April 2005
IMF Country Report No. 05/134

Israel: Selected Issues

This Selected Issues paper for **Israel** was prepared by a staff team of the International Monetary Fund as background documentation for the periodic consultation with the member country. It is based on the information available at the time it was completed on **March 1, 2005.** The views expressed in this document are those of the staff team and do not necessarily reflect the views of the government of **Israel** or the Executive Board of the IMF.

The policy of publication of staff reports and other documents by the IMF allows for the deletion of market-sensitive information.

To assist the IMF in evaluating the publication policy, reader comments are invited and may be sent by e-mail to publicationpolicy@imf.org.

Copies of this report are available to the public from

International Monetary Fund ● Publication Services
700 19th Street, N.W. ● Washington, D.C. 20431
Telephone: (202) 623 7430 ● Telefax: (202) 623 7201
E-mail: publications@imf.org ● Internet: http://www.imf.org

Price: $15.00 a copy

International Monetary Fund
Washington, D.C.

INTERNATIONAL MONETARY FUND

ISRAEL

Selected Issues

Prepared by Rick Haas, Natan Epstein, Franziska Ohnsorge,
Gil Mehrez, Allan D. Brunner (all EUR)

Approved by European Department

March 1, 2005

Contents Page

I. INFLATION-TARGETING PRACTICES IN ISRAEL[1]

A. Introduction

1. **Inflation-targeting frameworks have been adopted by a number of countries in recent years**. New Zealand was the first country to target inflation in 1990, followed by Canada (1991), the United Kingdom (1992), and Sweden, Finland, and Australia (1993). More recently, however, a number of *emerging market* countries—including Brazil, Chile, the Czech Republic, Israel, Poland, and South Africa—have also moved to inflation-targeting regimes. When industrial countries changed their monetary framework after disappointing experiences with monetary aggregate targeting or fixed exchange rate regimes, they did so with fairly well developed monetary and financial institutions in place and with a relatively long history of economic stability. In contrast, the emerging market countries have faced some additional hurdles in achieving price stability with inflation targeting, given their less well developed monetary and financial institutions.[2]

2. **By most measures, Israel's experience with inflation targeting has been quite positive, but some improvements can be made with respect to institutional and procedural characteristics**. Inflation rates have fallen from triple-digit level in the 1980s to single-digit rates in recent years. Nevertheless, while inflation has become fairly benign, Israel has had difficulty in keeping inflation within the targeted range. For example, inflation was 4 percentage points above the upper target range in 2002 and well below the lower bound in 2003. Currently, both inflation and inflationary expectations have been on the rise, leading to some concern that the upper bound might be breached again and that the central bank might lose some credibility as a result.

3. **The economic literature suggests several criteria for successfully achieving central bank credibility and, therefore, price stability**:

- First, the *primary objective* of monetary policy has to be price stability. In certain circumstances—namely, aggregate demand shocks—policy responses with inflation-targeting rules can achieve both economic stability and price stability; but, in all other cases, economic stability must be sacrificed to achieve price stability.

- Second, the central bank must be *independent* and have *sufficient resources* to achieve its goals. The central bank must be free from political influences that would lead to price

[1] Allan D. Brunner.

[2] Technically, "price stability" means an inflation rate of zero. However, it is well known that most measures of inflation are biased upward, and there are some compelling reasons for having a small, positive inflation rate. Therefore, this paper will assume that "price stability" actually means "low and predictable" inflation.

instability. As Frenkel (2001) has noted, many central bank laws have been rewritten in recent years, "and all in one direction, namely strengthening the independence of the Central Bank." In addition, it must have the necessary infrastructure (staff, technology, and internal procedures) to be able to forecast future economic developments and provide decision makers with high-quality analysis.

- Finally—and arguably the most important elements for achieving public credibility—the regime must be transparent and accountable.

4. **This chapter examines Israel's monetary policy regime with an eye toward developing some understanding of why breaches have been occurring and how to address them**. Section B provides a brief history of Israel's experience with inflation and inflation targeting. Section C examines several *institutional aspects* of inflation targeting and compares Israel with other emerging market regimes. Finally, Section D examines various *procedural issues* associated with implementing an inflation-targeting regime in Israel, and, in that context, section E illustrates how the appropriate stance of monetary policy can be gauged. Section F provides concluding remarks.

B. Israel's Experience with Inflation and Inflation Targeting

Inflation in the 1980s and early 1990s

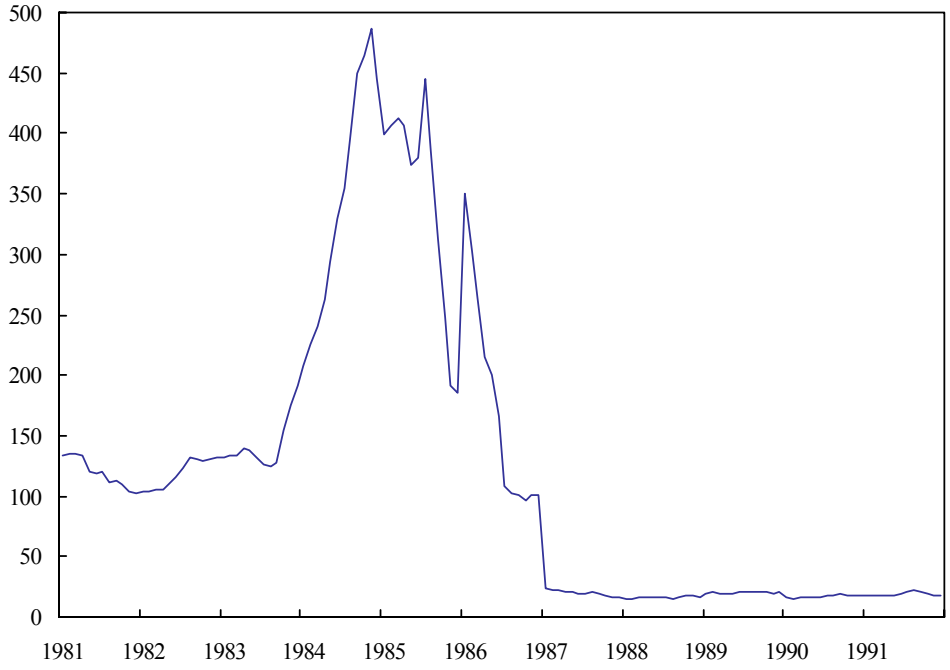
5. **The Israeli economy became increasingly unstable in the late 1970s and early 1980s**. Bruno and Fischer (1986) attribute the instability to several factors—a major recession in the early 1960s with a very slow subsequent economic recovery and war and oil price shocks in the late 1970s. As a result of these shocks, the government gradually lost control of the inflationary process. As shown in Figure 1, by the mid-1980s, consumer prices were progressing at triple digit rates, the economy was failing, and financial markets were in turmoil.

6. **An economic stabilization program was implemented in 1985, anchored by a fixed exchange rate regime.** Initially, the exchange rate was pegged against the U.S. dollar, and various capital controls were imposed to limit exchange rate volatility. In August 1986, the fixed exchange rate regime was modified, and the sheqel was pegged to a basket of five currencies—the U.S. dollar, the Deutsche mark, the U.K. pound sterling, the French franc, and the Japanese yen. The weights of each currency in the basket were determined according to the extent of Israeli trade with each country.

7. **The stabilization program had moderate success in stabilizing inflation, but the fixed exchange rate regime was not sustainable**. Inflation quickly fell to the 15-20 percent range once the program was implemented. However, with inflation in Israel far exceeding the level of inflation for those countries in the currency basket—likely owing to significant price rigidities—the exchange rate peg could not be held fixed for very long. This led to periodic surges in the demand for foreign currency and capital outflows and a gradual drawdown of foreign exchange reserves at the central bank. In 1989, Israel began to allow the exchange

rate to fluctuate within a band in order to accommodate some of the exchange rate pressures. Initially, the exchange rate bands were fairly narrow, and market pressures often pushed the exchange rate to the upper range of the target. Over time, the Bank of Israel (BoI) was forced to both further widen the bands and raise the midpoint of the bands to accommodate market forces.

Figure 1. Israel: Inflation, 1981–91
(Monthly, year-over-year percentage change)



Source: Central Bureau of Statistics.

The move from an exchange rate peg to inflation targeting

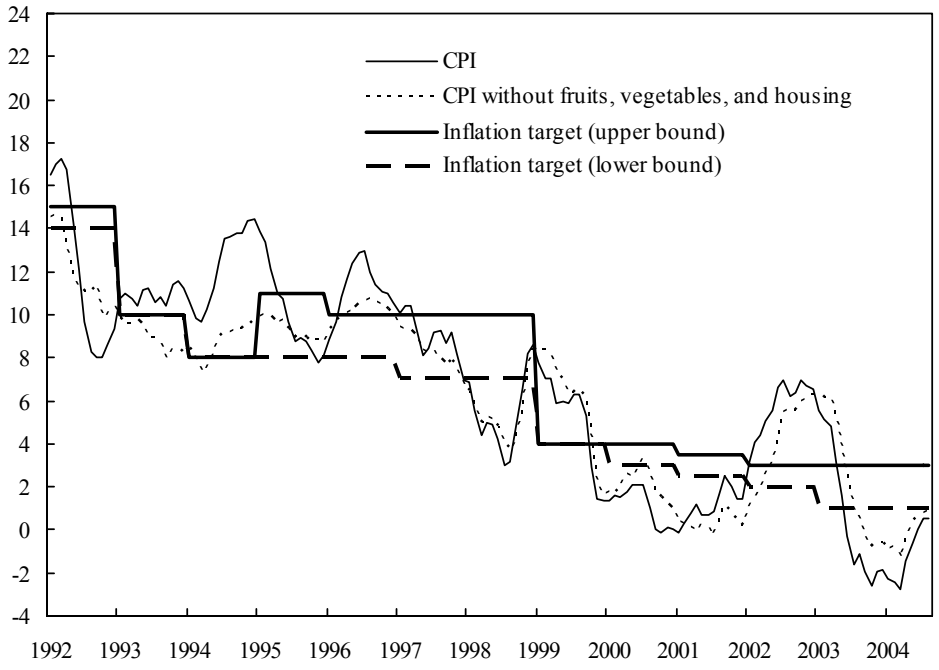
8. **In 1992, with inflation well below 20 percent, Israel shifted to a crawling peg within exchange rate bands and, eventually, to inflation targeting**.[3] Initially, the BoI's key interest rate was used almost exclusively to target the midpoint of the exchange rate bands, and the midpoint was allowed to increase gradually in response to changes in inflation differentials between Israel and the currency basket countries. In other words, the BoI was targeting both the exchange rate and inflation at this juncture, but less weight was being placed on the inflation target. Over time, the BoI put increasing weight on achieving lower

[3] See Elkayam (2001) and Leiderman and Or (2000) for a more complete history of monetary policy in Israel. Also, see Leiderman (1999) for a set of research papers analyzing the disinflation process.

inflation—i.e., on converging toward the inflation rates of other countries—by tightening the relationship between the midpoint of the bands and inflation targets and by widening the exchange rate bands. Although the exchange rate is still officially listed as an objective of the central bank, the exchange rate bands are sufficiently wide that this objective can essentially be ignored.

9. **In retrospect, this policy was very successful in reducing inflation**. Since 1992, both the inflation target and actual inflation have been lowered significantly (Figure 2). Inflation targets have been lowered from 14–15 percent in 1992 to 1–3 percent in 2003 and thereafter. Inflation has fallen as well, although there have been several breaches of the targets, on both the upside and downside of the target ranges.

Figure 2. Israel: Inflation, 1992–2004
(Monthly, year-over-year percentage change)



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

10. **Nevertheless, this success could hardly have been predicted in 1992**. There was considerable debate at the time about whether this was the right policy regime for Israel. At that time, the prevailing wisdom among most economists was that a monetary regime that focused on the exclusively on the exchange rate as a nominal anchor—rather than monetary aggregates or interest rates—was far more appropriate for a small, open economy such as Israel. Even among larger, more industrialized countries, the notion of using interest rates (rather than monetary aggregates) as operational instruments was somewhat controversial. Moreover, the concept of inflation targeting was relatively new. Just as importantly,

however, there was also considerable debate as to whether Israel could achieve low and stable inflation rates similar to those in industrial countries. Monetary policy has had to compensate, to some degree, for the rapid pace of fiscal expansion over the past several decades, which has likely put upward pressure on both real interest rates and inflation. Finally, inflation targeting requires a well-developed framework for forecasting inflation. In contrast, Israel has had to confront a number of substantial structural shifts in the economy, involving legal, political, security, and cultural changes. Finally, the speed at which inflation has fallen is rather remarkable, given the rigidity of prices and the high initial inflation rate.

