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The Inflation Targeting Regime Worldwide and its Implementation in Israel[1]

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אימוץ משטר יעד האינפלציה בעולם ויישומו בישראל

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תמצית

עבודה זו סוקרת את אימוץ משטר יעד האינפלציה בעולם ואת יישומו בישראל. בשנים 1990 עד 1993 אימצו ארבע מדינות מפותחות - ניו זילנד, קנדה, בריטניה ושבדיה (להלן: המדינות החלוצות) - משטר של יעד אינפלציה, שכלל מספר אלמנטים לרבות: (א) החלטה מפורשת, ומוצהרת של הרשויות שהמטרה העיקרית של הבנק המרכזי היא להשיג ולשמר יציבות מחירים; (ב) הצבת יעדי ביניים כמותיים ביחס לאינפלציה וחתירה מתמדת ונחושה להשגתם; ו-(ג) תקשורת עם הציבור הכוללת שקיפות ומתן דין וחשבון שוטף. מטרת המשטר היתה ליצור בקרב הציבור אמינות במחויבות ליציבות מחירים ובכך למזער את העלויות הריאליות הכרוכות בהשגת מטרה זו. בשונה מהיישום ההחלטי והאפקטיבי של המשטר במדינות החלוצות, תהליך אימוץ משטר יעד האינפלציה בישראל היה ארוך ומפותל. אומנם כבר בסוף שנת 1991 הכריז בנק ישראל על יעד אינפלציה לשנת 1992 ואולם הכרזה זו הייתה רק מרכיב שולי בשינוי משטר שער החליפין שנערך באותה עת ולא אימוץ המשטר בכללותו. רק לאחר ניסוי וטעיה של כעשור, שאופיין בתנודתיות רבה של האינפלציה ובוויכוחים מקצועיים ופוליטיים רבים, אומצו בהדרגה יתר האלמנטים של המשטר והושגה יציבות מחירים. התמשכותו של תהליך זה בישראל נבעה משתי סיבות עיקריות: א) העדר חלוקה ברורה של תפקידים ומשימות בין הממשלה ובנק ישראל; ב) בנק ישראל עצמו נדרש היה לשנות קונספציה ביחס למדיניות המוניטרית. ריסון מוניטרי מתמשך בשנים 1994 עד 1998 שלווה בהרחבה ניכרת של תחום ניוד שער החליפין באמצע שנת 1997 הביא לירידת מדרגה של האינפלציה ל-4% לעומת כ-10% בשנתיים שקדמו, ובכך נסללה הדרך בהמשך ליציבות מחירים.

The Inflation Targeting Regime Worldwide and its Implementation in Israel

By David Elkayam and Edward Offenbacher

Abstract

This paper surveys the adoption of inflation targeting regimes in the world and in Israel. In the years 1990 to 1993, four advanced economies (henceforth the "pioneering countries")—New Zealand, Canada, the UK and Sweden—adopted an inflation-targeting regime. This regime included a number of elements: (a) a specific decision, agreed upon and announced by the authorities, that the primary objective of the central bank is to achieve price stability and maintain it over time; (b) the establishment of intermediate targets for inflation with ongoing, determined action to attain them; (c) communication with the public including transparency and accountability. The objective of the regime is to engender strong credibility among the public about the authorities' commitment to strive for price stability, thereby minimizing the real costs involved in attaining this goal.

In contrast to the decisive and effective implementation of this monetary regime in the world, the adoption of the inflation targeting regime in Israel was a drawn out and complicated process. Albeit, already at the end of 1991, the Bank of Israel announced an inflation target for 1992, but this announcement was merely a marginal ingredient in a modification of the existing exchange rate regime and not the adoption of a full inflation-targeting regime. Only after a decade of trial and error, marked by high inflation volatility and numerous professional and political disagreements, were the additional components of the inflation-targeting regime gradually adopted, and price stability was attained. The two primary reasons for the extended duration of the process of adopting the inflation-targeting regime in Israel were: (a) the lack of a clear division of tasks and authority between the government and the Bank of Israel, and (b) the Bank of Israel itself had to alter its basic approach to the conduct of monetary policy. Continual monetary restraint from 1994 through 1998, accompanied by a significant broadening of the exchange rate target zone in mid-1997, brought about a sizable reduction in inflation to 4 percent in 1997 compared with 10 percent in the previous two years, thus paving the road toward price stability.

1. Introduction

Between 1990 and 1993, four advanced economies—New Zealand, Canada, the United Kingdom and Sweden—adopted a structured inflation targeting (IT) regime for their monetary policy. This regime was regarded at the time as innovative, representing a significant departure from the monetary regimes that had been in place until then. At that time, the Bank of Israel also began to announce an inflation target. However, the key features of the regime in Israel were considerably different from those in the four aforementioned countries (henceforth to be denoted, the "IT pioneers").

This paper has two sections. The first addresses the IT regime worldwide, wherein we wish to understand how the four IT pioneers arrived at this regime, what preceded it, what led to it, what was the theoretical background that prompted the four central banks to adopt this regime, and why it was adopted in the four pioneering countries at about the same time (between 1989 and 1993). In the second section, we describe the implementation of IT in Israel. To this end, we wish to understand the institutional setting and the monetary concept and analysis that guided Israel's monetary policy in the years following the Economic Stabilization Program (ESP) of 1985, subsequent changes in this policy, and its modes of implementation.

Regarding the world, it appears that the IT regime is, essentially, a natural extension of the intermediate targets regimes—primarily a commitment to a path for a monetary aggregate or the exchange rate—that characterized monetary policy in most Western countries in the 1970s and 1980s.[1] In many countries, the intermediate target regimes failed at some point, and the countries that moved to an IT regime replaced the intermediate targets with a target vis-à-vis inflation. Furthermore, as we will show below, some of the countries that had traditional intermediate targets regimes, in effect worked with an inflation target already then, without announcing it. Therefore, the move to IT was not a very drastic change relative to the previous regimes.[2] However, as we describe later, the basic willingness of a central bank to commit to attaining a concrete, short-run, quantitative target for inflation—a variable over which it has no direct influence—constitutes a significant departure from the past. The central bank has the ability to achieve good control of the nominal exchange rate

[1] During these two decades many countries experienced a significant inflation cycle—first an increase from less than 5 percent per annum to "low" double-digit levels (between 10 and 25 percent), and then, as a response to sharp monetary contraction, a return to low single-digit levels, though accompanied by high real costs of severe recession and a significant increase in unemployment.

[2] As we will see below, the inflation-targeting regime includes many elements beyond replacing the traditional intermediate targets with an inflation target.

and tolerable control of the quantity of money[3]; therefore, it can achieve credibility for a commitment regarding the paths of these variables. A key challenge with IT, which essentially distinguishes it from traditional intermediate targets, is the need to establish credibility for a commitment to work to achieve the inflation target—a variable not directly controlled by the central bank.

Success of the IT regime, in most countries that adopted it, was aided by several features that were included in the new regime: (a) an explicit, agreed upon and published decision by the government and the central bank stating that the primary goal of the central bank is the attainment and maintenance of price stability; (b) the specification of a concrete action plan, mainly setting intermediate targets for inflation with constant determined actions to achieve those targets[4]; (c) communication with the public including transparency and ongoing accountability.

As Freedman (1997) notes, at its outset, the IT regime did not receive much support from academia. The theories and models that justify and describe the advantages of this regime were developed shortly after it was implemented in the four pioneering countries.[5] Therefore, implementing the regime at the outset required a substantial dose of intuition. At the time of first implementation, the policy makers assessed that initial success would generate credibility and would help down the road and, in fact, after the regime was implemented and there were initial successes, the public adjusted its expectations accordingly, which did help to achieve the targets. The IT regime gained success and popularity, with an increasing number of countries gradually adopting it. As of January 2018, about sixty countries follow a full-fledged IT regime (that is, announced intermediate targets for inflation and efforts to attain them).[6]

In Israel, in contrast, the adoption of the IT regime was a long process that lasted over a decade. The beginning of the process was in December 1991. The Bank of Israel Governor at the time, Jacob Frenkel, decided to change the exchange rate regime, from a horizontal target zone surrounding a mid-point rate that was increased from time to time (with no pre-announced time trend) to a target zone with a positive slope over time. In order to determine

[3] As regards the exchange rate, this ability is mainly in the short run. The ability to control the exchange rate in the longer run depends on many factors and, often, this ability weakens over time and even becomes impossible. We will return to this issue below.
[4] If there is price stability at the outset, then the intermediate target constitutes price stability.
[5] It is worth noting that the importance of credibility as a means to address the inflationary bias problem was well understood at the time but the full New Keynesian model that reflects the transmission mechanism from the interest rate to inflation was developed a bit later.
[6] Central Bank News, January 2018.

the slope of the midpoint rate, an assessment of domestic inflation for 1992 was needed (along with inflation in Israel's key trading partners). The Governor decided, with the consent of the Government, to call this assessment of future domestic inflation an "inflation target". In fact, the first announced "inflation target" was at the two-digit level, quite far from Western inflation levels and implying resignation to the inflation environment that was in effect at the time. The announcement of the inflation target was not accompanied by any reference to the period following 1992 and, especially, was not accompanied by the additional measures that were implemented in the four pioneer countries. Furthermore, in contrast with the four pioneer countries where the inflation target replaced the traditional intermediate targets, in Israel, in the first years following the announcement of an inflation target, the exchange rate continued to be an intermediate target of monetary policy, making the management of monetary policy more difficult. Gradually, however, the additional features of the IT regime were added, along with added flexibility of exchange rate policy and a transition to using the interest rate as the key monetary instrument to achieve the inflation target. All this continued until the announcement by the Government and the Bank of Israel in August 2000 of a multiyear inflation target with a three-year path from about 4 percent to the range of 1 to 3 percent, for an indefinite period—a target defined as price stability.

In what follows we will try to understand the reasons for the big difference between the adoption of the IT regime in the four pioneer countries and the process in Israel, which, as noted, lasted a full decade of transition from an exchange-rate-based regime to a full-fledged IT regime, arriving finally at price stability. In short, adoption of the full-fledged IT regime required the construction of a suitable institutional infrastructure and a fundamental conceptual change concerning monetary policy. As regards institutional change, there was an ongoing struggle in which the Bank of Israel gradually obtained the task of achieving the price stability goal along with the necessary tools. In spite of the 1985 "no money-printing" law, in 1991, the Bank of Israel still had neither the authority, or at least not the support, nor the tools to work towards price stability.

As far as the conceptual change, it was necessary for policy makers and advisors to recognize fully that the attempt to use the exchange rate as a nominal anchor for prices had been unsuccessful. For a decade following the Economic Stabilization Program (hereinafter, "ESP") of 1985, there was an ongoing attempt to rely on the exchange rate as a nominal anchor. This attempt did not succeed, and price stability was attained only after it was decided to expand the target zone for the exchange rate greatly. Continued monetary restraint

combined with the significant target zone expansion in 1997 brought about a step-decrease in inflation to 4 percent, following 10 percent in the previous two years. This paved the way for the achievement of price stability within three years.

2. The Inflation Targeting Regime in the World

First, we describe briefly the key elements of the inflation-targeting regime that today characterizes a large number of countries. The following subsection describes the monetary regime of the two decades prior to inflation targeting, known as intermediate target regimes, and the difficulties that arose from this type of regime that led to the transition to inflation targeting in some countries.[7] In the third subsection we elaborate on the reasons that led to the adoption of inflation targeting in some countries and on the principles of its initial implementation. In the fourth subsection we will see the striking similarity between the practice of intermediate target regimes and of inflation targeting regimes. We shall see that the practice of inflation targeting slightly preceded the development of theory that justifies it. In the fifth subsection we summarize the principles that emerge from this survey regarding the necessary conditions to achieve the goal of price stability. These principles will serve us later in assessing the Israeli case and in understanding the reasons for the relatively late achievement of price stability in Israel.

2.1 What is the Inflation Targeting Regime?

The inflation-targeting regime was adopted first in New Zealand in 1990. Canada joined right afterwards in 1991, followed by the United Kingdom in 1992 and Sweden in 1993.[8] In what follows we refer to the regime as implemented in these four countries.

The inflation-targeting regime includes the following components:

a. The government and the central bank decide on and announce that the primary goal of monetary policy is to achieve and maintain price stability over time.[9]
b. The government and the central bank jointly determine an explicit quantitative target for the rate of increase of a specific price index, usually the consumer price index. Price stability is generally defined as an inflation rate of about 2 percent.

