



## **The Impact of Employment in Israel on the Palestinian Labor Force**

**Haggay Etkes\***

Discussion Paper No. 2011.11

November 2011

---

Research Department, Bank of Israel <http://www.boi.org.il>

\* Haggay Etkes – E-mail: [Etkes.haggay@boi.org.il](mailto:Etkes.haggay@boi.org.il); Phone: 972-2-6552581

The author would like to thank John Nassir, Noam Zussman, and participants in the BOI Research Department's seminar for helpful comments. Special thanks to Aharon Barazani, Yossi Eldad, Doron Segal who helped in transferring the permit data.

**Any views expressed in the Discussion Paper Series are those of the  
author and do not necessarily reflect those of the Bank of Israel**

חטיבת המחקר, בנק ישראל ת"ד 780 ירושלים 91007

Research Department, Bank of Israel, POB 780, 91007 Jerusalem, Israel

## **The Impact of Employment in Israel on the Palestinian Labor Force**

**Haggay Etkes**

### **Abstract**

This study provides circumstantial evidence for the impact of permits for employment in Israel on the Palestinian labor force in the West Bank during the late *Intifada* period and its aftermath (2005–2008). The study utilizes a unique dataset that merges data from the Palestinian Labor Force Survey with Israeli administrative data on permits for employment in Israel. The study quantifies the increase in Palestinian employment in the Israeli and Palestinian economies and the decrease in Palestinian unemployment, as well as the drop in the return to schooling which coincided with an increase in the number of permits issued. These results reflect the short-run benefits for the un-skilled Palestinian labor force as well as the adverse long-run effects of Palestinian employment in Israel on human capital accumulation.

## **ההשפעות של התעסוקה בישראל על כוח העבודה הפלסטיני**

**חגי אטקס**

### **תמצית**

מחקר זה מביא עדויות נסיבתיות להשפעה של היתרי תעסוקה בישראל על כוח העבודה הפלסטיני בגדה המערבית בשלהי האינתיפאדה ולאחריה (2005-2008). המחקר עושה שימוש בבסיס נתונים ייחודי המשלב את נתוני סקרי כוח האדם הפלסטיניים ונתונים מנהליים ישראלים אודות היתרי התעסוקה. המחקר מכמת את הגידול בתעסוקה הפלסטינית בישראל ובכלכלה הפלסטינית, את הירידה בשיעור האבטלה, כמו גם את הירידה בתשואה להשכלה שאירעו במקביל לגידול במספר היתרי התעסוקה בישראל שהונפקו. תוצאות אלו משקפות את ההשפעות החיוביות קצרות הטווח על כוח העבודה חסר השכלה על תיכונית ואת ההשפעות השליליות ארוכות הטווח על צבירת הון אנושי בכלכלה הפלסטינית.

## Introduction

This study provides circumstantial evidence for the impact of permits for employment in Israel on the Palestinian labor force in the West Bank during the late Intifada period and its aftermath (2005–08). Specifically, it examines the impact of changes in the number of permits granted on employment, unemployment, labor force participation, and return to schooling among Palestinians residing in the West Bank. Employment permits became particularly important during the second intifada when the entry of Palestinians into Israel was restricted and employment in Israel without a permit became even more difficult than previously. This is a break from the relations between Israeli and West Bank labor markets, which prevailed until the outbreak of the second intifada in late 2000, when more than a hundred thousand Palestinians were employed in Israel, often without a permit.

It is important therefore to evaluate the impact of Israeli permit policy on the Palestinian labor force using reliable measures of trends in both the Palestinian labor force and in Israeli policy. The main source of data used in this study is the Palestinian Labor Force Survey (LFS) which is conducted by the Palestinian Central Bureau of Statistics. This database is merged with Israeli administrative data of the employment permits of Palestinian workers in the Israeli economy. The merging of the two databases makes it possible to analyze the impact of Israeli permit policy, as revealed in the Israeli administrative data, on the Palestinian labor force, based on the Palestinian LFS.

The empirical analysis focuses on the 20–45 year-old male population, which includes the vast majority of Palestinian workers. This population includes both 30–45 year-old married males who *qualify* for an employment permit in Israel (excluding the settlements) and other males (i.e. 20–29 year-olds or unmarried 30–45 year-olds) who *do not qualify* but nonetheless may have been indirectly affected by the increase in the number of permits. The former group will herein be referred to as *qualified* and the latter group as *unqualified*.

The main findings of the study indicate that an increase in the number of permits is correlated with a reduction in unemployment and an increase in employment in the Israeli economy among *qualified* workers. The majority of *qualified* Palestinians who started working in the Israeli economy with permits had previously been unemployed, and a minority switched from employment in the West

Bank to employment in Israel.<sup>1</sup> The increase in the number of permits is also correlated with a limited increase in the employment of *unqualified* Palestinians in the Israeli economy possibly because of a networking effect. Finally, we found evidence that the increase in employment permits contributed to the erosion of the return to schooling and raised the wages of unskilled workers, even in the internal West Bank market. A quantification of the results appears in the concluding section.

The analysis of Israeli permit policy takes into account the Israeli institutional and geographical set-up by distinguishing between permits for working in Israel (including East Jerusalem) as defined by Israeli law, and permits for employment in Israeli settlements and industrial zones in the rest of the West Bank (herein: the settlements). Each type of permit is granted according to different criteria and within a different legal framework. We focused on the impact of employment permits in Israel proper. Notably, the permit regime is irrelevant for Palestinians who live in East Jerusalem (which was annexed in 1967) and can work within Israel without restriction; therefore, the analysis excludes the Palestinian governorate of Jerusalem. In short, unlike some studies of the West Bank labor market which overlook the Israeli institutional set-up, this study focuses on the implications of the employment-permits in Israel proper on the Palestinian residents of the West Bank according to the Israeli administrative definitions.

This paper follows the empirical literature on the interaction between the Palestinian and Israeli labor markets, which starts with Angrist (1995 and 1996)'s analysis of the decline in the return to schooling during the 1980s when the supply of educated Palestinians increased, and the Israeli demand for Palestinian labor during the first intifada. A number of studies that followed Angrist examined the impact of the second intifada on Palestinian unemployment, employment and wages. Miaari and Sauer (2006) found that closure of the West Bank had a significant adverse impact on Palestinian employment even when account was taken of the effect of foreign workers in Israel.<sup>2</sup> Mansour (2010) interpreted changes in Palestinian employment in Israel as labor supply shocks and found that the increase in the supply of both skilled (more than 12 years of schooling) and unskilled workers in the territories primarily affected mainly the wages of unskilled workers, and had a little impact on wages of skilled.

---

<sup>1</sup> It may be that people who previously had permits or think they will get permits are unwilling to take lower paying jobs. Thus they wait to get new permits and then go from being unemployed to employed in Israel.

<sup>2</sup> Aranki (2004) presented similar findings but did not take into account foreign workers.

This paper also adopts Mansour's approach by differentiating between skilled and unskilled workers.

The relationship between terror attacks in Israel and the Palestinian labor market (2000-2006) was explored by Benmelech et al. (2009). They found that an attempted suicide bombing was on average followed by an increase of 5.3 percentage points in unemployment, a reduction in wages by more than 20 percent and a reduction in employment in Israel by 6.7 percentage points among the residents of the suicide bomber's governorate. Presumably, these labor market outcomes were the result of Israeli anti-terror measures. On the other hand, a forthcoming study of the World Bank "finds little evidence that variations in closure intensity are correlated with variations in labor market indicators such as underemployment."<sup>3</sup>

This paper looks into the impact of the Israeli permit policy, which was shaped mainly by the attempts to prevent terrorist attacks on Israeli civilians and by political-diplomatic concerns. Hence, it is directly related to the abovementioned studies of the Palestinian labor market during the second intifada. It differs from those studies in that it directly measures the impact of Israeli (permit) policy on the Palestinian labor force, rather than using data on closures collected by the UN or data on suicide bombings. This study also takes into account the Israeli institutional set-up by excluding Jerusalem and using the qualifications for getting a permit. Finally, unlike the above studies that focus on the most turbulent period of the second intifada (i.e. 2000–05), we examine the post intifada period (2005–08) when the level of violence had already declined.