Recent experiences with inflation

11. **Despite low inflation over the past few years, there have been several breaches of the inflation target in recent years (Figure 2)**. Indeed, it appears that inflation volatility has increased, rather than decreased, as inflation has fallen.[4] This suggests that Israel's policy regime may be in need of further fine-tuning. There are several possible reasons for these breaches:

- First, a number of institutional characteristics in Israel—which will be discussed in more detail in section C—could be contributing to undesirable inflation volatility. Israel lacks a monetary policy committee, for example, which could help shield the central bank governor from undue public and political pressures and would strengthen central bank independence. In addition, the Bank of Israel Law still mentions the exchange rate as an objective of monetary policy, which might create some confusion among the public as to the importance of price stability and, therefore, reduce the central bank's credibility.

- Second, a number of operational changes—to be discussed in Section D—could also be made in Israel that could improve the ability of the BoI to meet the inflation targets. In particular, the BoI appears to put a great deal of weight on outside forecasts of inflation in setting its policy rate—a practice that is viewed as potentially dangerous by many economists.

- Third, a number of "high-inflation" mechanisms that remain after the double- and triple-digit inflation rates in the past, could confound the attempts of the BoI to meet inflation targets. For example, housing accounts for about 20 percent of the consumer price index (CPI) and is generally denominated in U.S. dollars. Thus, exchange rate movements are immediately translated into higher consumer prices. In addition to exchange rate links, there is still widespread indexation of wages and other prices to the CPI, which leads to rapid "second-round" effects in response to any change in the inflation rate.

[4] Roger and Stone (2004) report that disinflating countries miss their inflation target nearly 60 percent of the time, but stable inflation regimes breach their targets only 30 percent of the time.

- Finally, fiscal policy still remains a challenge, as general government debt stands at just over 100 percent of GDP and deficits remain relatively high. Undoubtedly, this situation leads to higher real interest rates and tighter monetary policy than would otherwise exist.

C. Institutional Characteristics of Inflation-Targeting Regimes

12. **Central bank credibility is arguably the most important criterion for successful monetary policy**. In recent years, there has been a strong movement toward using monetary rules (rather than discretion) to achieve and maintain central bank credibility.[5] Indeed, many countries—primarily industrial countries—have moved toward inflation-targeting regimes, which require fairly strict interest rate rules that focus exclusively on achieving price stability. The main appeal of rules (and inflation targeting in particular) is that they are easily communicated to the public, and, thus, the regime is fairly transparent. Nevertheless, while these regimes attempt to achieve credibility and price stability, they do so, perhaps, at the expense of some added volatility in economic activity.

13. **Central banks must possess certain institutional characteristics in order to achieve and maintain credibility, regardless of whether price stability is the primary goal or one of several goals**.[6] First, the goals and responsibilities of the central banks must be *explicitly stated*. In the case of inflation-targeting countries, price stability must be the only goal of monetary policy. It must be clear that, if shocks arise, for example, that raise the price level and lower economic activity (such as an oil shock), the central bank must act to stabilize the price level in lieu of supporting economic activity.

14. **The central bank must have the *ability* to achieve its goals**. This includes operational independence from direct, outside influences.[7] In addition, the central bank must possess the necessary funding to undertake its responsibilities. In the case of inflation-targeting countries, these resources could be quite extensive, since the central bank must be able to undertake in-depth analysis of current economic developments and develop models for forecasting future inflation. In the case of emerging market countries, having the necessary resources (staff and technology) may not be sufficient to make high-quality forecasts and analyses given their histories of economic and financial instability, underdeveloped financial markets, embedded institutions associated with high inflation, and lack of public credibility.

---

[5] For a comprehensive debate on the use of monetary rules, see Taylor (1999).

[6] See Debelle (1997) and Schaechter et al. (2000) for a survey of institutional characteristics of industrial and emerging market inflation-targeting countries.

[7] As pointed out by Debelle (1997, p.7), "independence of the central bank need not be associated with the freedom for it to choose its own goals, [but rather it must be unconstrained] in pursuing the assigned goal."

15. **The central bank must be held *accountable* for its policy actions**. In this context, inflation targets have advantages and disadvantages relative to other policy regimes.[8] On the one hand, inflation targets are a clear and easily measured yardstick for measuring central bank success. On the other hand, just as with other policy frameworks, there are long and variable lags between the policy instrument (the central bank's key interest rate) and the final inflation objective. In addition, unexpected events may arise that may make it difficult to judge whether breaches in the target can be attributed to central bank policy errors or to unforecast economic shocks. Indeed, some countries have explicit "escape clauses" that relieve central banks of accountability in specific circumstances. New Zealand has the further requirement that the central bank governor's job is subject to the achievement of the inflation target. But most countries opt for some form of "exceptional reporting", which requires that the central bank explain the reasons for the breaches, the actions that it is taking, and an expected date for achieving the original target.

16. **Finally, the central bank must operate as *transparently* as possible**. The standard among industrial countries is to publish frequent inflation reports, which announce future inflation targets, the risks associated with reaching the target, and explicit reasons for why the current target may have been breached. Again, New Zealand has attempted to achieve a very high degree of transparency by providing the central bank's inflation forecasts and by discussing possible policy responses in the event of unexpected economic shocks that would result in a breach of the inflation target.

17. **Emerging market countries have also begun to adopt inflation targeting regimes**. Despite their histories of price and financial market instability, their traditions of stricter controls and regulations, and their reluctance to communicate their economic outlook and policy intentions, these countries have taken important steps to gain the necessary credibility that industrial countries have achieved. In general, they have improved their governance structure by incorporating a broader range of perspectives into their decision-making process and by increasing the delegation of authority. They have enhanced transparency and accountability through regular press releases, inflation outlook reports, an ongoing dialogue with the private sector and media, and, in some cases, the publication of inflation-forecasting models.

18. **Table 1 presents a snapshot of the institutional framework adopted by six of the emerging market economies that have adopted inflation-targeting regimes**.[9] While there are a number of commonalities, there are also some important differences:

---

[8] See Debelle (1997) for a more extensive analysis of this issue.

[9] Several additional emerging market economies have recently adopted inflation-targeting regimes, including Colombia, Hungary, Korea, Mexico, Peru, Philippines, and Thailand. See Roger and Stone (2004) for a review of their initial experiences.

- First, most countries have established price stability as the primary objective of monetary policy. In Israel's case, exchange rate stability is still *officially* listed as an objective, but the exchange rate bands are so wide that, effectively, the exchange rate is not a direct concern of the central bank in setting interest rates. In 1998, the Levin Commission proposed that exchange rate stability not be listed as an objective of the central bank. As yet, this change in legislation has not been made.

- Second, all of these countries—with the exception of Israel—have set up monetary policy committees, and most of these committees include non-central bank members. The primary advantage of a policy committee is that it brings several perspectives and experiences to the decision-making process.[10] In addition, since decisions are made by committee rather than by an individual, the committee is likely to be far less influenced by outside (public or private) pressures. This is particularly important for many emerging market economies, where the government has enjoyed a great deal of influence in setting interest rates or influencing bank behavior. In Israel's case, again, the Levin Commission in 1998 recommended establishing a policy committee, but the necessary legislation has yet to be adopted.

- Third, there is no general pattern as to who sets the inflation target (the government, the central bank, or a joint decision). However, in all cases, the central banks appear to have the authority and responsibility for achieving the inflation target. In two cases, there are established "escape clauses", which allow the target to be breached in specific extenuating circumstances. In the event of such a breach, regulations require either the central bank to indicate when inflation is expected to return to within the target range or for a new inflation target to be established.

- Finally, most central banks issue quarterly inflation reports—again, Israel is an exception, publishing a semiannual report. The inflation reports differ in their content, although the trend is toward issuing model-based inflation forecasts with highly analytical discussions of the inflation outlook. Brazil has made the most progress in this area and is now fairly comparable to industrial country inflation targeters.

[10] This is particularly important if the central bank also sets the inflation objective.

Table 1. Selected Countries: Characteristics of Inflation-Targeting Regimes in Emerging Market Economies

Characteristic	Brazil	Chile	Czech Republic	Israel	Poland	South Africa
1. Primary objective	Price stability	Price stability plus others	Price stability	Price stability plus others	Price stability	Price stability
2. Decision-making body						
a) Policy committee	Yes	Yes	Yes	No	Yes	Yes
b) Non-central bank members	No	Yes	No	--	Yes	No
c) Executive responsibilities	--	Yes	Yes	--	Yes	Yes
3. Inflation target design						
a) Target set by:	Government	Central Bank	Joint	Government	Central Bank	Government
b) Escape clauses	No	No	Yes	No	No	Yes
4. Inflation report						
a) Frequency of report	Quarterly	Quarterly	Quarterly	Semiannual	Quarterly	Quarterly
b) Format of inflation outlook						
i) Forecast?	Fan chart	Fan chart	2-year forecast	Fan chart	Point estimate	Fan chart
ii) Discussion?	Analytical	Analytical	Analytical	Qualitative	Qualitative	Qualitative
c) Publishes forecasting models	No	No	No	Some	No	No

Sources: Schaechter et al. (2000); and central bank websites.

D. Operational Issues and Potential Pitfalls

19. **As discussed above, operational procedures are also important issues for the successful implementation of monetary policy**. This section discusses some of the pitfalls of inflation-targeting regimes that should be avoided—with a particular emphasis on Israel. In order to focus the discussion, consider a central bank that has a pure inflation target objective. In this case, the policy interest rate is set according to the following rule:

$$i^T = \overline{rr} + \pi^T + \lambda(\pi^E - \pi^T), \quad (1)$$

where i^T is the desired policy rate setting, $\overline{rr}$ is the long-run real interest rate for the economy, π^T is the inflation target, and π^E is a measure of expected inflation. This rule, of course, ignores other practical issues of implementation. In particular, central banks often do not react quickly to changes in expectations and, instead, attempt to smooth their policy changes over time.

20. **The interest rate rule in equation (1) suggests three important operational difficulties that must be addressed in order to successfully implement such a rule**. **First, the central bank must have a measure of the long-run real interest rate that is consistent with underlying long-run macroeconomic conditions.** If the central bank's perceived real interest rate is too high, for example, monetary policy will be too tight, and will result in prolonged breaches of the inflation target (from below) and slower economic activity. There are several ways to gauge the level of the long-run real interest rate using

standard macroeconomic theory. For example, standard growth models predict that this rate must equal the rate of potential GDP growth. Measuring potential GDP growth is a difficult exercise even for stable, well-developed countries; obtaining measures for countries with recent, substantial structural changes poses an even greater challenge.

21. **Israel relies on a CPI-indexed ten-year government bond for this reading**. This approach could over- or understate the actual real rate to the extent that the price of the underlying security reflects risks that are not related to macroeconomic conditions (such as default or exchange rate risk). Indeed, the real ten-year interest rate has fluctuated between 2 and 6 percent over the past ten years. As discussed above, using a biased measure of the real rate means that the target may be breached over long periods of time. For example, the current reading on the real rate is about 4½ percent. With expected inflation over the next year within the target range, a reasonable range of policy settings would be 5½ to 7½ percent, in line with the current setting. However, if the real rate is actually 3 percent, this would suggest monetary policy is too tight and that there may be room for further easing.

22. **The second potential obstacle for implementing an interest rate rule involves the response to deviations of inflation from the targeted rate**. λ must be greater than 1 to ensure that inflation and inflation expectations return to the targeted level. For example, if expected inflation exceeds the target level, then the nominal policy rate must rise by more than the deviation, so that real rates rise, thereby squelching inflationary pressures. Clarida, Gali, and Gertler (1998) have shown that λ approaches a value of 2 for low-inflation countries. One recent study—Elkayam (2001)—suggests that Israel's reaction to deviations is sufficiently strong to ensure long-run convergence. Still, that paper has some possible econometric problems, and staff estimates indicate that λ is close to 1 in Israel.[11] Therefore, a sluggish response to inflationary deviations could account for the periodic breaches of the target shown in Figure 2.