[7] In this survey, we relied largely on Bernanke, et. al. (1999).
[8] Additional countries that joined and implemented shortly thereafter a form of inflation-targeting regime were Finland and Australia (1993) and Spain (1995). The Bank of Israel announced an inflation target already in December 1991 but the implementation of the inflation targeting regime was delayed until 1997, at least, and in some opinions until 2000 (see below).
[9] Price stability is usually defined as a moderate inflation rate of two percent

c. This target is set for a specific time horizon, usually the coming year or two.

d. The aim of the regime is to achieve the goal of price stability over time; therefore, if at the time that IT is adopted, the inflation target is higher than the level consistent with price stability, the specifics include a time path for subsequent years that is consistent with convergence to price stability.

e. The task of achieving price stability is assigned to the central bank, which is obligated to act toward attaining the goal using the instruments at its disposal.[10] We emphasize that in order to achieve its goal, the central bank is granted independence in setting the relevant instruments.

f. Accountability and transparency: The central bank reports regularly to the government and the public on the measures has taken and intends to take in the future in order to meet the inflation target, along with the reasons for these measures, based on analysis of the economic situation. Furthermore, the central bank publishes regularly a macroeconomic forecast including future paths for inflation and economic activity.

g. Absence of fiscal dominance: An important condition to insure the effectiveness of monetary policy with regard to inflation is that the government manages its deficit and public debt in a manner that maintains a safe distance from there being an incentive to use inflation to erode the debt.

The foregoing components constitute the framework of the inflation targeting regime. Above all these components include the decision to work towards price stability and the assignment of the task of accomplishing this goal to the central bank. Naturally, there is an understanding that the central bank has the ability to achieve the goal using the instruments at its disposal. Note that the framework is not limited to a general statement of the principle of striving to attain price stability, but rather there is a specific program to achieve and maintain price stability. This is by way of an ongoing commitment of the central bank to attain a concrete, quantitative target in within a time horizon specified in advance and defined in terms of a well-defined price index. An additional central element is cooperation with the public in the process. The government and the central bank work to enlist the public's assistance to achieve price stability. The public, in its economic activity, will assist

[10] Here and in what follows we assume monetary dominance, i.e., that the government debt is not too large and that the markets assess that the government can retire the debt with taxes. In this case, an interest rate increase works to reduce inflation. If government debt is too large, an interest rate increase can cause difficulty for the government to service its debt, compromising the government's credibility leading to financial crisis and high inflation. In Israel, the "no printing" law, enacted within the ESP of 1985, is geared to insuring monetary dominance.

in attaining price stability if it believes in the central bank's intention and ability to attain it.[11] In order to achieve and maintain this credibility, the central bank commits itself to reporting regularly on the measures it has taken and that it intends to take in order to attain and maintain price stability and to publish at regular intervals its analysis of the economic situation and its macroeconomic forecast.

To understand and assess the importance of these components, it is necessary to first analyze the monetary regime that preceded the IT regime and the difficulties that the prior regime encountered.

2.2 The intermediate targets regime that preceded the IT regime

We will now briefly survey certain features of the economic analysis and monetary policy in the world during the period prior to the adoption of the IT regime. This is not a comprehensive historical survey; rather our purpose is to present the key features relevant to understanding the transition to the IT regime.[12] We note at the outset that the IT regime was essentially a continuation and a correction of the intermediate targets regime that characterized monetary policy in advanced economies from 1975 to 1990. What was the intermediate targets regime and what were the reasons for its use?

The two main goals[13] of central banks in advanced economies from 1975 to 1990 were, generally, maintaining moderate growth of prices and support for economic activity and employment.[14] In order to attain these goals, most central banks adopted an intermediate targets regime that would serve as a nominal anchor (for reasons presented below). The chosen anchor must possess two key features:

a. The central bank is able to influence its growth path.
b. The growth path of the instrument has a strong influence on the paths of prices and economic activity.

[11] Increased efficiency of the process is due to the target serving as a basis for the public to set prices of goods, services and contracts.
[12] For more on the reasons for the transition see Freedman and Laxton (2009).
[13] In the literature, there is a tendency to distinguish between ultimate goals, intermediate targets and instruments. Thus, for example, in Germany already from the beginning of the 1970s the ultimate goal of the central bank was price stability. The intermediate targets were growth rates for specific monetary aggregates and the instrument was the interest rate.
[14] See Bernanke and Mishkin (1992) and Goodhart and Vinals (1994).

Some chose a monetary aggregate as an intermediate target, some chose the exchange rate, some chose each of them at different times and yet others tried both of them simultaneously.[15]

Why did they set intermediate targets and how was monetary policy managed in this regime? The need to set an intermediate target was based on a number of factors (as detailed below). Nowadays, in general, the main instrument of central banks is the interest rate it sets on short-term loans to commercial banks (or deposits of the commercial banks at the central bank), that is called the "key policy rate".[16] Increasing this rate works to reduce economic activity and inflation, while decreasing the rate works to increase economic activity and inflation. Operating with this rate presents two difficulties; (a) from the nominal level of the rate itself, it is difficult to assess if this level is appropriate for achieving objectives regarding economic activity and the price level; (b) the effect of this rate on economic activity and prices is not immediate, and the magnitude and timing of its effects are not fixed. For example, the strength of these effects depends on other components of economic policy such as the degree of flexibility of exchange rate management. The way to overcome these difficulties is to make use of indicators that enable ongoing assessment of whether the level of the policy rate is appropriate for attaining the objectives for economic activity and prices.

Beyond the two "operational" difficulties just noted, there is also a more fundamental difficulty. The price stability objective is a long-term objective. In the short run, i.e., the coming year or two, there is a degree of price rigidity, and there are other considerations, mainly encouraging economic activity (more precisely, minimizing deviations of economic activity from its potential). Therefore, in the short run, it is sometimes necessary to be resigned to a rate of price increase that deviates from the long-run rate. This raises the question: How is it possible to preserve credibility regarding the intent and the ability to attain the long-run objective of price stability and at the same time enabling flexibility in the short run? The answer given is to establish an intermediate target for a given indicator and to hit that target, while allowing that the inflation over the near term implied by the intermediate target may deviate from price stability. In other words, using an intermediate

[15] In the context of the ERM in Europe, Germany chose a monetary aggregate as an intermediate target and the other countries that participated in this regime adhered to the exchange rate vis-à-vis the DM. In parallel, some of the countries, especially the larger ones, also announced targets for a monetary aggregate. See Goodhart and Vinals (1994).

[16] For a survey, see Friedman and Kuttner (2010) and references there.

target (a monetary aggregate or the exchange rate) permits short-run deviation from price stability without losing credibility regarding the intent to preserve it in the longer run.[17]

The use of an intermediate target was usually accompanied by an announcement of a commitment to a specific path for it with the intention that this path would constitute a nominal anchor for prices. We emphasize this because we will see later that the transition to IT was a natural continuation of the strategy of relying on a nominal anchor in the form of an intermediate target. The purpose of the commitment was to enhance the credibility of the determination to achieve the goal of price stability and thereby to influence inflation expectations. The desire to influence these expectations was derived from the notion that inflation expectations affect the inflation rate that is taken into account in contracts between economic agents (for example, in wage contracts and in price setting by firms) and thus affect actual future inflation.[18] A commitment to an intermediate target helped policy-makers to withstand political pressure, which generally pushes for the central bank to undertake expansionary policy and support economic activity.[19] Another advantage of intermediate targets is that their use can ease the explanation of policy to the public.[20]

Some central banks chose the quantity of money as the intermediate target.[21] The main reason for this choice was the perception at that time that it is the quantity of money that ultimately determines the price level (i.e., is a nominal anchor for prices). In addition, the quantity of money is affected immediately by changes in the interest rate. Therefore, it is possible to use the quantity of money as an intermediate target, attainment of which will ultimately lead to attaining the objective of price stability. This regime of intermediate targets for monetary aggregates worked in some of the countries some of the time but later on it became clear that the link between any given monetary aggregate and nominal economic activity and the price level is not stable and at times is not predictable.[22] That is,

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[17] Bernanke and Mishkin (1997) termed this behaviour "constrained discretion".

[18] According to the New Keynesian approach that was developed later on, expected future inflation influences current inflation as well (and not only future inflation).

[19] See Howitt (2006) and Goodhart and Vinals (1994).

[20] Poole (1994) cites this reason vis-à-vis the quantity of money as an intermediate target but the same reasoning holds for the exchange rate as an intermediate target.

[21] Many countries in the Western world, especially relatively large economies, tried at various times to use monetary aggregates as intermediate targets. They include Germany and Switzerland and sometimes the US, Canada, the UK, Spain, Italy, Japan and others. See Bernanke and Mishkin (1992) and Goodhart and Vinals (1994).

[22] A key factor that worked to detach the link between the quantity of money and prices was frequent shifts in money demand that resulted from ongoing improvement in payment technology. Difficulties in targeting monetary aggregates were prominent in Canada that tried using the approach from the mid-1970s through the early 1980s, in the UK which used the approach from the mid-1970s until the end of the 1980s and then joined the ERM for a short time, in Spain that used the approach until 1989 and then joined the ERM, in Italy which left the ERM in 1992 and then used a monetary aggregate for some time, and the United States. For more detail

it became clear over time that attaining a given monetary aggregate target was not sufficient to achieve price stability, especially in light of changes in the public's behavior in its use of money as a result of changes in inflation itself. This led some central banks to shift to another intermediate target—a target for the rate of increase of some price index—to be discussed below.

Other central banks[23] chose the exchange rate as the intermediate target. The exchange rate is also affected immediately by interest rate changes (or by direct foreign exchange market intervention) and stabilizing it vis-à-vis the currency of a large country ought to aid in stabilizing the price level (or its rate of growth) relative to that of the reference country. This worked in some countries and in some time periods. However, in many cases, at some stage the central banks that stabilized the exchange rate were forced to abandon this method, among other reasons because the cost of doing so in terms of economic activity and employment became intolerable.[24] In our description of Israel, we will elaborate on the principles of this method and on the reasons that it was impossible to sustain it in many cases, including in Israel.

The approach to intermediate targeting using monetary aggregates was led by the central banks of Germany and Switzerland.[25] From the beginning of the 1970s, these two central banks interpreted their responsibility, with government support, primarily but not exclusively, to strive for and attain price stability over time. In order to attain this goal they operated in the following manner. Each year they would announce a quantitative target for the growth of the chosen monetary aggregate. Some announced for a year (Germany) while others for a longer period (Switzerland). In calculating the targeted amount, a specific growth rate for output (usually an assessment of potential output growth) and for the rate of price level increase were taken into account. At times, this rate of price level increase was consistent with the long run rate (price stability) and at times it was different from the long run rate for various reasons (e.g., oil price crisis).[26] The fact that in calculating the specific

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regarding the US, see Friedman (1997). It is worth noting that in general the central banks were aware of these problems and already at an early stage, in practice they regarded the intermediate targets more as general guidelines and less as targets that must be achieved.

[23] Mainly the central banks in continental Europe that were linked to the German mark, see Goodhart and Vinals (1994), and countries in Latin America.

[24] For a discussion of the advantages and, mainly, the relative disadvantages of using the exchange rate see Svensson (1997a).

[25] The survey that follows refers primarily to Germany and Switzerland and is based mainly on Bernanke and Mishkin (1992). Regarding Germany, see also Clarida and Gertler (1997) and Bernanke and Mihov (1997).

[26] Bernanke and Mishkin (1997) show that with regard to the German central bank calculation of the short-term inflation rate at times a rate above the long-run objective was accommodated, for example if there was a

quantity of money account was taken of a specific inflation rate indicates the existence of an implicit inflation target. Albeit, the commitment is not to the inflation target but to the rate of growth of the monetary aggregate. However, as indicated by Bernanke and Mishkin (1997), in both countries if a contradiction emerged between the development of the intermediate target and the inflation target, preference was given, usually, to the implicit inflation target; this after examining many indicators of the state of the real economy and of inflation. From this description, it is possible to infer that the regime of using a monetary aggregate as an intermediate target constituted in practice, at least in Germany and Switzerland, a means of working to attain inflation targets without there being an explicit commitment for that.[27]

Toward the end of the 1970s and more so during the 1980s, it was increasingly realized that a vacuum existed concerning the effectiveness of using a monetary aggregate (or the exchange rate) as an intermediate target and nominal anchor—it became clear that hitting the intermediate targets does not necessarily aid in achieving price stability. This fact motivated many central banks to abandon the regime of using a monetary aggregate or the exchange rate as an intermediate target. However, the needs that brought about this regime remained in place, including the need for an indicator to guide and direct the central bank in the short run.

