Exchange rate pass-through implications for monetary policy: the Israeli case

Zvi Eckstein and Yoav Soffer[1]

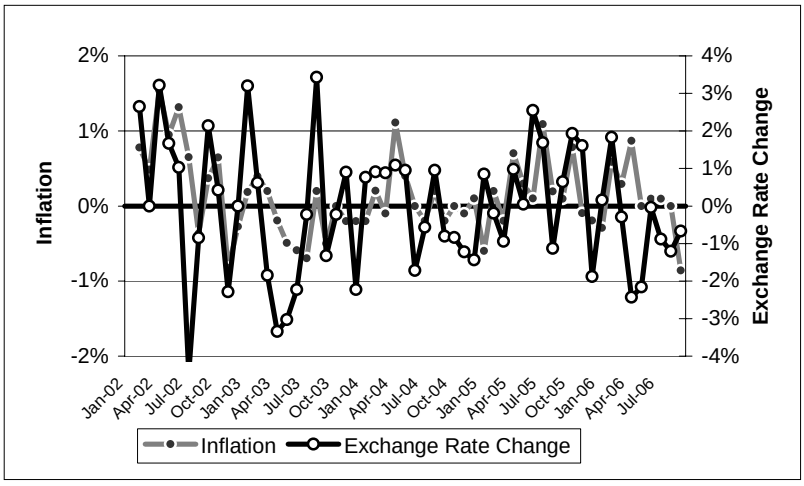
1. Introduction

The pass-through from the exchange rate to domestic prices is a key factor for monetary policymaking in Israel. In an inflation-targeting regime, the policy instrument is the interest rate, and the exchange rate is flexible without any intervention by the central bank. This has been the case in Israel since 1997. In this regime, movements in the exchange rate pass through to local prices via several channels. In Israel, apart from the effect of the exchange rate on the prices of tradables, there is a significant effect on the prices of non-tradables. This is mainly observed for housing prices that are set in US dollars, due to an indexation mechanism which began during the high inflation era (1978–1985). In this paper we provide recent evidence on the sources and extent of exchange rate pass-through to the CPI. Then we discuss the implications of these observations on monetary policy and the potential intervention policy in housing contracts.

From March to September 2006, the new Israeli shekel (NIS) appreciated against the US dollar by 7.5% (Figure 1). The CPI stayed almost constant between April and August 2006, rising by only 0.2% during these four months. In September, as the shekel/dollar rate reached an 18-month trough, the CPI decreased by 0.9% as compared to August, and the lower limit of the multi-year inflation target (1%–3%) is now in peril, as year-to-year inflation reached as low as 1.3%. In October appreciation of the shekel continued, and on certain days of the month the exchange rate was at its lowest recorded level in almost six years.

Figure 1

Monthly changes in the shekel/dollar exchange rate and the CPI, 2002:1–2006:9



[1] Deputy Governor, Bank of Israel (ez@boi.gov.il); Foreign Exchange Activity Department, Bank of Israel (yoavs@boi.gov.il).

Figure 1 clearly presents the very high correlation (0.43) between exchange rate changes and inflation. The correlation is not the same throughout the entire period: it is higher, for example, between 2002 and 2004, and lower during 2005 and 2006. Among several factors that have contributed to the recent decrease in the CPI, the exchange rate was the most important factor, just as it was on other recent occasions in which the Bank of Israel missed its inflation targets, such as in December 2002 (6.5% annual inflation) and December 2003 (–1.9% annual inflation). For a small open economy which relies heavily on imported goods and raw materials, changes in the price of foreign goods in domestic terms stemming from changes in the exchange rate can hardly be overlooked. However, it seems as if the role of the exchange rate in Israel exceeds this dimension. During years of high inflation, and especially during the decade of hyperinflation (which ended in 1985), the US dollar partially replaced the domestic currency as a unit of account and a store of value; widespread indexation to the exchange rate was exercised in many sectors of the economy. Since stabilization, some of these indexation habits have not yet disappeared, and they have a significant effect on the pass-through from the exchange rate to local prices. The exchange rate is therefore one of the main variables which the monetary policymaker needs to follow; moreover, it is also very closely monitored by the public. The shekel-dollar and shekel-euro rate are reported in almost every news broadcast, usually even before the weather forecast.