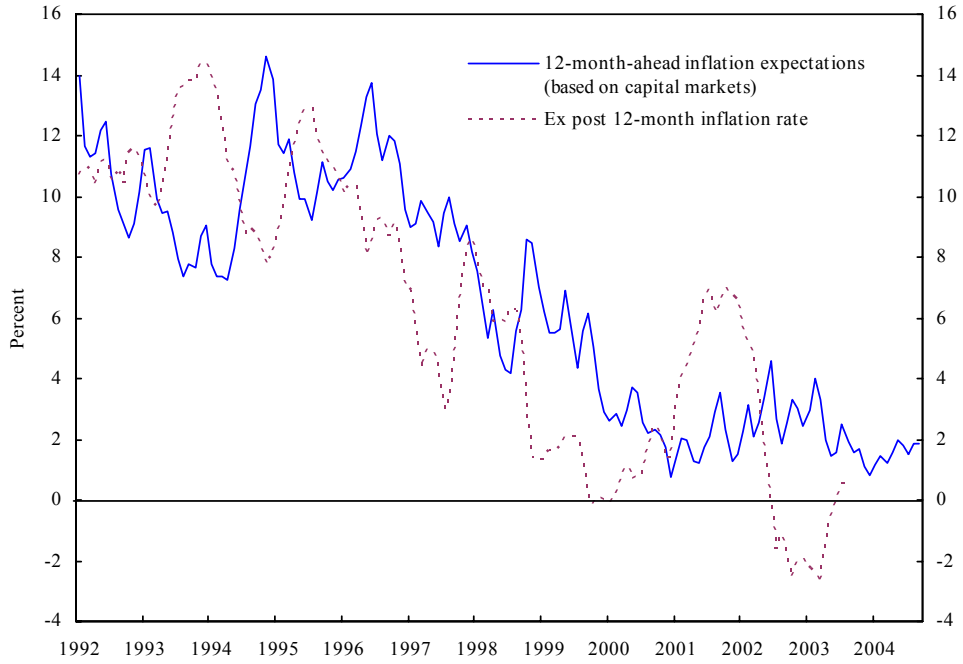
23. **Finally, the central bank must have a reliable measure of inflation expectations**. The central bank should use as much information as feasible to make its inflation forecast, including information that can be gleaned from private forecasters or from capital market instruments. Israel appears to place more weight on measures derived from capital markets than on its own, internal forecasting models. Unfortunately, this approach has two important drawbacks. First, market measures are biased and inefficient predictors of future inflation (Figure 3). Over the past decade, market participants have (implicitly) overpredicted inflation by 1 percentage point, on average, and their forecast errors are highly correlated with information that was available at the time of the forecast.[12] If capital market predictions are

[11] For example, if equation (1) is estimated using actual future inflation as a measure of expected inflation, using instrumental variables, and including a lagged dependent variable, λ is estimated to be about 1.

[12] For example, if one regresses the forecast errors on lagged CPI, GDP, and interest rates, the null hypothesis of zero coefficients is easily rejected at conventional significance levels.

still biased upward, this would be further evidence that monetary policy is still somewhat tight.[13]

Figure 3. Israel: Inflation Expectations and Ex Post Inflation, 1992–2004
(Monthly, year-over-year percentage change)



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

24. **More important, using market expectations induces price instability**. As discussed extensively in Bernanke and Woodford (1997), "strict targeting of inflation forecasts is typically inconsistent with the existence of a rational expectations equilibrium." The intuition for this argument is simple. Suppose that a shock occurs that will lead to higher (or lower) inflation in the future. If the central bank has 100 percent credibility, then the market's best forecast of future inflation will be the targeted inflation rate. In other words, with a credible policy regime, the market forecast contains no inherent information about future deviations from the inflation target. Moreover, if the central bank is basing its interest rate rule on market expectations—which will not change in the event of inflationary shocks—then the central bank will not react to the shock. That is, if the central bank uses market-based measures of expectations exclusively to make interest rate decisions, any set of

[13] The BoI related to the Article IV mission that, in a recent paper by David Elkayam and Alex Ilek (BoI), it was shown that one cannot reject the hypothesis that these inflation expectations are unbiased and efficient.

economic conditions would be consistent with "doing nothing", and, hence, there will be no unique equilibrium.

25. **In order to provide a solid anchor for market expectations and for the inflation-targeting regime, the BoI should rely more on its own forecasts of inflation**. A number of models—ranging from reduced-form vector autoregressions to larger, structural models—have been developed in the Bank of Israel that could be given more weight in the decision process. In addition, the structural models could be used to explain inflationary developments and provide more credibility about future expected developments.[14]

E. Gauging the Stance of Monetary Policy

26. **Given the complexities of implementing an inflation-targeting regime—especially for countries with a recent history of high inflation—it is difficult for observers to gauge the appropriate stance of monetary policy**. As a starting point, recall equation (1):

$$i^T = \overline{rr} + \pi^T + \lambda(\pi^E - \pi^T). \qquad (1)$$

One could use econometric procedures to estimate the coefficients of the rule, although such an approach is fraught with pitfalls (short time series, endogeneity, etc.) and is beyond the objectives of this section.

27. **Instead, once can use a rough rule of thumb to compare the actual, current policy rate with the "desired" policy rate, with a couple of assumptions**. First, it seems reasonable to assume that the real long-term interest for most emerging market countries is around 4 percent. In addition, as previously discussed, econometric studies show that the most successful inflation targeters have a λ of about 2. Given the possible pitfalls discussed above, alternative comparisons could and should be made by changing either of these assumptions. For example, the real interest rate is probably much higher than 4 percent in rapidly growing countries, such as Brazil. In addition, there is a great deal of uncertainty associated with inflation expectations measures in all of the emerging market countries discussed in this chapter.

28. **Table 2 presents stylized facts for six emerging market countries with inflation targeting regimes**. These countries have also recently experienced various financial and economic crises. The "rule-of-thumb" policy rate—based on the assumptions in the previous paragraph—is shown in column 4. The last column shows the deviation between the current policy setting (column 1) and the "rule-of-thumb" policy rate. A positive deviation indicates

[14] Elements of these models have been discussed in Sigal (2004) and Djivre and Sigal (2000a and 2000b).

relatively tight monetary policy, while a negative deviation indicates a relatively loose stance. According to these rough calculations, most countries appear to be accommodative, in light of relatively low inflationary expectations and signs of a faltering world economy. Israel's stance appears slightly loose following a number of policy easings in early 2004. The Czech Republic, Chile, and Poland appear to be the most accommodative, which could present some risk of future inflationary pressures emerging. Brazil, however, is quite restrictive, which likely reflects its desire to further lower inflation in the longer term.

Table 2. Selected Countries: Comparison of Current and Rule-of-Thumb Policy Rate Settings
(in percent)

Country	Current Policy Rate (1)	Expected Inflation (2)	Current Inflation Target (3)	Rule of Thumb Policy Rate (4)	Deviation (5) = (1)-(4)
Brazil	17.25	5.8	5.1	10.5	6.8
Chile	2.25	3.0	2 to 4	7.0	-4.8
Czech Republic	2.50	3.0	2¼ to 4¼	6.8	-4.3
Israel	3.90	2.1	1 to 3	6.2	-2.3
Poland	6.50	4.5	1½ to 3½	10.5	-4.0
South Africa	7.50	5.5	3 to 6	10.4	-2.9

Note: The rule of thumb policy rate assumes that (i) the long-term real interest is 4 percent, (ii) countries respond strongly to inflationary shocks (λ=2), and (iii) the midpoint of the target range is the actual inflation target.

F. Conclusions

29. **Israel's experience with inflation targeting has been quite positive, but some improvements can be made to institutional and procedural characteristics**. While inflation has fallen to levels comparable to industrial countries, there have been several breaches in the target in recent years. This chapter suggests several reasons for these breaches and recommends measures to address them:

- Israel lacks a monetary policy committee, which could shield the central bank from public and political pressures and would strengthen central bank independence. In addition, the exchange rate is still listed as an objective of monetary policy, a practice that might create some confusion among the public as to the importance of price stability and, therefore, reduce the central bank's credibility. Both changes have been recommended by an independent commission and would require amending the Bank of Israel Law.

- In addition, there are several ways in which Israel could make its regime more transparent, which would also improve credibility: publishing the inflation report on a

quarterly basis (rather than semiannually) and providing more analytical content in the report regarding recent deviations and the BoI's inflation forecast.

- Also, a number of operational changes could be made to improve the ability of the BoI to meet the inflation targets. Market measures of the real interest rate are likely to be biased, and there is some evidence that Israel is slow to respond to expected target deviations. But, more important, the BoI appears to put a great deal of weight on outside forecasts of inflation in setting its policy rate, which is potentially dangerous. Putting more weight on internal forecasts would anchor inflationary expectations and improve central bank credibility.

- A number of "high-inflation" mechanisms—dollarization and indexation—remain that also add to inflationary volatility and inertia. This creates extensive and very rapid pass-through. The government could take measures to reduce or eliminate these mechanisms, which would reduce inflation volatility.

- Finally, general government debt and deficits remain relatively high and rely heavily on U.S. debt guarantees. Undoubtedly, these conditions put upward pressure on real interest rates and, due to the uncertainty of obtaining a guarantee, also likely add volatility to interest rates.

REFERENCES

Bernanke, Ben S., and Michael Woodford, 1997, "Inflation Forecasts and Monetary Policy," *Journal of Money, Credit, and Banking,* Vol. 29 (November), pp. 653-84.

Bruno, M., and Stanley Fischer, 1986, "The Inflationary Process: Shocks and Accommodation," in *The Israeli Economy: Maturing through Crises*, ed. by Y. Ben Porat, (Cambridge, Massachusetts: Harvard University Press).

Clarida, Richard, Jordi Gali, and Mark Gertler, 1998, "Monetary Policy Rules in Practice: Some International Evidence," *European Economic Review,* Vol. 42 (June), pp. 1033–67.

Debelle, Guy, 1997, "Inflation Targeting in Practice", Working Paper 97/35, (Washington, DC: International Monetary Fund).

Djivre, Joseph, and Ribon Sigal, 2000a, "Monetary Policy, the Output Gap and Inflation : A Closer Look at the Monetary Policy Transmission Mechanism in Israel 1989–99," Discussion Paper No. 2000.09 (Jerusalem, Israel: Bank of Israel).

——, 2000b, "Inflation, Unemployment, the Exchange Rate and Monetary Policy in Israel 1990–99: A SVAR Approach," Discussion Paper No. 2000.06 (Jerusalem, Israel: Bank of Israel).

Elkayam, Daniel, 2001, "A Model For Monetary Policy Under Inflation Targeting: The Case of Israel," Discussion Paper No. 2001.03 (Jerusalem, Israel: Bank of Israel).

Frenkel, Jakob A, 2001, "Monetary Policy and Central Bank Independence," in *Inflation and Disinflation in Israel*, ed. by Leonardo Leiderman (Jerusalem, Israel: Bank of Israel), pp. 9–31.

Leiderman, Leonardo, 1999, ed., *Inflation and Disinflation in Israel* (Jerusalem, Israel: Bank of Israel).

—— and Bar H. Or, 2000, "Monetary Policy Rules and Transmission Mechanisms under Inflation Targeting in Israel," Discussion Paper No. 2000.01 (Jerusalem, Israel: Bank of Israel).

Roger, Scott, and Mark Stone, 2004, "Home on the Range? The International Experience with Inflation Targeting", unpublished (Washington: International Monetary Fund).

Schaechter, Andrea, Mark R. Stone, and Mark Zelmer, 2000, "A Practical Guide to Inflation Targeting for Emerging Market Countries," IMF Working Paper 00/202 (Washington: International Monetary Fund).

Sigal, Ribon, 2004, "A New Phillips Curve for Israel: Theory and Some Evidence," Discussion Paper No. 2004.11 (Jerusalem, Israel: Bank of Israel).

Taylor, John B., e.d., 1999, *Monetary Rules* (Chicago: University of Chicago Press).

II. Active Labor Market Policies[15]

A. Introduction

1. **Despite the recent economic recovery, conditions in the Israeli labor market remain difficult.** The labor force participation rate is low, at around 55 percent, and the unemployment rate is high, at 10 percent. Over the past three years, the authorities have implemented various welfare reforms in an effort to improve the functioning of the labor market. These reforms were necessary to prevent the deterioration in the labor market and have yielded some improvement in the labor market. Nevertheless, further steps to remove additional barriers to employment may be needed.

