Transmission channels of monetary policy in Israel

David Klein

1. Two preliminary comments

(i) The ultimate target of monetary policy

The Bank of Israel is, in most respects, an independent central bank. So much so that, once in a while, various proposals are brought forward to limit its independence. The main issue is, probably, the mission of the central bank.

Discussing the transmission mechanism of monetary policy assumes, in most countries, that the ultimate target of that policy is low inflation, or price stability. This is far from being the case in Israel, even among economists, let alone among politicians in the executive and the legislative branches, industrialists and financial market participants. In the ongoing public debate, two other goals of monetary policy are considered to be of greater importance than price stability, namely "maximum" growth, or "low" unemployment; and balance-of-payments equilibrium, or maintaining the competitiveness of exports.

The Bank of Israel Law, enacted in 1954, enumerates price stability as only one of the missions of the central bank, in addition to the encouragement of high levels of investment, employment and growth. Governments seem to be weary of fixing an inflation target, explaining that the "cost", in terms of unemployment, may be too high. Public figures can be heard from time to time saying, for example, that if they have to choose between a combination of 12% inflation and 3% unemployment or, on the other hand, a mix of 3% inflation and 12% unemployment – they prefer the former. Typically such statements do not distinguish between the short and the long run, giving the impression that this is a choice between two steady states.

This type of Phillips curve dilemma means that views differ not only with regard to the mission of the central bank, but also with regard to the very feasibility of reducing inflation. The Israeli economy, despite its

openness to international trade, tends to be riddled with monopolies and other structural constraints that introduce nominal rigidities even with respect to the rate of change of prices. So much so that if the economy "gets used" to an annual inflation rate of 18%, as recorded between 1986 and 1991, only a significant external shock that increases the productive capacity of the economy can extract it from that position. Without such a shock, applying "standard" restrictive monetary policy would not only increase unemployment but might even lead to the worse result of stagflation. On the other hand, if such a shock takes place and, as a result, the rate of inflation slows down in a given year, the job of the central bank is to seize the opportunity, nail down the lower level, and then wait until the next shock arrives.

Nevertheless, the transmission mechanism dealt with in this paper takes as given that the ultimate target of monetary policy is price stability. This is the case not because the central bank does not care about economic growth and balance-of-payments deficits, nor because it belittles the relevance of structural bottlenecks. Rather, we share the mainstream view that the relative advantage of monetary policy is in dealing with nominal phenomena; that real developments are better dealt with through fiscal policy; that structural reforms to improve the competitive structure of the economy should be implemented, regardless; and perhaps most importantly, that lower inflation promotes higher productivity and economic growth in the medium and long term. However, the fact that there is no consensus on those issues in Israel makes the conduct of monetary policy correspondingly harder and requires a more restrictive monetary policy than would otherwise be necessary to attain a given inflation target.

(ii) The basic strategy in attaining the target

Reviewing our experience in the last ten years, one can say that two basic strategies were followed for restraining inflation.

The first came into being with the stabilisation policy that successfully brought inflation down from a three-digit level in the first half of the 1980s to a low two-digit level in the second half of the same decade. That strategy adopted the exchange rate as a nominal anchor, assuming that stabilising the exchange rate, with the aid of a disciplined fiscal policy, would produce price stability.

Within the framework of this approach, the role assigned to interest rate policy was to stabilise the exchange rate. The mechanism is familiar from the experience of the European Exchange Rate Mechanism (ERM), from which we recognise also its limits. Interest rates can serve to stabilise capital flows, and thus help in maintaining a given exchange rate band, as long as these interest rates are consistent with domestic policy considerations. The United Kingdom, for example, had to leave the ERM in September 1992, because the increase in interest rates required to maintain the parity of the pound was deemed inconsistent with the high level of unemployment prevailing in the country at this time. In Israel, anchoring the exchange rate left much to be desired as a major instrument to reduce the pace of inflation, from the low two-digit level, in the second half of the 1980s. The stabilisation plan in the mid-1980s reduced inflation from 440% in 1984 to an average of 18% between 1986 and 1991, although its goal was price stability. The commitment to stabilise the exchange rate apparently was not very credible, specifically because the Government was considered to have a special responsibility in ensuring export competitiveness. The shekel was indeed devalued from time to time and the average annual inflation rate did not change much.