The paper is structured as follows: Section II describes the main features of the Palestinian labor force in the West Bank and its development during the period 1999–2008. Section III briefly reviews permit policy. Section IV describes the LFS data used in the study and Section V presents the main empirical strategy. Section VII and Section VIII analyze the impact of permit policy on employment and on the return to schooling, respectively. Section IX concludes and discusses policy implications. Appendix A describes the permits for employment in the settlements, and Appendix B presents the main empirical results stratified for unskilled and skilled males.

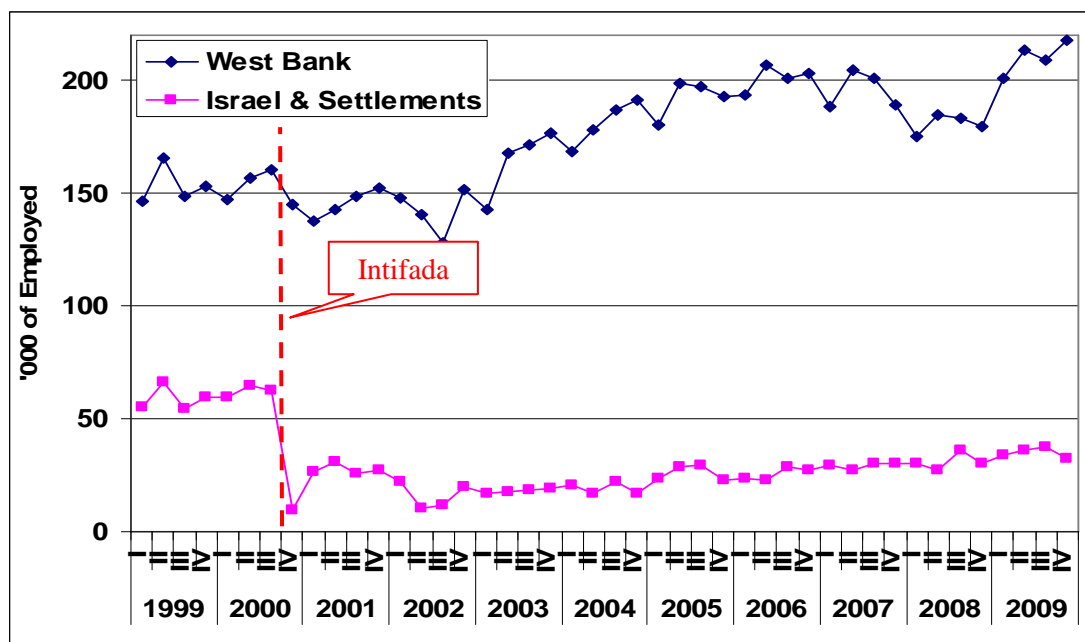
---

<sup>3</sup> <http://go.worldbank.org/OQPDBFEC00>

## II. The Palestinian Labor Force in the West Bank (1999–2008)

In 2008, the Palestinian labor force in the West Bank included about 400 thousand Palestinian males. One of the most noticeable characteristics of the Palestinian labor force is the participation in two separate labor markets: the internal Palestinian market, which employs the majority of Palestinians, and the Israeli market, which includes both Israel (proper) and the Israeli settlements in the West Bank. Perhaps the most important distinction between these two markets is in the impact of the Palestinian-Israeli conflict: While the internal Palestinian labor market is affected by ups and downs in the intensity of the conflict, the very access of Palestinian workers to the Israeli labor market is tightly restricted following terror attacks in Israel and is influenced by the political situation in general. A good example is the two-thirds decline in the number of Palestinians employed in the Israeli market following the outbreak of the second intifada (in October 2000).

**Figure I: Male Workers Aged 20-45 in the West Bank by Location of Employment (1999–2008)**



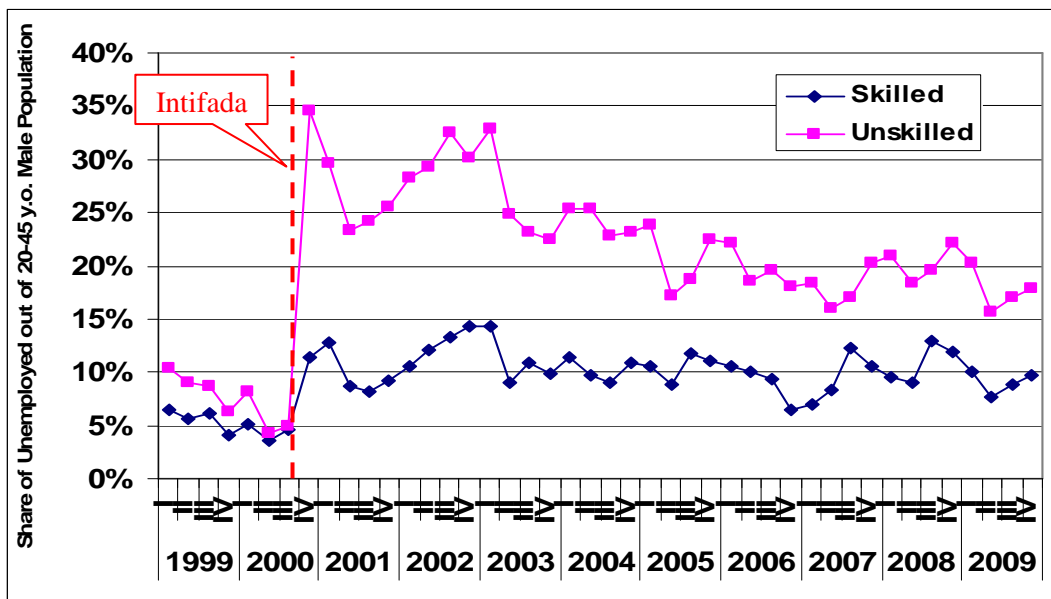
**Source:** Calculations based on the PLFS.

**Notes:** Excluding the Jerusalem governorate.

The majority of the Palestinian labor force is employed in the internal West Bank market, which is characterized by diversity in types of jobs, both in the private and public sectors. On the other hand, Palestinians in the Israeli economy are typically employed in manual labor jobs in construction, agriculture and other industries. Therefore, while the internal Palestinian market is characterized by jobs suitable for

both skilled (13 years or more of schooling) and unskilled Palestinians, the Israeli market offers jobs that are suitable mainly for unskilled workers. Therefore, the closure of the Israeli labor market to Palestinian labor following the outbreak of the intifada (in October 2000) primarily affected unskilled males: the rate of unemployment among the unskilled male population<sup>4</sup> soared from about 5 percent prior to the intifada to about 30 percent during it, while unemployment among skilled males remained relatively low throughout the decade.

**Figure II: Unemployment Rate among Palestinian Males Aged 20-45 in the West Bank (1999–2008)**



**Source:** Calculation based on the PLFS.

**Notes:** 1) Excluding the Jerusalem governorate.

2) The unemployment rate calculated for all 21–45 year-old males, rather than just those participating in the labor force, as is the case in the conventional calculation.

3) Skilled workers have more than 12 years of schooling, and unskilled workers have less than 13 years of schooling.

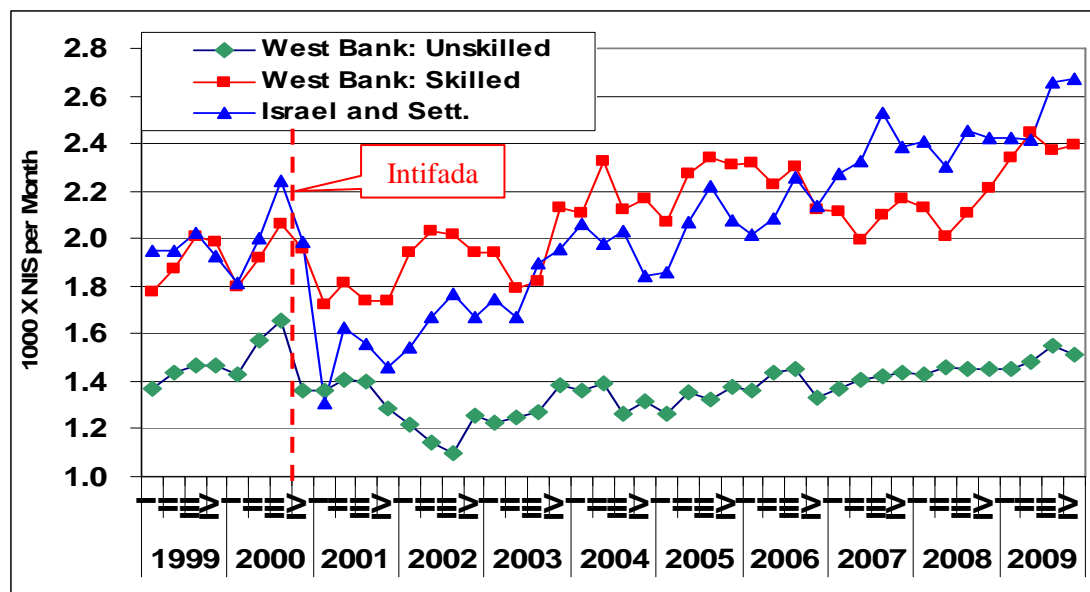
Wages also differ between skilled and unskilled male workers and the difference is influenced by the employment in Israel. In the West Bank, the wages of skilled Palestinians were higher than those of unskilled Palestinians throughout the period. Indeed, the wage gap between skilled and unskilled workers was modest in 1999–2000 because of the large-scale employment of unskilled workers in Israel, which limited the supply of unskilled within the Palestinian economy. However, when unemployment among unskilled workers soared following the drop in employment in

