

# *The Evolution of Monetary-Policy Strategy and Exchange-Rate Regime in Israel*

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*19 Jun, 2008*

Prepared for the ECB workshop on  
Economic and Financial Developments in Mediterranean Countries.  
Frankfurt, 24-25 June, 2008

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We would like to thank Tamar Ramot-Nyska for helpful comments and Meital Graham and Kfir Nissim for the figures editing.

### *Abstract*

The Israeli economy experienced very high inflation in the 1970s, which turned into hyperinflation in the mid-1980s. We describe the evolution of monetary policy in Israel since the implementation of the economic stabilization program of 1985, and the long road toward price stability with a floating exchange rate (ER) two decades later. The monetary policy and the ER regime evolved from ER anchoring through a dual-target regime, into a full-fledged, flexible, inflation-targeting regime. We then discuss some unique challenges and dilemmas of monetary policy making in Israel related to the high pass-through from the US\$ nominal exchange-rate to the consumer price index (CPI). We also discuss the monetary policy implications of the recent sharp drop of the ER-CPI pass-through.

## **1. Introduction**

The oil crises of the 1970s constituted the background for high inflation worldwide. In Israel, following the 1973 'Yom-Kippur' war and the sharp increase in public expenses during the following decade, inflation accelerated and turned into hyperinflation by the mid 1980s (see Figure 1). This hyperinflation, as well as the poor economic performance of the preceding decade, led to the implementation of an economic stabilization program in 1985. The evolution of economic policy since then led, two decades later, to price stability with floating ER.

In this review of Israeli economic evolution since 1985, we highlight the monetary policy strategy and ER regime, which evolved from ER anchoring through a dual target into a full-fledged inflation-targeting regime with floating ER. We describe the long road from an economic policy that was a source of instability, to an economic policy that enabled the recent decoupling of the economy from geopolitical developments. We also discuss unique challenges and dilemmas in monetary policy making in Israel, related to the high pass-through from the US\$ ER to the CPI; a high pass-through which is related to the common practice of price indexation to the US\$, and which recently has been diminishing rapidly.

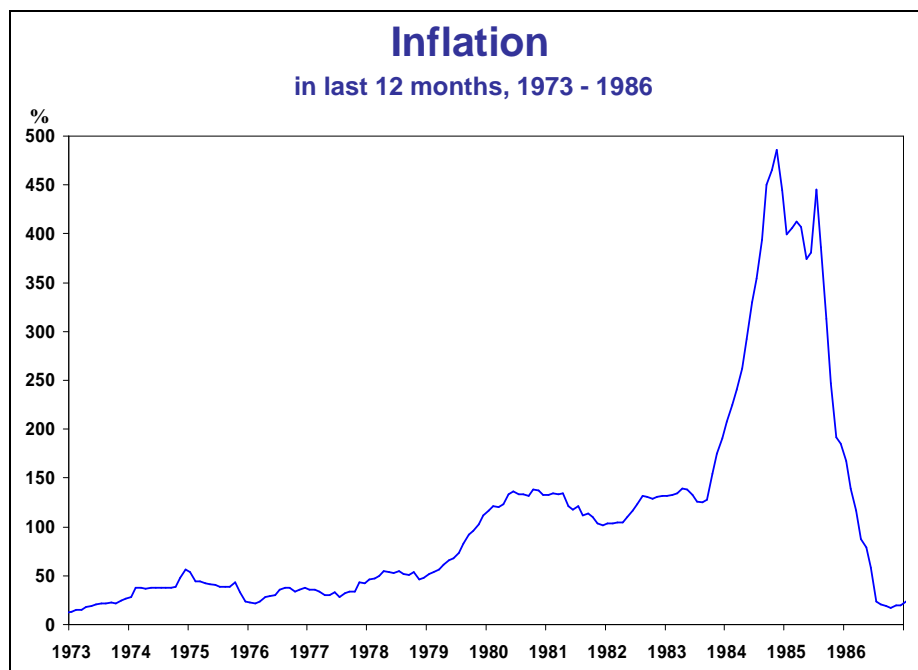
The remainder of the review is organized as follows: In section 2 we discuss the historical evolution of the monetary regime in Israel since the stabilization-program implementation in 1985. In section 3 we describe the high pass-through from exchange rate to CPI in Israel, and discuss its policy implications. We also discuss the causes and consequences of the recent drop in this pass-through. In section 4 we present the conclusions.

## 2. Evolution of a monetary regime

### July 1985: Implementation of the inflation-stabilization program

The 1973 'Yom-Kippur' war, the huge budget deficits during that year and in the following decade, and the global oil crises, formed the background of the high-inflation environment, currency depreciations and poor economic performance in Israel (see Figures 1 and 2), which, in the mid-1980s resulted in hyperinflation.<sup>1</sup> In July 1985, an economic-stabilization program was implemented. The program instituted dramatic changes in government expenditures, debt and deficit, as well as in monetary policy. In addition, the program was followed by a series of gradual structural reforms in a wide range of areas. Some of these reforms were related to monetary policy and we review these below.