This paper presents the facts and implications of exchange rate pass-through in Israel, and then discusses the implications for the practical aspects of conducting monetary policy to reach price stability using the nominal interest rate. In the next section we present the main theoretical background for the pass-through phenomenon and an international comparison of empirical pass-through coefficients. In section 3 we briefly review Israel's monetary history in order to give the reader a background for understanding how pass-through has developed in Israel and what its implications are. The main fact is that during the first half of the 1980's, high inflation encouraged the indexation of housing contracts to the US dollar. This contractual practice has continued until today, although inflation for almost the past eight years has been very close to that of the US. We document the implication of this indexation practice based on findings from a recent study by Soffer (2006) who estimated the pass-through for disaggregate product data. The main findings are that pass-through of tradable goods is lower than that of several non-tradable goods and services. On average the pass-through is about 30%, not too different from that of many other small economies. However, for housing prices the pass-through is 70%.

In section 5 we address several issues related to the consequences of the observed pass-through for monetary policy, for monetary policymakers, and for the public. In the standard model, exchange rate changes affect the prices of tradable goods, and this is the main channel for affecting the relative price of tradable to non-tradable goods (real exchange rate). This is an efficient economic allocation of resources. However, when changes in the exchange rate have a significant effect on the price of (non-tradable) housing, the impact on resource allocation might be inefficient.

The high exchange rate volatility and the excessive impact of exchange rate changes on inflation have often caused annual inflation to deviate from the target range. As a result, it might be that the monetary policy that set the interest rate had to react too frequently to exogenous shocks. However, this phenomenon of fast pass-through from exchange rate changes to inflation enables monetary policy to bring inflation more quickly within the target rate.

2. Theoretical background and international comparison

The main theoretical basis for the existence of exchange rate pass-through is the law of one price (LOOP) and purchasing power parity (PPP). An exchange rate change which is not

followed by a local currency change in the price of goods would be regarded as divergence from the LOOP. Demand and supply mechanisms are expected to bring about the necessary change in local prices in order to bring foreign and domestic prices back to the same level. According to this assumption, exchange rate pass-through should be complete, and might be close to 100% in the very long run. However, this is far from being the observed pass-through in most countries.

Driver and Westaway (2004) list several reasons for the fact that the LOOP and PPP are not actually observed. Some of the reasons they mention are relevant for discussing the extent of short-run and long-run pass-through. First of all, even if the LOOP does hold, it should hold only for tradable goods, and even for these products there is a significant component of locally sold services. Non-tradable goods and services account for 61%[2] of consumption in Israel. This is a good reason for incomplete pass-through to be recorded in Israel. To be sure, some of these non-tradable services are provided using a high proportion of imported inputs: electricity, public transportation, and other services could serve as examples. However, of this 61%, 22% consist of housing services, which will be discussed later. In general, the standard model based on the Ballassa-Samuelson hypothesis would show that a change in the exchange rate which results from a productivity shock would not pass through to the price of non-tradables, and thus would result in a change in the real exchange rate. An exchange rate change which results from a nominal shock due to monetary policy action would in the long run pass through to the prices of both sectors.

The LOOP may also not hold due to differences in taxation policy across countries, as well as trade barriers and transportation costs. An excise tax included in the price of fuel which is fixed in shekel terms, for example, reduces pass-through from the exchange rate and from the world price of fuel to the consumer price in Israel. As to trade barriers, in the extreme they could make any good non-tradable, thus once again driving a wedge between local and foreign prices.

Another reason we might not observe the LOOP in reality has to do with the degree of competitiveness of different markets. If firms have some monopolistic power, they could "price to market", and that could result in different prices in each market. A well known theoretical and empirical application of this exists in equilibrium search models where the search friction provides some degree of rents for both sides of the market. As a result there exists an equilibrium price distribution for homogeneous products. In these markets the level of deviation from the LOOP might also depend on the macroeconomic conditions. For example, during a recession firms might have to reduce their markups, and thus the change in the price to the consumer might not be of the same magnitude as the change in the exchange rate.