<sup>4</sup> This rate is not identical to the standard unemployment rate which is the ratio of unemployed to total participants in the labor force (both employed and unemployed).

Israel and the Palestinian private sector weakened as the intifada escalated (in 2001–02), the nominal wages of unskilled males declined by more than 30 percent and as a result the skill premium in the West Bank rose. (Mansour 2010).

In contrast, the wages of Palestinian workers in the Israeli economy were similar or even higher than those of skilled Palestinians employed in the West Bank. Therefore, an increase in the share of workers in the Israeli economy allows more unskilled Palestinians to earn high wages and a high level of employment in the Israeli economy eroded the skill premium in the West Bank.

**Figure III: Monthly Wages of Male Employees Aged 20-45 in the West Bank by Level of Skill and Location of Employment (1999–2008)**



**Source:** Calculations based on the PLFS.

**Notes:** Excluding the Jerusalem governorate.

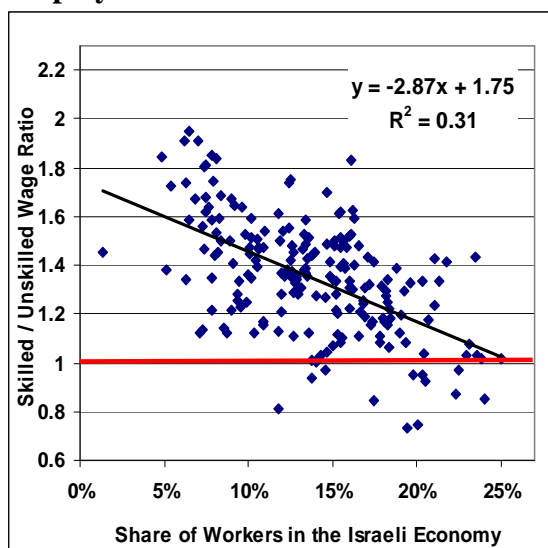
The impact of employment in Israel on the skill premium is evident in the correlation between the proportion of workers in the Israeli economy and the wage ratio between skilled and unskilled males (2005-09). Figure IV-A presents a clear negative correlation between the share of Palestinian workers in the Israeli economy and the wage ratio of skilled and unskilled workers regardless the place of employment. An increase of 10 percentage points in the share of the Palestinians from a given governorate employed in the Israeli economy corresponds to a drop of 21 percentage points in the wage ratio of skilled to unskilled workers in that governorate. The skill premium is almost completely eroded, i.e. skilled and unskilled wages are equal, when about 28 percent of males are employed in the Israeli economy. Such a



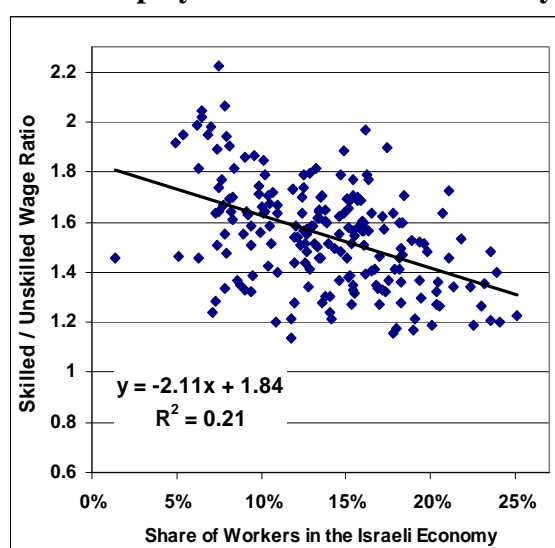
situation, i.e. a high rate of employment in Israel and a low skill premium, prevailed on the eve of the first and second *intifadas*.

**Figure IV: Skilled/Unskilled Monthly Wage Ratio and The Share of Males Employed in the Israeli Economy (2005-2009)**

**A: Employees in Israel and in the West Bank**



**B: Employees in the West Bank Only**



**Source:** Calculations based on the PLFS.

**Notes:** 1) Each data point represents a governorate for a particular quarter.

2) Excludes the Jerusalem governorate.

3) The red line designates parity between wages of skilled and unskilled employees.

To certain extent the result presented in Figure VI-A is technical for much of the erosion in the wage premium is caused by those employed in the Israeli economy. The data presented in Figure VI-B avoids the above mentioned technical result by excluding the workers in the Israeli economy. Yet the negative impact of the employment in the Israeli economy on the skill premium seems to play a *role even inside the West Bank*. This result suggests that the employment in the Israeli economy affected the wage schedule inside the West Bank even when the number of employees in Israel was limited as in the years 2005-9. The impact of employment in Israel, specifically the number of permits issued for working in Israel, on the return to schooling is further analyzed in Section VIII.

In sum, the above macro analysis demonstrates that employment in Israel is an important source of livelihood for unskilled Palestinians since it offers additional well-paid jobs. Hence, an increase in Palestinian employment in Israel erodes the return to schooling by raising the wages and reducing unemployment mainly among unskilled Palestinians. However, it increases the vulnerability of unskilled workers to the ups and downs of the Israeli-Palestinian conflict.

### **III. – Employment Permits: The Institutional Set Up**

The entry of Palestinian labor into the Israeli market began soon after the 1967 war and grew to include one-third of employed Palestinians on the eve of the first intifada (1987) and one-quarter on the eve of the second intifada (2000). This was a result of the Israeli open border policy and the wage gaps between the affluent Israeli economy and the underdeveloped Palestinian economy. This policy was later modified during the 1990s by imposing certain limitations on Palestinian access to Israel and was fundamentally altered through the strict regulation of Palestinian entry into Israel following the outbreak of the second Intifada (in September 2000). The most evident manifestations of this policy were the barrier built by Israel during the waning years of the second intifada and the permit policy which regulated Palestinian entry into Israel through Israeli check-points and the barrier.

The issuing of employment permits has played a major role in the Israeli regulation of Palestinian employment in the Israeli economy in recent years. There are two types of employment permits: permits for working inside Israel (including East Jerusalem) and permits for working in the Israeli settlements in the West Bank. These permits are subject to different laws and are granted according to different criteria. This study focuses on the first type of permit, i.e. for employment in Israel while permits for employment in the settlements are used as control variables in some of the estimations and are described in Appendix A.

Permits for employment in Israel are granted to Palestinians who pass a security check and meet certain age and personal status criteria which presumably reduce the likelihood of their participation in terrorist attacks against Israelis. The process of issuing an employment permit for a specific potential Palestinian employee typically begins with a request made by an Israeli employer to Matash the authority that issues the permits in Israel.<sup>5</sup> The request is typically approved if the employer has not violated relevant Israeli labor regulations and if the relevant quota is not yet filled. This quota is set by the Israeli government for each of the various industries in Israel (construction, agriculture, etc.).