We shifted gradually to a second strategy in the first half of the 1990s when the horizontal exchange rate band was replaced by an upward-crawling one, and annual inflation targets were announced.[1] In this approach, monetary policy has a different focus. In particular, changes in interest rates are not determined so as to stabilise a given exchange rate but are designed to attain the inflation target, while the exchange rate is not fixed but can vary within the given "diagonal" band, whose limits around the central parity were widened from the original 3% to 7% in each direction. The slope of the band was determined by the difference between the inflation target at home and inflation abroad, and was supposed to decline to zero when the inflation differential was reduced to zero. We gradually reached the same conclusion as reached by others, namely that it is better to let the market play a significant role in determining the exchange rate.

The purpose of this paper is to delineate the channels through which, under the current approach, monetary policy affects inflation developments.

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[1] A more detailed analysis of the shift to inflation targets in Israel can be found in Bufman, Leiderman and Sokoler (1995).

2. The monetary transmission mechanism

(i) The operating target and interest rates

The main instrument of the Bank of Israel has been, in recent years, its "monetary" loans to commercial banks. The interest rate on this type of loan, usually for one day or one week, is determined in an auction, and is strongly influenced by a marginally increasing discount window rate schedule, fixed by the central bank. Banks resort to these loans mainly because they have to meet the central bank's reserve requirements, averaging nowadays around 4% of total deposits.

The interest rate on the monetary loans has become the key short-term interest rate in the economy. When it changes, the commercial banks' prime rate changes by an equal amount and, with it, changes take place in other deposit and lending interest rates (see Graph 1). The response is immediate, and sometimes occurs even in advance of an anticipated rate change. It is worth noting that apart from policy-induced changes in interest rates, interbank trading in liquid assets takes place every day and reflects minor changes in interest rates due to changes in the liquidity position of each bank. The cost of borrowing money from

Graph 1
Banks' short-term lending and deposit rates, 1988–96
Annual averages, in percentages
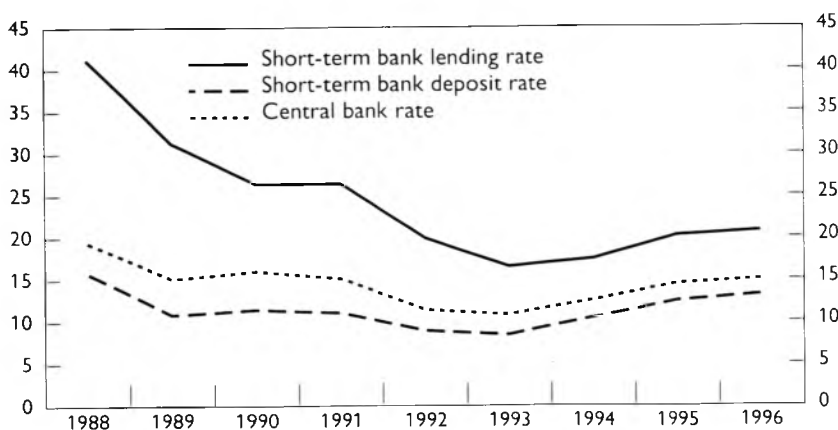
Note: The rates were, respectively, 26.4, 11.0 and 15.1% in 1991, and 20.7, 13.1 and 15.0% in 1996.

the central bank is the key determinant of interest rates in the interbank market.

Furthermore, commercial banks use part of their resources to invest in government bonds. One such bond is the "short-term note" – a Treasury bill with a maturity of up to one year – which serves exclusively, by law, as a monetary policy instrument and does not finance the government budget deficit. It is the main tool for open market operations of the central bank, and is a policy instrument in addition to the monetary loans. The significance of the short-term note is that it serves, on the one hand, as a substitute asset to bank deposits for financial investors and, on the other hand, as a substitute asset to loans from the viewpoint of the banks. Hence, the yield on the short-term note affects deposit and lending rates alike, and thus also has an impact on the banks' interest rate spread.