As noted above, 100% pass-through is rarely recorded in empirical studies. In this context it is important to distinguish between pass-through to prices of imports and pass-through to all consumer prices. In the former case, the assumption of low non-tradable components together with the theory would predict close to complete pass-through, and indeed this is often recorded. In this paper, however, we focus on pass-through of changes in the exchange rate to all consumer prices.

The mainstream view among economists is that the exchange rate pass-through has decreased substantially "recently".[3] However, there is still a substantial amount of research to be done on the topic. Table 1 summarizes evidence from several studies conducted during the last few years regarding exchange rate pass-through to the CPI.

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[2] According to the consumption basket used by the Central Bureau of Statistics to measure CPI. The distinction between traded and non-traded goods and services is based on Ben-Bassat, 1992.

[3] See, for example, Taylor (2000).

Table 1

Exchange rate to CPI pass-through: some recent international evidence

Country	Pass-through	Lag structure	Reference
Israel	29%	Within a quarter	Soffer, 2006
Croatia	30%		Billmeier and Bonato, 2002
Brazil	23%	Within 1 year	Belaish, 2003
Turkey	45%	Within 1 year	Leigh and Rossi, 2002
Romania	30–40%	Within 12–15 months	Gueorguiev, 2003
Canada	17%	"Long run"	Leung, 2003
Average of non-US G7 countries	19%	10 quarters	Choudhri et al, 2005

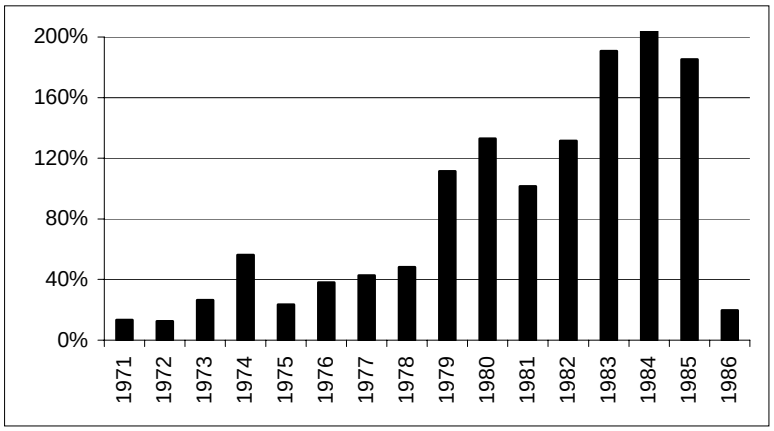
The evidence in Table 1 stands against the conventional wisdom in Israel that the pass-through in the country is exceptionally high. It is evident that the extent of Israel's pass-through is not unique. However, Israel might score among the leading countries if it were to compete in a pass-through speed contest. Moreover, in what follows we will describe some characteristics of the pass-through in Israel which we believe show that the mechanism of price changes between the exchange rate and local prices is somewhat different in Israel than in other countries.

3. Brief monetary history of Israel

During the second half of the 1970s inflation rates in Israel rose sharply, reaching three-digit rates during the beginning of the 1980s (Figure 2). The inflationary outbreak was accompanied by an increase in the use of indexation mechanisms. Although wage and financial indexation were prevalent prior to those years, high inflation caused the indexation of taxes and transfer payments and renewed indexation of long-term credits, and foreign-exchange denominated deposits were made available to the public. In general, indexation rates and frequency increased, and were expanded to numerous types of transactions, especially in the housing sector (Schiffer, 1999).

