Does the Presence of Foreign Guest Workers in Israel Harm Palestinians from the West Bank and Gaza Strip?

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Abstract

Starting in the late 1980s, the Israeli market for unskilled labor began a liberalization process that resulted in a large influx of foreign guest workers from overseas. The vast majority of overseas foreign workers directly compete with Palestinians from the West Bank and Gaza Strip for jobs in Israel. Using micro level panel data from the Territories Labor Force Survey and monthly time-series data on the number of foreign guest workers in Israel, this paper measures the effects of the presence of foreign guest workers on Palestinian employment and earnings. OLS and IV estimates indicate that the presence of foreign guest workers substantially reduces Palestinian employment levels in Israel. Palestinians from Gaza are displaced to a greater extent than are Palestinians from the West Bank. OLS and IV estimates indicate a large and significant reduction in mean monthly and mean daily earnings among Palestinians from Gaza, but not among Palestinians from the West Bank.

1. Introduction

The exportation of Palestinian labor services to Israel has long been a central feature of the economic relationship between Israelis and Palestinians. The historically large scale and mostly unregulated employment of Palestinians in Israel considerably helped both parties in the past (Kleiman (1990)). Income deriving from Palestinian employment in Israel has constituted a substantial stimulus in the Palestinian economy and has accounted for as much as 22% of Palestinian Authority (PA) revenues. The relatively low cost of Palestinian labor also benefited Israelis mainly through cheaper housing and agricultural products.

Recently, substantial changes have taken place in the Israeli market for unskilled labor. One of the most important changes over the past decade has been the large influx of foreign guest workers from outside of the region. Due to Israel's security concerns and policy of periodically closing off the West Bank and Gaza since the late 1980s, temporary shortages of labor in the Israeli construction and agricultural industries were created. The shortages of labor induced the government to liberalize controls over the number of foreign workers entering Israel from overseas. As the number of foreign workers employed in Israel has increased over time, the proportion of Palestinians working in Israel has fallen.

Because foreign workers are generally cheaper to employ in Israel than are Palestinians, the presence of foreign workers may be a main cause of the long-run trend of lower Palestinian employment levels in Israel. On the other hand, it is not always true that the availability of less expensive labor leads to a decrease in demand for competing types of labor. A large enough increase in output (scale effect) deriving from the employment of cheaper foreign labor could lead to an increase in demand and wages for Palestinians when temporary closures of the West Bank and Gaza are not in effect. It is, therefore, an empirical matter to determine whether and to what extent Palestinians are harmed by the presence of foreign workers in Israel.

Using micro level panel data from the Territories Labor Force Survey (TLFS) of the Israel Central Bureau of Statistics (ICBS), and monthly time-series data on the number of foreign guest workers in Israel between 1991 and 1995, we find that the presence of foreign workers does substantially reduce the long-run employment levels of Palestinians in Israel. OLS estimates indicate that the proportion of Palestinians from the West Bank that work in Israel is reduced by 2.2% for every 10,000 foreign workers. IV estimates yield a reduction of 1%. Using the 140,000 foreign workers employed in Israel at the end of 1995 as the base, IV estimates imply that an increase of 10% in the supply of foreign workers reduces the employment rate of Palestinians from the West Bank in Israel by 1.4%.

We also find that Palestinians from Gaza are displaced by foreign guest workers to a greater extent than are Palestinians from the West Bank. OLS estimates indicate that the proportion of Palestinians from Gaza working in Israel is reduced by 8.5% for every 10,000 foreign workers. IV estimates yield a more modest but still relatively large

reduction of 3.5%. IV estimates imply that an increase of 10% in the supply of foreign workers reduces the employment rate of Palestinians from Gaza in Israel by 4.9%.

We do not find substantial reductions in mean earnings among Palestinians from the West Bank as a result of the influx of foreign guest workers. OLS estimates yield a significant reduction in mean daily wages of one-half of one percent for every 10,000 foreign guest workers, but IV estimates yield a smaller and insignificant effect. Moreover, both OLS and IV estimates of the reduction in mean monthly earnings are insignificant.

Palestinians from Gaza, on the other hand, do experience large and significant reductions in both mean monthly and mean daily earnings. OLS estimates indicate reductions in mean monthly and mean daily earnings of 5.6% and 6.4%, respectively, for every 10,000 foreign guest workers in Israel. The corresponding IV estimates are 4.4% and 3.8%, respectively. IV estimates imply that an increase of 10% in the supply of foreign workers reduces the mean monthly and daily earnings of Palestinians from Gaza by 6.2% and 5.3%, respectively.

The generally significant and substantial negative impact of foreign guest workers on the employment outcomes of Palestinians is a rare finding in the immigration literature. Most studies of the impact of immigration on native (or incumbent worker) employment outcomes find, at best, weak negative effects (see, e.g., Borjas (1987), Card (1990), Altonji and Card (1991), Pischke and Velling (1997), Schoeni (1997), Friedberg (2001) and Card (2001).)[1] The lack of significant effects is usually attributed to problems associated with appropriately defining competing groups of immigrants and natives, natives responding to immigration by moving their labor and capital to other areas, and immigrants locating in growing local economies (Borjas (2003)).

In this study, we can reasonably overcome many of the problems that plague the immigration literature. First, we are examining data that relate to two groups of workers that truly compete in the labor market. Foreign guest workers were originally granted access to the Israel labor market in order to replace Palestinian laborers who were finding it difficult to reach work in Israel due to surges in the Israeli-Palestinian conflict. Second, the TLFS panel data include information on the employment and earnings of Palestinians after they exit the Israeli market for unskilled labor. Our estimates, therefore, suffer less from sample-selection biases since we can include the employment outcomes of displaced Palestinians in estimation.

Perhaps most important, data on foreign worker permits issued by the Israeli government allow us to correct for biases that arise due to non-random immigration. The number of foreign worker permits issued to Israeli employers in any given year is a potential source of exogenous variation in the change in the number of foreign workers actually employed in Israel. This is because there is a virtually infinite supply of unskilled workers from other countries that are willing to work in Israel at the going wage, and there are lags and inefficiencies in the regulatory process that governs the issuance of permits. Lags and

[1] Borjas (2003) is one of the few exceptions.

inefficiencies create a situation whereby the influx of foreign workers is not a direct result of contemporaneously rising wages or falling unemployment in Israel or its surrounding areas.