The central banks of Germany (until the establishment of the European Monetary Union) and Switzerland continued, ostensibly, in an intermediate target regime based on a monetary aggregate. However, as noted above, it appears that in practice they operated to achieve an inflation target. That is, these central banks followed a variety of indicators and operated so as to attain an inflation target without explicitly announcing it or committing to any specific inflation target. The commitment was to price stability over time.

Most other central banks in continental Europe continued from 1979, the year that the ERM was established, to link themselves to the German currency and, among these, most remained in this agreement until transferring to the European Monetary Union in 1999. In some of these countries, some of the time, this policy was successful. However, at some times, it turned out that the level of the interest rate appropriate for stabilizing the exchange rate vis-à-vis the German mark was not appropriate for stabilizing the domestic economy,

transitory supply-side effect (which they called "unavoidable inflation") Also, in calculating the desired rate of growth of the quantity of money, expected changes in the velocity of money were taken into consideration.

[27] Bernanke and Mihov (1997) examined the behavior of the German central bank and they concluded that it acted more as an inflation targeter than a monetary targeter. A similar conclusion, using different methods, was reached by Clarida and Gertler (1997) and by Clarida and Gali (1997).

including economic activity and prices. This was evident especially during the ERM crisis in 1992–93 and led some countries to seek additional tools for the conduct of policy (e.g., capital controls) and some, like the UK, Italy and Sweden, even left the regime.[28]

Other central banks continued to operate without a declared intermediate target and planned their policy according to the developments of economic activity and prices, sometimes relatively actively, and sometimes they simply accommodated an assessment or forecast of economic activity and prices. Many also considered additional factors, mainly the exchange rate and financial stability.

A striking example of this type of monetary policy is the US Federal Reserve. From 1975 to 1991, the Fed published targets for monetary aggregates. However, as Bernanke and Mishkin (1992) assert, the Fed did not attach much importance to attaining the monetary aggregate targets and concentrated on promoting economic activity and smoothing the interest rate. In 1979, in light of the high inflation at the time, it was decided to attach greater importance to the time path of the quantity of money, in the form of setting targets for a moderate growth of non-borrowed reserves, a move that required a drastic increase of the Fed's interest rate. The high interest rate stopped price increases but at a high real cost. In 1982, it became clear that the link between money and economic activity and prices had been severed and the Fed, in practice, abandoned the money targets. McKnees (1992) shows that throughout the 1970 to 1992 period, the Fed's monetary policy can be characterized as adjustment of the interest rate based on the developments of a number of variables including economic activity, prices and money, with goal variables being minimizing the deviations of economic activity and prices from trends.

Another example of abandoning the quantity of money as an intermediate target is the policy of the Canadian central bank. Following continuing disappointment from the use of some monetary aggregate as an intermediate target, the Canadian central bank in 1982 stopped using a quantitative intermediate target[29] and in essence until 1991 operated without an explicit target.

[28] For details, see Goodhart and Vinals (1994). Britain, of course, is not in continental Europe but it was a member of the ERM from 1990 to 1992.

[29] The Canadian central bank governor at the time, Gerald Bouey, summarized this by saying: We did not abandon M1; M1 abandoned us. See Freedman (1997).

2.3 What led to the transition to inflation targeting?

Increased inflation in the 1970s and the heavy price paid to reduce it led to the understanding of the importance of creating a mechanism to preserve price stability. In parallel, economists discovered that in the short run monetary expansion works to increase both economic activity and prices however, subsequently, economic activity returns to the level (or the increasing path) that preceded the monetary expansion while prices increase according to the expansion.[30] That is, they learned that an attempt to expand economic activity by monetary expansion can succeed only in the short run but ultimately is expressed by higher inflation even in the long run. Furthermore, they learned that monetary policy could be effective in controlling inflation if it is given freedom to do so.[31] Thus, the importance of sustained price stability was increasingly recognized and that attaining this goal should be assigned to monetary policy decision-makers.[32]

This doctrine gained expression also in the adjustment of many central bank laws in the Western world. From 1989, an increasing number of countries determined, in legislation, that the primary objective of the central bank is price stability; this was also under the influence of the idea of European Monetary Union and in some of the countries a policy or regime of IT was announced. [33] The preference that was given to price stability and the need for intermediate targets that would aid in achieving this goal, while at the same time, in contrast, the failure of the use of the traditional intermediate targets, monetary aggregates or the exchange rate, led to an increasing number of central banks using inflation itself as an intermediate target.[34] That is, an announcement of commitment to a given path of inflation for the coming years with price stability as the ultimate objective.

From the description so far it emerges that the transition to an IT regime is, in effect, a natural continuation of the intermediate targets regime. Instead of using a monetary aggregate or the exchange rate as the intermediate target, there was a switch to using inflation itself as the intermediate target. There were those who used inflation as an intermediate target without announcing it and without committing (see below)[35] and there were those who

[30] Furthermore, when policy decision-makers try to increase economic activity, even in the short run only, often the public learns this behavior and the economy remains with the same high unemployment but with high inflation—a situation termed in the literature as the "inflationary bias" (see references cited in footnote 57). Theoretical models explained the importance of building credibility in the eyes of the public regarding the commitment of policy decision-makers to refrain from making this mistake. The IT regime was created to solve the inflationary bias problem by creating this credibility.

[31] The striking examples are Germany and Switzerland and also Volcker's Fed (1979 – 1987).

[32] See Fischer (1995), Goodhart and Vinals (1994) and Woodford (2009).

[33] For further detail and a list see Goodhart and Vinals (1994).

[34] Effectively, in operating the system, the intermediate target was expected inflation (see below).

[35] This approach is sometimes referred to as a soft form of flexible IT.

announced it and were committed. Those who committed publicly added to the announcement a number of additional features, intended to provide credibility to the regime.[36]

The process of transition to IT regimes was begun by the central banks of New Zealand, Canada, the UK, and Sweden in the years 1990 to 1993. Subsequently, an increasing number of central banks joined, initially Finland, Australia, Spain and Israel and, later on, more advanced and developing economies.[37]

It is appropriate to distinguish between central banks that switched to an IT regime and others that did not announce an IT regime but still worked to reduce inflation and achieve inflation targets.[38] The central banks of Germany, Switzerland, Japan and, to some extent, also the US Fed (especially in the period starting from the mid-1980s) had a reputation for independence and, generally, low inflation. These central banks experienced difficulties with the traditional intermediate targets, but nevertheless did not find a need to announce inflation targets. The credibility that they acquired over the years and their relative independence allowed them to maintain low inflation without announcing an IT regime. These central banks could get along by announcing a qualitative target of price stability without committing to an intermediate target with respect to inflation. One of the considerations for not choosing an IT regime was, apparently, concern that committing to an intermediate target with respect to inflation would compromise the smoothing out of supply shocks to prices.[39]

In contrast, the central banks of New Zealand, Canada, the UK, and Sweden were less independent and their countries underwent periods of high inflation. These central banks were in a basic situation of low credibility and therefore felt a need to establish credibility regarding their intention and ability to achieve price stability. In light of their situations and in contrast with countries that had a low inflation history, they could not get along with an announcement of a qualitative target of price stability. In order to create credibility, they needed (or chose) to operate via an announcement of commitment to an inflation target for a specific price index as a quantitative intermediate target.

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[36] When the contribution of these additional features became apparent, countries that did not commit to an IT regime adopted these features as well.

[37] Joining the IT regime after the four pioneers occurred in two stages. First, until 1997, a few countries joined. Other countries that did not join then apparently followed results. When they saw that the IT regime was successful, more and more countries joined. For a list, see Freedman and Laxton (2009) or Svensson (2007).

[38] See for example, Orphanides (2009), Freedman and Laxton (2009) and Howitt (2006).

[39] See, for example, Friedman and Kuttner (1996).

As argued above, an important feature of a monetary aggregate or the exchange rate as an intermediate target is the ability to influence the intermediate target immediately using the interest rate.[40] With regard to inflation, this ability was less clear. In spite of this, these central banks decided to adopt the commitment to a quantitative inflation target within a defined time frame. This willingness was influenced by the awareness that developed at that time regarding the importance of credibility and the benefit that can be had from it in establishing a nominal anchor and the recognition of the effectiveness of intermediate targets as a tool for acquiring credibility.

The awareness of the importance of credibility grew due to two developments in the 1970s and 1980s:

(a) The experience of the United States in the 1970s of increasing inflation and the success at suppressing it via the disinflation program of Chairman Volcker from 1979 to 1982 convinced many economists of the central role of monetary policy in determining the price level. At the same time, however, this experience brought to the fore the high costs in terms of lost output and high unemployment of disinflation policy based on the "just do it" approach, that is interest rate increases without an attempt to create credibility.

(b) Developments in economic theory that emphasized the importance of the public's expectations and their looking forward in making decisions and thus in determining macroeconomic outcomes.

The developments taught that credibility assists, inter alia, in the following ways:

(1) The understanding that credibility in the eyes of the public of policy decision-makers' commitment to an intermediate target influences expectations and the behavior of economic agents in determining prices and thus contributes to the attainment of targets while reducing the real costs of doing so.

(2) The understanding that the length of time lags is a function of the policy regime and that credibility shortens these lags.

(3) The understanding that commitment can address the inflationary bias.[41]

[40] Or by foreign exchange market intervention in the case of the exchange rate.

[41] Barro and Gordon (1982) showed that under certain assumptions, including rational expectations of the public, an attempt to maintain real growth above potential by monetary expansion ends up with a level of inflation permanently higher without achieving the increase in real growth. A commitment to an inflation target is likely to prevent this.

From this arose the importance of attempts to mold the public's expectations in order to minimize real costs.[42]

In order to maximize credibility with maximal speed and to preserve it later on, central banks established communications infrastructure with the public and with the government. This included ongoing publication at regular intervals of an Inflation Report that describes developments that took place, policies that were implemented and results (during the reviewed period). Forecasts for the coming years were also published. Other actions taken included speeches by senior central bank officials and collaboration with academics to develop theory and models for monetary policy. Later on, as the significant benefits of these actions became clear, other central banks, that had not adopted a full fledged IT regime[43], adopted these communication devices.

In spite of these specific insights, it appears that the decision to undertake an IT regime involved a high degree of intuition, and as many authors note[44], academic support for this decision when the four pioneering countries did so was slight; many in academia were doubtful about the regime's chances for success.[45] Prior to the adoption of the IT regime, there was theoretical and empirical research that analyzed the benefits and drawbacks of using a variety of variables as intermediate targets, for example: monetary aggregates, the exchange rate, nominal GDP and inflation. The conclusion from this research usually was that inflation is not necessarily the best choice. According to Freedman (1997, 1998), what this research missed—and this became clear only later, after the IT regime was working—was that because of lags in the effect of policy, the appropriate intermediate target is not the inflation in the near term but a forecast of inflation for the next year or two. Once policy focuses on the inflation forecast as the intermediate target, the drawbacks of adopting the regime, as suggested by research, disappeared.[46] In the practice adopted by these countries, endeavoring to attain the goal is implemented by adjusting the key policy rate to the expected development of inflation. When expected inflation rises, the central bank raises the rate, and

[42] See, for example, Woodford (2003) who asserts that the main purpose of monetary policy is to manage expectations.
[43] Reference here is to the US Federal Reserve, the ECB, the Swiss National Bank and the Bank of Japan, all of which publish Inflation Reports or Monetary Policy Reports.
[44] See discussions in Woodford (2003), Howitt (2006 and 2012) and Freedman (1997, 1998 and 2009).
[45] However, the IT regime is a natural extension of intermediate targeting regimes that many central banks followed from 1975 to 1990, and that regime did get substantial support from academia, based on much theoretical and empirical research. The principles of intermediate targeting regimes provided infrastructure to implement the IT regime and therefore the decision to adopt this regime was not made haphazardly and was based on sound economic principles; nevertheless, a full and explicit theory that leads to and justifies the IT regime was formulated somewhat later.
[46] Svensson (1997b) develops a theory that justifies using the inflation forecast as the intermediate target.

when expected inflation declines, the bank lowers the rate; by adjusting the rate, the central bank attempts to adjust expected inflation to its target.[47]

In this regard it is important to note that in practice, already at the time that the four pioneering countries adopted the IT regime, the short run focus of policy was not just on inflation or expected inflation. In adjusting the interest rate they took into account some additional variables as well, in particular the proximity of the economy to full employment. In other words, from the outset the regime was managed in a manner termed later by Svensson (1997) as "flexible inflation targeting". The meaning of this regime is that if expected inflation deviates from target, efforts are made to offset the deviation gradually, with the speed of adjustment depending on the economy's distance from full employment and on the source of the shock to prices (supply or demand). Another element that began to gain importance in short-term interest rate adjustment, especially following the Global Financial Crisis of 2008, was financial stability.[48]

Charles Freedman (1994, 1997) notes that at the time of announcing the IT regime and of the quantitative targets, the relevant central banks did not expect credibility to be restored immediately just because of the announcement. They assessed that announcement of the regime along with actions commensurate with the announcement, that is, supporting the commitment with actions, would in time—when initial results came in—build credibility, which would lighten the burden further down the road. To wit, already in the early years of the regime in the four pioneering countries it transpired that the initial success worked to create credibility regarding the inflation target[49], which in turn lowered the real cost of attaining and preserving price stability.