Figure 1



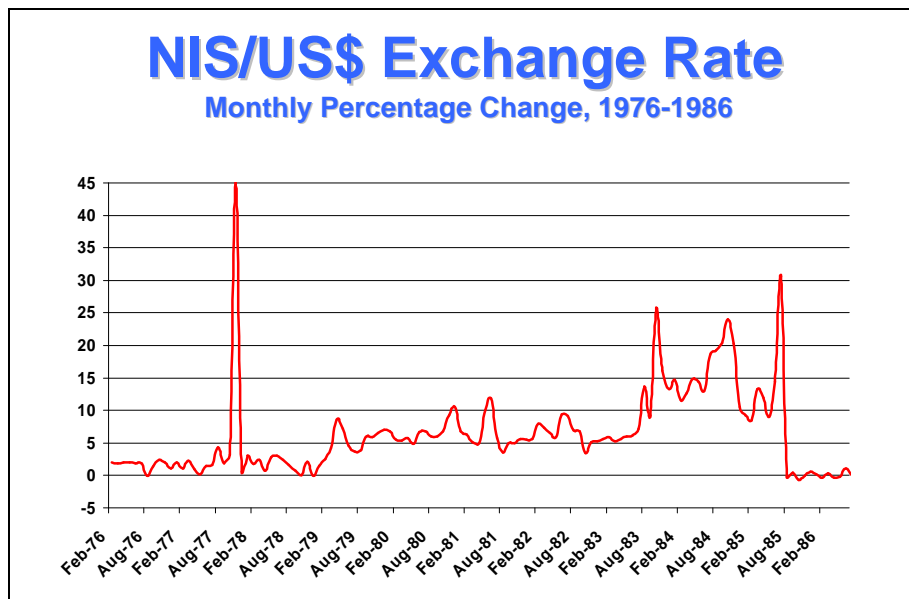
Source: Central Bureau of Statistics

The main component of the stabilization program was a large cut in government expenditures, so that the deficit in 1986 was actually zero and the debt to GDP ratio was drastically reduced due to external transfers. A central part of the new monetary

<sup>1</sup> For a detailed description of Israel's great inflation during this period, see Barkai and Liviatan (2007) among others.

regime was that the New Israeli Shekel (NIS) was temporarily pegged to the US\$. This signified the introduction of an explicit and quantitative objective for the Bank of Israel (BoI), together with the autonomy to use other monetary-policy instruments including the interest rate. This was the beginning of establishing independent monetary policy that later evolved into an inflation-targeting regime. The independence of the BoI to freely use policy instruments has survived the many subsequent reforms in policy objectives.

Figure 2



Source: Bank of Israel's calculations

An important part of the stabilization program was the 'no-printing' amendment to the BoI law which prohibited the BoI from providing loans to the government. The implementation of this amendment ended the era of fiscal dominance and monetary accommodation that dominated macro policy before July 1985.

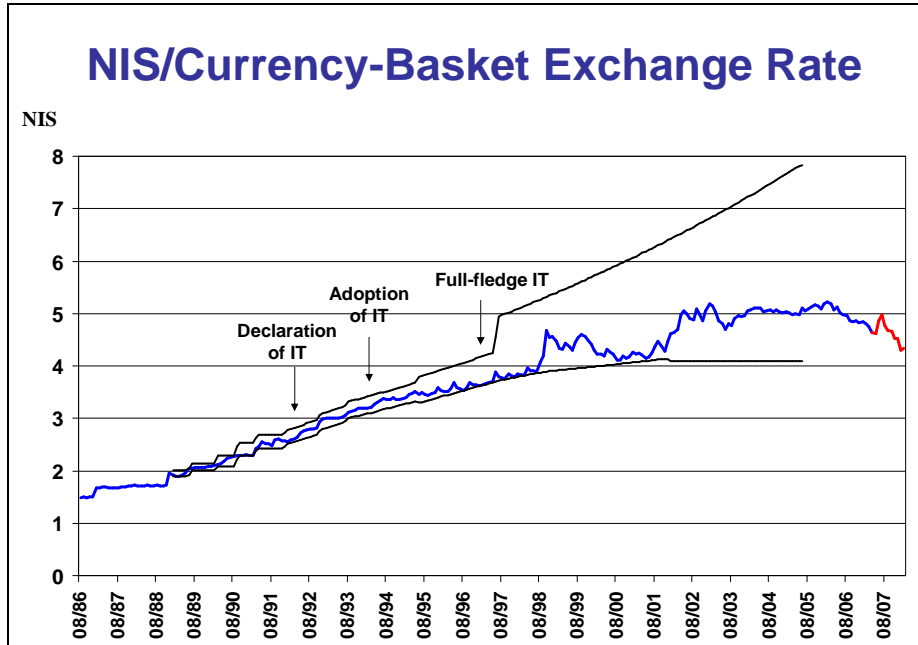
The stabilization program was described as "heterodox" due to elements of market intervention that were adopted as emergency measures. These included agreements for temporary price and wage freezes that were signed between the government and the dominant labor-unions, agreements that survived for only few months.

#### 1986-1992: Focusing on exchange-rate anchoring

The first years following the stabilization program witnessed the first steps toward gradual capital market and monetary policy reforms. The foreign exchange market

was changed from pegged to controlled ER. Other reforms were aimed at reducing the degree of government intervention in the capital market in order to improve efficiency and to develop the money and the capital markets.