The permit to work in Israel enables the worker to enter Israel at various checkpoints and to travel inside Israel. The permit is issued for either 3 or 6 months and is typically renewed. Israeli employers are required to report days and hours

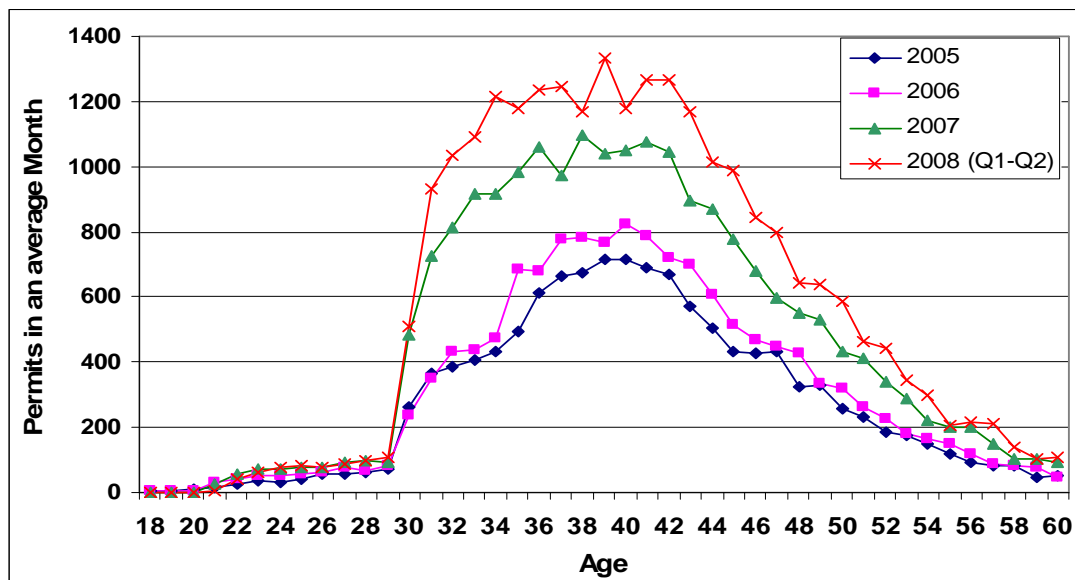
---

<sup>5</sup> Employment permits in Israel are issued by Matash, which is part of the Ministry of the Interior, while employment permits for the West Bank are issued by the Civil Administration.

worked and wages paid each month and to pay taxes, pension, social security and other compulsory deductions to Matash, the authority that administers the employment of non-Israeli workers in Israel. Matash then issues a wage slip and sees to the transfer of taxes and other deductions to the Palestinian Authority and the relevant pension funds. The data from these wage slips will be used here as a measure of permits utilized by Palestinian workers.<sup>6</sup>

At the height of the intifada (during the period 2001–04), the main criteria for issuing an employment permit required that an individual be married with children and over the age 35. The age criterion was relaxed in 2005 and a large number of permits were issued to 30–35 year-old Palestinians after that. By 2007 the binding age limit was in practice 30 (Figure V).<sup>7</sup> Therefore, the analysis of the impact of permits to work in Israel will distinguish between *qualified* Palestinians, who were married and over 30 and *unqualified* Palestinians who were never married or under 30.

**Figure V: Permits for Employment in Israel by the Age of the Employee in an Average Month (2005-8)**



Source: Calculations based on Matash data.

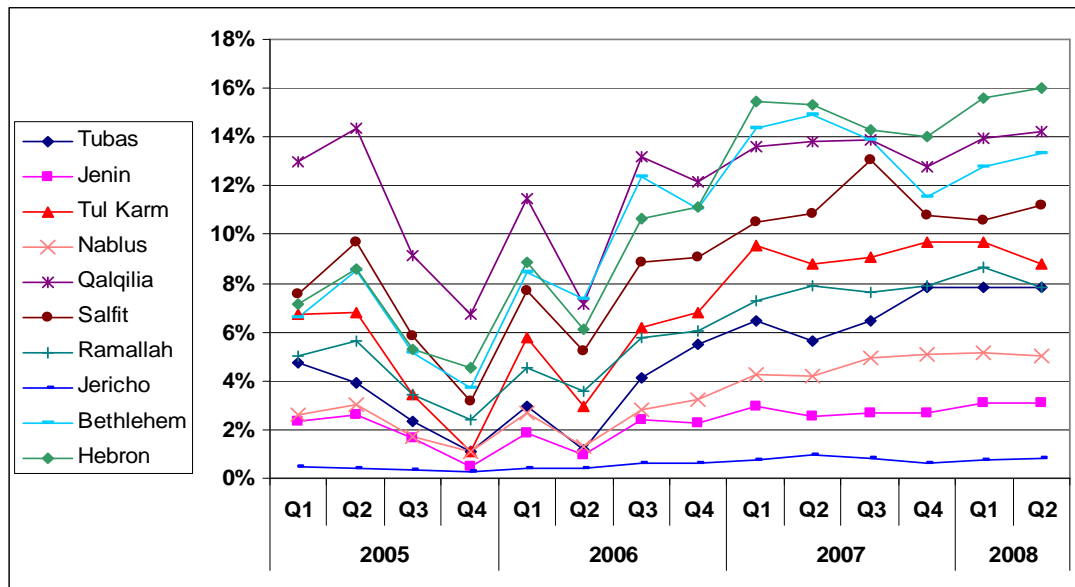
The current study focuses on post-intifada period (2005–08) during which there were Israeli restrictions on the illegal entry of Palestinians into Israel and as a result permits became voluble during this period. The number of permits for

<sup>6</sup> Lax enforcement of labor laws probably allows discrepancies between actual and reported net wages and working days. In other words, the wage and days of work in the data reflect Israeli policy regarding employment in Israel in general and employment of Palestinians in particular; however, they do not necessarily reflect actual wages and working days (see Appendix I).

<sup>7</sup> During the 2000s, a small minority of permits to work in Israel were granted to Palestinians under 30.

employment in Israel increased from about 12 thousand in an average month in 2005 to more than 20 thousand in 2007 and about 25 thousand during the first half of 2008. The increase in the number of permitted workers is evident in the upward shift of the age profile in Figure V. The expansion, however, was by no mean continuous and the number of permits fluctuated in 2005 and 2006 following few terror attacks in Israel, while in 2007 and early 2008 there was a gradual and steady expansion in the number of permits. Therefore, most of the results herein are driven by the volatility in late 2005 and early 2006. The ratio of employment permits to the population of 30–45 year-old males by governorate (Figure VI) shows the contrast between the earlier more volatile period (2005–06) and the subsequent more stable period (2007–08).

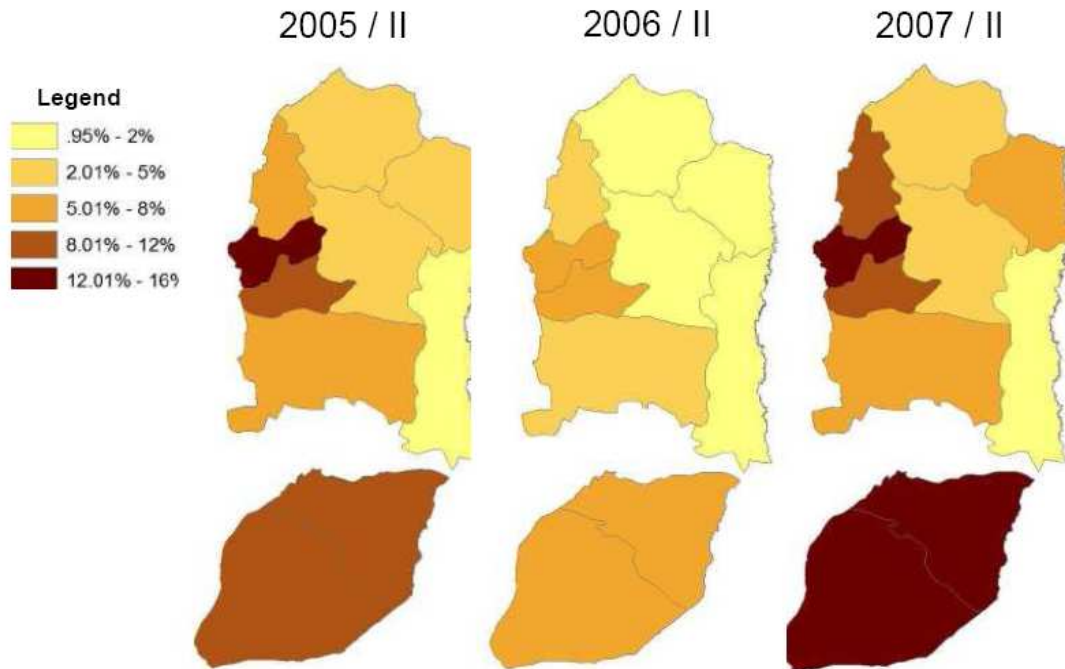
**Figure VI: Ratio of Permits to Palestinian males Aged 30-45 by Governorate (2005–2008Q2)**



Source: Calculations based on the LFS and Matash data.