2.4 The practice of intermediate targeting regimes and monetary theory (the canonical New Keynesian model)

As noted earlier, from the time that intermediate targets regimes were implemented, the (key policy) monetary interest rate is, was, and has been the primary instrument of monetary policy. Increasing the rate works to restrain economic activity and prices while decreasing the rate works to expand them. New Keynesian models that include an interest rate rule and

[47] It is worthwhile to note that expected inflation is not merely an indicator but, rather, a substantive part of the transmission mechanism; see below the discussion of the New Keynesian theory.
[48] The question of whether account should be taken of financial stability in adjusting the policy rate has raised a great deal of controversy in the literature. In practice, central banks do take the financial situation into account in adjusting the rate.
[49] Freedman (1997) notes that the credibility was expressed in the decline in inflation expectations as reflected in the financial markets and in the markets for goods and services and for labor.

describe such practice, were developed and assimilated in policy deliberation only in the second half of the 1990s.[50] Therefore, it is quite clear that the practice of managing monetary policy using the interest rate, including a policy of pursuing an implicit inflation target in those countries that did so, preceded theory. In addition, the IT regime also came before the development of models that describe or justify focusing on inflation (or inflation expectations) as an intermediate target.

It is worth noting two important differences in monetary theory as expressed in the canonical New Keynesian model that was developed in the 1990s vis-à-vis earlier models. The first difference is in the role of the quantity of money in the monetary transmission mechanism. The second is in the role of inflation expectations.

Regarding the quantity of money in the transmission mechanism, when policy was implemented using money as an intermediate target, it turned out that not a single monetary aggregate was suitable to serve as an anchor for prices; therefore, in practice, the use of any monetary aggregate as an intermediate target was discontinued. In theory, the quantity of money was retained as determining inflation (an anchor for prices). The transmission mechanism in the typical model of that period[51] was as follows: The interest rate influences the quantity of money, which influences aggregate demand, which influence costs, which influence prices. By way of contrast, in the New Keynesian Model, that was developed beginning in 1990, the quantity of money has no active role in the transmission mechanism. The interest rate affects aggregate demand directly (and these influence costs which then influence prices).[52]

The second difference is in the role of inflation expectations. In models constructed before 1990, today's expectations about future inflation affect future inflation. The idea is that these expectations affect wages as set in wage and other agreements that are concluded today, and thus affect the development of inflation in the future. This implies that there is a lag in the effect of monetary policy. Even if policy can affect future expectations, their effect on inflation will take place in the future. In contrast, in the New Keynesian approach today's

[50] For example, the basic canonical model in Clarida, Gali and Gertler (CGG) (1999).

[51] For a description of the change of thinking in models between these periods see McCallum (1980, 2002, 2005).

[52] A few words on the quantity of money (or any monetary aggregate) as an intermediate target: Cukierman (1995) developed an interesting theory that addressed the advantages and disadvantages of using money as an intermediate target vis-à-vis the use of an inflation target. Others also address this issue. However, according to the New Keynesian approach, as exposited for example by Woodford (2003), these do not exist as alternatives as there is not even viability to use the quantity of money as an intermediate target. The reason is that the transmission mechanism works directly from the interest rate, which is raised or lowered depending on inflation.

expectations of future inflation affect current inflation.[53] Therefore, the lags between policy steps and their effect on prices shorten relative to the former approaches, as to the extent that policy steps affect inflation expectations, they will affect current price setting immediately. Therefore, this type of transmission supports the effectiveness of an inflation-targeting regime since here inflation reacts quickly to policy.

These aspects emphasize the important advantage of using (expected) inflation as an intermediate target relative to using a monetary aggregate or the exchange rate. In order to set prices and sign agreements, the public needs an assessment of expected inflation. The IT regime supplies such an assessment to the public, and to the extent that it is credible, the public uses it and contributes to its realization. In contrast, in the traditional regime of intermediate targets there is a great deal of uncertainty about expected inflation, for two reasons: First, in the traditional intermediate target regime, it is not always clear what future inflation is intended. Second, even if the amount of intended inflation is made clear, there is no guarantee that achieving the intermediate target will be consistent with the expected inflation as conditioned on the intermediate target. Actually, severance of the connection between the intermediate target and inflation brought about the demise of the intermediate targeting regimes. Moreover, the existence of these two types of uncertainty apparently contributed from the outset to reducing the credibility of the regime and therefore impeded its effectiveness (inter alia, as the uncertainty created difficulty for the public to "collaborate", and thus to contribute to the realization of the forecast).

The prior regime, use of a monetary aggregate or the exchange rate as an intermediate target, in time became ineffective and most countries that had been using this regime moved to managing monetary policy without any announced intermediate target. Those countries continued to adjust the interest rate with the rate of inflation being one of the targets of monetary policy but this without announcing intermediate targets. The announcement of an IT regime in those countries that chose this regime, implying in effect a move to using (expected) inflation as the intermediate target, was intended to restore the benefits of using an intermediate target. Those are, mainly—the creation and preservation of credibility (thus easing the costs of reducing inflation) and an easing of political pressures from governments, the majority of which were not interested in paying the price of averting inflation increases.[54]

[53] See Woodford (2003). According to this approach, the producer cannot change his price at each moment but only in some of the periods. If prices are expected to rise in the future, those who can change prices in the current period do so with adjustment for the expected future price rises since they may not be able to change their price when the general price level rises.
[54] See Howitt (2006), Fischer (1994) and Freedman and Laxton (2009).

Thus, it may be asserted that according to the New Keynesian approach, the IT regime is a "natural" extension of intermediate targeting regimes with the following adjustments: (1) interest rate adjustments influence aggregate demand directly without "intermediation" of the quantity of money; (2) expected inflation is the "correct" intermediate target that replaces the quantity of money as the intermediate target (inflation forecast targeting).

It is important to emphasize that the IT regime places greater emphasis on the issue of credibility relative to intermediate targeting regimes and especially relative to countries that adopted an implicit inflation targeting policy. The emphasis on credibility is expressed by the announcement of the commitment to a target for inflation and by the importance placed on communicating with the public (issuing reports and transparency more generally).

2.5 Some lessons regarding necessary conditions to achieve and preserve price stability

The German and Swiss central banks succeeded in preserving price stability during the entire period from 1975 until the establishment of the ECB (1999) without transitioning to an IT regime. In contrast, other central banks succeeded in attaining and preserving price stability only after they switched to an IT regime. From this it may be inferred that an IT regime is not a necessary condition for attaining and preserving price stability. However, as has been shown in the previous subsections, adopting this monetary policy regime is likely to greatly facilitate and reduce the costs of achieving the goal of price stability.

We will now try to summarize the essential ingredients for achieving and preserving sustained price stability, as emerges from the discussion in the previous subsections:

- Establishing the goal of price stability and deciding to strive to attain it
- Assigning the task of achieving the goal to the central bank
- Providing tools for the central bank and independence in applying them
- Persistently striving to attain price stability

In order to facilitate the attainment of price stability in terms of reducing the time needed to reach the goal and reducing the real disruptions involved, it is important to strengthen the credibility regarding the intent and ability to act. This is by way of adopting the elements of the IT regime, including;

- Announcing a price stability goal and a commitment to intermediate targets in terms of inflation
- Improving communication with the public (transparency) by producing reports (accountability)

These lessons will serve as benchmarks that will assist in analyzing and understanding the development of monetary policy and inflation in Israel during the period following the Economic Stabilization Program (ESP). As will be seen, following the ESP (1985), another 15 years passed until most of the conditions were in place and price stability was attained.

3. Adoption of the Inflation Targeting Regime in Israel

3.1 Preface

In December 1991, Israel announced a change in its exchange rate regime—a transition from managing the exchange rate within a horizontal target zone to an upward sloping target zone over time. In order to determine a value for the slope an assessment of the time path of domestic inflation was required.[55] The Governor of the Bank of Israel at the time, Prof. Jacob Frenkel, decided to take this opportunity to announce, for the first time in Israel, an inflation target, for the year 1992. This was inspired by the adoption of inflation targeting regimes at the time in two countries, New Zealand and Canada, and in a limited way by Chile. However, in contrast to the adoption of the inflation targeting regime in the four pioneer countries, its adoption in Israel was a long and drawn out process.

As detailed in the previous section, the inflation targeting regime as adopted in the four pioneer countries included a list of policy measures including the announcement of a quantitative target for the time path of a well-defined price index, an explicit time frame for attaining the target, transparency principles for the central bank, reference to the possibility of other policy targets, independence of the central bank in operating its instruments to achieve the target and an understanding that there would not be fiscal dominance. Each of the pioneer countries adopted in full this package of policy measures, to be termed in what follows as "full-fledged inflation targeting", as soon as the decision to adopt the regime was taken. The background for adopting this regime, with very similar features, was a set of similar relevant initial conditions in these countries, in spite of considerable differences in certain substantial economic, political and societal features. Specifically, in each of these countries, inflation was at single digits at the time of adopting IT, but policy decision makers were concerned about a worsening of the inflation environment, in each country due to its own specific reason. In addition, the previous regime of intermediate targets (quantity of money or the exchange rate) to provide a nominal anchor had broken down in each of these

[55] In order to avoid a situation of continuing appreciation or depreciation of the local currency, the slope was determined as the difference between expected domestic and foreign inflation.

countries. Furthermore, based on the US experience of disinflation in the early 1980s, decision-makers in advanced economies, generally, and in the four pioneer countries, in particular, believed that the monetary policy interest rate has a decisive influence on inflation. However, they sought a means to minimize the requisite monetary contraction for achieving price stability and the real costs associated with such contraction (such as loss of real output and a rise in unemployment). In light of theoretical results that were developed since the 1970s[56], there was an understanding of the importance of the public's inflation expectations as a determinant of actual inflation, and for this reason importance was attached to the credibility the public attaches to the commitment of decision-makers to maintain price stability. Therefore, the decision-makers placed considerable weight on measures to build such credibility.

In Israel, in contrast, the adoption of the IT regime was a long process that lasted over a decade.[57] The announcement of an inflation target in December 1991, six years after the ESP of 1985, was made when actual inflation was still at double-digit levels, far from the levels in advanced economies and from price stability. The announcement of the inflation target at that time was, as noted, one element of a program to revise the exchange rate management regime, the objective of which was to dampen the magnitude of international capital flows and to preserve, but not improve upon (at least not at first), the achievements of the ESP in the area of inflation. Indeed, the first announced inflation target was at a double-digit level (14–15 percent), effectively reflecting acceptance of the existing inflation environment. In addition, policy did not begin to use communication with the public in order to bolster credibility, as the four pioneer countries had done. Albeit, in the following year when the inflation target for 1993 was announced, there was mention of the intention to reduce inflation gradually, when the opportunity would arise, but this announcement was not accompanied by a well-formulated and detailed program; it was quite clear that key elements of the regime that had been adopted in the pioneer countries were missing. As will be shown below, Israel added these elements gradually in the following years.

In the remainder of this section we will describe the developments in monetary policy and in monetary analysis in Israel in the period immediately following the ESP of 1985 until the announcement by the Government and the Bank of Israel in August 2000 of a multiyear inflation target, with a three-year time path from about 4 percent to an indefinitely lived

[56] Kydland and Prescott (1977), Barro and Gordon (1983), Rogoff (1985).
[57] As occurred in other emerging market economies, such as Chile. Svensson (2010) p. 7, notes that the adoption of the IT regime in most emerging market economies in which this regime was in fact adopted was very gradual.

target range of 1 to 3 percent, a target defined as price stability. We will attempt to understand the large differences between adoption of the IT regime in the pioneer countries and the process in Israel—the transition from an exchange rate-based monetary regime to full-fledged inflation targeting.