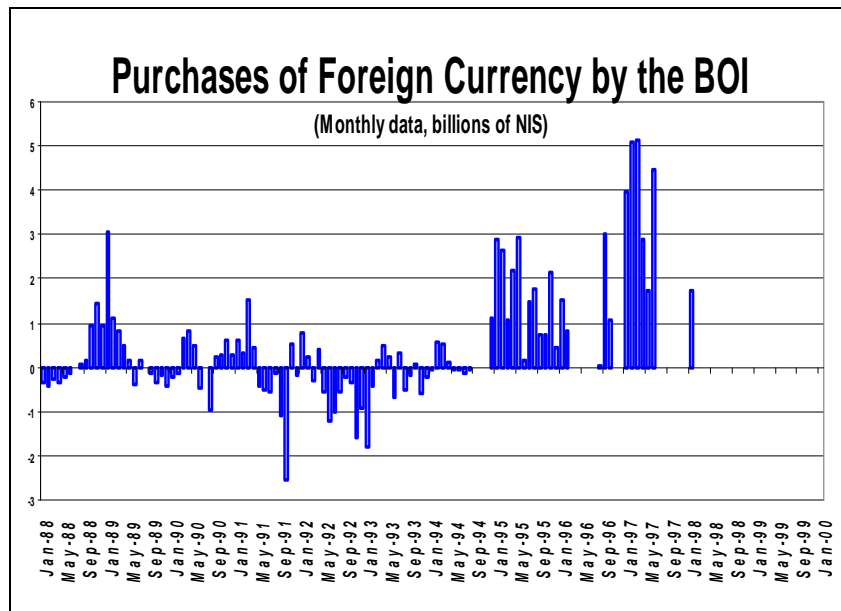
Figure 3



Source: Bank of Israel's calculations

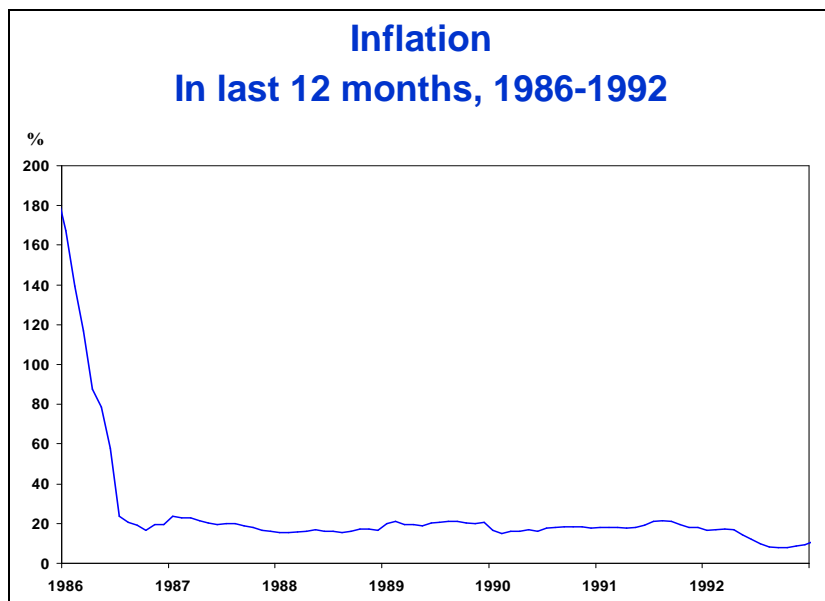
Monetary-policy reforms included three consecutive steps of redefining the target for the ER-based policy. In 1986, the NIS was pegged to a basket of trading-partners' currencies, instead of to the US\$. In 1989, the peg was replaced by a horizontal band, which was adjusted by occasional, unexpected and discrete jumps. Elkayam (2003) describes how these adjustments led to speculative waves, which in turn led to the announcement of an upward-sloping band in 1991. The slope of the band was selected so as to reflect the expected differential between trading-partners' inflation and some implicit inflation target for Israel. The evolution of the ER band is illustrated by Figure 3. Foreign-currency sales and purchases by the BoI in order to keep the ER within the band, are illustrated by Figure 4. At the same time, the BoI used the interest rate to influence FX demand and supply. However, although inflation was brought down to an environment of around 20% (Figure 5), the ex-post real exchange rate ended up being negative (Figure 6). The relatively high inflation and monetary instability were the reasons that in 1994 the government adopted an inflation target as the main objective for monetary policy as we describe in the next subsection.

Figure 4



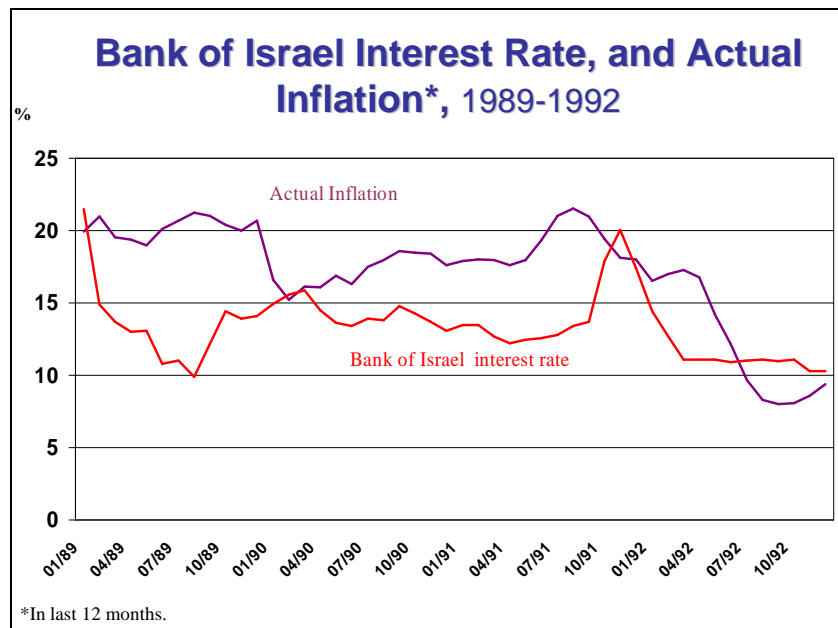
Source: Bank of Israel

Figure 5



Source: Bank of Israel's calculations

Figure 6



Source: Bank of Israel's calculations

Institutional reforms over this period included certain money- and credit-market reforms, which were aimed at reducing government intervention in these markets. Ben Bassat (2007) and Eckstein and Ramot-Nyska (2008), among others, describe the reforms which included the following steps: the BoI was released from supporting government-bond prices; short-term treasury bills ('MAKAM') were introduced (1987); direct discriminatory credit was gradually diminished; institutional investors were gradually allowed to reduce the share of government bonds in their portfolios (1987); private bonds were introduced (1987); and finally, non-tradable government bonds were gradually eliminated (1987-2003).