Figures VI and VII also depict the regional variation in permits to work in Israel: some governorates, such as Jericho, Jenin, and Nablus had a low ratio of permits to qualified males, while western and southern governorates (Tul Karm, Qalqilia, Salfit Hebron, and Bethlehem) had relatively high ratios. As a result, the large fluctuations in the number of permits in 2005–06 had a potentially larger impact on the regional labor force in western and southern governorates with high permit ratios as compared to those with low ratios. Indeed, much of the variation in permits utilized in the statistical estimations herein is in the early period in the western and southern governorates.

**Figure VII: Ratio of Permits to Males Aged 30-45 by Governorate**



**Note:** This map reflects the PA's definition of governorates, which are also used here. The governorate of Jerusalem is excluded since Palestinian residents of East Jerusalem do not need permits to work in Israel.

#### **IV. The Primary Data Source: The Palestinian Labor Force Survey**

One of the unique features of the current study is the merging of the Palestinian Labor Force Survey (LFS) with Israeli permit data. This makes it possible to analyze the impact of Israeli permit policy on various outcomes in the Palestinian labor market such as unemployment, employment in general and by industry, and wages. The permit data and the process of its generation are described above; this section focuses on the LFS data.

The Palestinian Labor Force Survey has been conducted regularly by the Palestinian Central Bureau of Statistics since the mid-1990s. The Survey samples more than 90 thousand individuals every year. Labor force characteristics, i.e. labor force participation, employment, unemployment, etc., follow both the ILO definitions and the more "relaxed" Palestinian definitions. The analysis here will use the former.

The LFS surveys are a rotating panel, whereby a household is sampled for two consecutive quarters, temporarily drops out of the sample for two quarters, then reenters the sample for an additional two quarters and then permanently drops out. For instance, some households were sampled in the second and third quarters of both 2005 and 2006. The empirical analysis below uses this sampling method in order to track

individuals across time and examines the labor market transitions of individuals between two consecutive years for the same quarter, e.g. the transition from unemployment to employment between the third quarter of 2005 and the third quarter of 2006. Although this method avoids any quarterly seasonal effects, it suffers from attrition due to households either moving to a different location or individuals that exit their original household.<sup>8</sup>

It should be noted that changes are made in parts of the LFS questionnaire from time to time and therefore there are phenomena that can be analyzed for some years but not for others. For instance, only for the years 2006–08 does the LFS indicate whether workers in Israel and the Israeli settlements had permits.

The Palestinian LFS defines the individual's governorate according to the Palestinian administrative definitions.<sup>9</sup> We merge the Palestinian LFS data with the Israeli permit data using a mapping of the permit holder's residence onto the Palestinian governorates. Since the Palestinian governorates significantly differ in the size of their population, we normalized the number of permits in each governorate by dividing it by the number of 30–45 year-old males in the relevant quarter, as estimated from the LFS (Figure VII).

We restricted the sample to 20–45 year-old Palestinian males since they comprise the majority of the West Bank labor force. Furthermore, older workers are less likely to be employed in the manual labor jobs that typically characterize Palestinian employment in the Israeli economy. We also excluded the governorate of Jerusalem from the sample since the majority of its residents hold Israeli identity cards and do not need a permit to work in Israel.

## **V. Empirical Methods**

The empirical analysis of the impact of permits for working in Israel on the Palestinian labor force is based on the individual-level LFS data, which is matched with governorate-level Israeli administrative data. The individuals' labor market outcomes are typically represented by dummy variables that reflect employment status (unemployed, employed, etc.) or transitions into the employment status. The main explanatory variables are as follows:

---

<sup>8</sup> Table IV below demonstrates that using two consecutive quarters, rather than the same quarter in consecutive years yields statistically weaker results. Hence, this study uses one year gaps.

<sup>9</sup> See Figure VII.

- $permits_{g,t}$  : the ratio of permit holders in governorate  $g$  at time  $t$  to the number of 30–45 year-old males residing in the governorate. This statistic reflects the proportion of permit holders in the local Palestinian population who meet the age criterion for receiving a permit.
- $qualify_{i,t}$  and  $unqualified_{i,t}$  : dummy variables that designate whether or not an individual  $i$  was met the personal criteria at time  $t$  to receive a permit for employment in Israel. These variables are complementary.<sup>10</sup>

The explanatory variables make it possible to estimate the change of the *probability* of a certain outcome for *qualified* (30–45 year-old and married) males and *unqualified* (other) males, which coincided with an increase in the number of employment permits. The estimations include both repeated cross-section estimations and panel estimations that track individuals over time. Formally, the cross section estimations are based on the following specification:

$$Y_{i,g,t} = \beta_1 \cdot Qualify_{i,t} \cdot permits_{g,t} + \beta_2 \cdot Unqualified_{i,t} \cdot permits_{g,t} + \beta_3 \cdot Qualify_{i,t} + \gamma \cdot X_{i,t} + \mu_t d_t + \varepsilon_{i,t}$$

where  $Y_{i,g,t}$  is a dummy outcome variable (employment, unemployment, etc.) for individual  $i$  residing in governorate  $g$  at time  $t$ ;  $permits_{g,t}$ ,  $qualify_{i,t}$  and  $unqualified_{i,t}$  are as defined above;  $X_{i,t}$  is a vector of personal characteristics including age, age squared, years of schooling and type of area of residence (urban, rural, or refugee camp); and  $d_t$  are time dummies for years and quarters. A positive  $\beta_1$  ( $\beta_2$ ) indicates that the *probability* of outcome  $Y_{i,g,t}$  increased with the number of permits for employment in Israel granted to *qualified* (*unqualified*) males.

Hence,  $\beta_1$  primarily reflects the direct impact of Israeli permit policy on the population that was qualified to receive a permit, while  $\beta_2$  reflects its indirect impact on the population that was not qualified. Channels for this indirect impact primarily include kinship networks, and markets, and in some cases also replacement of workers who switched to employment in Israel

The panel estimations were used to analyze the transitions in the location and status of employment using the repeated observations of the same individual in the LFS in consecutive years for the same quarter. This comparison avoids the seasonal

---

<sup>10</sup>  $Qualify_{i,t} = 1 - unqualified_{i,t}$

effect, which is assumed to be similar in the compared quarters.<sup>11</sup> The specification of the panel analysis is similar to the above cross-section specification:

$$Z_{i,g,t} = \beta_1 \cdot \text{Qualify}_{i,t} \cdot \Delta \text{permits}_{g,t} + \beta_2 \cdot \text{Unqualified}_{i,t} \cdot \Delta \text{permits}_{g,t} + \beta_3 \cdot \text{Qualify}_{i,t} + \gamma \cdot X_{i,t} + \sum_t \mu_t d_t + \varepsilon_{i,t}$$

where  $\Delta \text{permits}_{g,t}$  is the difference between the normalized number of permits in period  $t$  and in the parallel quarter in the previous year and  $\text{qualify}_{i,t}$ ,  $\text{unqualified}_{i,t}$ ,  $X_{i,t}$  and  $d_t$  are defined as above. The outcome variable ( $Z_{i,g,t}$ ) designates various transitions between employment statuses and/or location. For instance, we examine the correlation between changes in the number of permits in governorate  $g$  and the probability of a male from that governorate switching his place of employment from the West Bank to Israel, from unemployment to employment in Israel.<sup>12</sup>

The main advantage of the panel analysis over the repeated cross-section analysis is that the most of the personal characteristics, i.e. human and social capital, tastes, location, etc., do not change within a year. Thus, changes in employment characteristics are likely to be related to transitive changes, such as the number of permits granted in one's area of residence. On the other hand, some individuals were not tracked during consecutive years.<sup>13</sup> This attrition casts doubt on the external validity of the panel estimates since they likely suffer from selection bias. In other words, the panel estimates do not necessarily reflect the changes among the population that dropped out of the panel analysis. Therefore, the repeated cross-section and the panel analysis complement one another: the former is based on a representative sample though it does not account for certain personal characteristics, while the latter avoids the biases due to unaccounted-for constant personal features, though it is prone to selection bias.