In addition, institutional investors, who manage roughly half of the public's financial portfolio, hold in their portfolio all types of government bonds, including the short-term note and bank deposits. As a result, any change in the central bank's key interest rate reverberates through the money and capital markets to short and long-term rates, and in turn affects the behaviour of the various economic agents.[2]

It should be noted that most of these links were created only in the last few years as a result of a policy of deregulation. Previously, the basic minimum conditions for the conduct of an efficient monetary policy did not exist, as markets were deeply segmented. Deregulating Israel's financial markets is still unfinished business, but I will not elaborate on it here since it is beyond the scope of this paper.[3]

Given the network of interest rates, how do they contribute towards attaining the inflation target? While a full-scale macroeconometric model that incorporates nominal as well as real variables and has a detailed financial sector is not available, some small structural and reduced-form models have been tested, mainly in the central bank but also elsewhere, and I will rely on some of their findings in the following description.[4]

[2] Not enough attention is usually given to analysing the various ways in which changes in the central bank rate are transmitted to other market rates. Much depends on the institutional set-up of financial markets and the degree of government involvement in these markets. An interesting exception can be found in Deutsche Bundesbank (1996).

[3] Not everybody realises how essential financial deregulation is for the efficiency of monetary policy, especially when markets are widely segmented, as was the case in Israel. See Klein (1994).

[4] The source for the quantitative estimates in this paper is a recent version of a research paper prepared by two senior economists from the staff of the Monetary Department of the Bank of Israel (see Elkayam and Azoulay (1996)).

It should be emphasised that the models used here deal only with the short-term effects of monetary policy.

(ii) Money, prices and real interest rates

It is only natural to start from the oldest observation that inflation cannot be sustained without a continued increase in the money supply.

The empirical issue in Israel, as in other countries, is whether the demand for money is stable, and what the pertinent monetary aggregate is for which there is a stable demand and which has a significant impact on prices.

The answer suggested by the empirical research is that if there is such a monetary aggregate, it is M1. Econometric tests prepared in the Monetary Department came up with statistically significant findings in two respects:

- the demand for M1 does indeed change positively, having a unit elasticity, with the change in economic activity, and negatively with the change in the central bank interest rate. A 1 percentage point change in the nominal interest rate changes real M1 by 1.4%;
- changes in M1, in excess of the demand generated by changes in economic activity, affect prices with a lag of two to three quarters.

Examining this traditional channel more closely, we attempted to test the impact of changes in nominal interest rates on the expected short-term real interest rate, and through it on long-term real interest rates and on total demand. The first question centres on the impact of a given change in short-term nominal interest rates on inflationary expectations, as these expectations serve to deflate the nominal interest rate in order to gauge the expected real interest rate. These expectations can be measured for periods of up to two years, since nominal as well as index-linked bonds exist for these maturities. Next, estimates of expected short-term real interest rates are derived by relating the central bank monetary loans rate to these inflationary expectations.

A casual look results in a tentative finding that a change in nominal rates does not always affect inflationary expectations, either at all or in the right, namely negative, direction. The desired impact seems to be achieved only when the change in the nominal rate is sizable and unexpected, or when the real expected interest rate is already above 5%.

Credibility, we assume, plays a significant role in determining these para-
meters. A well-established commitment and tradition of pursuing price
stability, which we still lack in Israel, would require a smaller increase in
nominal rates and lower initial real expected rates in order to attain a
given change in inflationary expectations. Preliminary results of a more
powerful statistical test lend support to the intuitive hypothesis that there
is a significant negative impact of changes in the central bank's *real lagged*
short-term interest rate on inflationary expectations.