Those years also witnessed the beginning of a process of international capital-flows deregulation and liberalization which, among its many impacts, influenced the stability of the five-to-ten-years internal interest rate. Thus, in 1989, restrictions on capital inflows were partially lifted, enabling Israeli companies and residents to borrow abroad, thereby strengthening the link between domestic and foreign interest rates. The liberalization process was completed in 2004, with the removal of the tax discrimination on investments abroad.<sup>2</sup>

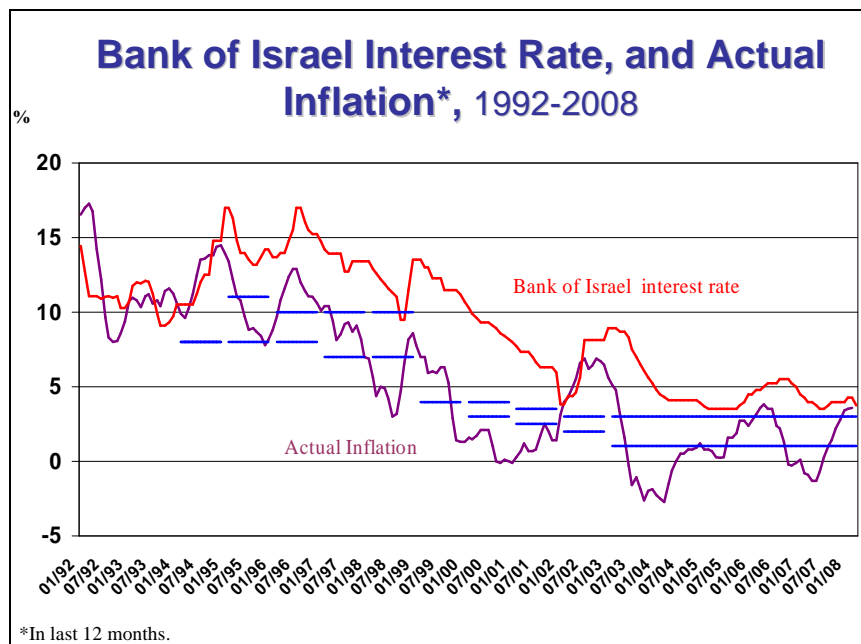
<sup>2</sup> See Ozer et al. (2005) for detailed review of the financial account liberalization.

1992-1997: Dual-targeting regime

The years 1992-1997 were a period of a dual-target regime. The policy of the preceding years successfully suppressed inflation to an environment of 20%, but was unsuccessful in pushing it down further (Figure 5). This led to a gradual shift in the focus of policy from ER to annual inflation, and a declining path of a calendar-inflation target was introduced. Israel was the third country to adopt inflation targeting, following New Zealand (in 1990) and Canada (in 1991).

1995 was an important landmark, when the ER band was widened and the inflation target—which thus far had only a declarative meaning—became an operative policy target. This was reflected in the gradual adjustment of the policy instrument: from intervention in the foreign-exchange market to short-term interest rates on commercial-banks deposits and loans by the BoI. The change in the policy strategy was subject to fierce public debate and wide disagreement regarding the disinflationary process and the high interest rate that was set by the BoI in order to meet the declining inflation-target path. The BoI led the disinflationary policy, sometimes facing bitter resistance and disagreements with the government, with professional economists, with the business sector and even among economists in the BoI itself—all arguing that the process was too aggressive and therefore would end up being too costly in terms of real economic activity.

Figure 7

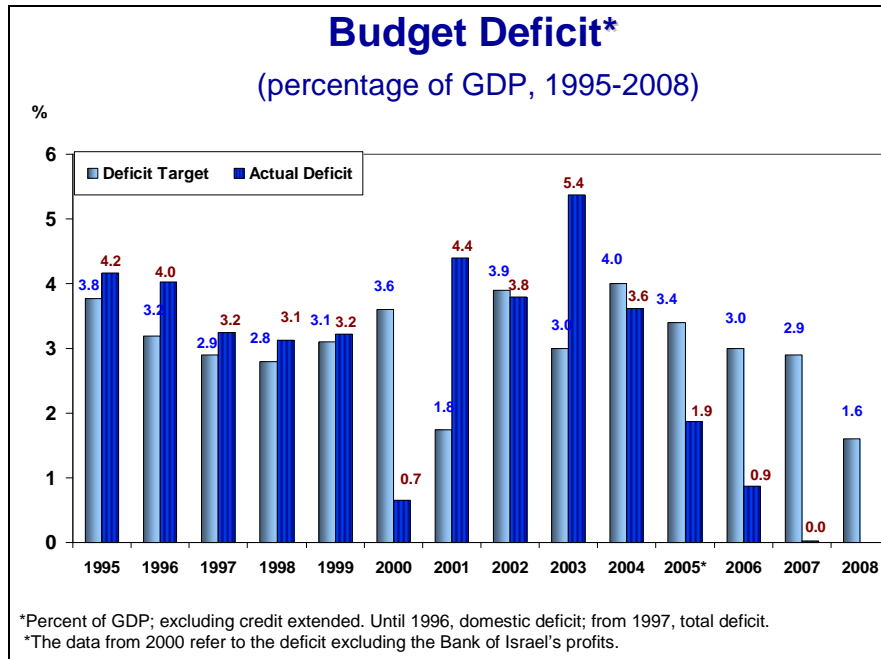


Source: Bank of Israel



The disinflationary process was completed in 1997, with the inflation target becoming the sole target of monetary policy and with the BoI ending its routine intervention in the foreign-exchange market. By 1997 the disinflationary process was widely viewed as a success, even by those who previously opposed it. Figure 7 depicts the evolution of the inflation target, together with actual inflation and the BoI interest rate.

Figure 8



Source: Central Bureau of Statistics

This process was supported by a greater degree of independence for the BoI since the inflation target was defined as the main monetary-policy objective, and the BoI could operate independently in order to achieve this objective. Accordingly, in 1995 the BoI began executing auctions for commercial banks deposits and loans, and in 1997 the BoI abandoned liquidity rates as a monetary tool (since then they function only as a tool for financial stability and for supervising the banks). However, as stressed by Cukierman (2007), the relatively high degree of de-facto independence is not yet in line with de-jure independence, and we refer to this issue below in more detail.

The shift from ER to an inflation-targeting regime, was also supported by related fiscal-policy reforms, which included a multi-year deficit-reduction law—albeit with frequent upward revisions of the target deficits, as described by Fischer

and Flug (2007) who discuss the experience with the multi-year fiscal rule. Figure 8 outlines the target vis-à-vis actual budget deficits.