It should be stressed that different units are used in the various statistical sources and this affects the interpretation of the empirical results. The basic unit in the administrative data is the *monthly wage slip*, while the basic unit in the LFS is an *individual's labor activity during the week* prior to the PCBS interview. Hence, two Palestinians who worked in Israel for two weeks per month during a given quarter, are recorded as two utilized permits but are captured like one worker who worked full

---

<sup>11</sup> It does not, however, avoid the bi-annual seasonality of the olive industry, which plays an important role in local rural production.

<sup>12</sup> The inclusion of a variable "becoming qualified", that is switching from unqualified to qualified, did not yield meaningful results.

<sup>13</sup> The attrition rate of individuals who were surveyed in the first year and did not appear in the data in the next year during the years 2005-08 is about 9 percent.



month in the LFS. Therefore, the coefficient of the permits variable in the above regressions, when they are regressed on Palestinian permitted employment in Israel, is likely to be lower than unity even in an optimal estimation.

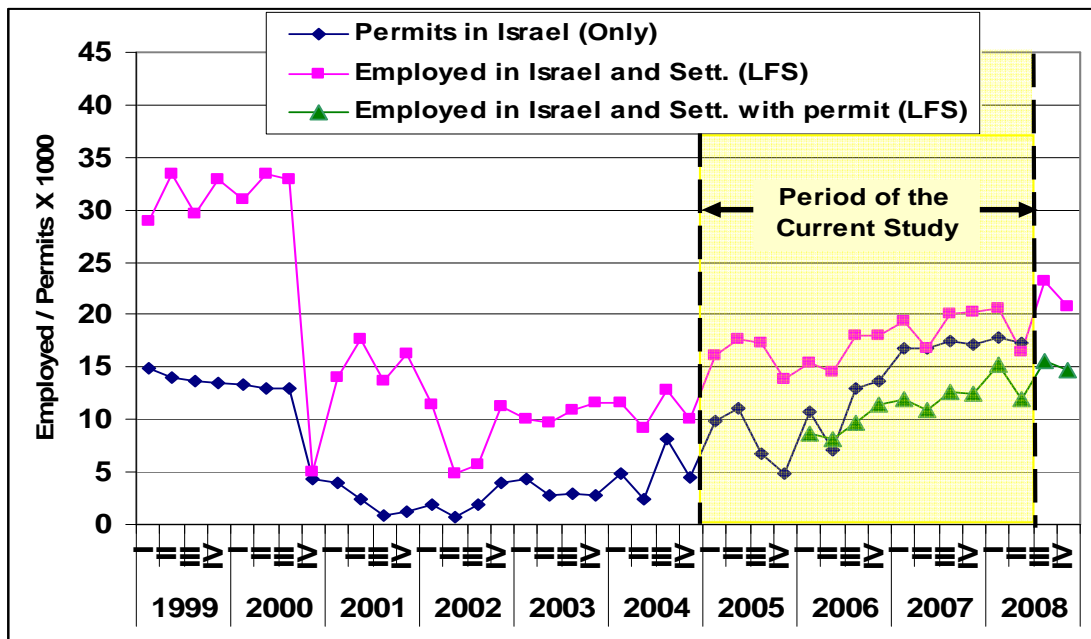
Additional discrepancies between the Palestinian survey data and the Israeli administrative data may result from misreporting to or by Palestinian survey takers, errors in the Israeli administrative data or errors in the processing and merging of the two datasets. Another discrepancy relates to geographical definitions: the Palestinian data bundles together employment in Israel and employment in the Israeli settlements in the West Bank, while the data on permits refers to employment in Israel only. Therefore, a permit holder who switched from employment in the settlements to employment in Israel is captured in the permit data yet not in the LFS data. The next section begins by testing whether these discrepancies significantly affect the estimation

## **VI. Empirical Results**

This section provides *circumstantial evidence* for the effect of permits for employment in Israel, which is one of the main tools used by Israel to regulate the employment of Palestinians inside Israel, on the main labor outcomes at the governorate level. In other words, we examine how participation in the labor force, employment in Israel and in the West Bank, and unemployment of Palestinian male residents of a West bank governorate changed when the number of employment-permits in Israel for Palestinians residing in the said governorate increased.

We begin by verifying that the number of permits granted to Palestinians is indeed reflected by the data for employment in Israel as measured by the Palestinian Labor Force Survey. Establishing that the Israeli administrative data and the Palestinian survey data are consistent – despite the above mentioned discrepancies – is crucial to validating the following empirical analysis. Figure VIII documents that the number of permits for employment in Israel (only) and the total employment of 30-45 y.o. males in Israel and the settlements according to the PLFS are correlated specifically in the period of this study (2005-2008). In addition, the permits and the employment in the Israeli economy *with permit* according to the PLFS are also increasing together for the period data for the latter are available.

**Figure VIII: Permits and Employment of Males Aged 30-45**



**Sources:** Calculations based on Matash (permits) data and PLFS (employed).  
**Notes:** excludes the governorate of Jerusalem.

We also use the regression analysis to establish that employment in the Israeli economy, as measured by the Labor Force Survey, actually reflects the employment permits granted by Israel at the governorate level, the basic unit of analysis in this study (Table I, Columns i-iv). The estimation of the base specifications with and without FE demonstrates that employment of qualified males in Israeli economy is indeed positively correlated with the number of permits issued, though not for unqualified males. The statistical significance of the FE estimation is somewhat higher than the OLS estimates, although the statistical fit is low in both cases.

Columns iii and iv demonstrate that, as expected, the permits variable is strongly correlated with employment of unskilled workers, while the correlations with employment of skilled workers is limited and statistically insignificant. Columns v and vi show that controlling for whether the permits are for employment in the settlements or employment in Israel neither changes the estimates of the base specification, nor does it improve overall explanatory power. Therefore, we do not control for permits for employment in the settlements, when we explore the impact of the employment in Israel on the labor force characteristics herein.<sup>14</sup>

The low magnitude of the coefficient in the various specifications, which varies around 0.5 and significantly lower than unity, is attributed to the discrepancies

<sup>14</sup> Inclusion of these controls did not significantly alter the estimates in the other regressions.

mentioned above and primarily to the fact that the labor market outcome data (working in Israel or the settlements according to the LFS) refers to a given week while the explanatory variable (i.e. number of permits) refers to a given month and the fact that the number of employment permits reflects employment only in Israel and the LFS data also includes the settlements.

**Table I: Employment in the Israeli Economy – Cross-Section**  
(Males Aged 20-45, 2005–2008/Q2)

	Base Specification				Controlling for Settlements-Permits	
	OLS	F.E.	F.E. Unskilled	F.E. Skilled	OLS	F.E.
	i	ii	iii	iv	v	vi
<b>Qualify</b> $_{i,t}$ · <b>Permits</b> $_{g,t}$	0.644 (0.378)*	0.500 (0.146)***	0.541 (0.168)***	0.238 (0.162)	0.554 (0.342)	0.509 (0.161)***
<b>Unqualified</b> $_{i,t}$ · <b>Permits</b> $_{g,t}$	0.064 (0.292)	-0.033 (0.198)	-0.132 (0.220)	0.223 (0.167)	-0.014 (0.028)	-0.024 (0.193)
<b>Qualify</b> $_{i,t}$	-0.021 (0.125)	-0.021 (0.011)	-0.025 (0.012)**	-0.001 (0.013)	-0.020 (0.124)	-0.021 (0.011)
<b>Settlements-Permits</b> $_{g,t}$					0.299 (0.389)	0.072 (0.293)
<b>Schooling</b>	-0.008 (0.001)***	-0.007 (0.001)***	-0.002 (0.001)	-0.011 (0.002)***	-0.008 (0.001)***	-0.007 (0.001)***
<b>Age</b> *10 <sup>-2</sup>	0.093 (0.245)	0.157 (0.245)	-0.391 (0.357)	1.145 (0.249)***	0.001 (0.002)	0.157 (0.245)
<b>Age</b> <sup>2</sup> *10 <sup>-3</sup>	-0.026 (0.037)	0.029 (0.036)	0.048 (0.053)	0.158 (0.037)***	-0.006 (0.036)	0.029 (0.036)
<b>Ever married</b>	0.046 (0.008)***	0.043 (0.008)***	0.049 (0.009)***	0.043 (0.008)***	0.046 (0.008)***	0.043 (0.008)***
<b>Governorate F.E.</b>	N	Y	Y	Y	N	Y
<b>F-Test</b> $\beta_1 = \beta_3$	8.12 [0.008]***	8.98 [0.006]***	13.71 [0.001]***	0.01 [0.941]	8.12 [0.008]***	8.95 [0.006]***
<b>R</b> <sup>2</sup>	0.05	0.05	0.04	0.03	0.05	0.05
<b>N</b>	53,805	53,805	39,366	14,439	53,805	53,805