Also, we do not know enough about the impact of a given change in
short-term expected real rates on the yield curve as a whole. That partic-
ular issue has a special dimension in Israel because all government bonds
having maturities of more than four years are index-linked – mainly to the
cost of living but also to the exchange rate. Thus the only question we can
try to answer is about the impact of a given change in short-term *nominal*
rates on the long-term *real* yield on government bonds. Whoever
attempts to answer that question should allow also for other factors
affecting long-term rates such as the size of the budget deficit and the
composition of its financing (domestic versus foreign borrowing,
short versus long-term bonds, and the level of government debt), the
degree of openness to foreign capital markets and some institutional
characteristics of long-term savings in Israel. Here, too, preliminary
statistical tests corroborate our intuitive feeling that a change in the
central bank's interest rate has a stronger and more immediate impact
on the yield of medium-term government bonds than on the yield of
long-term bonds.

Finally, our research indicates that a 1 percentage point change in the
short-term real interest rate brings about a negative *short-term* impact of
0.2–0.4 percentage points on domestic demand. It should be emphasised
that this is only the impact effect. For policy purposes the medium and
long term are more relevant.

To sum up, we have good reason to believe that increasing nominal
short-term interest rates will dampen overall demand in the short term
and thus lessen inflationary pressures. We assume that ultimately there
is a negative relationship between inflation and growth or, at least, that
such a relationship exists as long as we do not reach the average inflation
level prevailing in countries with which we trade (2–3%) and that, in the
meantime, we cannot attain higher durable growth by tolerating higher
inflation.

(iii) The impact through the nominal exchange rate

The degree of liberalisation of the capital account achieved so far, and the degree of flexibility of the exchange rate in the current regime, set the conditions enabling interest rates to affect prices through changes in the exchange rate. Experience indicates that a large enough gap between domestic and foreign interest rates, relative to inflation differentials, will cause capital movements. In the early 1990s real domestic interest rates were either negative or very low, resulting in excess demand for foreign currency. The opposite has happened more recently and has tended to strengthen the domestic currency. Since international trade, exports plus imports, approaches the size of GDP in Israel and since some prices of non-tradable goods, housing in particular, are quoted in terms of US dollars, the exchange rate has a considerable bearing on domestic prices.

A recent econometric estimate, prepared by the staff of the Monetary Department, suggests that a 1% change in the exchange rate will change the pace of inflation by 0.6%. Other quantitative estimates find that the exchange rate impact is not immediate and that it may take one to two quarters until its effect on prices is complete.

The empirical findings also shed an interesting light on an issue which is raised, from time to time, in policy debates. The question is what are the implications of a government decision to devalue the currency (assuming that the exchange rate can be viewed as a policy variable) if it wants, at the same time, to maintain its inflation target? The estimate provided by the model is that to offset the impact of a 1% devaluation on prices, the interest rate should be *raised* by 0.5% to 1%, depending on how quickly one wants to erase the inflationary effects of the devaluation on prices.

Be that as it may, the exchange rate channel, from interest rates to prices through international capital flows, is certainly one of the relevant transmission channels of monetary policy in Israel.

(iv) The credit channel

There are two other channels through which monetary policy can be assumed to be transmitted, although they have yet to be researched rigorously. The first is the credit channel and the second is the asset price channel. We consider first the credit channel.

Usually the impact of credit is nothing more than the real interest rate

effect discussed above. If monetary policy succeeds, for example, in raising real interest rates the demand for credit should eventually decline and, with it, total demand in the economy.

However, in Israel there are two interesting twists to this straightforward story. The first has to do with the liberalisation of the capital account and the exchange rate regime. For some time now, as a result of our policy of foreign currency liberalisation, foreign currency credit has not been restricted, as far as the exchange control regulations are concerned. Hence, whenever domestic interest rates rise the tendency to borrow in foreign currency increases. The year 1995 was noteworthy in this regard as the share of foreign currency credit in the public's total liabilities portfolio increased from 23% to 29%, mainly because of interest rate differentials. Such a shift in the structure of the loan portfolio represents a large capital inflow that under a floating exchange rate regime should have strengthened the domestic currency, thus affecting prices through the exchange rate channel. But, since we have an exchange rate band – not the regular horizontal band but an upward-sloping one – the Bank of Israel intervened in the market, buying foreign currency, first to prevent the actual exchange rate from moving too far from the central parity of the band, and then to protect the limit of the band. The resultant increase in the quantity of money had to be sterilised, which we did, but not without a price. The main price we have paid, apart from the cost of sterilisation itself, was in reducing, in the eyes of the typical domestic borrower, the exchange rate risk. The whole episode weakened the effectiveness of our monetary policy.