The rest of this paper is organized as follows. In the next section the recent history of the Israeli market for unskilled labor is reviewed. In Section 3, the data sources on Palestinians and foreign workers are described. Section 4 outlines the empirical strategy. In Section 5, estimation results are presented. In Section 6, data beyond the sample period are analyzed. The last section summarizes and concludes.

2. Background

Two years after Israel captured the West Bank from Jordan and the Gaza Strip from Egypt in the 1967 Six Day War, the Israeli government began issuing permits allowing Palestinians residing in the West Bank and Gaza to work in Israel. Palestinians who were denied permits also found employment in Israel with relative ease. The lack of a tightly controlled border separating Israel and the West Bank and Gaza, and the lack of enforcement against the illegal employment of Palestinians in Israel, rendered the permit system almost inconsequential.

In 1970, just one year after Israel began issuing work permits to Palestinians, 22% of all Palestinian salaried employees worked in Israel. By the mid 1970s, the proportion of Palestinians working in Israel more than doubled. Palestinian employment rates in Israel remained high throughout most of the 1980s, fluctuating between 49% and 61%.

In December 1987, when the first Palestinian uprising broke out, the relatively stable employment situation of Palestinians in Israel began to change. The Palestinian uprising led to strikes, curfews and occasional closures of the West Bank and Gaza, which made it difficult for Palestinians to reach work in Israel. The resulting temporary shortage of labor in Israeli construction and agriculture, the industries in which most Palestinian workers were employed, induced Israeli employers to lobby the Israeli government for permission to import foreign guest workers from outside of the region.

The Israeli government allowed the importation of foreign workers, but the number of foreign worker permits was initially kept to a minimum. Relatively few permits were issued because, beginning in October 1989, immigrants from the former Soviet Union were arriving in Israel in large numbers. The Israeli government expected new immigrants to replace the absentee Palestinian workers. However, it quickly became apparent that new immigrants, like Israeli natives, were not sufficiently attracted to the jobs that Palestinians were traditionally performing (see Friedberg (2000) and Weiss, Sauer and Gotlibovski (2003)).

In 1991, with the start of the first Gulf War, particularly tight closures of the West Bank led to severe shortages of labor in Israeli construction and agriculture. Israeli employers pressured the government, and in response, the government substantially increased the number of foreign worker permits. The number of permits issued for foreign workers

increased even more dramatically following a series of terrorist attacks inside Israel during 1993 and 1994. During these two years, the West Bank and Gaza were sealed off for relatively long periods of time.

It is important to note that the temporary shortages of labor resulting from the Israeli-Palestinian conflict and other turbulent events in the Middle East were not the only reasons that Israeli employers lobbied for a liberalization process and permission to import foreign workers. Foreign workers have been informally estimated to be 20-40% cheaper to employ than Palestinians (see Amir (1999)). Considering that production in the Israeli construction and agricultural sectors, the sectors in which most Palestinians and foreign workers are employed, is highly labor-intensive, the profitability of employing lower cost labor can be considerable.

One of the main reasons that foreign workers are cheaper to employ than Palestinians is the willingness and feasibility of legal and illegal foreign workers to reside inside Israel. In many cases, foreign workers live on the work site. Palestinian laborers, in contrast, commute daily from locations in the West Bank and Gaza to work locations in Israel, a factor that could lead to higher reservation wages. The cost differential between foreign workers and Palestinians generally depends on the legal status and country of origin of the foreign worker.[2] Note also that it is commonly believed that minimum wage laws for foreign workers and Palestinians employed in Israel are not strictly enforced.

3. Data

3.1 Palestinians

The data on Palestinians are drawn from the Territories Labor Force Survey (TLFS) of the Israel Central Bureau of Statistics (ICBS). The TLFS sampling frame includes almost all households in the West Bank and Gaza. The ICBS ceased conducting the TLFS soon after the signing of the Oslo Accords and the creation of the Palestinian Authority (PA) in 1994. Each household in the TLFS is investigated 4 times over 6 quarters. Two investigations are conducted during two consecutive quarters and then after a break of two quarters, two additional investigations are conducted. Local Palestinian enumerators employed by the former Israel Civil Administration in the West Bank and Gaza conducted the survey interviews.

The first year of the TLFS that we use is 1991, corresponding to the first year for which there are reliable data on the number of foreign workers in Israel. The sample is further restricted to male workers between the ages of 18 and 64 and that are in the labor force. Note that the participation rate of Palestinian women in the labor force has been traditionally very low. Therefore, data on Palestinian female workers are not analyzed.

[2] In 2002, in the agricultural sector, most legal foreign workers are from Thailand. In the construction sector, most legal foreign workers are from Romania, the former USSR, China, Turkey, Bulgaria and Thailand. Illegal foreign workers tend to originate from Romania, Philippines, India, Sri Lanka, Burma, Bulgaria, Hungary, Poland, the former USSR, South America, Africa, Jordan, China, Turkey and Thailand (see www.kavlaoved.org.il/workers/data_en.asp).

The top panel of Table 1 presents descriptive statistics for the sample of Palestinians that reside in the West Bank between the years 1991 and 1995. The data show that the proportion of Palestinians that work in Israel drops sharply from 1992 to 1993. In 1992, 61% of the residents of the West Bank work in Israel. In 1995, the percentage falls to 37.5. The increase in the proportion working in Israel from 1991 to 1992 is due to the closures of the West Bank during the Gulf War.

The data also illustrate that the proportion commuting from population centers in the West Bank decreases over time, and the mean schooling levels and mean age of Palestinians from the West Bank working in Israel slightly increases over the sample period.[3] Mean monthly wages of Palestinians that work in Israel hardly change from 1992 to 1995. There is an increase in mean wages from 1991 to 1992, which is driven by the re-entry of Palestinian workers from the West Bank into Israel at the end of the 1991 Gulf War.

The bottom panel of Table 1 presents descriptive statistics for the sample of Palestinians that reside in Gaza from 1991 to 1994. There are no data for the year 1995 since areas in Gaza came under the control of the PA sooner than areas in the West Bank. The figures for Gaza also show a sharp and similar drop in the proportion working in Israel from 1992 to 1993. The proportion of Palestinians from Gaza working in Israel that is married increases over time. Mean schooling levels and the mean age also increase. Mean monthly wages among Palestinians from Gaza that work in Israel are roughly constant over time.