2. **We find that, while some institutional barriers to employment remain, the main difference between Israel and OECD countries is in the greater extent of active labor market policies (ALMPs) in the latter.** The remaining institutional barriers to employment are largely moderate by international standards. For example, Israel's share of union membership and collective bargaining coverage are moderate by OECD standards. In contrast, expenditures on ALMP as a percent of GDP are less than one third of the OECD average.

3. **Theory suggests that ALMPs can improve the functioning of the labor market by reducing distortions arising from various market failures.** Asymmetric information can generate a high unemployment rate as firms try to attract better applicants and encourage stronger work effort by offering above-market wages. Moral hazard can result in low investment in training and education because the returns to on-the-job training may not be captured fully by the firm. Finally, incomplete information can generate high job search cost and lead to large frictional unemployment.

4. **A large empirical literature shows that certain active labor market policies can help increase employment.** Micro data from ALMP program participants show that, depending on program design, programs can be effective at raising employment among participants. In particular, job search assistance and well-targeted training have proven successful (and low cost, in the case of job search assistance) in many countries. However, studies that test the effect of ALMP expenditures on overall labor market outcomes, e.g., the overall unemployment rate, are less conclusive, partly because of data limitations and econometric difficulties.

5. **The purpose of this paper is threefold**. First, we review recent trends in labor market developments in Israel and provide an overview of possible distortions and institutional barriers in Israel that may affect unemployment while drawing on differences with OECD countries. Second, we provide an overview of the theoretical literature that

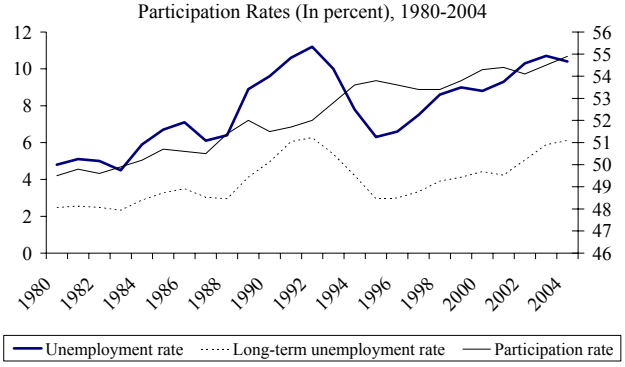
[15] Gil Mehrez and Franziska Ohnsorge.

suggests how ALMP can address market failures. Finally, we estimate empirically, using data from 20 OECD countries, the impact of ALMPs on the rate of unemployment. We find evidence that ALMP expenditures reduce unemployment—in particular, long-term unemployment.

B. The Israeli Labor Market

6. **The unemployment rate in Israel has increased continuously during the last two decades.** The unemployment rate rose from about 5 percent in 1980 to 10.4 percent in 2004, with a spike during the early 1990s associated with the heavy immigration from the former Soviet Union. Over the same period, the long-term unemployment rate (including those who have been unemployed for more than 12 months) increased from about 2 percent to 6 percent, and the participation rate increased by 5 percentage points to 54.9 percent.[16] Interestingly, the increase in unemployment has been roughly the same as the increase in participation, which may suggest a very saturated labor market. The swift absorption of almost 1 million immigrants from the former Soviet Union in the early 1990s, however, suggests to the contrary that the labor market is very flexible.

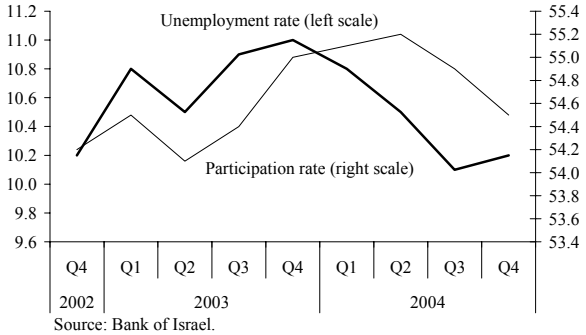
Israel: Unemployment, Long-Term Unemployment, and Participation Rates (In percent), 1980-2004



Sources: Bank of Israel; and Fund staff estimates.

7. **Recently, as a result of welfare reform and economic recovery, signs of labor market improvements have emerged.** In 2004, the labor force participation rate increased gradually by 0.4 percentage point to 54.9 percent, while the unemployment rate declined by 0.3 percentage point to 10.4 percent. Between the fourth quarters of 2003 and 2004, the number of job seekers at the Employment Service declined somewhat by 5,200. Given

Israel: Unemployment Rate and Participation Rate (In percent), Q4 2002-Q4 2004



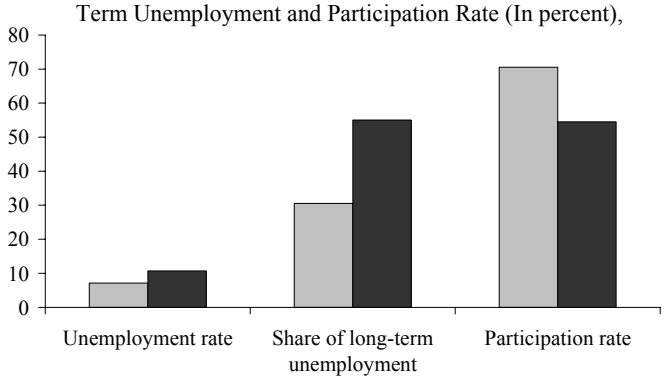
Source: Bank of Israel.

[16] The unemployment rate for those without work for at least 12 months overestimates long-term unemployment because it includes some new entries into the labor market. In comparison, the long-term unemployment rate for those seeking work for at least 27 weeks increased to 4.2 percent (40.8 percent of unemployed) in 2004 from 3.9 percent (36.3 percent of unemployed) in 2003.

the lags in the effects of welfare reform, the recent trends are likely to continue.

8. **Nevertheless, in comparison to other countries, current labor market outcomes remain disappointing.** The unemployment rate is about 3½ percentage points higher than the OECD average. The share of long-term unemployment of 55 percent is high compared to 30.5 percent in OECD countries. Labor market participation is 15 percentage points lower than in OECD countries—although part of the difference can be attributed to military service and low participation rates among Arab women and the ultraorthodox.

OECD and Israel: Unemployment Rate, Share of Long-Term Unemployment and Participation Rate (In percent),



Source: OECD; and Bank of Israel.

9. **Labor force participation is particularly low among low-skilled workers.** Social choices may account for the lower participation rate among women and religious men. Nevertheless, even among men of prime working age, labor participation in Israel is 8½ percentage points less than in the OECD. Much of this is accounted for by weak labor market participation among the lowskilled, whose participation rates of 63 percent are 12½ percentage points lower than in OECD countries.

Labor Market Participation Rates (In percent), 2003

	Men 25-54 Years	Women	Men with Religious Education	Low-Skilled Men
Average OECD 1/	92.0	53.4	...	75.4
Industrialized OECD countries	92.4	65.2	...	77.2
Emerging markets OECD	91.0	51.4	...	70.2
Israel 2/	83.5	48.4	29.1	63.0

Sources: OECD; and Bank of Israel.

1/ Men aged 25-64 with less than upper secondary education.
2/ Men aged 15-64 with 0-8 years of education.

10. **Likewise, unemployment is concentrated among the very lowskilled, particularly outside the commercial centers.** The unemployment rate among the lowskilled amounted to 16.1 percent in 2004, and, even among the highest skilled, with 16 years of education or more, it was 5.3 percent, almost on a par with overall unemployment rates in industrialized OECD countries. Unemployment rates are particularly high and persistent outside the commercial centers, where they reach as high as 13½ percent.

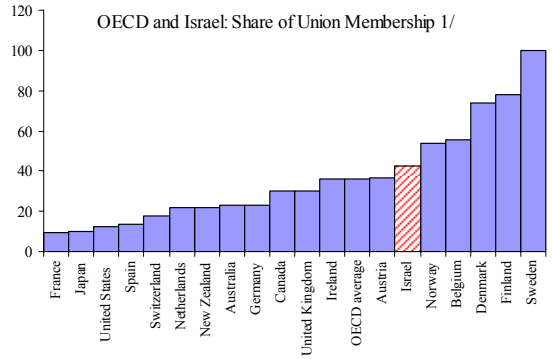
Israel: Unemployment Rate (In percent), 2004

Total	10.4
Among those with 0-8 years of education	16.1
Among those with 9-12 years of education	13.8
Commercial centers 1/	6.3
Outside commercial centers 2/	13.2

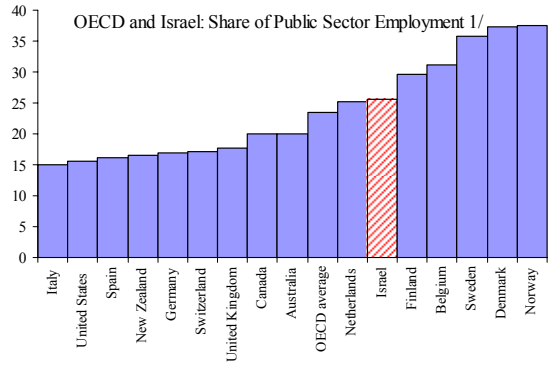
Sources: Bank of Israel; and *Jerusalem Post,* Aug. 19, 2004.
1/ Unweighted average of Tel Aviv, Jerusalem, and Haifa for July 2004.
2/ Unweighted average of Galilee, Eilat, and Jezreel Valley for July 2004.

11. **Most institutional barriers to wage flexibility appear moderate compared with those in other European countries.** Union membership is high but concentrated among public sector employees, who are almost fully unionized. The unionization rate in the private

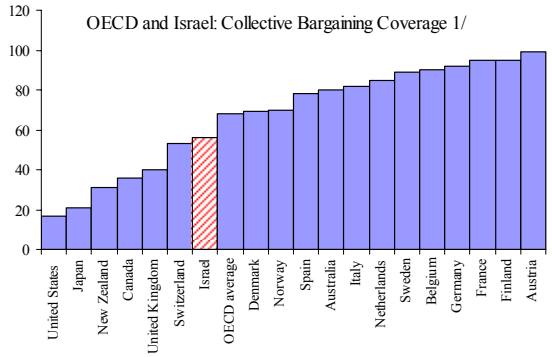
sector, however, remains well below the average of OECD countries. The intensity of labor disputes in Israel in recent years, on the other hand,—most of them among public sector employees—has been far above the OECD average. The share of public sector employment, while larger than the OECD average, is broadly in line with that of smaller OECD countries and declined further in 2004. Wage bargaining outside the public sector is largely decentralized, and the coverage of collective bargaining is narrower than in many European countries.



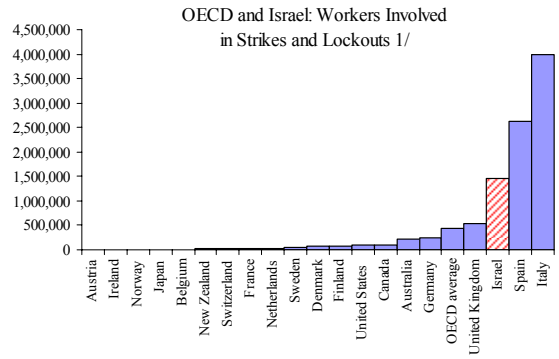
1/ 2002 data, except for 2001 data for Denmark, Finland, France, Ireland, Norway, Switzerland, and 2000 data for Austria. Source: OECD Labor force statistics.



1/ 2000 data, except for 1999 data for Finland, Norway and 1998 data for Switzerland. For West Germany only. Source: ILO.



1/ 1994 data for collective bargaining coverage in OECD countries, as in Nickell et al. (2001) and 2000 data for Israel from Bank of Israel (2003 Annual Report).

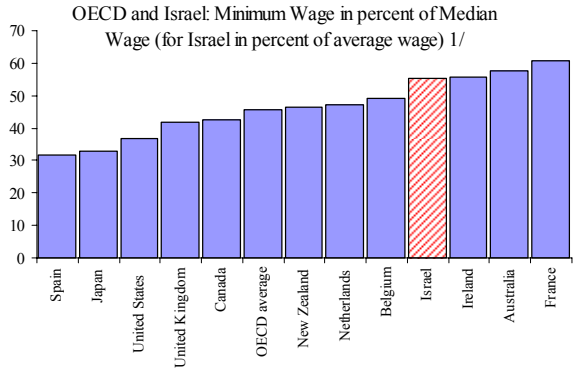


1/ Average 2002 and 2003 data for workers involved in strikes and lockouts, except for 2001-2002 average for Netherlands, France, 2000-2001 average for Japan, and 1999-2000 average for Belgium. Source: ILO.