*Since 1997: Inflation target*

By 1997 the BoI had stopped intervening in the FX market, the monetary-policy regime had completed its evolution into an inflation-targeting regime, and the IMF had classified the monetary regime of Israel as full-fledged inflation targeting. Accordingly, capital flows were liberalized and a floating ER regime was instituted in practice (see Figure 4).<sup>3</sup> Elkayam (2003) describes how the BoI abstained from intervening in the significant depreciation of the summer of 1998 caused by the global economic crisis that led to a massive outflow of foreign currency from emerging markets. Thus, the short-term interest rate was established as the sole policy instrument, and the BoI started implementing flexible inflation targeting with monthly decisions.

The disinflation policy, launched with the stabilization program of 1985, was implemented from 1994 by a declining path of the annual inflation target that was set by the government. In 2000 the government decided on a constant inflation target, instead of the annual paths that existed until then. In 2003 the disinflation process was completed when a constant target of price stability was defined by the government as a 1 to 3 percent inflation rate during the past 12 months, continuously for each month. As discussed in the BoI position paper (2007), this is the definition of price stability adopted by most countries.

In 2005 the ER was declared as floated de jure (after 8 years of de-facto floated ER) and the ER band was formally abolished.

In line with other modern central banks, since 2006 the BoI publishes minutes, which reveal the considerations discussed in the monthly meetings that precede the monthly interest-rate decision. These publications—together with the inflation reports and the press releases of the BoI interest-rate decision—are aimed at stabilizing inflation expectations by improved communication with the public and by more transparent policy decisions.

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<sup>3</sup> Due to the liberalization, there are only reporting requirements; capital-flows limitations were removed.

Today: disparity between de-jure and de-facto independence of BoI

The evolution discussed thus far significantly changed monetary policy in Israel in comparison with the era prior to the inflation stabilization program of 1985. One of the interesting dimensions of this change is the resulting disparity between de-jure and de-facto degrees of BoI independence.

Since 1985, in practice the BoI enjoys growing independence, even though the law hasn't caught up with these changes. This has induced a growing disparity between de-facto and de-jure independence of the BoI, as measured by Cukierman (2007). *De facto*, BoI independence is in line with the evolution of monetary policy regimes in many developed and emerging markets. The policy objective, which is decided by the government, focuses on inflation targeting, and the BoI is independent in using the short-term interest rate as the main tool for reaching this goal. The BoI routinely publishes the monetary decisions protocols which describe the main arguments made in the internal discussions. Communication of the decision-making process ensures that the policy as well as its independent and professional characteristics will be more transparent to the public. This process increases the credibility of the BoI, which helps in stabilizing inflation expectations. These expectations are the main factor for stabilizing inflation itself through pricing and wage setting used by market participants. *De jure* however, the BoI law is still not in line with the growing *de facto* independence of BoI. The current legal state is largely based on the 1954 law that sets multiple targets for the monetary authority, related to economic activity, employment and price stabilization. The original law has been amended several times and the most important amendment, mentioned above, is the 'no-printing' act. However, the disparity between de-facto and de-jure independence is still significant and important.

According to this background the government appointed a professional team, called the 'Levin Committee', which in 1998 submitted its recommendations for a new law for the BoI. The recommendations covered a wide range of issues and removed the disparity between de jure and de facto independence of BoI. Based on these recommendations the BOI and the Ministry of Finance are currently working on a draft of a new law that meets the standards set by the most recent laws of modern central banks including those set by the European Central Bank (ECB) for its members.

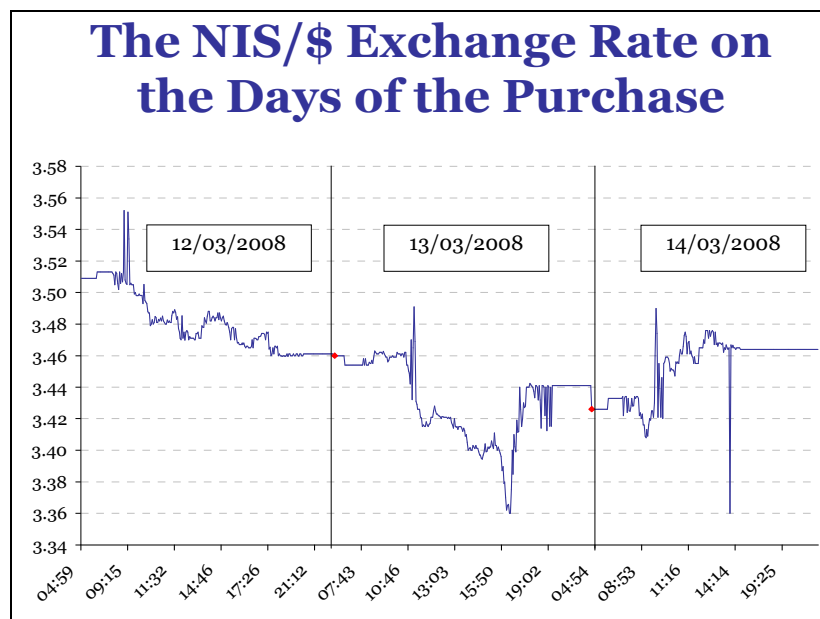
*Has the BoI abandoned the floating ER regime?*

Since 1997, and until recently, the BoI did not intervene in the foreign-exchange market at all (see Figure 4). Recently however, one exception was recorded during two days in March 2008 when the BoI purchased a large amount of US\$ in light of unusual ER movement (Figure 9). Similar ad-hoc intervention was implemented by other floating ER countries, such as New Zealand and Chile, "to combat dysfunction in the FX market".

A week later, on March 20<sup>th</sup> 2008, the BoI announced a plan to increase FX reserves by purchasing 25 million US\$ daily over a two year period. The need to increase the FX reserves had been identified a few months earlier, and the BoI noted that current market conditions (massive appreciation of the Israeli currency) had enabled such routine purchases in a prudent manner and consistent with flexible inflation targeting and with a secondary target of supporting employment and economic growth through the reduction of the negative impact of the strength of the NIS on economic activity of the exporting sector.