Figure 2

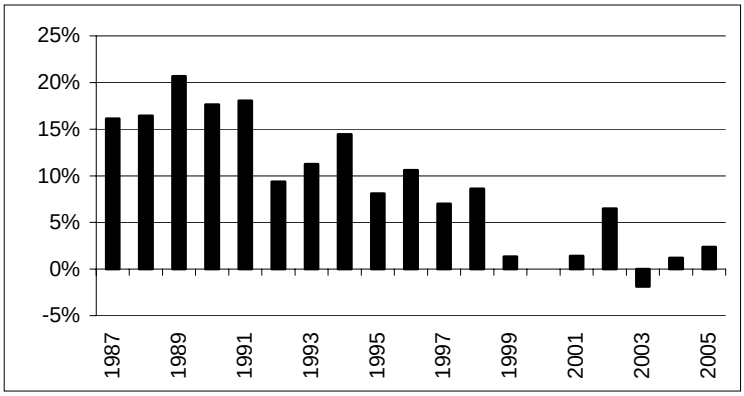
Annual inflation in Israel, 1971–1985



In 1985 the government, together with the Bank of Israel[4] and the labor unions, implemented a successful economic stabilization plan, which ended a decade of hyperinflation. Inflation went down from 445% in 1984 (and over 1000% in annual terms in specific months of 1985) to just 20% in 1986. However, inflation stayed high, in the range of 15–20%, and it took about 14 years to finally reach the inflation rate prevalent in industrial countries (Figure 3). During the first years following the economic stabilization plan, monetary policy was conducted mainly using the exchange rate as a nominal anchor. A fixed exchange rate against the US dollar, and later against a basket of currencies, was a crucial component of the stabilization. However, as inflation was not totally overpowered, the fixed exchange rate soon led to real appreciation of the shekel, and expectations for nominal devaluation evolved. The Bank of Israel was forced to devalue the currency several times, by a cumulative 30% from 1986 to 1989.

Figure 3

Annual inflation in Israel, 1987–2005



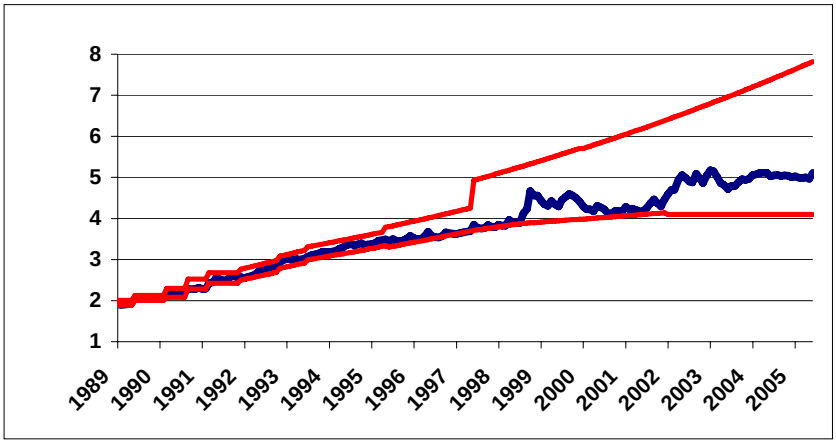
In order to maintain a stable and reliable monetary regime, an exchange rate band of 3% width was declared in 1989, in which the shekel could float freely against the basket (Figure 4). The width of the band was soon enlarged and its middle rate raised until 1991, when the horizontal band was replaced by a diagonal band, in order to make changes in the level of the exchange rate smoother and less unexpected.

The need to determine a slope for the exchange rate band as well as the adoption of inflation targeting in many small countries led Israel to the inflation targeting regime (Klein, 1999). The slope was intended to represent the inflation differential between Israel and its trading partners. But what inflation rate should be considered as the rate in Israel? Letting the change in exchange rate follow inflation would not be desirable – this would make inflation an anchor for the exchange rate, instead of the opposite. Therefore, an inflation target was set, so that the slope would be consistent with that target. In 1991 the Bank of Israel began publishing its monetary interest rate month by month, and inflation targeting was officially declared in Israel in 1994. Since then the government has announced, once a year, a target for the following year's inflation. In 2000 a long-run target of 1% to 3% was declared for 2003 and indefinitely thereafter. The exchange rate band gradually expanded. Since 1998 the Bank of Israel has not intervened even once in the foreign exchange market, and in 2005 the band was officially abolished.

[4] The 1985 "Non-Printing Law", which was amended as part of the stabilization plan, substantially increased the level of independence of the Bank of Israel. See Cukierman (2004) for a thorough description of the monetary history of Israel in the context of central bank independence.