12. **Real market wages appear to be flexible, as is evident from their decline during the recent slowdown.** Real wages declined in all sectors, on average, by 6 percent in 2002 and 2¾ percent in 2003. The decline was particularly pronounced in the private sector, but public sector wages were also cut in 2002 and 2003, bringing real wage cuts in line with those in the private sector.

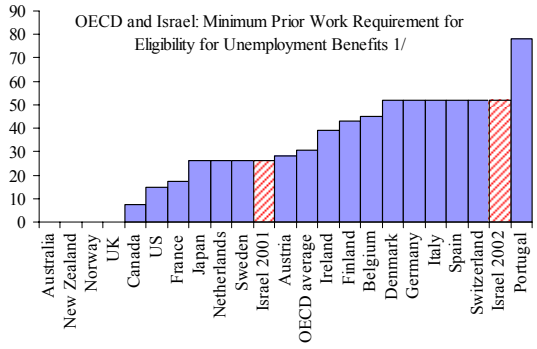
Sources: Bank of Israel; and Fund staff estimates.

13. **Yet, the minimum wage has been less affected by the recent slowdown and, relative to average wages, is higher than in OECD countries**. While market wages declined in real terms by 8½ percent over the past two years, the minimum wage ($760 per month) declined by only 1¼ percent in real terms over the same period. In addition to its limited flexibility in real terms, the minimum wage in percent of the median wage is almost 10 percentage points higher than in OECD countries.

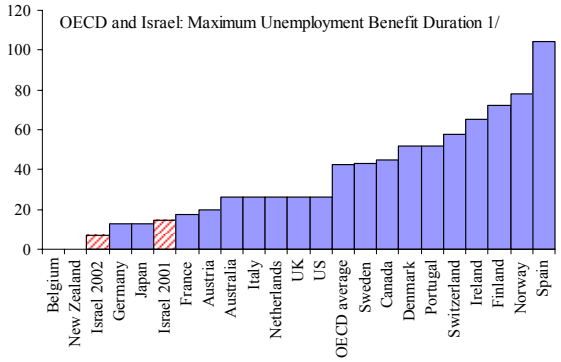


1/ 2000 data for minimum wage in percent of median wage. Sources: OECD Labor Force Statistics and Bank of Israel. 2003 data for Israel, due to lack of median wage estimate: relative to average wage.

14. **Furthermore, until the recent welfare reforms, the welfare system was relatively generous to those capable of work.** Before the welfare reforms in 2002-03, the prior work requirement for eligibility for unemployment benefits was comparable to the more lenient unemployment benefit systems in the OECD. While the maximum duration of the unemployment benefit was relatively stringent, unemployment benefits were often replaced after their expiry by income maintenance assistance of unlimited duration. Moreover, income maintenance assistance payments for an unemployed couple with two children amounted to 89 percent of the minimum wage, to which child allowances of 10 percent of the minimum wage were added.



1/ Data for OECD from U.S. Social Security Administration, Social Security Online, 2004 data for Europe, 2003 data for North America, 2002 data for Asia and Pacific. 2001 and 2002 data for Israel from Bank of Israel, 2002 Annual Report.



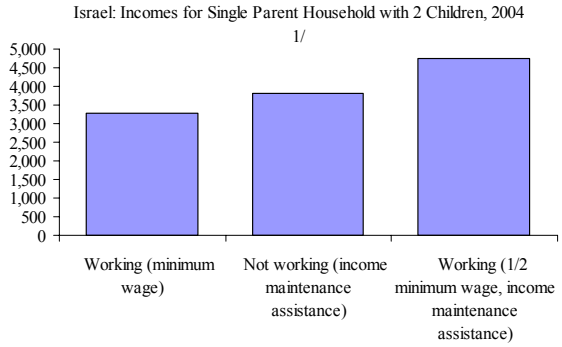
1/ Data for OECD from U.S. Social Security Administration, Social Security Online, 2004 data for Europe, 2003 data for North America, 2002 data for Asia and Pacific. 2001 and 2002 data for Israel from Bank of Israel, 2002 Annual Report.

15. **Despite the welfare reforms of 2002-03, some dimensions of the welfare system remain relatively generous, especially for low-skilled workers.** The reforms tightened prior work requirements, unemployment benefits for those participating in vocational training, and the duration of unemployment benefits (Box 1).[17] At the same time, benefit

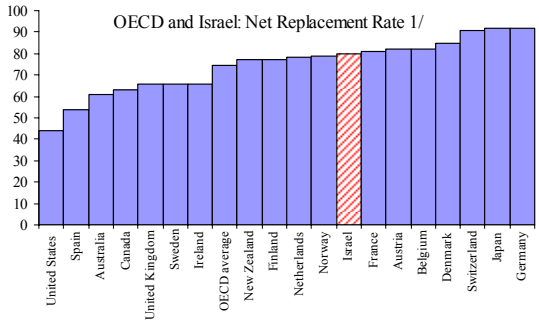
[17] In 2002, prior work requirements were increased from 180 out of 360 days or 270 out of 540 days to 360 out of 540 days. The benefit duration for those below the age of 25 years

(continued…)

levels were reduced for recipients of income maintenance assistance, eligibility requirements for benefit recipients (including employment tests) were tightened, and other social benefits, such as child allowances, were cut. Nevertheless, the replacement rate remains higher than in some European countries, albeit lower than in the northern European countries. Additionally, for some population groups, including single parents, incentives to work part-time or not at all while receiving income maintenance assistance remain strong.



1/ Source: Ministry of Industry, Trade and Labor, Planning, Research and Economic Administration Unit.



1/ 2002 data for OECD countries (for single parent with 2 children, earning 67 percent of average productive wage). Source: OECD Benefits and Wages. 2004 data for Israel for single parent family with 2 children.

16. **Finally, ALMPs are weak in Israel.** Expenditures on active labor market policies amount to 0.2 percent of GDP, compared with an OECD average of 0.7 percent. Until recently, ALMPs were limited to vocational training and focused on skills needed for specific jobs. Search assistance was provided by the Employment Service, but this agency's main role of assisting the unemployed in finding jobs was hindered because it was also assigned responsibility for approving eligibility claims for unemployment benefits and income maintenance assistance.

OECD Countries and Israel: Expenditures on Active Labor Market Policies (in percent of GDP), 2002

	ALMP
Average OECD	0.7
Industrialized OECD countries	0.8
Emerging markets OECD	0.3
Israel	0.2

Sources: OECD; and Israeli authorities (2005 budget data).

17. **In 2003-04, the authorities strengthened the focus on ALMPs, but the measures remain limited** (Box 1). In 2004, the Employment Service took steps to improve the efficiency of its activities, including strengthening the emphasis on job search assistance, carefully targeting the placement of unemployed in training courses, and focusing on placing income maintenance assistance claimants in jobs. Similarly, vocational training programs were refocused to better address the needs of the longer-term unemployed by offering shorter

---

was reduced from 100 to 50 days. The benefit duration remained 100–138 days for those between the ages of 25 and 35 years (depending on family size), 138–175 days for those above the age of 35 years (depending on family size) and 175 days for those above the age of 45 years.

courses that emphasized job search assistance and postplacement monitoring.[18] Additionally, a project to subsidize wages for single mothers was introduced (with an annual budget of up to 0.01 percent of GDP), management firms for welfare-to-work employment centers were approved (with a two-year budget of up to 0.05 percent of GDP), and a wage subsidy program for remote areas was initiated (with a five-year budget of up to 0.08 percent of GDP). The measures were accompanied by a reduction of the tax disincentives for low-income households to work.

[18] A reduction in unemployment benefits to participants in vocational courses in 2002 led to a decline in demand for such courses from unemployment benefit claimants. Most participants in these courses are now longer-term unemployed on income maintenance assistance.

Box 1. Welfare Reforms in Israel, 2002–04

In 2002, the authorities initiated major cuts in welfare benefits: 1/

- The duration of unemployment benefits for repeat unemployed was shortened, and the benefit was reduced by 15 percent for every episode of unemployment in four years. Unemployment benefits were cut by 4 percent across the board until end-2003. Unemployment benefits to persons in vocational training were reduced by 30 percent. Eligibility for unemployment benefits was made conditional on prior employment of at least 360 out of 540 days, one-third more than previously. This made 25 percent of the unemployed ineligible.
- Income maintenance assistance benefits were reduced by 8–23 percent, depending on family composition, and benefits for new income maintenance assistance claimants between the ages of 46 and 54 years and new claimants below 25 years were reduced further. The earned income threshold above which claimants of income maintenance assistance had their claims reduced was lowered, and claims were further reduced for earned income above this threshold. (Most of these cuts did not apply to persons older than 55 years).
- Exemptions from employability tests were largely removed.
- Tax incentives for residents of the periphery, where low-skilled unemployment is concentrated, were cut.
- Child allowances were reduced, especially for later children, and will continue to be reduced until 2009 when they will no longer be progressive with respect to the number of children.

Continuing reforms in May and August 2003 included the introduction of tax incentives and implementation of active labor market policies.

- **Tax disincentives to work** were reduced: the earned income tax was reduced; a wage floor was established for national insurance contributions and health tax; and tax benefits for residents of the periphery, where unemployment is highest, were curtailed.
- In August 2003, a **wage subsidy program for single parents** who receive income maintenance benefits was introduced. The program was designed for single parents who had increased their earnings substantially (by NIS 1,200 per month for four months). To encourage employers to provide full-time employment, an employer subsidy was also included in the program. After a year of operation, the program has shown poor success: only 1,581 out of 58,000 eligible single parents were able to qualify for the wage subsidy. Most single parents who had been working prior to the program found it difficult to attain the required earnings increase, while many of the qualifying single parents who were unemployed were unable to find full-time employment, partly because of a lack of all-day child care facilities. The program has been extended for another year, the qualifying requirements have been eased (to an average income increase of NIS 800 for four months) for those who were working previously, and full-time subsidized child care facilities have been provided.
- Four international management companies won bids for establishing **pilot employment centers** in four diverse areas with high unemployment. From June 2005 on, the centers will provide the full range of employment services to recipients of income maintenance assistance, including job search assistance, transportation allowance, child care allowance, and vocational training. Income assistance claimants in the four areas who refuse job placements can be stripped of their eligibility for income maintenance assistance. The profits of the employment centers have been structured to create incentives for reducing the number of income maintenance assistance claimants for at least several months.
- A **pilot wage subsidy program for newly created jobs** in the south of the country, where unemployment is especially high, was initiated. The government will subsidize up to 20 percent of the wages of 200 new jobs in the chosen area (Sderot). Two firms qualifying for the subsidy have been chosen and the program is expected to be implemented in 2005.

1/ Sources: Bank of Israel *Annual Report* 2002; National Insurance Institute *Annual Survey* 2002–03; and Ministry of Industry, Trade and Labor: Planning, Research and Economic Administration Unit.

C. The Rationale for Active Labor Market Policies

18. **Modern labor market theories emphasize unemployment and labor market inefficiencies as an outcome of market failure due to incomplete and asymmetric information, behavioral and negotiation structures, coordination failure, monopoly/monopsony power, and various distortions associated with government policies.** Some government policies, such as income taxes and welfare payments, may raise workers' reservation wage and discourage them from finding employment at the market wage. Monopoly power in wage bargaining may lead to insider-outsider phenomena that raise wages for insiders at the expense of employment of outsiders. Other theories of unemployment, however, stress that unemployment is not solely the result of people not willing to work at the existing wage or having outsider status, but also the result of people who are willing to work at the existing wage not being able to find a job because of market failure. The government can thus improve the labor market outcomes by reducing the sources of the market failure associated with information asymmetries, moral hazard, and coordination failure.

19. **For example, efficiency wage models (such as Shapiro and Stiglitz, 1984; Akerlof and Yellen, 1990) emphasize the importance of asymmetric information.** Because firms do not have full information about the workers' quality and often cannot observe effort, they set wages higher than the market-clearing rate to attract high-quality candidates (adverse selection models), and increase workers' effort (moral hazard models).[19] In other words, if firms cannot perfectly monitor effort they need to pay sufficiently high wages for workers to prefer exerting effort to shirking in order to lower the possibility of their losing their job. Likewise, if firms cannot observe applicants' quality, a higher wage will increase the proportion of high-quality applicants.[20] In addition, it is often argued that the unemployed find it harder to get a job either because of incomplete information (the employer assumes that a long-term unemployed is less skilled than others) or because of lost skills.