The period from the ESP until adoption of full-fledged inflation targeting can be divided into three subperiods, as follows: (a) from the ESP until the adoption of the crawling exchange-rate target zone and the announcement of an inflation target in December 1991, (b) from the beginning of 1992 until September 1994, a period that can be described as non-committal to the inflation target, and (c) from September 1994 to August 2000, which began with a large deviation above the inflation target and Government meetings where it was decided to support the Bank of Israel's efforts to return inflation to target, continuing with gradual adoption of the additional features of the inflation targeting regime until completion of its adoption in August 2000.[58]

3.2 What preceded the IT regime? Economic policy from the ESP until the first announcement of an inflation target

A key building block of 1985's ESP was the use of the exchange rate as the key nominal anchor for prices. From the ESP itself, and for the first few years following it, policy attempted to stabilize the exchange rate. The assessment was that stabilizing the exchange rate would ultimately lead to price stability, namely low inflation at advanced economy levels. The problem was that inflation was not arrested and, as a consequence of stabilizing the exchange rate, continued real appreciation was generated. The accumulation of inflation differentials vis-à-vis the rest of the world led to expected devaluation, and with it, capital outflows that added to the expected devaluation. As a result, policy makers were forced to carry out devaluations from time to time. Each devaluation compensated only partly for the real appreciation and temporarily halted the capital outflows, but concomitantly fed further inflation, which brought about yet another continuing cycle of capital outflows and devaluation.

The policy, then, was an attempt to stabilize prices by stabilizing the exchange rate, with the interest rate serving as a tool to dampen capital flows. Subsequently, when the inflation did not quickly fall to the level in advanced economies, the policy makers hoped that it would

[58] Table 1 of the Appendix contains a number of key data series concerning the period under study. Figure 1 of the Appendix presents quarterly data on 12-month prior inflation and the upper and lower bounds of the inflation target range.

decline gradually in light of fiscal policy that continued to be restrictive and exchange rate adjustments that compensated only partially for inflation differentials. However, inflation did not fall further and the public's inflation expectations remained high. From 1986 to 1991, the rate of inflation fluctuated between 16 and 21 percent, compared with 2 to 5 percent in advanced economies (G7); the frequent adjustments of the exchange rate generated an annual average devaluation vis-à-vis the USD of 8 percent.

Regarding this period, it may be asked: Why did inflation continue, and why was there no more concerted attempts to stop it? The stated objective of the ESP of July 1985 was to reduce inflation from 15 to 20 percent per month to price stability. The ESP also included the objective of improving the balance of payments deficit, and that stabilizing prices would provide the basis for renewal of real growth. Within the ESP, it was decided to take drastic measures to influence the public's expectations and to enhance confidence that the program would succeed. These measures included a drastic contraction of the government budget deficit and determination of nominal anchors. The exchange rate was regarded as the key anchor for prices with money and credit aggregates, the nominal wage and government controlled prices being supporting anchors. The program was geared toward a general freeze of the entire nominal system, as far as possible. Taking account of inertial and very short-term effects, the program's formulators judged that inflation would decline initially to a monthly rate of 2–3 percent, and after a number of months, to lower rates. Indeed, as a result of the ESP, inflation did fall drastically but it settled down to an average annual rate of 18 percent.

Regarding the first two full calendar years after the ESP—1986 and 1987—a number of factors that maintained inflation above Western levels can be identified:

(a) The linkage to the US dollar combined with the weakening of the dollar vis-à-vis other currencies. As part of the ESP, the exchange rate was fixed with respect to the dollar, and during the first twelve months after the ESP, the dollar depreciated sharply vis-à-vis the currencies of other countries with which Israel trades. As a result, the effective exchange rate for determining the prices of Israel's tradable goods depreciated; this generated inflation of tradable goods, followed by inflation of nontradables.[59] When the

[59] However, it must be remembered that stabilizing the dollar exchange rate had an advantage over stabilizing the effective exchange rate of a currency basket since the dollar is a well-recognized currency by the public and linkages to foreign exchange during the high inflation period were to the dollar, not to the exchange rate of a currency basket. Therefore, linking to the dollar expressed clarity and transparency on the part of policy-makers and contributed greatly to the credibility of the program. It is far from clear that the ESP would have achieved as much as it did if, at the outset, the exchange rate had been fixed with respect to a currency basket.

policy makers discerned that the program succeeded at halting the extremely high inflation but that linkage to the dollar still left inflation too high, they switched, in August 1986, to linkage to the exchange rate of a currency basket.

(b) Following a significant wage cut as part of the ESP, wages resumed an increase at a pace exceeding plans, partly due to sectoral and plant-specific wage agreements that had been set even before the ESP and that were not able to be adjusted to the situation of reduced inflation.[60]

(c) Another difficult factor in halting inflation in the first few years was the need to adjust (upwards) government-controlled prices.

At first, it was thought that the influence of the above factors reflects the synchronization of anchors and that prices would eventually stabilize. However, when it became clear later that excess inflation was continuing, the economy was facing other problems that were more pressing and important than the struggle with inflation. These problems included a recession in 1987 and 1988 followed by the need to absorb the massive wave of immigration from the Soviet Union, starting in 1989. In the first two years following the ESP, the economy was in a significant economic boom, apparently based on the realization that the stabilization, and the removal of the threat of total macroeconomic collapse, constituted an increase in the public's permanent income, generating increased demand for private consumption. This real sector environment enabled wage and price increases beyond the program's targets. The expectations of policy makers (as presented in the Bank of Israel Annual Reports of those years) was that fixing the exchange rate would lead to inflation converging gradually to Western levels. However, against the background of rising aggregate demand and wages, the attempt to stabilize the exchange rate was not credible in the eyes of the public. Instead, the real appreciation led to capital outflows, which, in turn, required the authorities to adjust the exchange rate.

In the middle of 1987, economic activity began to slow and unemployment began to rise.[61] In Bank of Israel Annual Reports written in "real time" (1988 and 1989), it is explicitly

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Furthermore, the effective depreciation that fed inflation also had the positive effect of preserving the growth of exports and thus partly alleviated the contractionary effects of the stabilization program.

[60]The difficulty of undoing long-term wage agreements in the context of a stabilization program, that reforms the monetary regime, is a well-known problem.

[61] The recession can be attributed to the combination of three factors: (a) wage increases in excess of those planned as partial compensation for the cuts that accompanied the ESP and even exceeded the increases called for by agreements that had been signed prior to the ESP; (b) the "natural" conclusion of the economic boom caused by the success of the ESP; and (c) structural measures that had been implemented in order to improve

stated that it was decided to give preference to promoting employment and exports at the expense of further reductions of inflation. That is, maintaining inflation at the low two-digit level of that time was the conscious choice of policy makers. During 1989, the wave of immigration from the Soviet Union began and a new preference-ordering was created, with immigrant absorption at the top of the list for understandable reasons. In the first two years of the immigration, its main macroeconomic impact was to expand aggregate demand to enable successful initial absorption of the immigrants. This worked to increase inflation, or at least prevent its reduction. In contrast, during 1991 immigrants began to enter the labor force in large numbers, generating strong pressure for wage decreases. That is, immigration then began to influence inflation in the expected direction, as a positive supply shock. Indeed, as will be described below, in 1992 there was a substantial decline of actual inflation to 9.4 percent.

Prof. Michael Bruno, who was among the architects of the ESP and Governor of the Bank of Israel from 1986 to 1991, describes developments at that time: “The ESP did indeed bring about a drastic drop in inflation but that, in and of itself, did not correct the other ills of the economy that had solidified as a result of the long period of high inflation” (Bruno, 1993). The ESP was preceded by twelve years of high inflation during which time systems were developed to deal with the difficulties that the inflation generated, and these systems remained after the stabilization, impeding the attainment of price stability. One of these ills is a mentality of "inflationary thinking", whereby the public became accustomed to automatic accommodation of the monetary aggregates, wages and the exchange rate. In addition, they became accustomed to automatic bailouts of failing firms, a policy that impedes disinflation, from both the supply side, by supporting inefficiency, and from the demand side, by imposing a fiscal burden. Stabilizing the exchange rate brought about real depreciation, accompanied by high real interest rates, and, in parallel, it was necessary to maintain low budget deficits.

The ongoing currency depreciation generated expected devaluation and increased purchases of foreign currency by the public. In order to limit these purchases, the Bank of Israel had to increase the interest rate. However, there was concern that overly drastic increases in the interest rate would hurt real activity, so occasional devaluations were needed. The policy makers' concept was to try to devalue as infrequently as possible, by as little as possible, and by decreasing amounts up to the attainment of price stability. The cost of

economic efficiency such as elimination of the Lavi (fighter aircraft) project and refraining from bailing out failing firms.

attaining stability by this route is continuing real appreciation, maintaining high interest rates and increased unemployment.

According to Bruno, implementation of this strategy was impeded by constant pressure from the Ministry of Finance to devalue the local currency. In particular, Bruno (1993, p. 135) asserts that there was a consensus among the Bank of Israel, the Ministry of Finance, and academics about the need to maintain low fiscal deficits. However, on the question of the nominal anchors there was no consensus. At the outset, the Bank of Israel was alone on the issue of anchoring the exchange rate, while the Ministry of Finance, under pressure from industrialists, called for devaluation. Some academics also did not support stabilizing the exchange rate. The public was aware of these pressures and acted accordingly, exacerbating expectations of devaluation and capital outflows, making it difficult to slow down the pace of devaluation to attain price stability.

An additional complicating factor from the Bank of Israel's viewpoint was that decisions about the exchange rate required coordination with the Ministry of Finance. Generally, the Ministry of Finance pressured for devaluation, and a pattern developed of devaluation every few months. There was, however, one episode—from March 1987 until December 1988—when the Ministry of Finance, due to political considerations, refused to authorize a devaluation and delayed approval until after elections.[62] A reality where the main instrument of the central bank to attain price stability is the exchange rate but in order to employ (or not employ) this instrument agreement of the Ministry of Finance is needed is very difficult for monetary policy. With this background, it is easy to understand the Bank of Israel's demand to switch to a target zone, then to expand it, and later to move to an upwardly crawling zone.[63]

In light of the limit on using the exchange rate as a policy tool, the question arises as to why the Bank of Israel did not use the interest rate tool more actively, particularly as the interest rate is the main instrument of monetary policy in most countries, including the four inflation targeting pioneers, of which two (New Zealand and Sweden) are small, open economies, like Israel. The answer is that when the exchange rate is stabilized, the effectiveness of using the interest rate to curtail inflation is limited. In order for there to be full effectiveness of interest rate policy, the exchange rate must be allowed to fluctuate, and

[62] According to Bruno, in spite of all sorts of interference, the method did work and in 1992 inflation fell to the single-digit level, 9 percent. That is, Bruno attributes the decline of inflation to this method and not just to the supply shock.

[63] At the beginning of 1988 there was a devaluation and, in parallel, a target zone of +/- 3 percent was adopted; in March 1990 the zone was widened to +/- 5 percent.

there was concern among policy makers and their advisors that freeing the exchange rate might lead to the loss of the nominal anchor and/or damage to exports.[64] As we shall see below, this continued to be a concern in the Ministry of Finance and some of the Bank of Israel economists in the ensuing years. In addition, at that time, some economists world-wide and some of the senior economists at the Bank of Israel, maintained the view that the interest rate is not a sufficiently effective instrument to attain and maintain price stability (even with a flexible exchange rate). Nevertheless, as will be seen below, during the 1990s the Bank of Israel changed its conceptual outlook. That is, use of the interest rate was gradually increased, along with increasing flexibility of the exchange rate, and the high effectiveness of the interest rate as an instrument for stabilizing prices was demonstrated in Israel as well.

A further reason—in our opinion the main one—for the continuing "excess" inflation from 1986 to 1991 was that the allocation of tasks between the Government and the Bank of Israel was not made clear—which entity is responsible for attaining the price stability objective? As mentioned, the conceptual framework adopted both by the Ministry of Finance and by the Bank of Israel was that the exchange rate is the main instrument for stabilizing prices and that the Government (via its representative, the Ministry of Finance) has effective authority for decisions regarding this instrument. Therefore, as far as the Bank of Israel was concerned—at least part of the time—the Government was regarded as having responsibility for attaining the price stability objective. The role of the Bank of Israel was to use the interest rate to support the Government's economic objectives, which included, in addition to price stability, objectives for economic activity in general, for employment and for exports.[65]

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[64] In spite of the difficulty to lower inflation to Western levels and in spite of the difficulty to establish the exchange rate as an anchor, at that time both the Ministry of Finance and some Bank of Israel economists adhered to the notion that it is impossible to stabilize prices using only the interest rate even if the exchange rate is allowed to fluctuate.

[65] Thus, for example in the Bank of Israel Annual Report for 1988 in the survey of exchange rate policy (ch. 3, p. 57) :

In spite of the fact that the government held the exchange rate stable until the last days of the year, the public was not convinced that it would adhere to this policy…These expectations apparently rested on the assumption that the government would not be prepared to pay a high price, in unemployment and damage to exports, for further progress in curbing inflation.