**Notes:** \* 10%, \*\*5%, \*\*\* 1% significance

- s.e. are clustered by governorate in parentheses P-values for the F-test in brackets.
- *Permits*  $_{g,t}$  is the ratio of Palestinian holders of permit for employment in Israel in governorate  $g$  at time  $t$  over the number of males aged 30-44 in the governorate.
- *Settlements-Permits*  $_{g,t}$  is the ratio of Palestinian holders of permit for employment in Israeli settlements in governorate  $g$  at time  $t$  over the number of males aged 20-45 in the governorate.
- *Qualify* (and *Unqualified*) are dummy variables for individuals who (do not) satisfy the personal criteria for getting a permit (married and older than 30 years).
- *Skilled* (*Unskilled*) are males with more than 12 (less than 13) years of schooling.

The panel analysis (Table III line 7) also confirms that the Israeli permit policy is indeed reflected in the PLFS; the estimates of the correlations between first

differences between years (e.g. 2007/Q2 vs. 2006/Q2) of permits and the probability of starting to work in the Israeli economy are very similar to the above OLS and FE estimates (Table I).<sup>15</sup> The assertion that Israel's permit policy is reflected in the Palestinian LFS is further supported by the analysis of the *probability* of starting working in the Israeli economy with a permit even though due to data limitations these estimations refer to a shorter period (Table III line 8).<sup>16</sup>

To conclude, Figure VIII and the above regressions demonstrate that the number of permits granted is positively and significantly correlated with the probability of employment in the Israeli economy (the cross-section analysis) or starting to work in the Israeli economy (the panel analysis) by West Bank Palestinian, whose age and marital status meet the criteria for being issued a permit. The correlations are larger for unskilled Palestinians due to the nature of Palestinian employment in Israel. These results validate that Israel's permit policy is indeed reflected in Palestinian labor force surveys.

The PLFS allows us to look at the past activity (in 2007) of the Palestinians who were employed in the Israeli economy with permits in 2008. Table II documents that the majority of the 2008-permit-holders were employed in Israel in 2007 either with a permit (45 percent) or without one (10 percent). In addition, more than one-fifth (22 percent) of the 2008-permit-holders, or more than a half of the new workers in the Israeli economy, were not employed (unemployed or out of LF) in 2007. This highlights the importance of employment in Israel for increasing male employment rate, which in 2007 were 18.3 and 45.6 percent. On the other hand, a somewhat smaller share (20 percent) of the 2008-permits-holders, or slightly less than a half of the new comers to the Israeli economy, were employed in the Palestinian economy in 2007. About half of these switchers from the Palestinian to the Israeli economy switched from the Palestinian construction industry.

---

<sup>15</sup> The estimates in the first difference between two consecutive quarters (e.g. 2007/Q2 vs. 2007/Q1) are smaller and statistically insignificant most likely because of seasonal effects that are not captured by dummy variables (see Table B-III).

<sup>16</sup> The correlation in cross-section analysis between the permits and employment in Israel *with permit* is positive, yet statistically insignificant.

**Table II: Permit Holders Employed in Israel and Settlements in 2008 by Employment Status in 2007 (Males Aged 20-45)**

	<b>All Industries</b>	<b>Construction</b>	<b>Agriculture</b>
<b>Out of Labor Force</b>	524 5%	170 3%	71 6%
<b>Unemployed</b>	1,771 17%	1,206 22%	126 11%
<b>Employed in the WB – All Industries</b>	1,997 20%	984 18%	323 27%
<b>Employed in the WB – Construction</b>	984 10%	984 18%	0 0%
<b>Employed in Israel with Permits</b>	4,764 47%	2,570 46%	562 48%
<b>Employed in Israel without Permits</b>	1113 11%	614 11%	94 8%
<b>Total</b>	10,169 100%	5,544 100%	1,176 100%

Source: PLFS.

Note: This table presents Palestinian males who were employed in Israel and the settlements with a permits in 2008 and were samples in the same quarter in 2007.

The greater share of Palestinians who switched from unemployment to employment in Israel is also reflected in the regression analysis. Table III (lines 10-11) documents that an increase of a 100 permits coincided with an increase of 25 switches of qualified Palestinians from unemployment to employment in the Israeli economy, but only of 19 switches from employment in the Palestinian to the Israeli economy. Notably, these latter switches might hinder the production inside the Palestinian economy by raising local production costs.<sup>17</sup> We conjecture that this hazard increased in the recent years as the number employment permits increased and the West Bank male employment rate increased from 55.0 in 2007 to 57.7 percent in 2010.

In view of the switch from employment in the West Bank to employment in Israel, one can ask to what extent the increase in permits affected total employment inside the West Bank. The cross section estimation (Table III line 4) suggests that the increase in the number of permits coincided with an increase in the local employment of unskilled Palestinians who did not qualify for a permit. On the other hand, the

<sup>17</sup> Interestingly, all of the permit holders who switched from employment in the West Bank to employment in the construction industry in Israel were employed in construction in the West Bank during the previous year, where presumably they acquired the relevant skills. However, a larger proportion of Palestinian workers in the Israeli construction industry were not employed in 2007 and it is plausible that their construction-specific skills eroded.

panel estimation (Table III line 12) suggests a puzzling and contradictory result according to which the increase in the number of permits coincided with an increase in the number of qualified Palestinians who started working in the West Bank. These contradictory results preclude us from pointing on the short run impact of employment in Israel on the employment inside the West Bank.

We also evaluate the overall effect of the increase in employment permits on total unemployment and on the employment of West Bank Palestinians regardless of where they work (Israel or the West Bank), which is primarily manifested among qualified males. The probabilities of a Palestinian being employed and starting to work are positively correlated with number of permits and the first difference of the number of permits (Table III lines 1 and 5, respectively). The correlation is relatively high and significant only for qualified males and barely significant for unqualified males in the cross-section estimations. Notably, the coefficients are larger than those estimated for the probability of working in Israel and the settlements (Table III lines 3 and 7). One possible explanation is a weak multiplier effect for employment in Israel on total Palestinian employment. Yet, this explanation is only partly supported by the correlations between employment in the West Bank and the number of permits (Table III lines 4 and 12). Another plausible explanation is the improvement in overall security situation which brought about both increase in the number of permits and an increase in economic activity in the West Bank.

Finally, we examine the correlation between the number of permits and unemployment in the West Bank. Both the panel estimations and the cross section estimations (Table III lines 2 and 6, respectively) suggest that unemployment dropped when the number of permits increased. The effects are to be particularly large for unskilled qualified males and there is little evidence that the increase in permits had an impact on unqualified or unskilled males (compare table B-I and B-II in the appendix). However, the cross section correlation is not significant, probably due to changes in labor force participation.<sup>18</sup>

---

<sup>18</sup> Estimation of the effect of the increase in permits on labor force participation did not yield meaningful results. Results are available from the author upon request.