The second special aspect of the credit channel, related to the first one, has to do with prudential guidelines regarding credit allocation by commercial banks, issued by the supervisor of banks. According to these guidelines, loan-loss provisions should increase whenever total credit to any given industrial branch by any given commercial bank rises above 20% of its total credit. It turned out that because of the boom in housing, from 1993 onwards, real estate lending by commercial banks exceeded the 20% mark, thus affecting their loan-loss provisions. The housing industry protested vigorously and there were those in the Government who tried to apply pressure on the Bank of Israel to modify the guidelines to prevent the increase in the cost of borrowing to the housing industry. Eventually, with some modifications, the guidelines remained in force and they probably played a role in the recent slowdown of housing price increases.

(v) The equity/housing market channel

When we come to asset prices we find ourselves, again, in barren territory as far as empirical research is concerned.

Hypotheses abound. The most common and well-known one is that expansionary monetary policy creates demand not only for goods and services but also for assets such as shares and real estate. Since the supply of such assets cannot be adjusted at the same pace to meet demand, share and housing prices rise, providing incentives to consume. A variant of this hypothesis rests on the discounted value of future income from assets, which increases as a result of lower interest rates, thus augmenting overall demand through the wealth effect.

The Israeli case has an additional feature – housing prices, rather than the cost of housing services, are included in the cost of living index. Casual examination of the data can support the hypothesis that interest rates were one of the factors behind the cycles in the equity and housing markets in the first half of the 1990s. The stock market reached a peak at the end of 1993, when interest rates recorded a trough, and housing prices surged in 1993 and 1994. On the other hand, when real interest rates started to climb in 1994, and stayed at a somewhat higher level in 1995 and 1996, the bull market in the stock exchange ended, and the increase in housing prices started to slow down.

However, no rigorous test was done to examine the validity of these hypotheses or to obtain some clues as to their quantitative importance. We assume that asset prices absorb and then emit inflationary impulses to the general price level.

3. Concluding observations

(i) Attaining the inflation target

The discussion above does not leave much doubt: monetary policy can reduce inflation, and Israel is not different in this sense from any other developed economy. Nevertheless, when one looks at the record of the last five years, since 1992, it seems as if we are marking time. The average annual inflation rate hovered around 11%, with significant ups and downs (see Graph 2).

Graph 2
Inflation targets and actual inflation, 1993–96
In percentages
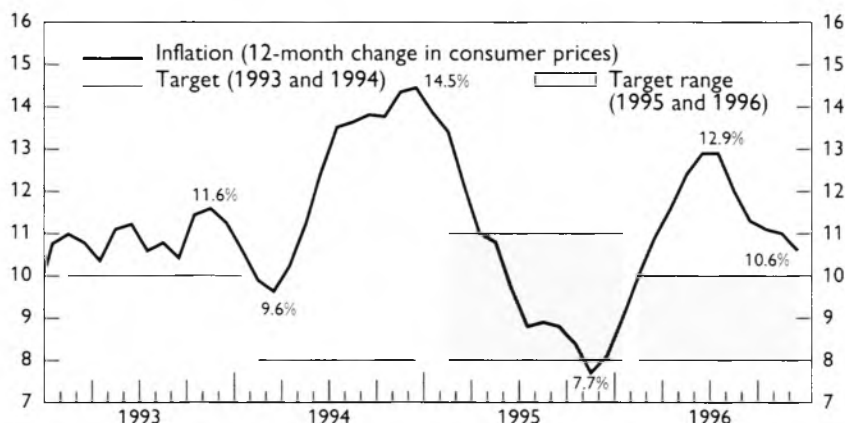
The only explanation seems to be that we lack the political will, in the broader sense of the word, to reach "western" inflation levels. It is true that there are many influential economists and senior officials who keep warning and advising the government, any government, that any attempt to reduce inflation, no matter at what pace,[5] will turn economic growth into recession and will increase unemployment even in the long term. They like very much to cite the example of Spain, but also of some other European countries, such as Germany and France, which were able to reduce inflation but, at the same time, recorded unemployment levels of 10% and more.