Figure 4

Exchange rate of the shekel against the currency basket and the exchange rate band, 1989–2005



The disinflation process in Israel was a success. It was achieved during a long transition period starting from a state in which exchange rate depreciation and price inflation were in tandem in the late 1980s, to a situation in which the exchange rate fluctuates freely. The exchange rate today is near the level it was at the end of 1998, while the consumer price index has risen more than 10% during the same period. Have we broken the connection between the exchange rate and the inflation rate? Only to some degree.

4. Exchange rate pass-through in Israel: recent evidence

The exchange rate is known to have a major role in determining inflation trends in Israel. Figure 1 tells us that a large proportion of the volatility of inflation is closely related to exchange rate changes. The exchange rate is the most important single indicator in almost all policy and research papers that have been written on monetary policy in Israel. In some of these papers a coefficient of pass-through from the exchange rate to the CPI can be calculated from the estimated equations. Some recent examples can be taken from Elkayam (2003) and from Barnea and Djivre (2004): in both cases, the short-run pass-through is estimated at 28%. In general, exchange rate pass-through of around 20% to 40% was also the result concluded in other studies, and this magnitude is "common knowledge" among economists in Israel.

In this section we focus on recent results from Soffer (2006). The approach taken there breaks the CPI into 31 components, in an attempt to identify the sources of the pass-through. In addition to the standard division of the index into the main consumption components, here we also make the distinction between tradable and non-tradable goods, price-controlled (or price-supervised) goods and services, and goods the prices of which are free to be set by the market. These additional distinctions enable us to further examine the role of market interventions and "network" habits on the process of exchange rate pass-through. We provide simple regression equations where we use data from the years 1991 to 2004, and the exchange rate is set to the quarterly average shekel per dollar rate.

The main finding in Soffer (2006) is that the average pass-through from the dollar exchange rate to the CPI is about 30%, a result that is consistent with the findings of earlier studies, which were based on aggregate data. Most of the pass-through is immediate, taking place within the quarter in which the exchange rate change is recorded. However, the main contribution of the study lies in identifying the sources of the pass-through. Table 2 summarizes the main results.

Table 2

Selected items of the CPI and exchange rate pass-through on these items

	Weighting in the CPI 2005 (%)	Recorded pass-through coefficient (%)	Contribution to overall pass-Through (%)
Tradable items			
Travel abroad	3.6	63.7	2.3
Furniture and home appliances	4.3	42.9	1.8
Culture and entertainment	3.8	34.7	1.3
Other	3.2	35.2	1.1
Cars and maintenance	8.7	12.4	1.1
Fuel and oils for cars	3.4	29.0	1.0
Price controlled food items	0.8	14.6	0.1
Fruit and vegetables	1.1	9.2	0.1
Non-price controlled food items	5.7	0.0	0.0
Clothing and footwear	2.9	0.0	0.0
Home heating fuel	0.2	0.0	0.0
Medicines and medical equipment	1.7	0.0	0.0
Sub-total			8.9
Non-tradable items			
Housing	21.6	70.0	15.1
Electricity	2.8	68.0	1.9
Vacations, trips and functions	5.1	28.6	1.5
Sub-total			18.5
–	–	–	–
Total[1]	**100**		**29.0**

[1] Total weights do not sum to 100%, and the total pass-through does not sum to 29%, because only selected items of special interest are shown.

Source: Reproduced from Soffer (2006).

The surprising finding is that the pass-through to tradable goods and services is very low, and accounts for only 8.9% of the total 29% pass-through to the CPI. Of course, one main reason for this could be that the prices used for estimation are consumer prices, and a large non-tradable component of local sales and storage is reflected in the price. The tradable item with the highest pass-through coefficient is travel abroad, which is only 64%.[5] Other tradable items show much lower pass-through, and in several tradable items no pass-through was recorded at all. An interesting case is that of fuel products, the prices of which are set by the government at the gate of the refineries once a month, according to the relevant fuel prices at the Genova-Lavera Port in Italy and the end-of-month US dollar exchange rate. Pump

[5] One reason could be that the estimated pass-through is from the US dollar, whereas a significant share of Israeli tourism is to Europe. Thus, while some of the price volatility is due to the volatility in the shekel/euro rate, it is not caught by the estimation as exchange-rate volatility, but rather as volatility of the dollar price of traveling abroad. Nonetheless, air ticket prices in Israel are usually denominated in dollars.

prices for certain car fuels are subject to a maximum limit, and this rate is observed at almost all gas stations; in this case the pass-through is estimated to be 29%.[6] On the other hand, for prices of heating fuel, which are not regulated, the estimated pass-through is zero.