In comparison to residents of the West Bank, the figures in Table 1 show that residents of Gaza that work in Israel are more likely to be married, are more likely to be commuting from a population center and a refugee camp, are more educated and are older. Residents of Gaza are also more dependent on the Israeli labor market and are paid less than their West Bank counterparts. The differences in the characteristics of those that work in Israel by residential location, as well as the changes in these characteristics over time, are broadly reflective of Israel's Palestinian work permit policy and relatively tighter border controls in Gaza.

3.2 Foreign Workers

The monthly time series data on the total number of foreign guest workers in Israel (legal and illegal) is taken from the ICBS. In estimating the total number of foreign workers, the ICBS takes into account the date of entry into Israel, the date of exit from Israel and the country of origin of individuals that received tourist visas or work permits. According to ICBS estimates, there were a small number of foreign guest workers in Israel in 1991, but by the end of 1995, there were approximately 140,000. In 1995, foreign guest workers constituted 5.7% of total labor input in Israel.[4]

[3] Angrist (1995) uses the TLFS to describe the increase in schooling levels and changes in the returns to schooling among Palestinians during the 1980s.

[4] The percentage of total labor input in Israel accounted for by Palestinians from the West Bank and Gaza

Figure 1 displays data on the total number of foreign guest workers, the cumulative number of foreign guest worker permits issued since 1991, and the total number of Palestinians working in Israel, between January 1991 and December 1995. The data on the total number of foreign worker permits was supplied by the Israel Ministry of Labor and Social Affairs and is interpolated from a yearly level to a monthly level in order to match the monthly level data on foreign guest workers and Palestinians. The monthly data on the number of Palestinians working in Israel is calculated from the TLFS and adjusted by sampling weights.

The data in Figure 1 clearly show an accelerating cumulative number of guest worker permits issued over the period. The number of permits issued during 1993 was 22% higher than the average number of permits issued in 1991 and 1992, and in the following year the number tripled. Within 5 years, the number of permits grew by a factor of 8.5.[5] Note that the number of foreign guest workers always exceeds the cumulative number of permits issued, which is reflective of the presence of illegal guest workers.

Figure 1 also shows that, after the end of the Gulf War, there was an increase in Palestinian employment levels that remained relatively stable until 1993. During 1993 there is a sharp drop in Palestinian employment levels in Israel. Toward the end of 1993 and during 1994 there is a recovery in Palestinian employment in Israel but it does not reach pre-March 1993 levels.

4. Estimation Strategy

The empirical model used for measuring the effect of foreign guest workers on Palestinian employment outcomes is

$$(1) \qquad Y_{it}=\alpha_0+\alpha_1 F_t+\alpha_2 C_t+\boldsymbol{\beta}\mathbf{X_i}+\varepsilon_{it,}$$

where Y_{it} is the employment outcome of individual **i** in month **t**. Y_{it} is either a dummy indicating employment in Israel, the natural logarithm of monthly earnings, or the natural logarithm of average daily wages.

The main covariate of interest in (1) is F_t, the number of overseas foreign guest workers in Israel in month **t**. C_t, the number of days of closure imposed on the West Bank and Gaza in month **t**, helps separate short-run lack of access to the Israeli labor market and long-term replacement by foreign workers. C_t is constructed using dates of closures published by the PA. C_t is reasonably exogenous to unobserved components determining Palestinian employment levels and earnings (see Angrist (1996)).

The individual and approximately time-invariant covariates contained in the vector $\mathbf{X_i}$ include dummies indicating marital status, residence in an urban area, residence in a

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fell from 11% in 1987 to 2.9% in 1995.

[5] In 1994, 50% of the permits were issued to employers in construction, 21% to employers in agriculture and 15% were issued for household services. The remaining permits were issued for other labor services.

refugee camp, schooling group, and age group. The schooling groups are 12 years of schooling, 13 to 15 years of schooling and 16 years or more. The base schooling group is less than 12 years of schooling. The age groups are 18-24, 25-34, 35-44, 45-54 and 55-64. The base age group is 18-24. Controls for the first and second quarters of 1991 (the Gulf War) are also added to the $\mathbf{X_i}$ vector.

Since the random error component in (1) is likely to contain unobserved individual effects that are potentially correlated with the demand for foreign workers in Israel, ε_{it} is specified as

$$\varepsilon_{it}=\mu_i+\nu_{it} \tag{2}$$

where μ_i captures unobserved characteristics of Palestinian laborers that are fixed over time. Possible individual effects in this context are productivity, motivation, language ability and geographical proximity to work locations inside Israel (assuming no residential mobility). Palestinian workers that are more productive, more motivated, have better Hebrew language skills and that are closer geographically to work locations in Israel may be differentially more employable in Israel, and differentially less substitutable with foreign workers. ν_{it} is assumed to be an independent and identically distributed disturbance term.

In order to correct for potential biases that arise from individual effects, first differences regressions are estimated in addition to the levels regressions in (1). First differencing (1) yields

$$Y_{it}-Y_{it-1}=\alpha_1(F_t-F_{t-1})+\alpha_2(C_t-C_{t-1})+(\nu_{it}-\nu_{it-1}), \tag{3}$$

thus eliminating μ_i. However, estimating (3) may still yield a biased effect of foreign workers on Palestinian employment outcomes. It is possible that the change in foreign workers and the change in the employment outcomes of Palestinians are both driven by changes in the total demand for labor deriving from economic growth in Israel. It is also possible that an increase in foreign workers is due to a shortage of Palestinian laborers driven not by competing foreign workers or closures, but rather by improving economic conditions in the West Bank and Gaza during the sample period. There may also be changing preferences for foreign workers and Palestinians, on the part of Israeli employers, during times of general conflict.[6]

In order to correct for these additional sources of bias in the first differences regressions, the change in the number of foreign workers in (3) is instrumented by the number of foreign worker permits issued by the government between **t** and **t-1**. That is, the first stage in two-stage least squares estimation of (3) is

$$F_t-F_{t-1}=\pi_1(P_t-P_{t-1})+ \pi_2(C_t-C_{t-1})+(\xi_{it}-\xi_{it-1}), \tag{4}$$

[6] Observed proxies for the total demand for foreign workers and Palestinians (such as aggregate Israeli wages or GDP per capita) are not directly included in estimation because they are potentially strongly endogenous.

where P_t is the number of foreign worker permits issued by the government in month **t**. The error term in (3), $\nu_{it}-\nu_{it-1}$, is likely to be correlated with $\xi_{it}-\xi_{it-1}$ for the reasons mentioned above. Note that P_t-P_{t-1} will not be perfectly correlated with F_t-F_{t-1} because of unused work permits and the availability of illegal foreign labor.