And continuing on p. 58:

The setting of the devaluation at a rate lower than the cumulative erosion of the real exchange rate signalled to the public that the government intended to continue using the exchange rate as an instrument for curbing inflation, with only a partial accommodation to the actual increases of prices and costs.

And on p. 66:

In July 1985, the government adopted the exchange rate as the principal instrument of price stabilization, but it did not commit itself unequivocally to refrain from adjusting the exchange rate.

From the above citations it is clear that in the view of the authors of the Annual Report, the government did indeed determine the exchange rate and it decided and acted so as to attain or not to attain the price stability objective.

Today we know that in order to ensure attainment of price stability there must be an institution (usually the central bank) that has this as its objective and responsibility—along with the authority, the tools and a workable program to achieve this objective. These conditions did not exist in the period between 1986 and 1991. As will be described below, beginning in 1991 at the start of Governor Frenkel's term of office, a process began that lasted a decade, whereby the Bank of Israel gradually obtained the responsibility and the tools to achieve inflation targets and, in parallel, formulated a work program and a monetary framework to achieve the objective of price stability. As regards the framework, the principal change was the transition (too gradual in our view) from relying on the exchange rate as an anchor for prices to permitting the exchange rate to fluctuate and using the interest rate as the main instrument for anchoring prices.

Regarding the 1986–91 period, it is difficult to know why inflation wound up at the particular range of 16 to 21 percent but it appears that this was a tolerable deviation from the level in Western countries. It is possible that if inflation had settled at a higher rate, such as 30 to 50 percent, the Government and the Bank of Israel would have collaborated and worked more determinedly to arrive at price stability; the actual level of inflation that emerged was low enough to live with for many years in spite of the gap vis-à-vis Western levels.

In summary: During the six years following the ESP, an inflation "step" was established of between 16 and 21 percent. After a year and a half that were needed to recognize this, policy makers chose to accept this rate, based apparently on the fear of worsening the damage to economic activity and employment in 1988 and 1989 and on the desire to encourage the immigrant absorption process that began in the second half of 1989. Experience in this period shows that the exchange rate is an effective nominal anchor in drastic disinflation programs but an ineffective nominal anchor at lower levels of inflation; however, policy makers and their advisors did not recognize this important distinction in real time.

3.3 The process of adopting the IT regime in Israel

In this subsection, we describe the process of adopting the IT regime in Israel that lasted for a decade. We divide this period into two subperiods. The first is from the end of 1991 when Governor Frenkel announced an inflation target for 1992 until September 1994, when actual inflation was well above target and the Government and the Bank of Israel were forced to

decide whether to persist in attaining the target or to relinquish it. The second subperiod is from September 1994 until August 2000, when a permanent inflation target range of 1 to 3 percent was announced to start in 2003. The second subperiod was characterized by an ongoing struggle by the Bank of Israel to move to a full-fledged inflation targeting regime and to obtain the tools needed to achieve it. The transition required a change of concept in the Bank of Israel regarding the roles of the exchange rate and the interest rate in restraining inflation, assigning to the Bank of Israel the task of achieving the target and allowing the Bank of Israel flexibility in implementing its tools to attain the target. Now we will describe this process along with the reasons for its being so drawn out.[66]

3.3.1 The first stage – End 1991 to September 1994

At the end of 1991, Israel announced an inflation target for the first time but, as mentioned, not in the context of adopting the inflation targeting regime of the type adopted by a number of Western countries at about the same time, but as a secondary component of a change in the exchange rate regime, the objective of which was to mitigate international capital flows. As noted earlier, the change in the exchange rate regime from a horizontal target zone to an upwardly crawling one required determination of the slope of the new target zone based on an assessment of the inflation differential between Israel and its main trading partners. This in turn required an assessment of domestic inflation, which was termed an "inflation target".[67] Thus, the inflation target was not set at the level of inflation in advanced

[66] The lengthy transition from double-digit inflation following the ESP to price stability rested on the IT regime but was accompanied by a large number of additional reforms in the monetary-finance area, most of which greatly assisted in the attainment of price stability and some may even have been required to attain it. These reforms included: (a) increased flexibility of the exchange rate regime; (b) removal of foreign exchange controls; (c) moving public debt management from a regulatory/coercive basis—that gives advantages in many respects to public debt over private debt—to a free market environment with no such advantages; (d) reduction of the direct financial intermediation roles of the government and elimination of regulatory restrictions that had been used to attain these roles; (e) basing financial regulation on the objectives of promoting financial stability and increasing competition and fairness to clients. The details of these reforms are beyond the scope of this paper and we will just mention two main features: (a) there was a sharp transition from the effective nationalization that characterized the Israeli financial system from the British mandate period before establishment of the State until the end of the 1980s to management of the financial system by the market, with all of its problems (high concentration, conflicts of interest, etc.); (b) there was a transition from highly concentrated management of the entire economic policy by the Ministry of Finance, with other governmental agencies advising in their areas but subservient to the Ministry of Finance to a somewhat more dispersed system, especially the transfer of responsibility for price stability to the Bank of Israel, as an independent public agency. The various reforms are described and analyzed in a broad literature and we will mention here two books by former Bank of Israel Governor Dr. David Klein (2009, 2014) that describe these reforms by one who contributed greatly to their design and successful implementation.

[67] The "inflation target" for 1992 was set at 14–15 percent while inflation in the main trading partners was assessed at 3 percent and at the time of the reform the existing target zone was elevated by 3 percent; therefore, the slope of the upwardly crawling target zone was set at 9 percent.

economies but rather at a level which, in the assessment of policy makers, was consistent with the economic conditions in Israel at the time of the reform, including the level of the public's short-term inflation expectations. At the time of the announcement, there was no pronouncement that the initial inflation target was an intermediate stage on the way to price stability, as in advanced economies that fully adopted the IT regime. In practice, Israel began to operate with an inflation target in the sort of regime that later become known as "inflation targeting lite". A similar policy was initiated slightly before Israel in another emerging market economy, Chile. In both countries, although an inflation target was announced, this did not reflect a commitment to the "full-fledged inflation targeting" regime. In fact, in Israel there was obfuscation about the term "target"; it was not clarified that there is a willingness to take steps to attain the target in the event of a deviation from it, so the public had difficulty in distinguishing between the term "target" and the term "forecast". Also, the announcement in Israel was not supported by additional credibility building measures as in the four countries that adopted the IT regime at that time or as this regime developed in the world during the next decade. Furthermore, the target was determined in conjunction with the Ministry of Finance but there was no decision as to who is responsible for attaining it. This, of course, in contrast with the pioneer countries, where the central bank was assigned this responsibility with suitable tools.

As evidence that inflation was not the main objective of the policy change at the end of 1991 we note that in chapter 1 of the Bank of Israel Annual Report for 1991, there is no mention at all of the concept "inflation target". This report was published five months after the announcement about the change in the exchange rate regime and about the inflation target. The description of the policy move in the report centered around the exchange rate and capital flows only, that is, the change was interpreted by the report's authors as a means of correcting the problem of an inability to maintain a stable exchange rate due to developments following the ESP that were unforeseen when it was adopted. We also note that the change in the exchange rate regime did not reflect any change in the thinking about the transmission mechanism of monetary policy or about the proper way of managing monetary policy.[68] In contrast, the transition to the IT regime in other countries that did so at that time was preceded by extensive preparatory work including analysis of the importance of a nominal anchor and of the role of credibility in mitigating the costs of monetary restraint when required. Groundwork was also laid regarding public opinion about the policy change

[68] That is, the Bank of Israel continued to regard the exchange rate as the nominal anchor.

and its significance and it was clarified that initial targets were intermediate stages toward price stability along with an operational program to attain it. New Zealand was the first country that announced an inflation target. The transition there included a fundamental change in monetary doctrine, as the monetarist approach was adopted.[69] The transition to the IT regime in New Zealand was also preceded by legislating a new central bank law (1989), which, while not detailing the new regime, established price stability as the primary objective of central bank policy and provided independence in implementing it. Obviously, the Bank of Israel Annual Report for 1991 has no hint of this sort of transition, neither in the first chapter nor anywhere else in the report.

In subsequent years, as well, 1992 and 1993, there was no substantive discussion of the inflation target. In 1992 and 1993, inflation fell, reaching 9.4 and 11.2 percent, respectively, after an average of 18.5 percent in the previous six years. Nevertheless, the inflation target was mentioned only cursorily in the Annual Reports for those years and the discussion of the policy change adopted at the end of 1991 concerned details of the change in exchange rate management, including extensive discussion of the pass-through from the exchange rate to prices. The term "nominal anchor" was hardly mentioned and if at all, only with respect to the exchange rate and not in connection with the inflation target. In the Bank of Israel Annual Reports of those years, the drop in inflation was described as a policy success and a "step" reduction in the rate of inflation that is likely to persist. However, this success was not attributed to the inflation target, and rightly so. Regarding the decline in inflation in those years, two points are worth noting: (1) The achievement was described as a return of inflation to the level of the early 1970s, but this was still far in excess of the ESP's objective—price stability or, at least, the advanced-economy level of inflation; (2) the change in inflation was the result of a number of real sector shocks, especially the large increase in labor supply due to the massive influx of immigrants into the labor market, but there was not sufficient recognition—neither in implementing policy nor in the analysis in reports—that the effects of such shocks on inflation are temporary and do not, by themselves, generate sustained disinflation.

It is worth noting that the transition to the upward-crawling target zone and the announcement of the inflation target were the initiative of Governor Frenkel, while the Research Department of the Bank of Israel viewed this move with reservations.[70] In Chapter 3 of the 1991 Bank of Israel Annual Report, there is a survey of the exchange rate regime. It

[69] See Svensson (2010).
[70] For detail see Klein (2009, Hebrew only).

claims in regard to the upwardly sloping target zone that its advantage is to reduce uncertainty about the exchange rate that may dampen the volatility of international capital flows, but that its main drawback is that it may impede further disinflation at times when that is supported by economic conditions. That is, there was concern that the new regime indicates acceptance of continued inflationary differentials for a considerable interim period, i.e., placing in abeyance the desire to attain advanced economy inflation levels over the current policy planning horizon. In addition, regarding the essence of announcing an inflation target, there was concern that it constitutes a gamble, as policy cannot ensure hitting a given target, and target misses, that are sure to occur eventually, will cause a loss of credibility.

However, we point out three important positive aspects of the new exchange rate policy that were not mentioned in the Annual Reports, written by the Research Department. First, it increased the Bank of Israel's independence in managing the exchange rate; at the outset the annual increase of the exchange rate was set with a tolerance range of +/- 5 percent, implying that during the year the Ministry of Finance did not intervene in setting the exchange rate.[71] The path of the mid-point exchange rate was set in advance and the Bank of Israel could influence the rate within the zone via the interest rate.[72] This was, in essence, the first step of a process that would continue in coming years, of rescinding the Ministry of Finance's dominance in exchange rate policy. Second, the very announcement of an inflation target increased the emphasis on inflation within the economic policy agenda. The announcement of an inflation target does generate some measure of commitment by the economic authorities, and deviations from target require an explanation. Third, in connection with the previous two points, the gradual freeing up of the Ministry of Finance's dominance of exchange rate policy marked the signaling of the Bank of Israel as the institution responsible for attainment of the inflation target. That is, the very shift to the upwardly crawling exchange rate band along with the announcement of the inflation target planted the first seeds in the lengthy process by which the Bank of Israel gradually obtained responsibility for attaining the inflation target, along with independence in applying tools to do so.

[71] In practice, the Ministry of Finance did continue to try to intervene in managing the exchange rate within the target zone. See Klein (2009, Hebrew only

[72] Of course, concurrence of the Ministry of Finance was still required to set the slope of the target zone's crawl, for any discrete change in the mid-point rate and for any change in the boundaries of the zone.

In 1992, as mentioned, the inflation rate declined to 9.4 percent, well below the 14–15 percent target. Commensurately, in November 1992, the inflation target for 1993 was set at 11.2 percent, slightly above the target, but in the first half of the year it appeared that inflation had moderated and in July the inflation target for 1994 was set at 8 percent and the slope was reduced further to 6 percent. In 1992 and 1993, the inflation target reflected existing economic forces so that policy makers assessed that it would be possible to attain the targets without the need for monetary restraint. It turned out that in those years the Bank of Israel implemented considerable monetary accommodation. It was assumed that the slope of the target zone would suffice to attain the inflation target. At the beginning of 1994, inflation remained at the low "step" of the previous two years, but in the second half of that year inflation increased markedly and for the full year reached the level of 14.5 percent, well in excess of the inflation target of 8 percent. Such a large deviation forced the policy makers, not just the Bank of Israel but the Government as well, to come to grips with the full impact of the meaning of the term "target"—something that at times requires active measures to attain, at times at non-negligible cost. That is, the Government had to address the question of whether to allow the Bank of Israel to take contractionary measures, at the risk of endangering real activity and exports, or to abandon the inflation target at the risk of generating a "step" increase in inflation.