Nevertheless, on 12th December 1996, the Government decided to take note of the Minister of Finance's decision, adopted in consultation with the Prime Minister and the Governor of the central bank, to fix the 1997 inflation target within a range of 7–10% (compared with 8–10% in 1996). The decision also included two other, new, elements:

● a medium-term inflation target was fixed, for the year 2001, when inflation in Israel is expected to equal the average rate of inflation

[5] The optimal speed of disinflation is the main issue in King (1996). The issue is especially relevant for countries which adopt inflation targets when actual inflation is still high. Israel is an extreme case in this regard, since inflation in 1991 – at the end of which the first target, for 1992, was announced – was 18%.

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prevailing in the OECD countries. In 1996, for example, the rate of inflation in Israel was more than twice the average for the OECD;

- in the future, and within the framework of the medium-term target, the annual inflation target will be announced not later than the middle of the preceding year, so that it can serve as a guideline for the design of fiscal and monetary policies for the year ahead.

This decision opens up a third chance to start a process of reducing inflation to the level existing in our trading partners' economies. We missed the first chance in the second half of 1993, when we were quick to ease monetary policy in the light of a brief deceleration in the pace of inflation. As a result inflation picked up in 1994, reaching 14.5% by the end of that year. Following the surge in inflation, monetary policy was tightened throughout 1994, especially towards the end of the year. A second chance was missed in 1995, when we eased again under circumstances similar to those of 1993, namely after a few months of low cost-of-living increases. Inflation surged again in the second half of 1995 and the first half of 1996 to 15% on an annual basis.

We tightened monetary policy again towards the middle of 1996 and, not surprisingly, we consequently started to reap the fruits. In the second half of 1996 inflation was running at an annual rate of 7%. To meet the inflation target for 1997 there is no need to ease monetary policy much further, after the steps taken in the last few months of 1996. We certainly should take into account the fact that inflation in 1998 should be lower than that for 1997 – unless we are convinced that current monetary policy will result in an inflation rate *lower* than the government target. At present nobody views that outcome as very probable.

(ii) Other reforms

This is not the place to elaborate on labour market reform (there is currently a heated debate, for example, on whether to raise the minimum wage), restructuring and privatising government monopolies – especially some utilities – completing the reform of the financial markets[6] and

[6] Israel is already party to three international agreements in which it committed itself to financial liberalisation. It accepted the obligations under Article 8 of the IMF Articles of Agreement, joined the recent Uruguay Round Agreement that included a chapter on financial services, and updated its agreement with the European Union to include also a special reference to the financial sector. Israel is also one of many countries that adopted the Basle Committee rules on banking supervision, aimed at fostering financial stability. For an interesting recent survey of this aspect of financial development, see White (1996).

further reducing the relative size of the government sector. Various reforms have been accomplished so far, including trade liberalisation which opened the Israeli economy to international trade, the successful implementation of recovery and adjustment programmes for various corporations in the last decade (which is still going on), the reduction in employment taxes (also a subject of a heated debate in Israel) and the shift of wage agreements in the private sector from the national to the plant level. This progress should encourage us in the belief that we can also succeed on the inflation front.

At all events, it seems that, until now, the lack of resolve to make continuous progress in reducing inflation casts constant doubts on the future course of the economy. Such doubts hinder investment and slow down growth, which makes it more difficult to maintain fiscal discipline and return to durable equilibrium in the balance of payments, raising question marks about the future course of the exchange rate. What is required is a policy that will create the conditions for long-term non-inflationary growth. This is certainly within our reach and the recent decisions of the Government, providing a medium-term perspective for fiscal and monetary policies, may set the stage for that.

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