The other interesting finding is that most of the pass-through to the CPI is actually due to non-tradable items, and most of this is accounted for by housing prices. During the years of hyperinflation it became common for rental contracts to be denominated in US dollars. Twenty years later, 90%[7] of rental contracts are still indexed to the US dollar exchange rate. Usually, payment is in local currency, but the amount is indexed to the monthly change in the exchange rate. This type of contract is not common in countries where inflation is the same as that in Israel today. Therefore, one can argue that it is a result of Israel's history of high inflation. Is that an efficient contract for rental apartments and housing prices? Ex ante, both landlords and tenants expose themselves, month by month, to the shekel-dollar exchange rate, a position that is generally not hedged, for example, in basic dollar income for the tenant or by fixed dollar outgoings for the landlord. This might indicate that the housing market imposes an unnecessary risk on the written contract. It is an open question whether intervention in the form of forcing contracts to be stated in shekels would improve welfare. The effect on the CPI, however, is clear: a 15% pass-through from the dollar rate to inflation.[8]

Table 2 shows that dollarization accounts for the pass-through on other non-tradable items: the prices of electricity are also set monthly by a government authority, which takes exchange rate changes into account in its pricing formula. Although a substantial proportion of the cost of electricity production is made up of imported fuels, the cost of local labor is not at all negligible, and electricity prices would probably not have a higher pass-through than that of tradable items if they were not controlled with such a close relation to exchange rate changes. Prices of leisure activities are also often indexed to the dollar exchange rate, although there is clearly no economic sense in doing so.

Soffer (2006) verifies the total pass-through coefficient found in other studies, but locates its main source: the housing component of the CPI. The study finds that the total pass-through has decreased from 33% in the first years of the sample, when inflation was still prevalent and exchange rate depreciation was dictated by the diagonal band, to 24% since 1999, as inflation decreased and the exchange rate became de facto flexible. The housing component, however, kept its pass-through coefficient across all these years; the decrease in the pass-through, therefore, is mainly in tradable goods.

5. Exchange rate pass-through and monetary policy

The Israeli economy is subject to frequent and large geopolitical uncertainty. During the summer of 2005 internal political instability was behind the foreign exchange market uncertainty. This was reflected in an increase in the implied volatility derived from shekel/dollar derivatives and in a 4.2% devaluation against the dollar. Devaluation then continued for a few months. A year later, when the monetary forum submitted its biannual

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[6] The pass-through in this item is far from complete, due mainly to the above-mentioned excise tax which is fixed in local currency.

[7] According to the sample used by the Central Bureau of Statistics (CBS) for constructing the housing component of the CPI basket.

[8] The home rental item actually weighs only 4.3% in the CPI. However, prices of owner-occupied dwellings, accounting for 16.7%, are computed by an alternative cost approach, based on the same sample of rent contracts used in the home rental item, thus increasing the pass-through to the total housing item. The rest of this item is composed of "other housing expenses", accounting for 0.7%.

inflation report, it had to explain the 0.5% deviation of the annual inflation rate above the upper limit of the target (3.5% annual inflation from June 2005 to June 2006). The report stated the following:

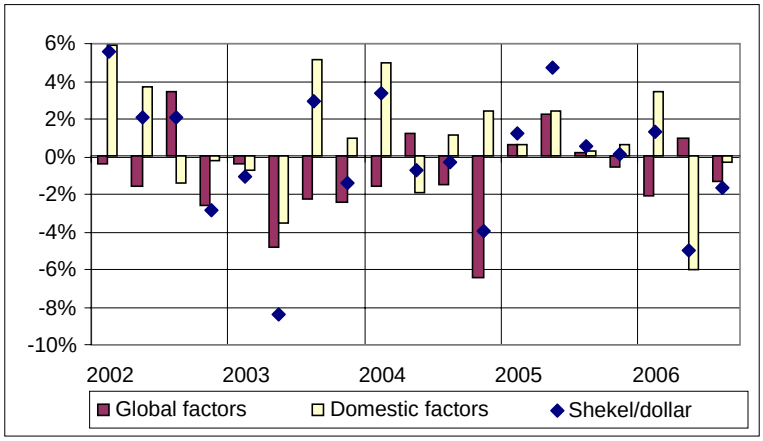
> "An acceleration of the rate of inflation calls for deviations from the price stability target to be addressed. For most of the period reviewed inflation over the previous twelve months was higher than 3 percent (the upper limit of the target range). The main reasons for this deviation from the upper limit seem to be the depreciation of the NIS …"[9]

It is likely that when the inflation report for July–December 2006 is written, we will once again need to explain the deviation from the target. Only this time, just six months after deviating from the above, we will miss the lower limit of the target range. Inflation from December 2005 to September 2006 was only 0.8%, and a negative rate of –0.4% is expected for October. Once again, the exchange rate is the main source for the high volatility in the CPI and the inability of monetary policy to set stable inflation within the target range.

The volatility in the exchange rate is due in many cases to exogenous shocks to the Israeli economy. Several recent changes in the exchange rate of the dollar against world currencies have been an important source of the variability in the shekel/dollar rate. Figure 5 shows the outcome of a method used by the Bank of Israel to distinguish between global and domestic factors that affect the shekel/dollar rate.[10] In several periods global factors have had a significant effect on this rate. Sometimes they offset the domestic factors, thus leaving the shekel/dollar rate unchanged, such as in the third quarter of 2004. At other times they join the domestic factors in increasing the change in the shekel/dollar rate, such as in the second quarter of 2003. But developments in worldwide exchange rates sometimes dominate the shekel/dollar rate. In the last quarter of 2004, for example, the dollar depreciated significantly against world currencies. The Bank of Israel had to react against an appreciation of the shekel against the dollar,[11] although domestic factors actually acted to weaken the shekel.

Figure 5

Quarterly breakdown of change in the shekel/dollar exchange rate, I/2002–III/2006



[9] Bank of Israel Inflation Report 2006, January-June.

[10] For a description of the method see Box 2.1.1 of the Bank of Israel Annual Report, 2004, Foreign Exchange Activity Department, page 97.

[11] The appreciation probably contributed to the fact that the Bank of Israel interest rate was gradually reduced from 4.1% in November 2004 to 3.5% in February 2005.

The CPI reacts to the shekel/dollar rate more than to other currencies due to the dollar indexation of housing rental prices. If this were eliminated – the practice of indexation is not so prevalent in most low-inflation countries – the effect of the global foreign exchange market on local inflation would be much milder. This is the case since the trade-weighted index of the exchange rate is less volatile than the dollar rate in this particular case. In Israel the characteristics of the housing sector enhance the effect of the shekel/dollar rate on the local CPI.

Should decreasing the exchange rate pass-through be a policy objective of monetary policy at the central bank? Currency markets are very unstable, partly due to domestic conditions, but partly also because of factors that are totally exogenous to a small economy. Passing this instability on to local prices, and from there to the local policy interest rate, is not a desired development. This might lead to a positive answer to the above question.

However, one should note that pass-through results from fundamental market forces acting to prevent price differentials and to clear international markets. For example, we all know that the global economy is waiting for a significant appreciation of the Chinese yuan. This is expected to raise the price of Chinese goods for the American consumer, and thus contribute to balancing the US current account. But if there is no pass-through, appreciation of the yuan would not raise the price of the Chinese shirt at the American dock, and the desired improvement in US competitiveness would not occur. Edwards (2006) discussed the exchange rate pass-through as a "shock absorber" mechanism for the economy. In this context, the economy converges to a new equilibrium after a shock by an "expenditure switch effect". Prices of tradables are more sensitive to the exchange rate than those of non-tradables. Thus, a change in the nominal exchange rate is capable of delivering the desired change in the real exchange rate. In Edwards' own words:

> "In particular, once the role of the real exchange rate is explicitly introduced into the analysis, it is important to distinguish between two notions of exchange rate pass-through: pass-through into non-tradables, and pass-through into tradables. In this context, and from a policy perspective, a desirable situation is one where pass-through coefficients for tradables and non-tradables are low and different, with the pass-through for tradable goods being higher than that for non-tradables."