The ad-hoc intervention of mid March 2008, the first of its kind in more than a decade, should be clearly distinguished from the systematic purchasing that was announced thereafter in order to increase foreign-currency reserves. The BoI emphasized that these two activities involve no change in its policy goals.

**Figure 9**



Source: Bank of Israel

### 3. Characteristics of the ER and the inflationary process in Israel

#### High ER-inflation pass-through and high volatility of inflation

The Israeli economy has been characterized by an unusually high pass-through of ER movements to price movements (see table 1). As a result, CPI inflation is highly volatile. Interestingly, the US\$ has a unique role in determining price evolution in Israel. Prices in NIS are correlated with the US\$ more than they are correlated with the ER of a basket of currencies reflecting trading partners. The explanation goes beyond the regular open-economy channel of prices of imported goods and other standard mechanisms. It is common knowledge in Israel that residential and commercial real-estate rental contracts, as well as lawyers, accountants and other service-providers fees are linked to the US\$. An examination of the sub indices composing the CPI reveals that the ER-inflation correlation is even higher for non-tradable goods and services than for traded goods.

**Table 1**

<b>Pass-Through from Exchange Rate to Prices: International Evidence and the Israeli Experience</b>		
	<b>Over 1 Quarter</b>	<b>Over 1 Year</b>
<b>Developed Economies</b>	<b>0.05</b>	<b>0.1</b>
<b>Emerging Markets</b>	<b>0.15</b>	<b>0.2</b>
<b>Israel</b>	<b>0.3</b>	<b>0.5</b>

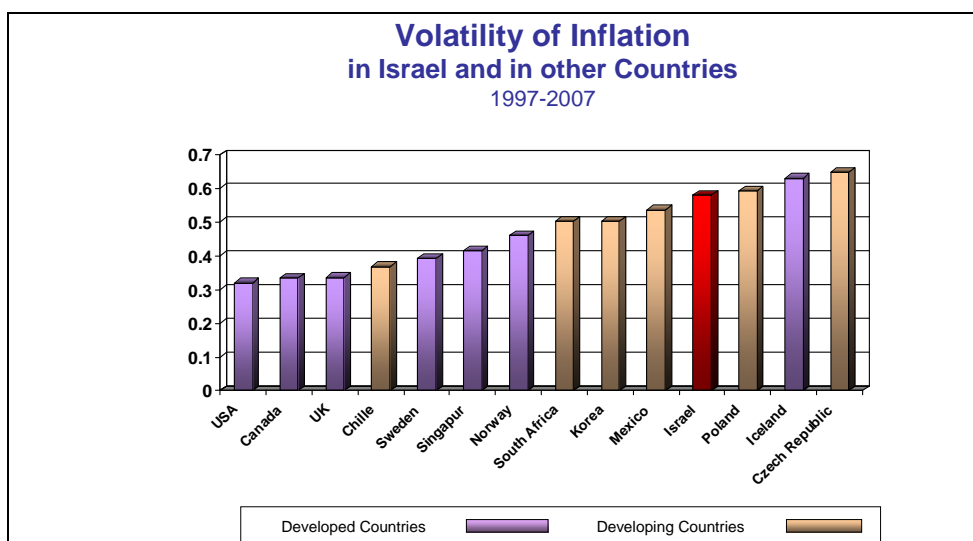
**In the second half of 2007 the Pass-Through has dropped sharply.**

Source: Choudhri and Hakura (2003) and bank of Israel estimates

This practice of price indexation of non-tradable goods and services to the US\$ is quantitatively unique to the Israeli economy and was inherited from the years of hyperinflation during the early 1980s. Recently, however, due to the sharp appreciation of the NIS vis-à-vis the US\$, this practice is being abandoned at an

accelerated pace. As a result, we are witnessing a rapidly diminishing pass-through from ER to CPI inflation.