20. **Similarly, moral hazard may result in insufficient training and hiring (e.g., Stevens, 1994).** General training and even firm-specific on-the-job training that imparts some transferable general skills may be underperformed because of moral hazard (a worker may leave the firm after completing the training) and free riding (the poaching of employees by other firms).

21. **In search models, meanwhile, unemployment results from delays in matching workers with unfilled vacancies (e.g., Diamond 1982).** The market equilibrium could be

---

[19] Akerlof and Yellen (1990) show that workers' efforts are affected by their feelings of loyalty toward the firm, partly determined by wage comparisons with other firms.

[20] Likewise, in the presence of hiring and firing costs, lack of information could result in higher unemployment rate as the uncertainty would cause firms to delay hiring.

Pareto-improved through a centralized matching process: in the market equilibrium, firms lose output in excess of wages when maintaining vacancies, while unemployed workers forgo income in excess of their disutility when unemployed.

22. **ALMPs could reduce unemployment below the inefficient market outcome.** For example, if firms are reluctant to hire and train new employees because of asymmetric information (the firm does not know whether the new worker fits the training) or moral hazard (once the worker completes the training and enhances her human capital she moves to another firm paying higher wages), ALMPs could improve market efficiency by providing training. Likewise, subsidies to new employees could help undo the impact of hiring costs associated with specific job learning, particularly in the face of incomplete information. Finally, enhancing the matching process—in terms of both increasing the speed of finding a match and reducing the probability of mismatch—could reduce unemployment and increase efficiency.

D. International Experience with Active Labor Market Policies

23. **The empirical research of the impact of ALMPs can be divided into micro studies that investigate the impact of a specific program using a small group of participants, and macro studies that investigate the impact of ALMPs on the aggregate level of employment and unemployment.** Micro studies have generally found that some ALMPs have been successful in reducing unemployment among the participants, while macroeconomic studies, which have been fewer, show more tenuous links between ALMP expenditures and reductions in aggregate unemployment.

24. **Job search assistance was found to be particularly effective in placing unemployed, especially if it was mandatory for welfare benefit recipients and accompanied by tight monitoring.** In the 1990s, several countries made job search mandatory for welfare recipients and monitored the job search. This was usually found to be an effective, low-cost means of increasing employment among welfare recipients (Betcherman et al., 2004, Martin and Grubb, 2001). For example, in Sweden job search assistance in the 1990s increased participants' employment rates to 13 percent compared with 9 percent among nonparticipants. Participation in the U.K. Restart program in 1986 increased participants' employment rates by 4 percent (Heckman et al., 1999).

25. **Well-targeted, strongly job-related training with employer participation was often found to be effective in reducing unemployment.** The effectiveness of general classroom training was found to vary among countries, studies, and subperiods. It was found to have a positive impact in Denmark, France, and Sweden, while there was no evidence of positive results in Germany, Australia, or Norway. In contrast, well-targeted programs with a strong job-related component were found successful in increasing employment rates of program participants in most cases. For example, sector-specific training programs in Spain in 2000–01 reduced participants' probability of remaining unemployed (Arellano, 2003). In Sweden for the period 1995–2000, programs with subsidized work experience and firm-

provided training were found to be more effective in reducing the duration of unemployment than publicly provided classroom training (Carling and Richardson, 2001).

26. **Most youth programs failed to reduce unemployment among participants.** Youth programs in the U.S., Canada, France, and Sweden were, in general, unsuccessful, although the results were somewhat better for programs that emphasized workplace practice over classroom training or those that included work experience (e.g., for some subgroups in Ireland and France, see Heckman et al., 1999). An exception to the generally unfavorable results is the U.K. New Deal for Youth Unemployed, an intensive mandatory program for young welfare recipients, which increased the probability of youths finding employment by 20 percent.

27. **There is some evidence from micro studies that employment subsidies, in particular to workers, have a positive impact.** Positive results were found, at least for subgroups of workers, in the Netherlands, Sweden, Germany, and Switzerland. In most of these programs, however, the combining of employment subsidies with other ALMPs makes it difficult to disentangle the effect of the employment subsidies. Additionally, the risk of replacing unsubsidized workers by subsidized workers is substantial unless programs are carefully monitored. Programs that included an employment subsidy paid to workers have been more effective. A good example is the Self-Sufficiency Program launched in Canada between 1992 and 1995, which provided substantial financial assistance to single parents who left income assistance for work. Within a year, participants were twice as likely to be full-time employed than members of the control group (Michalopoulos et al, 2002).[21]

28. **Public works projects have alleviated unemployment in some cases.** Such projects have been partially successful in Sweden, Canada, and France, but unsuccessful in Germany. Individual programs, however, may be effective on a small scale. For example, in Germany, the operation of subsidized nonprofit agencies that hire unemployed to place them in firms as temporary workers increased participants' employment by half a month in the four months following the program (Lechner et al., 2001).

29. **Finally, it appears that the combination of several ALMPs combined with tight monitoring is important.** Particularly successful examples are the New Deal to Youth Unemployed in the U.K.—as mentioned above and described in Box 3—and several welfare-to-work programs in the U.S. These programs combine mandatory job search assistance, training, and work experience for welfare benefit recipients with tight monitoring. For example, labor force participation among single mothers increased by 10 percent between 1994 and 1999—a period when many welfare-to-work programs were implemented in the U.S. (Box 2).

---

[21] Lise, Seitz and Smith (2003), however, find that in one province a substantial number of program participants would have found employment regardless of the program.

Box 2. Welfare-to-Work Programs in Wisconsin

In 1996 in the U.S., the Personal Responsibility and Work Opportunity Reconciliation Act (PRWORA) replaced the previous Assistance to Families with Dependent Children (AFDC). Even before 1996, many states had received waivers from the AFDC program and begun implementing reforms. A lump-sum federal grant was provided to states, which were allowed to choose their welfare programs. This encouraged a variety of state-specific programs, and several states experimented with welfare-to-work programs—for example, Wisconsin. Many states mandated job search requirements and ran job placement and training programs, focusing on narrow job preparation skills. Penalties were often imposed on individuals who did not meet job search or preparation requirements. Time limits on benefit payments were imposed in some states. To encourage employment among single parents, work support programs, such as child care, were expanded and cash payments to working families provided.

In 1997, Wisconsin introduced its Wisconsin Works (W-2) program which had been developed since the mid-1980s. All welfare assistance was conditioned on work. Employable adults were expected to obtain full-time jobs. Instead of cash benefits, only work support services were provided, such as child care. Employment or wage subsidies were provided for some jobs, and employment in community jobs against a cash grant was available for those who were unable to find jobs. Participation in the welfare-to-work programs was enforced stringently and the bureaucracy was set up to monitor welfare recipients on an ongoing basis (Mead, 2001).

Local experiments were instrumental in finding the most effective programs. For example, some counties in Wisconsin initially emphasized training and education rather than work placement. This approach, however, was found to yield smaller earnings gains and smaller reductions in welfare dependency than placing people immediately into jobs. The "work-first" programs that emphasized a rapid transition to employment were generally found to be more effective in generating stable employment and income increases than education-centered programs (Blank, 2002).

The program was very effective in increasing employment, although program implementation also coincided with a period of strong economic growth. In a 1997 survey documenting the results of the changes implemented since the mid-1980s, employment among low-income parents was higher in Wisconsin than in any of the other 13 states surveyed. Additionally, Wisconsin's welfare caseload declined by 90 percent between 1986 and 2000.

30. **Although micro studies provide evidence that ALMPs have a positive impact on employment among program participants, it is not clear whether ALMPs can have a significant impact on the aggregate level of unemployment.** First, employment among program participants may have increased at the expense of nonprogram participants. Second, it is possible that, because of selection bias, the participants in the programs would have found a job even in the absence of ALMPs.

31. **Macro studies that investigate the impact of ALMPs at the aggregate level find that effects of ALMPs on overall unemployment are weak.** For example, Scarpetta (1996) uses data of OECD countries from 1983–93 and, with a least squares estimation, regresses unemployment on ALMP expenditures per unemployed person on output per capita, unemployment benefits, output gap and several institutional variables, such as union density and employment protection. He finds that ALMPs have a significant effect on unemployment, but the results are sensitive to the inclusion of coordination indices and exclusion of indices of corporatism. He also does not find a significant effect on long-term unemployment. Similarly, Elmeskov et al. (1998), using a similar approach and data set, find that ALMP expenditures per unemployed person have a negative impact on structural

unemployment. Estevao (2003) addresses the possibility that ALMP expenditures per unemployed may be endogenous and that ALMPs may reduce unemployment simply for accounting reasons—because people are accounted for as being in training rather than as unemployed—by using ALMP expenditures per GDP and using business sector employment as a dependent variable. He finds, using least squares regressions, that ALMPs were not very effective in increasing business employment rates until the second half of the 1990s. Finally, Nickell (1997) accounts for the endogeneity of ALMPs in an instrumental variables regression and tries to remove year-on-year noise by regressing ALMP expenditures per unemployed on average unemployment rates for the period 1977–79. He finds a strongly significant negative effect of ALMP on unemployment and long-term unemployment for the period 1983–94 using five-year averages.

32. **These macro studies have several shortcomings that should be kept in mind.** Except for Nickell (1997), these studies do not address the simultaneity among unemployment, ALMP expenditures, and expenditures on passive labor market policies (PLMP). That is, when the unemployment rate is high, expenditures on ALMPs and PLMPs are high as well. Furthermore, many studies are based on data from the 1980s and 1990s, which pre-dated some major reform initiatives (see Box 3 for two examples). For example, the U.S. (Blank, 2002), the Netherlands (van Velzen, 2001), Sweden (Behrenz et al., 2001), and Germany (Mosley and Schutz, 2001) initiated reforms in the late 1990s and 2000s, decentralizing employment services and tightening benefit requirements and ALMP program monitoring. The effects of these reforms may not be visible in previous macro studies, which focused on data up to the 1990s.

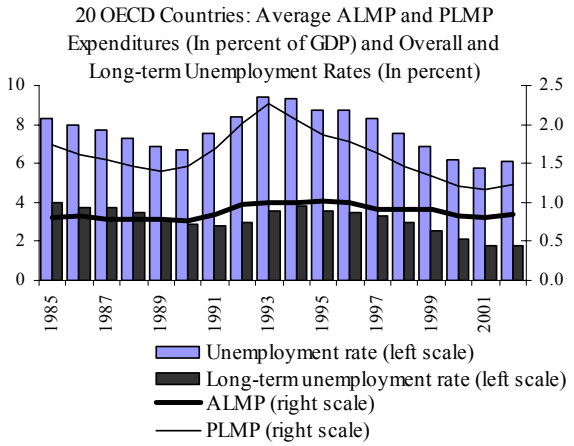
Box 3. Welfare Reforms in the UK and Sweden

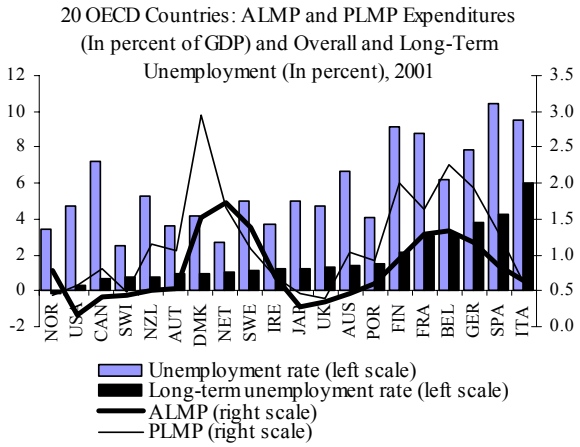
New Deal for Youth Unemployed in the U.K.
The New Deal was introduced in 1998 and included a range of ALMPs. The mandatory program for young recipients of unemployment benefits was a full-time, three-stage program of intensive job search assistance, with regular counseling, training in basic skills or full-time education, and subsidized employment in the private or public sector (Van Reenen, 2003). It improved the likelihood of employment among participants by 20 percent.

Public Employment Service in Sweden
Several pilot projects to improve the welfare system were introduced in 1996. The reform focused on decentralization of welfare programs, with programs developed by a municipal employment service committee with private sector participation. Municipalities were required to finance 25 percent of new programs. Eligibility criteria for unemployment assistance were tightened to require acceptance of reasonable jobs and proof of job search. Public employment offices provided hands-on job search assistance. Studies so far have not been able to find clear benefits from the pilot projects, although registration in a public employment office accelerated the transition to work (Behrenz et al, 2001).