The reason that P_t-P_{t-1} is likely to be exogenous to $\nu_{it}-\nu_{it-1}$ is mainly due to administrative lags and inefficiencies in the issuance of permits. The Israel Ministry of Labor and Social Affairs issues foreign worker permits to Israeli employers. The Ministry's allocation process is periodically reviewed by the Israeli State Comptroller's Office.

The State Comptroller's Office regularly finds hundreds of deficiencies in the foreign worker permit allocation process. For example, Israeli employers often file more employment requests than "necessary", leading to delays in issuance that can last many months. There is also a lack of computerization and coordination between different authorities within the Ministry. These problems have led to work permits being issued for already finished construction projects, for projects that are not allowed to begin because of lack of proper building permits, and for planned harvests that are based on unverified reports by farmers.

5. Estimation Results

In this section, estimation results for levels, first differences and instrumented first differences specifications are presented and discussed. First differences are taken one year apart, between the first and third interviews of each household in the TLFS.[7] All specifications are estimated by weighted least squares using ICBS sampling weights. Reported standard errors are clustered on month of observation.

5.1 Employment Effects

Table 2 presents estimated effects of foreign workers and closures on the proportion of Palestinians from the West Bank employed in Israel. In the levels regression in Column (1), the OLS coefficient on foreign workers is negative and precisely estimated. The coefficient of -.022 means the addition of 10,000 foreign guest workers reduces the employment rate in Israel of Palestinians from the West Bank by 2.2%. Taking the size of the male labor force in the West Bank in 1991 to be 166,000, the coefficient implies that every 10,000 foreign workers reduces the number of Palestinians working in Israel by 3,652. This corresponds to an estimated rate of substitution between foreign workers and Palestinians of .365.[8]

In Column (2), the number of days of closure imposed on the West Bank is added in order to take into account the possibility that the estimated effect of foreign workers is

[7] There are very few observations on the same household between the second and fourth interviews. See Angrist (1992,1995) for discussion.

[8] The rate of substitution is defined as the size of the labor force multiplied by the coefficient on foreign workers, divided by 10,000.

confounded with a temporary inability of Palestinians to reach work in Israel during the closure period only. The addition of the closure data has only a small effect on the foreign workers coefficient.

In the first differences regressions, the coefficient on foreign workers is considerably reduced in magnitude. The coefficient is -.007 in both Columns (3) and (4). The coefficients in the IV first differences regressions are similar in magnitude and the first stage t-statistics are quite large. The IV estimate of the foreign workers coefficient in Column (6), with closures added, is -.008 and is statistically significant. This latter coefficient yields a rate of substitution of .133.

Table 3 presents estimated effects of foreign guest workers and closures on the proportion of Palestinians from Gaza employed in Israel. The coefficients in the levels regressions are considerably larger than in Table 2. Taking the size of the male labor force in Gaza in 1991 to be 102,000, the OLS coefficient of -.085 in Column (2) corresponds to a rate of substitution of .867.

In the first differences and IV regressions, the coefficient on foreign workers is much weaker but is still large and statistically significant. With closures added, the IV estimate of the coefficient on foreign workers is -.035, corresponding to an estimated rate of substitution of .357. This latter rate of substitution is 2.7 times larger than the corresponding rate of substitution estimated among Palestinians from the West Bank.

5.2 Monthly Earnings Effects

Tables 4 and 5 present the estimated effects of foreign workers and closures on the mean monthly earnings of Palestinians from the West Bank and Gaza. Note that individuals who are displaced by foreign workers contribute earnings observations both before and after displacement in these regressions. The sample is not restricted to only those individuals who are employed in Israel in both periods.

The estimates in Table 4 illustrate that the presence of foreign workers in Israel do not significantly reduce the mean monthly earnings of Palestinians from the West Bank. In Column (1), the OLS coefficient on foreign workers is statistically significant but the addition of closures in Column (2) reduces the coefficient's magnitude and precision. The first differences and IV first differences coefficients are relatively weaker and less precisely estimated.

In sharp contrast to the estimates in Table 4, the estimates in Table 5 indicate large and significant negative effects of foreign workers on the mean monthly earnings of Palestinians from Gaza. The OLS coefficient on foreign workers in Column (2), with closures added, is -.056 and is very precisely estimated. For every 10,000 foreign workers employed in Israel, the mean earnings of Palestinians from Gaza are reduced by 5.6%.

The first differences and IV first differences specifications yield more modest, but still relatively large and significant negative coefficients. The IV first differences regression

with closures added, in Column (6), yields a significant coefficient on foreign workers of –.044. In this latter specification, an addition of 10,000 foreign workers in Israel reduces the mean earnings of Palestinian from Gaza by 4.4%.

5.3 Daily Earnings Effects

In addition to monthly earnings, the TLFS also contains information on the number of days worked in the prior month. It is thus possible to construct a daily earnings figure for each individual in the sample. Tables 6 and 7 report the estimated effects of foreign workers and closures on the mean daily earnings of Palestinians from the West Bank and Gaza.

The estimated coefficients in Table 6 illustrate that foreign workers do not significantly reduce the mean daily earnings of Palestinians from the West Bank. This is the same general result found when using monthly earnings. The coefficients on foreign workers in Table 6 are slightly stronger and more consistently negative than in Table 4, however, the estimated coefficients are not precisely estimated.

The estimated coefficients in Table 7 also do not change the general conclusions reached earlier. The presence of foreign workers significantly reduces the mean daily earnings of Palestinians from Gaza. The first differences and IV first differences coefficients in Table 7 are weaker in magnitude than the corresponding coefficients in Table 5. However, the estimated coefficients remain relatively large and statistically significant. The IV estimate in Column (6) of Table 7 is –.038, implying that every 10,000 foreign workers in Israel reduce the mean daily earnings of Palestinians by 3.8%.

5.4 The Importance of Post-Displacement Earnings Information

As mentioned earlier, the results in Tables 2 through 7 exploit the information on Palestinian labor market outcomes in Israel and in the local Palestinian economy. In most studies of the impact of immigration, information on individual outcomes after displacement is not available. In order to assess the contribution of the post-displacement earnings data and, consequently, the extent of sample selection bias were this information not available, Tables 8 through 11 report estimation results that restrict the sample to Palestinians who continuously work in Israel throughout the sample period.