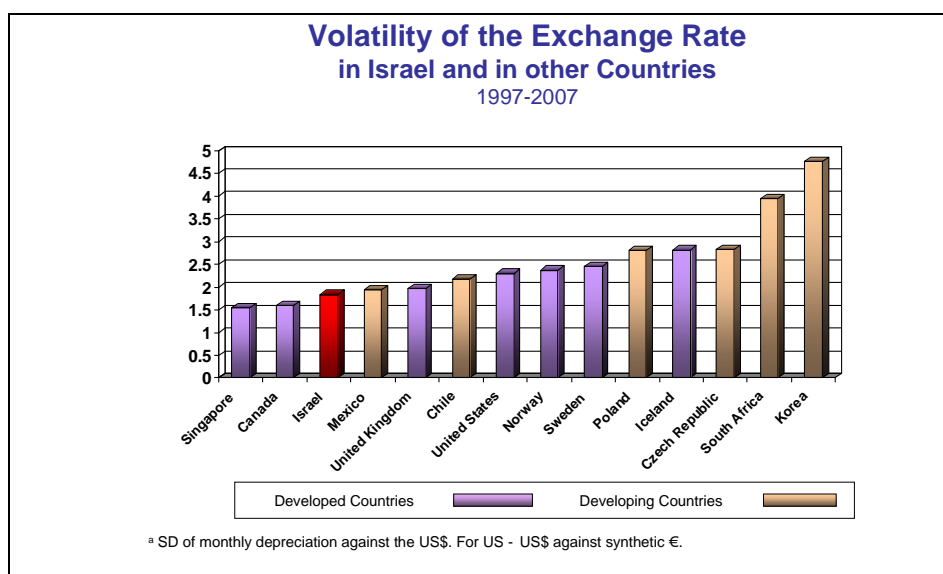
**Figure 10**



Source: Bank of Israel's calculations

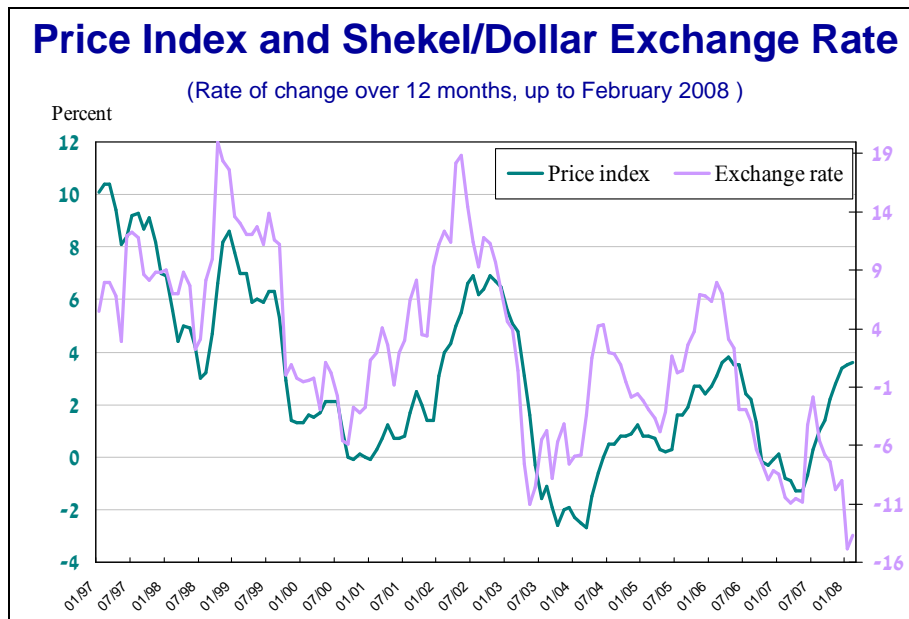
The result of the unusually high pass-through in Israel is illustrated by Figures 10 and 11. Figure 10 shows the high volatility of the Israeli-CPI inflation in a cross-country comparison. But at the same time, Figure 11 shows that the ER in Israel is relatively stable in a cross-country comparison. These two properties are jointly explained by Figure 12, which illustrates the high correlation between inflation and ER movements, brought about by the unusually high pass-through.

**Figure 11**



Source: Bank of Israel's calculations

Figure 12



Source: Bank of Israel's calculations

### Policy challenges and dilemmas

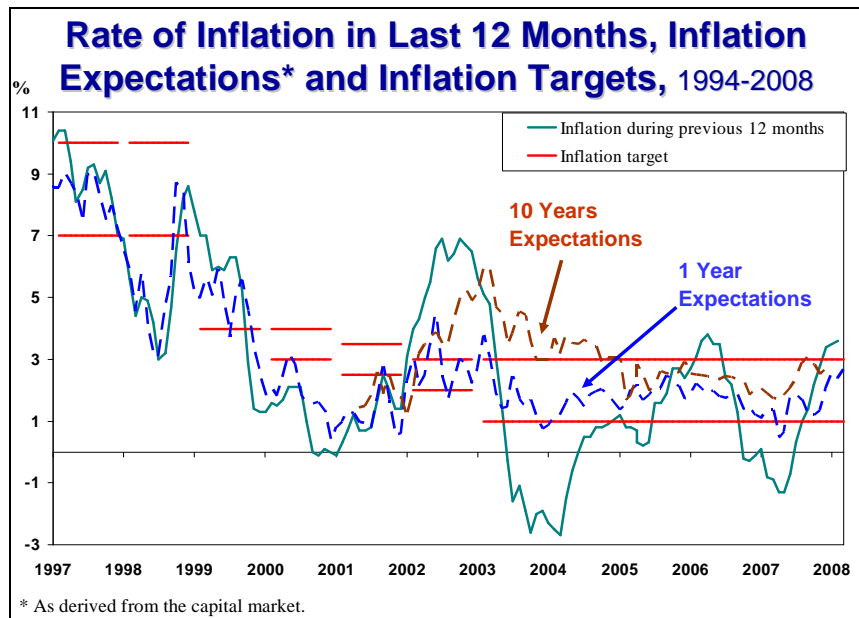
In what follows we review two properties of price indexation to the US\$, which pose particular challenges to monetary policy making in Israel. We first discuss the effects of indexation per se. Next we discuss the effect induced by prices being indexed to the US\$ (rather than to a currency basket).

In an environment of wide price indexations to a foreign currency, the inflation inherits the high volatility and the poor forecastability of the ER. This explains, to a large degree, the high frequency in which the inflation is outside its target band. However, Figure 13 illustrates how well inflation expectations were gradually anchored even though actual inflation was often outside the target band. It also illustrates how the ten-year expectations were gradually anchored after the significant reduction of their risk premium.

ER indexation of prices influences monetary policy. The monetary policy transmission mechanism is very quick and very aggressive in an environment of price indexations to ER. Thus, when prices are indexed to ER, the transmission from monetary policy to inflation is much faster than under the standard policy transmission mechanisms of an open economy, such as prices of tradable goods or raw materials. It is also faster than the indirect mechanism of the expenditure-

switching effect between foreign and domestically produced goods, which influences inflation through real activity. Finally, it is definitely faster than the traditional policy transmission mechanism through the effect of policy on investment and private consumption. This implies that monetary policy within an inflation targeting regime, when indexation to ER is widespread, might be very different than in an economy without such indexation. The reason is that the fast and aggressive transmission mechanism, under indexed prices, changes the considerations and shortens the horizon of the monetary policy. Thus, monetary policy within an inflation targeting regime, under wide ER indexation of prices, has to take into account the specific properties of the transmission mechanism that differ from that in an economy where there are no indexation practices.