Should we adopt this argument, then, the high pass-through to the non-tradable items of the CPI in Israel is not desired. However, note that most of this pass-through is in the housing sector, and is actually a result of the dynamics of home rental contracts, which are indexed to the dollar exchange rate. The increase in rent prices following devaluation is less likely to disrupt the "expenditure switch effect" mentioned by Edwards, and if it did, it would only be in the long run. It is difficult to justify the high pass-through in housing prices based on an efficient market mechanism.

Fischer (2006) addressed the topic of exchange rate pass-through in Israel, saying that a high and quick pass-through coefficient from the exchange rate to prices can actually increase the effectiveness of monetary policy. The increasing openness of the foreign exchange market following its liberalization has made the exchange rate highly sensitive to interest rate differentials. In an inflation targeting regime, this increases the ability of the bank's policy instrument to affect the exchange rate and, due to exchange rate pass-through, increases the speed by which the policy instrument affects inflation. In the face of an unanticipated shock to prices, the governor could quickly change the interest rate in order to bring inflation back to its target range.

The above argument seems very relevant for economies where inflation is primarily affected by shocks which do not stem from the exchange rate. One could imagine, for example, that the Fed would be happy to have an efficient tool which could act quickly on inflation to offset an oil shock, or to react to the strong impact that volatility in US housing prices could have on

consumption and prices through the asset price transmission channel. In Israel, however, inflationary shocks most often are the result of exchange rate shocks.

References

Barnea, A and J Djivre (2004): "Changes in monetary and exchange rate policies and the transmission mechanism in Israel", *Bank of Israel Discussion Paper Series*, 2004.13.

Belaish, A (2003): "Exchange rate pass-through in Brazil", *IMF Working Paper*, WP/03/141.

Ben Bassat, I (1992): "Indices for prices of tradables and non-tradables", Bank of Israel Review, 66 (Hebrew only).

Billmeier, A and L Bonato (2002): "Exchange rate pass-through and monetary policy in Croatia", *IMF Working Paper*, 02/109.

Choudhri, E U, H Faruqee and D S Hakura (2005): "Explaining the exchange rate pass-through in different prices", *Journal of International Economics*, 65.

Cukierman, A (2006): "Legal, actual and desirable independence: a case study of the bank of Israel", forthcoming in N Liviatan and H Barkai (eds), *The Bank of Israel: A Monetary History*, volume II, Oxford University Press.

Driver, R and P F Westaway (2004): "Concepts of equilibrium exchange rates", *Bank of England Working Paper*, 248.

Edwards, S (2005): "The relationship between exchange rates and inflation targeting revisited", *NBER Working Paper*, 12163.

Elkayam D (2003): "The long road from adjustable peg to flexible exchange rate regimes – The case of Israel", Bank of Israel Monetary Studies, 2003.04.

Fischer, S (2006): "Reflections on one year at the Bank of Israel", Bank of Israel, Lectures and Papers of the Governor.

Gueorguiev, N (2003): "Exchange rate pass-through in Romania", *IMF Working Paper*, WP/03/130.

Klein, D (1999): "Practical issues in achieving an inflation target – the Israeli case", In Leiderman, L (ed), *Inflation and disinflation in Israel*, Bank of Israel (Hebrew only).

Leigh, D and M Rossi (2002): "Exchange rate pass-through in Turkey", *IMF Working Paper*, WP/02/204.

Leung, D (2003): "An empirical analysis of exchange rate pass-through into consumer prices", RM-03-005.

Schiffer, Z (1999): "The rise and (partial) fall of indexation in Israel", In Leiderman, L (ed), op cit.

Soffer, Y (2006): "Exchange rate pass-through to the consumer price index: a micro approach", Bank of Israel Foreign Exchange Discussion Paper Series, 2.06.

Taylor, J B (2000): "Low inflation, pass-through, and the pricing power of firms", *European Economic Review*, 44.