27,235 | 27,505 |
| Nonfinancial private sector | 5,004 | 5,971 | 6,673 | 7,751 | 7,941 | 8,305 | 8,364 |
| Bank of Israel | 298 | 235 | 98 | 89 | 83 | 81 | 68 |
| Banks | 13,564 | 15,014 | 15,478 | 17,520 | 19,171 | 19,518 | 20,069 |
| Gross assets | 22,945 | 25,564 | 29,657 | 37,009 | 43,024 | 42,928 | 44,275 |
| Bank of Israel reserves | 6,896 | 8,309 | 11,575 | 20,333 | 22,674 | 21,984 | 21,931 |
| Other financial institutions | 542 | 530 | 371 | 480 | 602 | 468 | 651 |
| Exporters' credit | 3,496 | 4,321 | 4,431 | 5,039 | 6,376 | 6,722 | 7,282 |
| Banking system | 12,011 | 12,404 | 13,281 | 11,157 | 13,372 | 13,754 | 14,411 |
| Net liabilities 1/ | 18,473 | 19,232 | 17,857 | 14,517 | 11,571 | 12,211 | 11,731 |
| Total current debt | 5,458 | 7,169 | 6,153 | 10,305 | 8,942 | 9,152 | 9,085 |
| Banking system (net) | 1,689 | 2,646 | 2,334 | 6,403 | 5,788 | 5,789 | 5,753 |
| Nonfinancial private sector | 1,707 | 2,252 | 1,613 | 1,286 | 661 | 665 | 697 |
| Direct government debt | 0 | 9 | 33 | 0 | 1 | 1 | 1 |
| Medium- and long-term debt (repayable within a year) | 2,062 | 2,262 | 2,173 | 2,616 | 2,491 | 2,698 | 2,633 |
| Net current debt 2/ | -5,476 | -5,991 | -10,224 | -15,547 | -20,710 | -20,022 | -20,779 |

Sources: Central Bureau of Statistics, *Monthly Bulletin of Statistics* ; and data provided by the Bank of Israel.

1/ Gross liabilities minus gross assets.
2/ Total current debt minus Bank of Israel reserves, other financial institutions' reserves, and exporters' credit.

Table 53. Israel: Official Gold and Convertible
Foreign Exchange Reserves, 1994-99

| | Gold 1/ | SDRs | Reserve position in the Fund | Foreign exchange 2/ | Total 3/ |
|---|---|---|---|---|---|
| | | (In millions of U.S. dollars; end of period) | | | |
| 1994 | 0.4 | 0.4 | 0.0 | 6,895 | 6,895 |
| 1995 | 0.5 | 0.6 | 0.0 | 8,308 | 8,309 |
| 1996 | 0.4 | 1.4 | 0.0 | 11,573 | 11,573 |
| 1997 | 0.4 | 0.1 | 0.0 | 20,332 | 20,332 |
| 1998 | 0.0 | 0.3 | 0.0 | 22,674 | 22,674 |
| | | | | | |
| 1996 | | | | | |
| I | 0.4 | 0.6 | 0.0 | 9,836 | 9,837 |
| II | 0.4 | 0.6 | 0.0 | 9,007 | 9,007 |
| III | 0.4 | 1.1 | 0.0 | 10,367 | 10,367 |
| IV | 0.4 | 1.4 | 0.0 | 11,573 | 11,573 |
| | | | | | |
| 1997 | | | | | |
| I | 0.4 | 0.2 | 0.0 | 15,520 | 15,520 |
| II | 0.4 | 1.7 | 0.0 | 17,992 | 17,992 |
| III | 0.4 | 0.2 | 0.0 | 19,205 | 19,205 |
| IV | 0.4 | 0.1 | 0.0 | 20,332 | 20,332 |
| | | | | | |
| 1998 | | | | | |
| I | 0.4 | 0.2 | 0.0 | 21,602 | 21,602 |
| II | 0.4 | 0.3 | 0.0 | 21,322 | 21,322 |
| III | 0.4 | 0.4 | 0.0 | 21,714 | 21,714 |
| IV | 0.0 | 0.3 | 0.0 | 22,674 | 22,674 |
| | | | | | |
| 1999 | | | | | |
| I | 0.0 | 0.2 | 0.0 | 21,984 | 21,984 |
| II | 0.0 | 0.0 | 0.0 | 21,931 | 21,931 |

Sources: IMF, *International Financial Statistics*; and data provided by the Bank of Israel.

1/ National value.
2/ At the Bank of Israel.
3/ Gold plus foreign exchange.