E. Econometric Estimation of the Effects of ALMP on Aggregate Unemployment in the OECD

33. **To address the shortcomings in the econometric literature, we investigate the impact of ALMPs on unemployment and labor force participation, using panel data for OECD countries during 1985–2002.** The estimation expands the literature in three ways. First, we use a larger and more recent data set, which includes the reforms in the 1990s. Second, we use IV estimation to address the simultaneous determination of unemployment, ALMPs and PLMPs. Third, we investigate the effect of ALMPs on different labor market outcomes, including the overall and long-term unemployment rates and the labor force participation rate.[22]





34. **Over the 18-year period, overall and long-term unemployment in OECD countries broadly trended downward.** Expenditures on PLMP were strongly procyclical, suggesting the need for simultaneous equation estimation, whereas ALMP expenditures

[22] This contrasts with Estevao (2003), who estimates results for employment in the business sector alone, arguing that the effect of ALMPs on unemployment is distorted by its effect on labor force participation. Instead, we explicitly test the relationship between ALMPs and participation rates to account for this effect and find no significant relationship. Estevao (2003) also argues that the fact that participants in ALMPs are not included in unemployment data distorts any regression results based on unemployment. He therefore chooses employment as the dependent variable. The argument does not apply to participants of job search programs (the majority of ALMP participants), however, who remain classified as unemployed. Additionally, employment data are also distorted by the artificial employment increase generated by participants in wage subsidy or public employment programs. Until cross-country data on ALMP participants become available, the issue cannot be resolved satisfactorily.

remained more stable.[23] OECD countries with high PLMP expenditures also tended to have high ALMP expenditures. Nickell et al. (2005) hypothesize that the high reservation wages in countries with generous unemployment benefits force these countries to implement strong ALMPs in order to entice workers back into employment. A detailed data description can be found in the Data Appendix.

35. **To estimate the impact of ALMPs, we are interested in the parameter estimates for the following equation:[24]**

$$UE_t = \beta_0 + \beta_1 ALMP_t + \beta_2 UE_{t-1} + \beta_3 X_t + \varepsilon_t$$

where *UE* is the unemployment rate, *ALMP* are expenditures on ALMP in percent of GDP, and *X* is a vector of other variables that the literature identifies as influencing unemployment. These include expenditures on PLMP in percent of GDP (*PLMP*), the gross replacement rate (*GRR*), the per capita GDP growth rate (*GROWTH*), the share of unionized employees (*UNION*), an index of employment protection (*EMP_PROT*), and the coverage of collective bargaining agreements (*COLL_BARG*).[25] To account for persistence in unemployment, we include lagged unemployment in the regression equation, similar to Nickell et al (2005) and Scarpetta (1996). Our priors are that a generous welfare system—such as large benefits relative to average wages or easy eligibility for welfare benefits—reduces incentives to work and contributes to higher unemployment. Higher GDP growth should be associated with lower unemployment. Strong unions and a broad coverage of collective bargaining agreements may generate wage agreements above the market-clearing wage, thus adding to unemployment. Likewise, stringent employment protection laws may create high hiring and firing costs which may lead to higher unemployment.

36. **We first estimate the equation using generalized least squares and find that ALMP expenditures may reduce unemployment.** Because of the simultaneity of *ALMP* and *PLMP*, the results are biased but can still serve as a benchmark and as a comparison for other research. The first column in Table 1 presents the results for the overall unemployment rate. The parameter estimates suggest that *ALMP* reduces unemployment, although the

[23] A simple regression of unemployment on ALMP and PLMP, including country dummies and trend, shows strongly significant positive coefficients for both kinds of labor market policies, indicating the possible existence of simultaneity.

[24] We do not include interaction terms between institutions and macroeconomic shocks. Nickell et al. (2005) find that such interaction terms do not explain unemployment.

[25] Much of the data have already been presented in comparison with Israel and are further described in detail in the appendix. We do not include data on mobility or on tax wedges because complete and consistent data on these two variables are not available for the whole period.

parameter estimate is significant only at the 12 percent level.[26] With regard to the other variables, their coefficients are in general as expected and significant: *PLMP* increases unemployment, as do strong employment protection laws *EMP_PROT* (as in Elmeskov et al., 1998). The coefficient on the gross replacement rate is counterintuitive but is driven by the exceptionally low gross replacement rates in Italy. (When excluding Italy, the gross replacement rate does not have any impact, while the remaining results are unaffected). The weak findings on unionization coincide with Elmeskov et al. (1998). Nickell et al. (2005) argue that they may be related to the existence of extension laws for union bargaining agreements to nonmembers.

37. **Because ALMPs are often targeted toward long-term unemployed, we estimate in the second column of Table 1 the effect of ALMPs on long-term unemployment**. The coefficient of *ALMP* is negative and significant at the 5 percent level.[27] The impact of the other variables is, again, as expected: *PLMP* raises long-term unemployment as does employment protection, while strong real GDP growth reduces long-term unemployment, although less than overall unemployment. The effect of *PLMP* on overall unemployment is greater than that on long-term unemployment. This may be related to time limits in most countries on unemployment benefit payments. After these time limits have expired, the long-term unemployed are often eligible for social assistance (Nickell, 1997). The coefficient estimate for *ALMP* suggests that an increase in ALMP expenditures by ½ percent of GDP would, in the long run, reduce long-term unemployment by 0.8 percentage point.

38. **Finally, the impact of ALMPs on unemployment may be weak because they may increase the participation rate (Estevao, 2003).** We estimate, therefore, the effect of *ALMP* on labor force participation. The results, as presented in the third column of Table 1, suggest some positive impact, but significance only at the 15 percent level. Per capital real GDP growth reduces unemployment and raises the labor participation rate. This is consistent with the phenomenon of discouraged unemployed workers who drop out of the labor force entirely if unemployment is high in a difficult macroeconomic environment. High PLMP expenditures, as expected, reduce the participation rate.

---

[26] We conducted several robustness tests, which generally did not affect the qualitative results. A time trend was insignificant and did not affect the other parameter estimates significantly. The same applied to the exclusion of the variables assumed to have the largest measurement error, the employment protection index and the collective bargaining rate, as well as to the exclusion of the replacement rate which may be correlated with *PLMP*. Likewise, the use of three-year averages to reduce the possibility of bias due to serial correlation in the error term yielded larger coefficient estimates for *ALMP*, as expected, but reduced their significance for long-term unemployment somewhat to 12 percent.

[27] Nevertheless, because of the large standard error of the coefficient estimate for *ALMP* in the equation for unemployment, the coefficients on *ALMP* are not significantly different in the equations for unemployment and long-term unemployment.

Table 1. 20 OECD Countries: Results of GLS Panel Regression for Unemployment Rate, Long-Term Unemployment Rate, and Labor Force Participation Rate, Annual Data 1985-2002 1/

	Unemployment Rate		Long-Term Unemployment		Labor Force Participation Rate	
	Random effects	Fixed effects	Random effects	Fixed effects	Random effects	Fixed effects
UE(t-1) 2/	0.911 ***	0.728 ***	0.870 ***	0.765 ***	0.947 ***	0.798 ***
	(0.017)	(0.025)	(0.017)	(0.029)	(0.012)	(0.028)
ALMP	-0.150	-0.253	-0.211 **	-0.455 ***	0.074	0.157
	(0.124)	(0.188)	(0.082)	(0.131)	(0.15)	(0.266)
PLMP	0.506 ***	1.384 ***	0.405 ***	0.813 ***	-0.350 ***	-0.570 ***
	(0.089)	(0.108)	(0.053)	(0.068)	(0.086)	(0.117)
GROWTH	-0.266 ***	-0.197 ***	-0.056 ***	-0.019	0.050 *	0.020
	(0.024)	(0.023)	(0.016)	(0.016)	(0.027)	(0.028)
GRR	-0.028 ***	-0.019	-0.019 ***	0.018 *	0.024 ***	-0.019
	(0.006)	(0.013)	(0.004)	(0.01)	(0.006)	(0.018)
UNION	-0.001	0.019 **	-0.004 **	0.003	0.003	-0.018
	(0.003)	(0.009)	(0.002)	(0.007)	(0.003)	(0.014)
EMP_PROT	0.324 ***	0.448	0.300 ***	1.602 **	-0.263 **	-0.025
	(0.109)	(0.999)	(0.073)	(0.697)	(0.134)	(1.389)
COLL_BARG	-0.001	0.000	0.002	0.003	-0.004	0.017
	(0.003)	(0.009)	(0.002)	(0.006)	(0.003)	(0.012)
Constant	0.999 ***	-0.375	0.163 *	-2.944 ***	4.200 ***	15.862 ***
	(0.181)	(1.23)	(0.098)	(0.87)	(0.928)	(2.94)
Number of obs.	313	313	313	313	313	313
R^2	0.9645	0.8753	0.9637	0.8322	0.9795	0.9581

1/ Numbers in parentheses are standard errors. A * indicates significance at 10 percent, ** at 5 percent, *** at 1 percent.
2/ *LF* (t-1) for the regressions using labor force participation as dependent variable.

39. **As mentioned above, one shortcoming of the estimation is that it does not account for the endogeneity of ALMP and PLMP expenditures.** While *ALMP* and *PLMP* affect the unemployment rate, a higher unemployment rate increases the level of *PLMP* (e.g., through higher spending on unemployment benefits) and the level of *ALMP* (e.g., through more participants in ALMPs or higher spending in an effort to reduce unemployment or help the transition, if the source of the rise is a shock in a particular sector). Thus, one has to estimate the system using a simultaneous equation estimation to account for the simultaneous determination of unemployment, and ALMP and PLMP expenditures:

$$UE_t = \beta_0 + \beta_1 ALMP_t + \beta_2 PLMP_t + \beta_3 UE_{t-1} + \beta_4 X_t + \varepsilon_t$$
$$ALMP_t = \gamma_0 + \gamma_1 UE_t + \gamma_2 Y_t + \nu_t$$
$$PLMP_t = \delta_0 + \delta_1 UE_t + \delta_2 Z_t + \mu_t$$

40. **The estimation of the simultaneous equations requires the use of instrumental variables for *ALMP* and *PLMP*.** The problem is identifying suitable instruments that are correlated with *ALMP* and *PLMP* but are uncorrelated with the error term. We use lagged

ALMP and *PLMP*, country dummies, and time trends.[28] In addition, the first-stage estimation uses all the variables in the unemployment regression, as these variables have an impact on *ALMP* and *PLMP* through their impact on unemployment, in addition to their direct impact on *ALMP* and *PLMP*, and are uncorrelated with the error term in the unemployment equation.

41. **The simultaneous equation results presented in Table 2 are consistent with the results of the GLS regression.**[29] *ALMP* has a negative and significant impact on long-term unemployment, but there is no evidence that it has any impact on the unemployment rate. This may be because ALMP are often targeted at long-term unemployment. Not surprisingly, therefore, the coefficient estimate in the regression on long-term unemployment continues to be significantly negative at the 5 percent level. The point estimate is slightly smaller, reflecting the bias in the least square estimation; however, given the standard errors, the coefficient estimates for *ALMP* in the three GLS and IV regressions are not statistically different from each other. This reflects, as noted in paragraph 28, the relatively weak procyclicality of *ALMP*, which suggests, in turn, that the endogeneity problem may not cause significant bias in the regressions.

42. **The IV estimation is particularly different for the effect of PLMP on overall unemployment.** The coefficient estimates for *PLMP* for overall employment are significantly smaller in the IV regression, suggesting a much lower impact of PLMP on unemployment, although one that is still positive and significant. Finally, the regression for labor force participation is not substantially affected by the correction for simultaneity bias.

[28] The paucity of instruments makes the country dummies key to identifying the equations. Fixed-effects regressions therefore yield very weak results.

[29] We conducted several robustness tests, which yielded qualitatively similar results. Inclusion of a trend or an autoregressive AR(2) process in the second-stage regression does not affect the coefficient estimates. The inclusion of initial unemployment has no significant effects. Using three-year averages reduces the significance of *ALMP* to the 16 percent level. It also strengthens the correction for endogeneity in *PLMP*.