3.3.2 The second stage – September 1994 to August 2000

a. Developments

The considerable deviation of inflation from target in 1994 required the policy makers to decide whether to accommodate the jump in inflation to 14.5 percent and risk the loss of credibility and of the gains that had been made on the inflation front or, alternatively, whether to act with determination to reduce inflation to the 1994 target.

In September 1994, the Government held three meetings on the topic of inflation, after which it granted the Bank of Israel support to contain inflation and it set the inflation target for 1995 at 8 to 11 percent; this when inflation in 1994 was 14.5 percent. The target set for 1995 was, admittedly, far from price stability and from advanced economy inflation but it clearly indicated the Government's determination to avoid returning to a significant inflationary process. Immediately after the Government took this decision, the Bank of Israel implemented strong monetary contraction by raising the interest rate on monetary loans (central bank loans) to commercial banks (the key policy rate) to 17.3 percent in the fourth quarter of 1994, following 11.5 percent in the second quarter of 1994 and 9.8 percent in the

fourth quarter of 1993. During 1995, the Bank of Israel maintained the high level of interest rates, which generated pressure for local currency appreciation. In order to keep the exchange rate within the bounds of the target zone, the Bank of Israel was forced to purchase foreign currency. To limit the need to defend the lower (appreciated) bound of the target zone, the Government and the Bank of Israel decided to expand the zone to +/- 7 percent (from +/- 5 percent). That is, concomitant with the monetary contraction to return inflation to target, an additional measure was implemented—increasing the flexibility of exchange rate management thus increasing the effectiveness of interest rate policy to restrain inflation. The monetary contraction indeed succeeded in halting the increase of inflation, which fell to 8.1 percent in 1995, within the target range of 8–11 percent.

As regards 1996, the Government decided to suffice with the achievement of arresting the rise of inflation and set a target of 8 to 10 percent for 1996—that is, a decline of one percent of the upper bound of the target range. During 1996, the Bank of Israel maintained a high level of interest rates, which was expressed in the second half of the year by the exchange rate being flush against the appreciated bound of the target zone. This forced the Bank of Israel to acquire large amounts of foreign exchange again in order to defend the target zone. Inflation in 1996 was 10.6 percent, close to the target range of 8–10 percent.

Within a short time following the decision in September 1994 to increase the interest rate, it became clear that the decision to fight inflation's deviations from target constituted a radical change in attitude toward the inflation process, first on the part of policy makers, and following them, the general public: The inflation target was understood as a benchmark that requires measures to attain and the interest rate became regarded as the tool to do so. This was expressed both in the way the Bank of Israel set the interest rate tool and in its communication with the public about aspiration to reach advanced economy inflation levels within a relatively short time span. As opposed to previous years, the 1995 Bank of Israel Annual Report included a substantive discussion of the importance of the inflation target in influencing inflation expectations, with wording that typified countries with the full-fledged IT regime. That is, for the first time it may be discerned that the response to the inflation deviation in 1994 reflected the intention to take the inflation target seriously. In spite of this, the policy that was implemented still lacked some important components of a full-fledged IT regime. In particular, a clear expression of the primacy of the inflation target for the management of monetary policy was lacking, as was a well-defined time path for the inflation target that would reach Western levels within a reasonable, stated time frame. In addition there was no ongoing use of communication with the public to increase credibility,

such as publication of an Inflation Report or establishing formal explanations by the Bank of Israel to the Government and the public in the event of future inflation target misses.

The success in arresting the increase in inflation, the appreciation of the exchange rate and the drop in inflation expectations following the interest rate increases stimulated the confidence of the policy makers and the public in general in the effectiveness of the interest rate as a tool to combat inflation. In light of these developments, in the summer of 1996, the Bank of Israel proposed to the Government a multiyear program, the main feature of which was the announcement of a declining time path of inflation targets to reach inflation in advanced economies by 2001. The Government did not adopt the full proposal, but it did adopt another significant step toward adopting a full-fledged IT regime, inter alia with the following measures: (a) set the target for 1997 at 7–10 percent; (b) no specific targets were set for the years 1998 to 2000 but it was stipulated that the targets for each of those years would be set by July of the preceding year, not toward the end of the year, and thus the target would be a guideline for the government budget, for the public and for monetary policy; (c) the target for 2001 would be as accepted in the OECD.[73] Though it may be said that by these decisions the Government went a considerable way in moving toward adoption of a full-fledged IT regime, it also maintained the impediment towards attaining price stability by abstaining from granting the Bank of Israel the freedom to work constantly to hit the inflation target; this because of the maintenance of the exchange rate target zone.

The monetary restraint continued in 1997 as well, and the first half of the year had substantial capital inflow that generated pressure for local currency appreciation. Throughout this period, the exchange rate was nearly at the appreciated bound of its target zone, so the Bank of Israel was forced to purchase unprecedented amounts of foreign exchange.[74] The situation required some decision. The Bank of Israel requested an expansion of the exchange rate target zone to halt the capital inflow and to increase the effectiveness of the interest rate in restraining inflation. The Ministry of Finance and some of the economists in the Bank of Israel Research Department opposed expanding the target zone based on concern about losing a nominal anchor (from their viewpoint) and/or concern about real appreciation that would adversely affect exports.[75] The alternative to expanding the

[73]At that time, average inflation in OECD countries was 4.5 percent but it fell considerably afterwards.

[74] The Bank of Israel Annual Reports for those years describe extensively the difficulties, the costs and the risks of the need to purchase large amounts of foreign currency. In order to assess the magnitude of the forex purchases we note that at the end of 1994, forex reserves of the Bank of Israel were approximately $8 billion and in the years 1995, 1996 and 1997, the Bank of Israel was forced to purchase $ 1.2, 3.5 and 9.3 billion, respectively.

[75] See, for example, Ben Bassat (1995) and the Bank of Israel Annual Report for 1997.

target zone was to depreciate the exchange rate by lowering the interest rate but that would be at the cost of abandoning the efforts to attain the inflation targets. In June 1997, the Government adopted the Bank of Israel's proposal to expand the exchange rate target zone by increasing the depreciated (upper) bound by 15 percent and by decreasing the slope of the appreciated (lower) bound from 6 percent to 4 percent. Following this, capital inflows ceased and the Bank of Israel was released from the need to intervene in the forex market in order to defend the target zone (from mid-1997 until the Global Financial Crisis in 2008 the Bank of Israel did not intervene in the forex market).[76] Thereafter, in order to avoid the possibility of the Bank of Israel having to defend the target zone again, the Government reduced the slope of the appreciated bound even more, to 2 percent in August 1998 and to zero near the end of 2001.[77]

In 1997, inflation declined relative to previous years and hit 7 percent, the bottom of the target range, 7–10 percent. The main deceleration was in the second half of the year. In mid-year it still was not clear that a deceleration was occurring and the target range was maintained at 7–10 percent. During the first eight months of 1998, the decline of inflation continued to 4 percent at an annual rate while inflation expectations and other indicators suggested the economy was attaining price stability faster than expected. On this basis, the Government decided to take advantage of the opportunity and set an inflation target for 1999 of 4 percent. At the end of August 1998, a worldwide financial crisis took place over Russia's sovereign debt default, which brought about, inter alia, capital outflows from a number of emerging market countries, including Israel, and a substantial depreciation of the Israeli shekel vis-à-vis the US dollar. In order to restrain the rate of depreciation so as to avoid a deviation from the inflation target, the Bank of Israel raised its interest rate drastically. As a result of the depreciation, inflation in the fourth quarter of 1998 rose (and for 1986 as a whole, inflation hit 8.6 percent, in the middle of the target range) but the hike in interest rates prevented the creation of an ongoing inflationary process. In 1999, inflation turned out to be 1.3 percent, in contrast to the 4 percent target. The low inflation rate reflected a temporary decline in prices in the first quarter (a correction for the large increase in the fourth quarter of 1998) and during the remainder of the year, inflation was about 4 percent, at annual rate.

[76] This except for a few days in September 1998 on account of the large depreciation that occurred due to the crisis in Russia at the time which affected capital flows in many countries. Barnea and D'jivre (2006) found that starting from 1997, expansion of the target zone increased greatly increased the effectiveness of monetary policy.

[77] The change in the parameters of the target zone in mid-1997 generated an ongoing expansion of the gap between the depreciated and appreciated bounds and, in practice, these bounds ceased to be relevant. In June 2005, the target zone was abolished formally.

From the beginning of the disinflation in the middle of 1997 until mid-1999, inflation was about 4 percent, compared with about 10 percent in 1995–96. This development led the Government to set a 3-4 percent inflation target for each of the years 2000 and 2001. In 2000, the inflation rate fell to zero, combined with impressive real growth of 9 percent. The decline in inflation, which began in essence in mid-1997, and the low inflation in the first half of 2000 encouraged the Government to set, in August 2000, a declining path for the inflation target for the years 2001 and 2002. In addition, it determined that beginning in 2003 the inflation target would be the range of 1 to 3 percent indefinitely.

It is worth noting that the Government's announcement in the summer of 2000 indeed stipulated a multiyear time path for the inflation target leading to price stability and thus was a key building block in adopting full-fledged IT. However, the form of publicizing the announcement was token—an addendum to the state budget for 2001—and far from the pronounced manner that typified other countries that adopted full-fledged IT and Israel in later years. Further evidence for the hesitant manner in adopting the FFIT (full fledged IT) regime in Israel was the extremely long and exasperating process of adjusting the Bank of Israel Law to the FFIT regime, completed only in 2010, a decade after the remaining measures were implemented. As noted earlier, one of the steps that most countries took in adopting the FFIT regime was to anchor the transition in primary legislation of some form, some via a new central bank law and others in another type of legislation that gave strong expression to the principles of the regime. It is obvious that legislation of this type is an important step in generating credibility for the authorities' commitment to persist in attempting to maintain price stability, and this credibility is an important contributor to success of the policy. Awareness of this developed in Israel as well, and in 1998, then-Prime Minister Benjamin Netanyahu appointed a committee of experts headed by former Supreme Court Justice Shlomo Levin, to formulate a basis for such legislation. The committee indeed formulated and published a report as requested which was developed into a proposed law by experts at the Bank of Israel under then-Governor David Klein. However, the Levin Committee Report and the proposed law produced by the Bank of Israel were buried by the Israeli Governments for over a decade, even after Israel adopted de facto the FFIT regime and attained price stability. Only in 2009, when then-Governor Prof. Stanley Fischer insisted on the amendment of the Bank of Israel Law as a condition for his accepting a second term as Governor did the Government renew work on preparing a new law, and it was finally adopted in May 2010.

As noted, from the initial announcement of an inflation target in September 1991, a decade elapsed until the Government's decision in August 2000 to adopt, from 2003, a multiyear, permanent inflation target at advanced economy levels of inflation. In the following subsection we will elaborate on why this process took so long.

b. ***The reasons for the delay in the transition to the FFIT regime***

Following are a number of reasons for the delay in the transition to the FFIT regime:

1) Concern by the Government about the real costs of restraining inflation: This was expressed in the failure to reduce the inflation target before there was a prior, concomitant reduction in actual inflation.
2) The innovative nature of the IT regime and the feeling of uncertainty within the Government and among some economists, including some at the Bank of Israel, about the ability to achieve price stability using this regime.
3) The transition required a fundamental change in concept within the Bank of Israel regarding the relative roles of the exchange rate and the interest rate in containing inflation.
4) The transition required granting operational freedom to the Bank of Israel to work toward achieving the inflation targets, in part by constantly expanding the exchange rate target zone.

We now elaborate on each of these reasons:

As mentioned, at the beginning of the process, at the end of 1991, the announcement of the inflation target was a measure accompanying the change in the exchange rate regime; until September 1994, monetary policy was primarily geared to supporting attainment of the exchange rate path. The fundamental concept continued to be that in a small, open economy, the path of the exchange rate ultimately determines inflation while the role of the interest rate is to dampen capital flows and to enable the exchange rate to move according to the upwardly sloping target zone. The eruption of inflation in 1994 and the successful use of the interest rate in restraining it contributed to the erosion of the old concept and to the development of a "new" concept—that the interest rate is the appropriate tool for managing inflation; attempting to also manage the exchange rate not only does not help, but even hinders, attaining the inflation targets. The change in the conceptual framework was gradual and continued until the end of 1997. Thus, for example, only in the Bank of Israel Annual

Report for 1995, written in the spring of 1996, when analyzing the period of interest rate hikes starting in September 1994, is there even a hint of the change in concept:

"These processes reflect a change of emphasis in monetary policy; whereas previously it focused on the exchange rate and, by maintaining its path, affected all price rises, it now concentrates on setting the rate of interest on the central bank's sources at a level intended to achieve the inflation target." (ch. 1, p. 12).