The results in Table 8 indicate that the mean monthly earnings of Palestinians from the West Bank who continuously work in Israel consistently increase with the arrival of foreign guest workers. The positive earnings effects are, however, not precisely estimated. The results in Table 10, which use average daily earnings as the dependent variable, also reveal positive earnings effects. These latter positive earnings effects are statistically significant in the levels and first differences specifications but not in the IV first differences regressions.

The effects of foreign workers on the mean earnings of Palestinians from Gaza reported in Tables 9 and 11 show a similar pattern. The coefficients on foreign workers are either

weakly negative or positive but are not precisely estimated. This is in sharp contrast to the consistently strong and statistically significant negative coefficients in the full sample. Note that the weak effects of foreign workers on the earnings of Palestinians that remain employed in Israel were already hinted at in the descriptive statistics presented in Table 1.

Overall, the evidence suggests that Palestinians who remain employed in Israel do not suffer significant earnings losses due to competition with overseas foreign workers. Palestinians that remain employed in Israel may even experience slight earnings increases. Earnings increases could derive from Palestinians moving up the job hierarchy in construction and agriculture. This type of complementarity, or promotion phenomenon, actually occurred amongst Israeli natives who worked in construction and agriculture after the entry of Palestinians to the Israeli labor market in the early 1970s (Semyonov and Lewin-Epstein (1987)). This type of complementarity is also one of the hypothesized explanations for why the influx of Cuban refugees to Miami in 1981 did not adversely affect the employment and earnings of previous Cuban immigrants living there (Card (1989)).

The evidence also suggests that Palestinians from the West Bank who are displaced from jobs in Israel and find employment in the local Palestinian economy do not suffer large earnings losses. In contrast, Palestinians from Gaza who are displaced and find employment in the local Palestinian economy experience relatively large decreases in earnings. This is probably due to the local Palestinian market for unskilled labor in Gaza being less developed than the local Palestinian market for unskilled labor in the West Bank.

5.5 Additional Results

The coefficients on the other regressors in the employment in Israel regressions in Tables 2 and 3, not reported in the tables, generally show that Palestinians who work in Israel are more likely to be married, less likely to live in an urban setting or in a refugee camp, less educated and older than Palestinians who do not work in Israel. The effects of these covariates partially capture Israel's policy of not issuing work permits to Palestinians with particular observable characteristics, considered to be security risks.

It is interesting to note that the negative effect of education on the probability of working in Israel is stronger among residents of Gaza than residents of the West Bank. This may be due to the greater availability of higher skilled jobs in public administration in Gaza, where the PA concentrated its administrative activities in the first half of the 1990s. The proportion of Gaza residents employed locally in scientific, academic and managerial professions increased by 8% between 1991 and 1994, while the proportion remained constant in the West Bank.

Additional specifications, not reported for sake of brevity, show that there are no significant nonlinearities in the effect of foreign workers and closures on the employment rate of Palestinians in Israel. There are, however, a few significant interactions between

foreign workers and the individual characteristics of Palestinians. The interaction terms generally indicate that Palestinians that reside in an urban setting and that are more educated and younger are relatively less substitutable with foreign workers.

The coefficients on the other regressors in Tables 4 through 7 indicate that higher mean earnings are associated with being married, not living in an urban setting or in a refugee camp, and having 16 years of schooling or more. Mean earnings also follow a standard age-earnings profile. These results are consistent with findings in Angrist (1995,1996). Among Palestinians from Gaza, the marriage premium is weaker, the schooling coefficients are stronger in magnitude and earnings increase with age to a lesser extent (see also Yashiv (2000)).

In all of the specifications in Tables 2 through 7, days of closures do not consistently have a precise independent effect on employment rates or mean earnings. The coefficients on days of closures do, however, generally have the expected negative sign. The mostly weak and statistically insignificant effects of days of closure could be partially due to measurement errors in the dates of closures of the West Bank and Gaza obtained from the PA's website.

6. Will the Future Look like the Past?

The empirical results presented above are strictly valid only for the period 1991 through 1995. Unfortunately, it is very difficult to obtain micro data on Palestinian labor market outcomes subsequent to 1995. Nonetheless, it is possible to get an impression of the permanence of the effect of foreign workers on Palestinian labor market outcomes by examining the figures in Table 12. Table 12 displays data on the composition of labor input in the Israeli construction industry from 1990 through 2002.

The figures in Table 12 show considerable variation in the number of Palestinians (from both the West Bank and Gaza) employed in the Israeli construction industry over time. In 1990, there were 69.2 thousand Palestinians employed in Israeli construction, in 1995 the number fell to 38 thousand and in 1999 there was a recovery in absolute numbers to 64.7 thousand. In 2001 and 2002, the years following the start of the second Palestinian uprising, in September 2000, the numbers sank to 29.3 and 13 thousand, respectively.

Note that as a percentage of the male Palestinian labor force, the temporary recovery between 1998 and 2000 was not complete. The 69.2 thousand Palestinians employed in Israeli construction in 1990 constituted 27.1% of the Palestinian male labor force. The 64.7 thousand Palestinians employed in Israeli construction in 1999 account for 16.4% of the male labor force.

As a proportion of total construction industry employment, which was both expanding and contracting over the years, Palestinian representation fell from 45% of total industry employment in 1990 to 6% of total industry employment in 2002. During the recovery between 1998 and 2000, Palestinians did not exceed 26.5% of total industry employment. If Palestinians had continued to constitute 45% of total industry employment in 1999, as

in 1990, 109.8 thousand would have been employed in Israeli construction rather than 64.7 thousand. Palestinians, therefore, lost 45,100 jobs.

The figures in the table also illustrate the increasing number of foreign workers employed in Israeli construction since 1990. There were no recorded foreign workers in 1990, but by 1999, there were 59 thousand foreign workers employed in the construction industry. An increase of 59 thousand foreign workers employed in construction and a loss of 45,100 Palestinian jobs, through the same year, implies a long-run rate of substitution of .764.

Note that this informally estimated rate of substitution of .764 is considerably higher than the formally estimated rates of substitution during the period 1991 to 1995 presented in Tables 2 and 3. It is, therefore, not obvious that the substantial substitution between foreign workers and Palestinians reversed course during the relatively peaceful and prosperous years from 1996 to 1999.