Table 2. 20 OECD Countries: Results of IV Panel Regression with Random Effects for Unemployment Rate, Long-Term Unemployment Rate, and Labor Force Participation Rate, Annual Data 1985-2002

	Unemployment Rate		Long-Term Unemployment Rate			Labor Force Participation Rate	
			Second-stage regression				
UE (t-1)	0.946	***	0.881	***	*LF* (t-1)	0.942	***
	(0.018)		(0.018)			(0.013)	
ALMP	-0.110		-0.187	**	*ALMP*	0.087	
	(0.131)		(0.087)			(0.176)	
PLMP	0.252	**	0.362	***	*PLMP*	-0.376	***
	(0.098)		(0.057)			(0.097)	
GROWTH	-0.295	***	-0.062	***	*GROWTH*	0.052	*
	(0.025)		(0.016)			(0.028)	
GRR	-0.017	***	-0.018	***	*GRR*	0.024	***
	(0.006)		(0.004)			(0.007)	
UNION	0.002		-0.003		*UNION*	0.004	
	(0.003)		(0.002)			(0.004)	
EMP_PROT	0.256	**	0.283	***	*EMP_PROT*	-0.294	*
	(0.111)		(0.075)			(0.156)	
COLL_BARG	-0.001		0.002		*COLL_BARG*	-0.004	
	(0.003)		(0.002)			(0.003)	
Constant	0.789	***	0.168	*	Constant	4.583	***
	(0.183)		(0.098)			(1.025)	
			First-stage regression for ALMP				
UE (t-1)	0.003		0.007		*LF* (t-1)	0.010	**
ALMP (t-1)	0.825	***	0.834	***	*ALMP* (t-1)	0.818	***
PLMP (t-1)	-0.006		-0.009		*PLMP* (t-1)	0.015	
GROWTH	-0.016	***	-0.017	***	*GROWTH*	-0.013	***
GRR	0.005	*	0.004		*GRR*	0.005	*
UNION	0.002		0.003		*UNION*	0.004	
EMP_PROT	-0.113		-0.130		*EMP_PROT*	-0.090	
COLL_BARG	-0.001		-0.001		*COLL_BARG*	-0.001	
TREND	-0.002		-0.003		*TREND*	-0.004	*
Constant 1/	0.279		0.310		Constant 1/	-0.637	
			First-stage regression for PLMP				
UE (t-1)	-0.016		-0.038	**	*LF* (t-1)	0.012	
ALMP (t-1)	0.147	**	0.157	**	*ALMP* (t-1)	0.152	**
PLMP (t-1)	0.887	***	0.876	***	*PLMP* (t-1)	0.845	***
GROWTH	-0.082	***	-0.079	***	*GROWTH*	-0.082	***
GRR	-0.003		-0.006		*GRR*	-0.001	
UNION	0.003		0.003		*UNION*	0.003	
EMP_PROT	-0.498		-0.550		*EMP_PROT*	-0.574	
COLL_BARG	-0.003		-0.003		*COLL_BARG*	-0.003	
TREND	-0.011	***	-0.014	***	*TREND*	-0.014	***
Constant 1/	1.059		1.270	*	Constant 1/	0.210	
Number of obs.	313		313		Number of obs.	313	
R^2	0.9636		0.9635		R^2	0.9795	

1/ Numbers in parentheses are standard errors. The country dummy for Spain was excluded from the regression but a constant included. A * indicates significance at 10 percent, ** at 5 percent, *** at 1 percent.

F. Conclusions

43. **The main conclusion of our analysis is that an expansion of active labor market policies in Israel would reduce unemployment, particularly long-term unemployment.** The welfare reforms have strengthened incentives to find employment and have contributed to rising labor force participation and declining unemployment rates. Furthermore, institutional barriers and distortions are broadly in line with other industrial countries. However, expenditures on ALMPs are very low by international standards. While, on average, OECD countries spend about 0.7 percent of their GDP on ALMPs, Israel spends only 0.2 percent of GDP. Using our point estimates, increasing ALMP expenditures from 0.2 percent of GDP to 0.7 percent would reduce the long-term unemployment rate by about 0.8 percentage point in the long term. While this would benefit the labor market, it also highlights concerns about cost effectiveness. Careful program design, enhanced with experience from pilot projects, is therefore key to ensuring the effectiveness of ALMP.

44. **Further research is needed to estimate the most efficient type of ALMPs to reduce unemployment; however, international studies based on micro data provide some insights.** International studies show that, in particular, job search assistance can be a low-cost and very effective means of increasing job placement among unemployed. Additionally, a carefully targeted training program that takes into account industry input can be useful in raising the placement and earnings potential of the unemployed. Nevertheless, international experience also suggests the need for country-specific program design, as well as ongoing evaluations. In this regard, Israel is undertaking several pilot programs that could provide guidance in designing efficient ALMPs.

REFERENCES

Akerlof, George A., and Janet L. Yellen, 1990, "The Fair Wage-Effort Hypothesis and Unemployment," *Quarterly Journal of Economics*, Vol. 105(2) (March), pp. 255-83.

Arrellano, Alfonso, 2003, "Do Training Programmes Get the Unemployed Back to Work? A Look at the Spanish Experience", unpublished; (Madrid: Universidad Carlos III de Madrid).

Behrenz, Lars, Lennart Delander, and Harald Niklasson, 2001, "Towards Intensified Local Level Co-operation in the Design and Implementation of Labour Market Policies: An Evaluation of Some Swedish Experiments and Reforms," in: *Labour market policy and Unemployment: Impact and Process Evaluations in Selected European Countries*, ed. by Jaap de Koning and Hugh Mosley, (Cheltenham, U.K. and Northampton, Massachusetts: Elgar), pp. 256–90.

Betcherman, Gordon, Karina Olivas, and Amit Dar, 2004, "Impacts of Active Labor Market Programs: New Evidence from Evaluations with Particular Attention to Developing and Transition Countries," Social Protection Discussion Paper No. 0402 (Washington: World Bank).

Blank, Rebecca, 2002, "Evaluating Welfare Reform in the United States," NBER Working Paper No. 8983, (Cambridge, Massachusetts: National Bureau of Economic Research).

Carling, Kenneth, and Katarina Richardson, 2001, "The Relative Efficiency of Labor Market Programs: Swedish Experience from the 1990s," Office of Labor Market Policy Evaluation, Working Paper No. 2001:2 (Uppsala: Office of Labor Market Policy Evaluation, Swedish Ministry of Industry, Employment, and Communications).

Diamond, Peter A., 1982, "Wage Determination and Efficiency in Search Equilibrium," *Review of Economic Studies*, Vol. 49(2) (April), pp. 217-27.

Elmeskov, Jorgen, John P. Martin, and Stefano Scarpetta, 1998, "Key Lessons for Labour Market Reforms: Evidence from OECD Countries' Experience," *Swedish Economic Policy Review*, Vol. 5 (autumn), pp. 205–52.

Estevao, Marcello, 2003, "Do Active Labor Market Policies Increase Employment?" IMF Working Paper No. 03/234 (Washington: International Monetary Fund).

Heckman, James J., Robert J. LaLonde, and Jeffrey A. Smith, 1999, "The Economics and Econometrics of Active Labor Market Programs," in *Handbook of Labor Economics,* Vol. 3A, ed. by Orley Ashenfelter and David Card (Amsterdam, New York and Oxford: Elsevier Science North-Holland), pp. 1865–2097.

Lechner, Michael, and Friedhelm Pfeiffer, (eds.), 2001, *Econometric Evaluation of Labour Market Policies*, (Heidelberg and New York: Physica-Verlag and Center for European Economic Research).

Lise, Jeremy, Shannon Seitz, and Jeffrey Smith, 2003, "Equilibrium Policy Experiments and the Evaluation of Social Programs", IZA Discussion Paper No. 758, (Bonn: Institute for the Study of Labor).

Martin, John P. and David Grubb, 2001, "What Works and for Whom: A Review of OECD Countries' Experiences with Active Labour Market Policies," Office of Labor Market Policy Evaluation Working Paper No. 2001:14 (Uppsala: Office of Labor Market Policy Evaluation, Swedish Ministry of Industry, Employment, and Communications).

Mead, Lawrence M., 2001, "Welfare Reform in Wisconsin: The Local Rule," IRP Discussion Paper No. 1232–01 (Madison: Wisconsin, Institute for Research on Poverty).

Michalopoulos, Charles, and others, 2002, *Making Work Pay: Final Report on the Self-Sufficiency Project for Long-Term Welfare Recipients*, (Ottawa, Canada: Social Research and Demonstration Corporation, MDRC).

Mosley, Hugh, and Holger Schütz, 2001, "The Implementation of Active Policies in the German Regions: Decentralization and Co-operation," in *Labour Market Policy and Unemployment: Impact and Process Evaluations in Selected European Countries*, ed. by Jaap de Koning and Hugh Mosley (Cheltenham, U.K. and Northampton, Massachussetts: Elgar), pp. 178–218.

Nickell, Stephen J., 1997, "Unemployment and Labor Market Rigidities: Europe versus North America," *Journal of Economic Perspectives*, Vol. 11(3), pp. 55–74.

Nickell, Stephen J., Luca Nunziata and Wolfgang Ochel, 2005, "Unemployment in the OECD since the 1960s," *Economic Journal*, Vol. 115 (January), pp1–27.

Nickell, Stephen, Luca Nunziata, Wolfgang Ochel, and Glenda Quintini, 2001, "The Beveridge Curve, Unemployment, and Wages in the OECD from the 1960s to the 1990s", CEP Discussion Paper No. 0502 (London: Center for Economic Performance).

Scarpetta, Stefano, 1996, "Assessing the Role of Labor Market Policies and Institutional Settings on Unemployment: A Cross-Country Study", *OECD Economic Studies*, Vol. 26, pp. 43–98.

Shapiro, Carl, and Stiglitz, Joseph E., 1984, "Equilibrium Unemployment as a Worker Discipline Device," *American Economic Review*, Vol. 74(3) (June), pp. 433-44.

Stevens, Margaret, "Labor Contracts and Efficiency in On-the Job Training," Economic Journal, Vol. 104 (March), pp. 408-419.

Van Reenen, John, 2003, "Active Labour Market Policies and the British New Deal for the Young Unemployed in Context," NBER Working Paper No. 9576 (Cambridge, Massachusetts: National Bureau of Economic Research).

Van Velzen, Martijn, 2001, "Activation through Co-operation: A Case Study of the Implementation of Active Measures in the Netherlands", in *Labour Market Policy and Unemployment: Impact and Process Evaluations in Selected European Countries*, ed. by Jaap de Koning and Hugh Mosley (Cheltenham, U.K. and Northampton, Massachussetts: Elgar), pp. 219–255.

DATA APPENDIX

We used the following data sources for the regression analysis.

Variable	Definition	Source
Unemployment rate	Unemployment in percent of labor force.	OECD Labor Market Statistics Database.
Labor force participation rate	Labor force in percent of population (aged 15–64 years).	OECD Labor Market Statistics Database.
Long-term unemployment rate	Unemployed for 12 months or more in percent of labor force.	OECD Labor Market Statistics Database.
Minimum Wages and Median Wages		OECD Labor Market Statistics Database.
ALMP Expenditures and PLMP Expenditures	In percent of GDP.	Expenditures from OECD Labor Market Statistics Dabase; GDP from World Economic Outlook database (IMF).
Unionization	Trade union members in percent of employees	OECD Labor Market Statistics Database.
Gross replacement rate	Average of the gross unemployment benefit replacement rates for two earnings levels, three family situations and three durations of unemployment.	Benefits and Wages, OECD (2004).
Per capital real GDP growth	Real GDP (in national currency units) divided by population, annual percent change.	World Economic Outlook database (IMF).
Employment Protection Index	Range 0–2.	Nickell, Nunziata, Ochel, and Quintini (2001) show estimates in 5-year intervals up to 1995. Data within the intervals are intrapolated. Data from 1996 onward is assumed to be constant .
Collective Bargaining Coverage	In percent.	Nickell, Nunziata, Ochel, and Quintini (2001) show estimates in 5-year intervals up to 1994. Data within the intervals are intrapolated. Data from 1996 onward is assumed to be constant.

The OECD Labor Market Statistics Database is available at (http://www1.oecd.org/scripts/cde/members/lfsdataauthenticate.asp). The OECD benefit and wages database is available at http://www.oecd.org/document/0/0,2340,en_2825_497118_34053248_1_1_1_1,00.html#statistics.

We included 20 OECD countries for the years 1985–2002. The countries are Australia, Austria, Belgium, Canada, Denmark, Finland, France, Germany, Ireland, Italy, Japan, Netherlands, New Zealand, Norway, Portugal, Spain, Sweden, Switzerland, the UK, and the US.