In spite of the successful attempt, from the end of 1994 to mid-1995, to repel the increase in inflation by raising the interest rate, leading economists in Israel, and, in particular, in the BoI, were not convinced that it is possible in a small, open economy like Israel to maintain inflation close to the target using only the interest rate instrument. The controversy heightened in 1995–96 when the interest rate was increased and capital began to flow into Israel, resulting in the exchange rate appreciating to the floor of its target zone. Then, the Bank of Israel strove to expand the target zone while the Ministry of Finance and some economists at the Bank of Israel had reservations about widening it; these reservations were both about the possible loss of a nominal anchor and about ensuing real appreciation of the shekel that would adversely impact on exports and real activity.[78],[79]

As mentioned, from September 1994 the Government and the Bank of Israel began to act with greater commitment to the inflation target. However, the commitment itself and concern about failure or about the need to take contractionary measures to attain the target led to caution in the policy of setting the numerical targets, in particular refraining from setting more ambitious targets between 1996 and 1998. This decision was also influenced by the economic situation in 1995 and 1996, characterized by significant upward inflationary pressure, due especially to the Government conceding to demands for large wage increases in the public sector. Another expression of this caution was the Government's refusal to adopt

[78] Expressions of this controversy can be found in two separate papers that were written by senior Bank of Israel officials that were presented in two different conferences in 1995, one at the Bank of England and one at the CEPR. Ben Bassat (1995) presents the traditional approach whereby it is important to preserve exchange rate management and renounces the policy of announcing inflation targets. In contrast, Bufman, et al. (1995) supports the announcement of inflation targets, intensive use of the interest rate instrument and a gradual transition to exchange rate flexibility,

[79] It is important to note that in contrast to the current situation (2019), indexation of contracts to the exchange rate was still widespread in Israel, including real estate contracts which are clearly a non-traded item, and a large share of the public's assets and liabilities were still managed under strict, detailed directions from various government agencies; liberalizations in these areas, which constituted a revolution in Israeli financial markets, were just beginning. Therefore, reservations about liberalizing exchange rate management were understandable. A stark and concrete indication of the disagreement about freeing the exchange rate came in June 1997 when the Minister of Finance, Dan Meridor, who had contributed to stabilizing the economy by containing pressures for fiscal expansion, resigned his ministerial post in response to the Government's decision, initiated by the Bank of Israel Governor, to greatly expand the exchange rate target zone, rendering it essentially ineffective.

a downward path of inflation targets for 1997 and 1998. While the Government did announce that by 2000 the inflation target would be set at the average of OECD inflation, it refused to commit to a specific path of convergence to this goal. The Government did, however, adopt a policy of "opportunistic disinflation": when a disinflationary shock did occur, the Government did reduce the inflation target in the aftermath of the shock.

Another factor that delayed disinflation in Israel was the novelty of the inflation targeting regime in the world: in the mid-1990s, inflation targeting was still sort of an "infant industry"—new and unfamiliar to policy makers in most countries. It also lacked a sufficient track record to assess whether it really was successful, both from the aspect of attaining inflation targets consistently and from the aspect of minimizing the real costs of offsetting deviations from the inflation target. It must be noted that inflation in Israel at the time was still significantly in excess of price stability.

In light of the above considerations, the Government abstained from adopting the Bank of Israel's proposal in 1996 to announce a gradual path for disinflation, although it did go part of the way, especially in announcing the goal of achieving OECD average inflation by 2000. A number of developments from 1997 to 1999 brought about a drastic reduction in actual inflation and motivated the Government to adopt a nearly full-fledged inflation targeting regime.

The major factor for the fall in inflation from 1997 was the expansion of the exchange rate target zone in June 1997, as a necessary complement to earlier monetary contraction. It is true that the major motivation for expanding the target zone was the desire to moderate capital inflows that had necessitated massive purchases of foreign exchange, and not as a means to reduce inflation. However, increasing exchange rate flexibility in essence indicated to the public that the Government had decided between the interest rate and the exchange rate as the key monetary policy instrument; this enhanced credibility in the inflation targeting policy and led to lower inflation expectations. Additional factors that contributed to disinflation beginning in 1997 were: correction of the earlier, excessive fiscal expansion and the successful containment of the large exchange rate depreciation shock and associated inflation shock following the worldwide financial crisis of autumn 1998. These effects were expressed as a reduction of actual inflation to Western levels in most months of 1998 and 1999, without adverse effects on real growth.

After a year and a half of low, single-digit inflation and accelerated real growth, the Government announced, in August 2000, a multiyear inflation target path, beginning with a downward-sloping segment for three years until arriving at the 1–3 percent target range, to

be maintained indefinitely. This announcement had been preceded by an increase of the flexibility of the exchange rate regime, including effectively abolishing the target zone, and by advancing the liberalization of foreign currency control to the point of nearly abolishing it. The issue of communication with the public had been advanced gradually already in previous years and it continued, with an important milestone being the end of 1998 when the Bank of Israel began publishing a periodic Inflation Report.

In spite of the reduction in the inflation environment to advanced economy levels in 2000 and 2001, and in spite of the announcement of a price stability target beginning in 2003, it appears, in retrospect, that there was not full appreciation of the inflation targeting regime, at least on the part of policy makers. During 2001, the Government and the Ministry of Finance pressured the Bank of Israel to reduce interest rates in order to alleviate the effects of the recession that developed due to the worldwide crisis in the technology industries (the dot.com crash) and the second Intifada. A situation in which the Government determines the inflation target and the central bank has instrument independence to attain it should convey credibility. However, in Israel, this regime was just beginning and the Minister of Finance was exerting strong pressure to ease monetary policy significantly, in spite of assessments by the Bank of Israel that such a degree of easing would impede attainment of the inflation target. Ultimately, a "package deal" was arranged that included, among other things, an unexpected and exceedingly large interest rate drop of two percentage points[80] (from 5.8 to 3.8 percent in one shot). Such a large drop caused an erosion of the public's credibility regarding the authorities' commitment to the inflation target, expressed in a large depreciation of the shekel, a concomitant increase in inflation expectations, and shortly thereafter an increase in actual inflation. The Bank of Israel did react quite promptly to these developments with a drastic interest rate hike that was maintained for two years until actual and expected inflation returned to the price stability range. It appears that both the Government and the Bank of Israel learned the lessons of this unsuccessful policy package and there have not been similar episodes since then. With this background, it is possible to understand the importance of the legislation of a new Bank of Israel Law in 2010 that emphasizes the instrument independence of the Bank of Israel.

[80] In return, the Bank of Israel was given independence in issuing Makam (short-term bills intended as a monetary instrument) as well as a few further steps to ease some remaining aspects of foreign currency control.

4. Summary and Conclusion

In this paper, we have surveyed the background and the motivation for the adoption of the inflation-targeting regime globally and in Israel along with the processes of its adoption.

Regarding the world, experience that had been gained as a result of the increase in inflation and the elimination of that increase in the 1970s and 1980s along with advances in economic theory taught a number of important lessons about which there had not been agreement previously and that were implemented within the inflation-targeting regime. First, it was recognized that high inflation has large economic costs. Second, it was recognized that monetary policy operating via the interest rate is capable of reducing inflation and preserving price stability. Third, it was recognized that inflation expectations influence the effectiveness of monetary policy and therefore, the credibility of policy in the public's eyes is of critical importance in determining the costs of attaining price stability. These lessons began to be implemented from the beginning of the 1990s by the adoption of the inflation-targeting regime in a growing number of countries. The cornerstone of the inflation targeting regime as it was adopted around the world, especially in the four pioneering countries, was the set of measures taken to acquire credibility regarding the commitment to attain the price stability goal and thus to reduce the real costs of this policy. Understanding these features, the four pioneering countries adopted a full policy program, without obfuscation, of communication with the public in order to attain this credibility. The program succeeded beyond expectations. It is interesting to note that in adopting the inflation targeting regime in these four countries, practice preceded theory in the sense that the macroeconomic model that describes the transmission mechanism justifying the inflation targeting regime was developed only some years after the regime was first adopted in practice.

In complete contrast to the adoption of the inflation targeting regime in the four pioneering countries and in almost all the other countries that subsequently adopted it, the adoption of inflation targeting in Israel was a long and winding process. In the first stage after the formal announcement of an inflation target at the end of 1991, the price stability objective did not even exist so the topic of credibility was not dealt with at all. Only after a process of trial and error lasting a decade, characterized by high volatility of inflation and many professional and political disagreements, and after the regime attained high reputation in the world, did Israel first attain actual price stability and then adopt full-fledged inflation targeting. The prolonged and arduous process that transpired until the attainment of price stability and the adoption of the full-fledged inflation-targeting regime certainly incurred an

economic cost that could have been saved if it had been possible to adopt the full regime from the outset. However, at the beginning of the 1990s, when Israel first announced an inflation target, the Israeli economy was not ready to adopt the full regime. In order to reach the point where it would be possible to promote price stability, it was necessary to undergo fundamental change in the institutional arrangements and the concepts regarding monetary policy. On the institutional front, the Government had to promulgate the goal of price stability and equip the Bank of Israel with the tools and the authority to work toward attainment of the goal.[81] On the conceptual front, it was necessary that the central bank free itself from the ongoing attempt to utilize the exchange rate as an anchor for prices and to move to a flexible exchange rate, using the interest rate as the main tool for restraining inflation. Furthermore, it was necessary to recognize the importance of the public's expectations and of the contribution of credibility to reducing the costs of restraining inflation and attaining price stability.

[81] This includes tools for the ongoing management of monetary policy, including the elimination of restrictions on the use of tools for absorbing monetary base, such as Makam, as well as the Government refraining from involvement in exchange rate management.

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Appendix

Table 1
Monetary Policy Indicators, 1986–2003

Year	BoI Real rate	Real yield on makam	Real yield to maturity on 5-year bonds	Depreciation vis-à-vis the currency basket	Depreciation vis-à-vis the dollar	Inflation target	Actual Inflation	1-Year Inflation Expectations	Bank of Israel nominal interest rate	1-Year return on makam
	I_boi-Exp1	I_mk1-Exp1						Exp1	I_boi	I_mk1
1986			5.3	6.0	0.1		19.6		31.1	18.1
1987			4.4	14.2	4.4		16.1		31.5	20.0
1988	1.9	5.0	3.9	1.3	3.1		16.4	14.1	19.1	16.0
1989	-2.7	-1.8	1.7	19.7	22.2		20.7	15.6	13.8	12.9
1990	-5.7	-6.5	1.2	11.1	3.7		17.6	20.7	14.2	15.1
1991	-3.1	-1.5	2.2	11.6	13.7		18.0	17.6	16.1	14.5
1992	1.5	1.3	2.4	14.9	16.9	14-15	9.4	10.7	12.1	12.2
1993	2.3	2.4	3.0	8.0	10.1	10	11.2	8.9	11.4	11.2
1994	3.2	3.7	3.1	5.4	1.8	8	14.5	9.7	13.4	12.9
1995	5.2	6.3	4.3	5.8	3.1	8-11	8.1	9.3	15.6	14.5
1996	5.1	5.9	4.6	3.0	5.0	8-10	10.6	10.4	16.3	15.5
1997	5.1	6.3	4.1	3.7	7.9	7-10	7.0	8.3	14.6	13.4
1998	5.8	6.9	5.2	20.6	18.2	7-10	8.6	5.6	12.5	11.3
1999	6.7	8.2	5.6	-2.5	0.4	4	1.3	4.7	12.9	11.4
2000	6.9	7.8	6.0	-6.3	-2.7	3-4	0.0	1.9	9.7	8.8
2001	5.3	5.8	4.9	3.7	4.8	2.5-3.5	1.4	1.2	7.0	6.5
2002	4.7	4.5	4.8	14.2	9.8	2-3	6.5	2.7	7.2	7.4
2003	5.0	5.8	4.9	-0.5	-6.4	1-3	-1.9	2.0	7.7	7.0

Inflation Expectations: 1-year ahead, annual average.
Actual Inflation: As of end of year (Dec/Dec previous).
Currency basket: As defined by the BoI from time to time;
(Dec. average/Dec. previous average).

Figure 1
Actual Inflation, Inflation Expectations and the Inflation Target, 1987–2003