Another interesting aspect of Table 12 is the changing composition between legal and illegal foreign workers during the period 1995 to 2002. Between 1995 and 2002, the proportion of illegal foreign workers out of all foreign workers steadily increases from one-third to more than one-half. Foreign workers become illegal in Israel as soon as they leave their initial employers. Tourists also become illegal foreign workers as soon as they violate the terms of their tourist visas. The incentive to be an illegal foreign worker in Israel generally lies in the wage premium that is received on the black market and the ability to live off of the work site with family and friends.

In light of the sharp increase in the proportion of illegal foreign workers, it is possible that recent policy proposals that intend to discourage the employment of legal foreign workers, e.g., raising taxes on legal foreign workers, could accelerate the trend of turning illegal rather than causing a substantial decrease in the overall number of foreign workers. Collecting fines from employers for employing illegal foreign workers also constitute a large investment on the part of the government and may, therefore, not be a credible deterrent (see Hill and Pearce (1990)).

Although it is true that deportations of illegal foreign workers from Israel have been increasing over the past few years, there is no consensus that they have been effective in reducing their overall presence. There is also substantial opposition to deportations on the part of local human rights organizations in Israel. Lower employment rates of Palestinians in Israel, due to the presence of foreign workers, may therefore be expected to continue into the foreseeable future.

7. Conclusion

Using micro level panel data on the employment outcomes of Palestinians and monthly time-series data on the number of foreign guest workers in Israel, this paper shows that the presence of foreign workers in Israel is a main cause of the substantial reduction in long-run Palestinian employment levels in Israel. OLS estimates indicate that the

employment rates of Palestinians from the West Bank in Israel are reduced by 2.2% for every 10,000 foreign workers. IV estimates yield a weaker but still significant reduction of 1%. IV estimates imply that an increase of 10% in the supply of foreign workers reduces the employment rate of Palestinians from the West Bank in Israel by 1.4%. The corresponding OLS and IV estimates among Palestinians from Gaza are much larger, 8.5% and 3.5%, respectively. IV estimates imply that an increase of 10% in the supply of foreign workers reduces the employment rate of Palestinians from Gaza in Israel by 4.9%.

The influx of foreign guest workers to Israel does not appear to cause substantial reductions in the mean earnings of Palestinians from the West Bank. OLS estimates indicate significant reductions in mean daily wages but IV estimates yield insignificant effects. Both OLS and IV estimates of the reduction in mean monthly earnings are insignificant.

The influx of foreign workers does, however, cause substantial reductions in the mean monthly and mean daily earnings of Palestinians from Gaza. OLS estimates yield reductions in mean monthly and mean daily earnings of 5.6% and 6.4% for every 10,000 foreign guest workers in Israel. The corresponding IV estimates are 4.4% and 3.8%, respectively. IV estimates imply that an increase of 10% in the supply of foreign workers reduces the mean monthly and daily earnings of Palestinians from Gaza by 6.2% and 5.3%, respectively.

The evidence presented in this paper suggests that the significant reduction in mean earnings among Palestinians from Gaza is primarily due to lower earnings potential after displacement. A more developed market for unskilled labor in the Gaza Strip would probably help to ease the differentially higher earnings losses suffered by Palestinians who reside there, in comparison to Palestinians who reside in the West Bank.

The generally significant and substantial negative impact of foreign guest workers on the employment outcomes of Palestinians, who can be considered native workers in this context, is a rare finding in the immigration literature. We believe that we have uncovered significant effects because we are examining data that relate to two groups of workers that truly compete in the labor market, we have information on the employment and earnings of Palestinians after they exit the Israeli market for unskilled labor, and we use data on foreign worker permits issued by the Israeli government to correct for biases that arise due to non-random immigration.

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Table 1

Palestinians from the West Bank and Gaza
(Descriptive Statistics)

Year	Work in Israel (1)	Married (2)	Urban (3)	Refugee Camp (4)	Schooling (5)	Age (6)	Monthly Wages In Israel (NIS) (7)	Sample Size (8)
West Bank								
1991	.529	.732	.237	.088	8.738	31.776	1,337	12780
					(3.979)	(10.303)	(450)	
1992	.607	.735	.233	.085	8.975	31.815	1,509	15916
					(3.974)	(10.090)	(512)	
1993	.467	.739	.227	.090	9.198	31.915	1,557	15090
					(3.873)	(10.023)	(559)	
1994	.413	.734	.190	.084	9.301	31.950	1,531	15033
					(3.773)	(10.068)	(574)	
1995	.375	.726	.179	.083	9.448	32.018	1,553	12140
					(3.795)	(9.953)	(602)	
Gaza								
1991	.632	.830	.579	.322	9.226	32.441	1,247	3846
					(4.268)	(10.187)	(424)	
1992	.607	.847	.592	.315	9.377	32.373	1,258	4162
					(4.222)	(9.616)	(439)	
1993	.486	.867	.604	.304	9.519	33.001	1,261	3623
					(3.795)	(9.679)	(516)	
1994	.442	.891	.551	.331	9.448	33.076	1,257	942
					(3.706)	(9.276)	(520)	

Note: Columns (1) through (7) contain means and, in parentheses, standard deviations. Data are drawn from the Territories Labor Force Surveys (TLFS) of the Israel Central Bureau of Statistics (ICBS). Monthly wages are in 1995 New Israeli Shekels (NIS). In 1995, 1 NIS equals approximately .33 dollars.