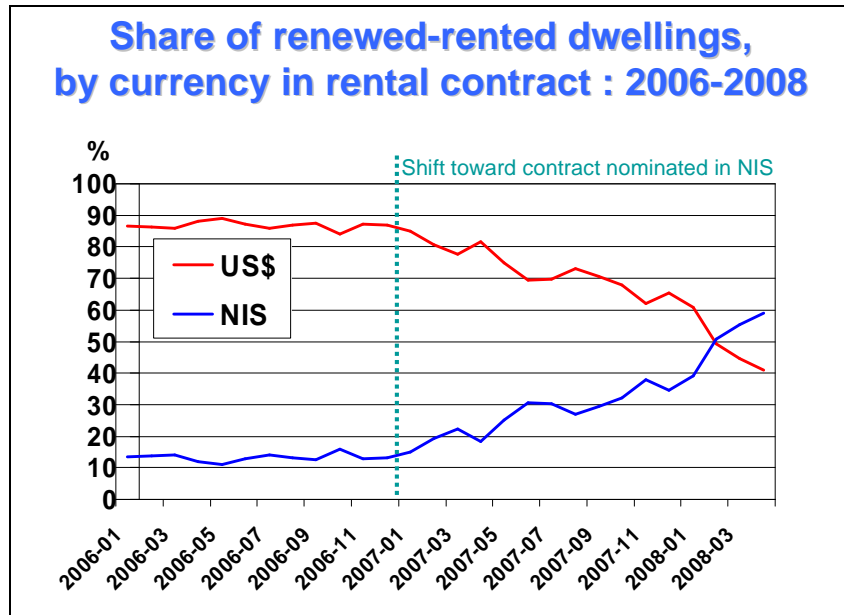
Figure 13



The fact that ER indexations in Israel are linked to a specific currency, namely the US\$, provides an additional challenge. Some of the fluctuations of the Israeli currency against the US\$ simply reflect the global fluctuations of the US\$. This occurs in periods when the Israeli currency is stable. It follows that inflation, and therefore monetary policy, fluctuates as a result of US\$ fluctuations in the global capital markets. This, of course, induces policy dilemmas in certain episodes of US\$ fluctuations, when the NIS trade-weighted ER remains stable.

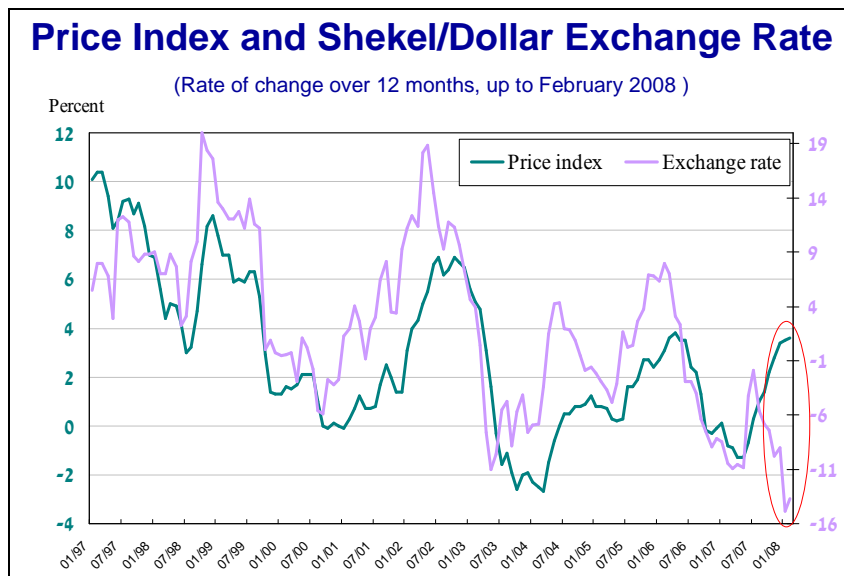


Figure 14



Source: Central Bureau of Statistics

Figure 15



Source: Bank of Israel's calculations

Since the beginning of 2007, due to the sharp NIS appreciation vis-à-vis the US\$, indexation to the US\$ is rapidly being abandoned in non-tradable sectors in Israel (Figure 14). As a result, the ER to CPI pass-through has diminished and there has been a decoupling of the US\$-NIS ER correlation with inflation in Israel (Figure 15).

### *Recent developments and the risk of imported stagflation*

Due to global market developments, recent monetary decisions were taken under the risk of undesirable imported stagflation. The imported share of inputs, energy and commodities is high in Israel. Thus, rocketing commodities' prices induce high inflation as well as considerable upside risks to future inflation, as we observe in most other countries. But at the same time, the exporting sector is challenged by the massive appreciation of the Israeli currency as well as by risks of global slowdown. This sector has, until recently, been the main source of economic growth. Thus, stagflation risks were seriously considered during recent monetary decisions meetings. The recent decoupling of prices from the ER adds an additional challenge at this time, as the ER appreciation no longer offsets the imported inflationary forces. Hence, the recently diminishing ER-CPI pass-through comes at a time when it could be helpful. However, the diminishing pass-through and the abandonment of ER indexation are favorable developments that have come about, not only due to the sharp appreciation of the NIS against the US\$, but also partly as the result of the credibility of the inflation targeting monetary policy that has been achieved during the last decade.

## **4. Concluding remarks**

We reviewed the evolution of the monetary-policy regime in Israel, starting from the inflation stabilization program of 1985, and ending with the current regime of flexible inflation targeting with freely floating ER. This evolution has changed the resilience of the economy to shocks. In the past, monetary policy was a source of instability, while today, monetary policy is an anchor that supports the economic performance of the Israeli economy in global markets that are subject to growing risks.

The successful anchoring role of both fiscal and monetary policy is reflected by the recent decoupling of the Israeli economy from political and geopolitical local developments. Thus, neither the frequent elections nor the recent significant security incidents (for example, the Second Lebanon War during 2006) undermined the Israeli economy, which functions with unusually stable growth and financial markets. The

real economy and the financial markets seem to be more strongly linked to global economic developments than to domestic geopolitical developments. Therefore, it seems that macroeconomic policy contributes to the resilience of the economy by shielding it from the negative effects of the political and the geopolitical instability.

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