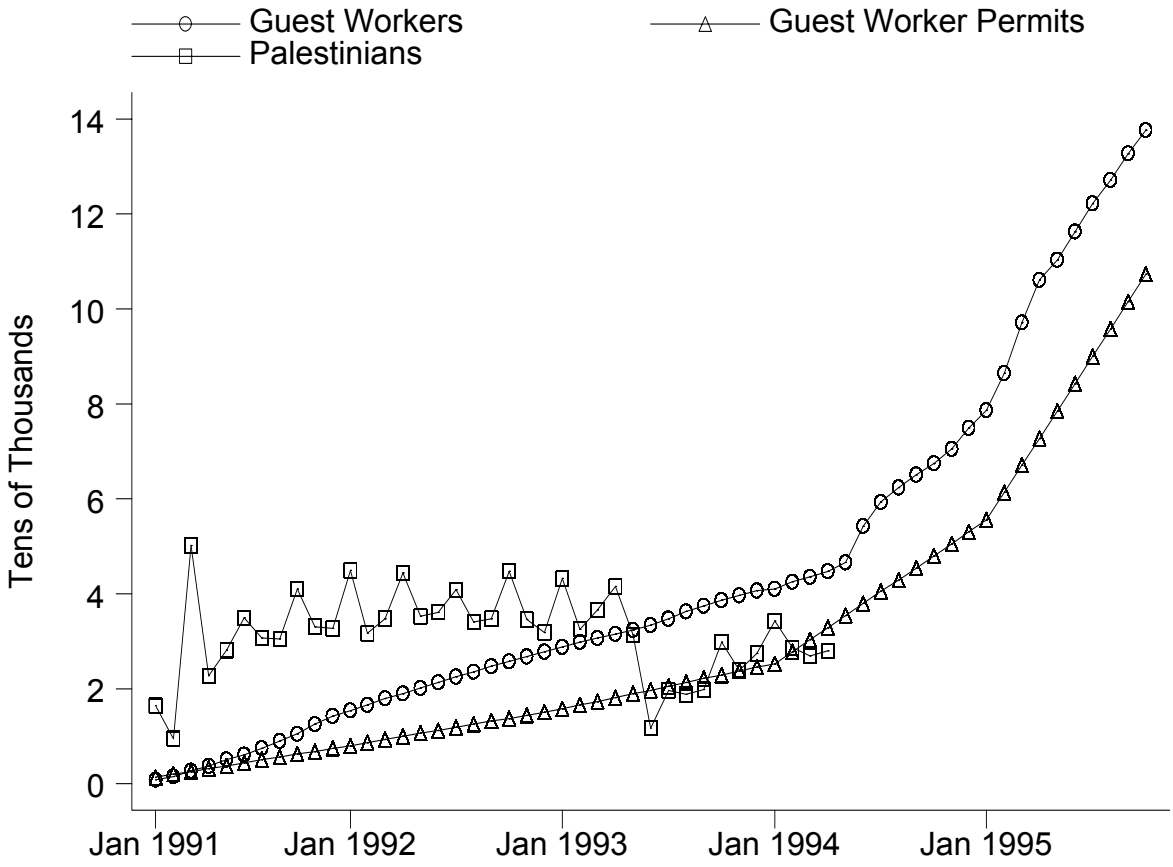

Figure 1: Foreign Workers and Palestinians In Israel

Table 2

Employment in Israel Regressions
Palestinians from the West Bank

	Levels		First Differences		IV First Differences	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Workers	-.022	-.021	-.007	-.007	-.009	-.008
	(.003)	(.004)	(.004)	(.004)	(.004)	(.004)
Days of Closure	-	-.002	-	-.003	-	-.003
		(.002)		(.003)		(.003)
Other Regressors	Yes	Yes	No	No	No	No
First-stage t-stat.	-	-	-	-	822	875
R squared	.154	.460	.002	.003	-	.0554
N	70,959	70,959	15,667	15,667	15,667	15,667
Rate of Substitution	.365	.349	.116	.116	.149	.133

Note: The other regressors are marital status, urban residence, refugee camp residence, schooling groups, age groups, and first and second quarters of 1991 (the Gulf War). The levels regressions are linear probability models. The first differences regressions are first differenced linear probability models. In the IV first differences regressions, the number of foreign worker permits is used as an instrument for the change in the stock of foreign workers. Standard errors are clustered on month of observation.

Table 3
Employment in Israel Regressions
Palestinians from the Gaza Strip

	Levels		First Differences		IV First Differences	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Workers	-.084	-.085	-.020	-.023	-.030	-.035
	(.011)	(.011)	(.017)	(.017)	(.017)	(.016)
Days of Closure	-	.000	-	.003	-	.004
		(.001)		(.003)		(.003)
Other Regressors	Yes	Yes	No	No	No	No
First-stage t-stat.	-	-	-	-	140	160
R squared	.126	.126	.002	.003	-	.0554
N	12,573	12,573	2,435	2,435	2,435	2,435
Rate of Substitution	.857	.867	.204	.235	.306	.357

Note: The other regressors are marital status, urban residence, refugee camp residence, schooling groups, age groups, and first and second quarters of 1991 (the Gulf War). The levels regressions are linear probability models. The first differences regressions are first differenced linear probability models. In the IV first differences regressions, the number of foreign worker permits is used as an instrument for the change in the stock of foreign workers. Standard errors are clustered on month of observation.

Table 4

Log of Monthly Wages
Palestinians from the West Bank

	Levels		First Differences		IV First Differences	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Workers	-.005	-.003	.001	.002	-.002	-.000
	(.002)	(.003)	(.004)	(.004)	(.004)	(.004)
Days of Closure	-	-.005	-	-.006	-	-.006
		(.002)		(.003)		(.002)
Other Regressors	Yes	Yes	No	No	No	No
First-stage t-stat.	-	-	-	-	779	814
R squared	.098	.100	.000	.005	-	.0722
N	65,892	65,892	13,517	13,517	13,517	13,517

Note: The other regressors are marital status, urban residence, refugee camp residence, schooling groups, age groups, and first and second quarters of 1991 (the Gulf War). In the IV first differences regressions, the number of foreign worker permits is used as an instrument for the change in the stock of foreign workers. Standard errors are clustered on month of observation.

Table 5

Log of Monthly Wages
Palestinians from the Gaza Strip

	Levels		First Differences		IV First Differences	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Workers	-.060	-.056	-.033	-.032	-.044	-.044
	(.010)	(.010)	(.022)	(.025)	(.016)	(.018)
Days of Closure	-	-.002	-	-.001	-	-.000
		(.002)		(.003)		(.003)
Other Regressors	Yes	Yes	No	No	No	No
First-stage t-stat.	-	-	-	-	137	157
R squared	.108	.110	.007	.007	-	-
	12,312	12,312	2,324	2,324	2,324	2,324

Note: The other regressors are marital status, urban residence, refugee camp residence, schooling groups, age groups, and first and second quarters of 1991 (the Gulf War). In the IV first differences regressions, the number of foreign worker permits is used as an instrument for the change in the stock of foreign workers. Standard errors are clustered on month of observation.

Table 6

Log of Daily Wages
Palestinians from the West Bank

	Levels		First Differences		IV First Differences	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Workers	-.005	-.005	-.002	-.002	-.003	-.003
	(.002)	(.002)	(.002)	(.003)	(.003)	(.003)
Days of Closure	-	-.001	-	-.002	-	-.002
		(.001)		(.001)		(.001)
Other Regressors	Yes	Yes	No	No	No	No
First-stage t-stat.	-	-	-	-	779	814
R squared	.101	.102	.000	.001	-	-
N	65,891	65,891	13,517	13,517	13,517	13,517

Note: The other regressors are marital status, urban residence, refugee camp residence, schooling groups, age groups, and first and second quarters of 1991 (the Gulf War). In the IV first differences regressions, the number of foreign worker permits is used as an instrument for the change in the stock of foreign workers. Standard errors are clustered on month of observation.

Table 7

Log of Daily Wages
Palestinians from the Gaza Strip

	Levels		First Differences		IV First Differences	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Workers	-.063	-.064	-.025	-.026	-.036	-.038
	(.006)	(.007)	(.022)	(.016)	(.013)	(.013)
Days of Closure	-	.000	-	.001	-	.001
		(.001)		(.001)		(.001)
Other Regressors	Yes	Yes	No	No	No	No
First-stage t-stat.	-	-	-	-	137	157
R squared	.074	.074	.006	.006	-	-
N	12,311	12,311	2,324	2,324	2,324	2,324

Note: The other regressors are marital status, urban residence, refugee camp residence, schooling groups, age groups, and first and second quarters of 1991 (the Gulf War). In the IV first differences regressions, the number of foreign worker permits is used as an instrument for the change in the stock of foreign workers. Standard errors are clustered on month of observation.

Table 8

Log of Monthly Wages
Palestinians from the West Bank
Work in Israel Both Periods

	Levels		First Differences		IV First Differences	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Workers	.002	.005	.009	.011	.003	.006
	(.002)	(.003)	(.007)	(.007)	(.005)	(.007)
Days of Closure	-	-.005	-	-.008	-	-.008
		(.003)		(.004)		(.004)
Other Regressors	Yes	Yes	No	No	No	No
First-stage t-stat.	-	-	-	-	446	449
R squared	.085	.089	.003	.015	-	-
N	33,022	33,022	4,529	4,529	4,529	4,529

Note: The other regressors are marital status, urban residence, refugee camp residence, schooling groups, age groups, and first and second quarters of 1991 (the Gulf War). In the IV first differences regressions, the number of foreign worker permits is used as an instrument for the change in the stock of foreign workers. Standard errors are clustered on month of observation.

Table 9

Log of Monthly Wages
Palestinians from the Gaza Strip
Work in Israel Both Periods

	Levels		First Differences		IV First Differences	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Workers	-.009	.000	-.002	.007	-.008	.003
	(.014)	(.010)	(.022)	(.024)	(.020)	(.019)
Days of Closure	-	-.006	-	-.008	-	-.007
		(.003)		(.005)		(.005)
Other Regressors	Yes	Yes	No	No	No	No
First-stage t-stat.	-	-	-	-	86	96
R squared	.048	.057	.000	.011	-	-
N	7,109	7,109	910	910	910	910

Note: The other regressors are marital status, urban residence, refugee camp residence, schooling groups, age groups, and first and second quarters of 1991 (the Gulf War). In the IV first differences regressions, the number of foreign worker permits is used as an instrument for the change in the stock of foreign workers. Standard errors are clustered on month of observation.

Table 10

Log of Daily Wages
Palestinians from the West Bank
Work in Israel Both Periods

	Levels		First Differences		IV First Differences	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Workers	.008	.008	.006	.006	.004	.004
	(.001)	(.001)	(.003)	(.003)	(.003)	(.003)
Days of Closure	-	-.000	-	-.001	-	-.0002
		(.000)		(.001)		(.0013)
Other Regressors	Yes	Yes	No	No	No	No
First-stage t-stat.	-	-	-	-	447	449
R squared	.056	.056	.002	.002	-	-
N	33,021	33,021	4,529	4,529	4,529	4,529

Note: The other regressors are marital status, urban residence, refugee camp residence, schooling groups, age groups, and first and second quarters of 1991 (the Gulf War). In the IV first differences regressions, the number of foreign worker permits is used as an instrument for the change in the stock of foreign workers. Standard errors are clustered on month of observation.

Table 11

Log of Daily Wages
Palestinians from the Gaza Strip
Work in Israel Both Periods

	Levels		First Differences		IV First Differences	
	(1)	(2)	(3)	(4)	(5)	(6)
Foreign Workers	.008	.008	.005	.005	.001	.001
	(.005)	(.005)	(.011)	(.012)	(.012)	(.012)
Days of Closure	-	.000	-	-.0003	-	-.000
		(.001)		(.002)		(.001)
Other Regressors	Yes	Yes	No	No	No	No
First-stage t-stat.	-	-	-	-	86	96
R squared	.032	.032	.001	.000	-	-
N	7,108	7,108	910	910	910	910

Note: The other regressors are marital status, urban residence, refugee camp residence, schooling groups, age groups, and first and second quarters of 1991 (the Gulf War). In the IV first differences regressions, the number of foreign worker permits is used as an instrument for the change in the stock of foreign workers. Standard errors are clustered on month of observation.

Table 12

Employment in the Israeli Construction Industry
1990-2002

Year	Palestinians	Illegal Foreign Workers	Legal Foreign Workers	Total Foreign Workers	Israelis	Total Industry Employment
1990	69.2 (.450)	-	-	0.0 (.000)	84.5 (.550)	153.7
1991	68.4 (.385)	-	-	1.9 (.011)	107.5 (.605)	177.8
1992	81.7 (.399)	-	-	3.1 (.015)	120.0 (.586)	204.8
1993	60.0 (.304)	-	-	6.0 (.030)	131.6 (.666)	197.6
1994	46.5 (.225)	-	-	21.0 (.101)	139.5 (.674)	207.0
1995	38.0 (.167)	15.0	30.5	45.5 (.200)	144.1 (.633)	227.6
1996	33.1 (.135)	20.0	42.1	62.1 (.253)	149.9 (.612)	245.1
1997	42.4 (.165)	26.7	41.7	68.4 (.266)	146.0 (.569)	256.7
1998	60.4 (.240)	24.2	36.5	60.7 (.241)	130.9 (.519)	252.0
1999	64.7 (.265)	27.1	31.9	59.0 (.242)	120.3 (.493)	244.0
2000	59.0 (.250)	29.0	31.5	60.5 (.256)	116.7 (.494)	236.2
2001	29.3 (.133)	35.3	39.0	74.3 (.337)	117.0 (.530)	220.6
2002	13.0 (.061)	41.0	39.0	80.0 (.376)	119.5 (.562)	212.5

Note: Employment numbers are in thousands. Parentheses contain percentages of total industry employment. Data sources are the CBS and Israeli Ministry of Labor and Social Affairs.