**Table III: Main Empirical Results of Granting 100 Employment Permits in  
(Males aged 20-45, 2005–2008/Q2)**

		$\beta_1$ Qualified (aged 30-45)	$\beta_2$ Unqualified (aged 20-30)	F-Test $\beta_1 = \beta_3$	R <sup>2</sup>
		i	ii	iii	iv
<b>Levels: Cross-Section Analysis (N=53,805)</b>					
1	<b>Employed</b>	0.860 (0.290)***	0.569 (0.3222)*	1.89 (0.181)	0.11
2	<b>Unemployed</b>	-0.605 (0.297)*	-0.338 (0.305)	6.49 (0.021)**	0.03
3	<b>- Employed in the Israeli economy (including Settlements)</b>	0.500 (0.146)***	-0.033 (0.198)	8.98 [0.006]***	0.05
4	<b>- Employed in the Palestinian economy</b>	0.357 (0.290)	0.586 (0.229)**	1.23 [0.27]	0.08
<b>Transitions: Panel Analysis (N=18,333)</b>					
5	<b>Started working</b>	0.603 (0.164)***	0.253 (0.239)	2.83 (0.104)	0.01
6	<b>From unemployment to employment</b>	0.419 (0.107)***	0.061 (0.180)	3.66 (0.07)*	0.01
7	<b>Started working in the Israeli Economy</b>	0.449 (0.138)***	0.099 (0.079)	8.53 [0.007]***	0.02
8	<b>- Started working in the Israeli Economy with a permit †</b>	0.402 (0.103)***	0.061 (0.074)	8.52 [0.007]***	0.02
9	<b>- Started working in the Israeli Economy without a permit †</b>	0.193 (0.101)*	0.135 (0.008)	0.36 [0.555]	0.02
10	<b>- From unemployment to employment in the Israeli economy</b>	0.250 (0.085)***	0.029 (0.030)	7.74 [0.001]***	0.01
11	<b>- From employment in the WB to employment in the Israeli economy</b>	0.186 (0.074)**	0.039 (0.047)	7.37 [0.014]**	0.01
12	<b>Started working in the Palestinian Economy</b>	0.483 (0.212)**	0.132 (0.185)	2.74 [0.11]	0.01
<p><b>Notes:</b> * 10%, **5%, *** 1% significance. Robust SE in parentheses clustered by governorate. The estimates are derived from FE regressions and do not add up. † Data on employment with and without permits is available since 2006. N=38,296.</p>					

### **VIII. The Impact of Employment Permits on Return to Schooling**

Another feature of the Palestinian labor market is the relatively low economic return to schooling (estimated herein to 4.2 percent) in comparison to the return other economies (Flabbi et al., 2008; Trostel et al. 2002). Research has shown that the return to schooling plays an important role in economic development. Rosenzweig (2010) surveyed the literature on the role of schooling in economic development, including the evidence that schooling enhances productivity and that schooling increases when the return to schooling rises. Cohen and Soto (2007), as well as Ciccone and Papaioannou (2009), provide empirical evidence for the positive impact of schooling

on economic growth from an international perspective. Furthermore, growth theory links an increase in the return to schooling to the demographic transition that typically heralds the switch to a modern growth regime (Becker, Glaeser and Murphy, 2009; Galor and Weil, 2000).

There are a few plausible reasons for the low return to schooling in the West Bank. For instance, cheap schooling, such as that subsidized by UNRAW for refugees, may increase the demand for schooling. An alternative explanation is that barriers to economic development limit the demand for skilled workers outside the public and NGO sector. This section explores the role that employment in Israel and specifically employment permitted and regulated by Israel, plays in determining the return to schooling in the West Bank. Employment in Israel in low-skilled occupations may lower the return to schooling, both directly since unskilled workers earn higher wages in Israel, and indirectly by reducing the supply of unskilled workers within the West Bank and thus increasing their wages. Notably, the employment in Israel may also indirectly increase the wages of unskilled inside the Palestinian economy, and thus reducing the ability of Palestinian employers to compete and accumulate physical capital and further hindering the long-run growth of the Palestinian economy.

We estimate the relations between employment-permits and return to schooling using a Mincer equation augmented by a variable for the number of permits issued to residents in the worker's governorate normalized by the number of adult males and an interaction variable between the normalized number of employment permits and schooling. Formally, we estimate the following regression:

$$wage_{i,g,t} = \beta_1 \cdot schooling_{i,t} + \beta_2 \cdot permits_{g,t} + \beta_3 \cdot schooling_{i,t} \cdot permits_{g,t} + \gamma \cdot X_{i,t} + \sum_t \mu_t d_t + \varepsilon_{i,t}$$

where  $wage_{i,g,t}$  is the log of the monthly wage,  $schooling_{i,t}$  is the years of schooling of individual  $i$  at time  $t$ , and  $permits_{g,t}$  is the number of permit holders in governorate  $g$  at time  $t$  normalized by the number of 20–45 year-old males in the governorate. In addition, we include a vector of personal characteristics  $X_{i,t}$  (age, dummies for residence in a rural area or refugee camp, etc.), as well as time dummies  $d_t$ . The base specification, which does not include number of permits and the interaction term, is similar to the Mincer equation. Two other specifications, which include the number of permits and the interaction term between permits and schooling with and without



governorate fixed effects, allow us to evaluate the effect of changes in the number of employment permits on return to schooling.

We also estimate panel specifications using the one-year differences in wages, the one-year difference in the number of permits and the interaction between schooling and the one-year difference in the number of permits. The panel specifications allow us to determine whether the wage schedules of individuals were affected by the change in the number of permits or by changes in the composition of workers, which could drive the results in the repeated cross-section analysis.

The equation was estimated for the full sample, which included Palestinians employed both in the West Bank and in Israel, and for a sub-sample which included only those employed in the West Bank. The full-sample results provide evidence for both the direct and indirect effects of the number of permits while the sub-sample results capture only the indirect effect. In both estimations, the samples were restricted to males aged 20–45, which was meant to reduce selection bias as a result of retirement in the late 40s or early 50s while still including most of an individual's earning years.

The results indicate that between 2005Q1 and 2008Q2 the increase in the number of permitted employees in Israel reduced the return to schooling both directly and indirectly. The estimation of the base specification, which does not include the permits variable, for the full sample indicates that the return to schooling is a rather low 4.2 percent (Table IV, Column i). When the number of permits and the interaction between the number of permits and years of schooling are added to the estimation, an increase in employment in Israel reduces the return to schooling such that an increase of 10 percentage points in the number of permits issued to male 25–45 year-olds reduces the return to schooling by 0.7 percentage points. The base return to schooling increased to about 5.8 percent (Columns ii-iii). The decline in the return to schooling is due to the increase in the wages of workers with less than 11 years of schooling<sup>19</sup>, as reflected in the large, positive and significant coefficient of the permits variable ( $\beta_2$ ). Notably, the panel estimations suggest that the wage schedules of individuals changed in similar directions, and that the drop in the return to schooling is not merely a result of the composition of employees.

---

<sup>19</sup> The estimations suggest that increase in the number of permits had practically zero effect on wages for those with 11 years of schooling ( $11.4 \sim |\beta_2 / \beta_3|$  in column iii).

**Table IV: Return to Schooling and Employment Permits in Israel**  
**Full Sample: Working in the Palestinian and in the Israeli Economy;**  
**(Males aged 20-45, 2005-2008/Q2); Dependent variable: Log (monthly wage)**

	OLS	OLS	F.E.	One year Difference	One year Diff. – F.E.
	I	ii	iii	iv	v
<b>Schooling</b> $_{i,t}$	0.042 (0.004)***	0.058 (0.006)***	0.058 (0.006)***	0.004 (0.003)	0.005 (0.003)
<b>Schooling</b> $_{i,t}$ * <b>Permits</b> $_{g,t}$		-0.071 (0.018)***	-0.078 (0.020)***	-0.048 (0.025)*	-0.050 (0.025)*
<b>Permits</b> $_{g,t}$		1.026 (0.276)***	0.887 (0.352)**	0.432 (0.320)	0.482 (0.347)
<b>Age</b>	0.068 (0.009)***	0.067 (0.009)***	0.068 (0.009)***	-0.001 (0.006)	-0.001 (0.006)
<b>Age</b> <sup>2</sup> *10 <sup>-3</sup>	-0.788 (0.128)***	-0.767 (0.125)***	-0.791 (0.130)***	-0.040 (0.086)	-0.035 (0.081)
<b>Rural</b>	0.042 (0.029)	0.048 (0.030)	0.020 (0.028)	0.011 (0.014)	0.009 (0.015)
<b>Refugee</b>	-0.113 (0.039)**	-0.095 (0.042)**	-0.103 (0.037)**	-0.015 (0.022)	-0.015 (0.020)
<b>Governorate</b> <b>F.E.</b>	N	N	Y	N	Y
<b>N</b>	20,885	20,885	20,885	6,384	6,384
<b>R</b> <sup>2</sup>	0.12	0.13	0.15	0.005	0.01

**Notes:** \* 10%, \*\*5%, \*\*\* 1% significance

- s.e. are clustered by governorate in parentheses.
- Schooling  $_{i,t}$  is the years of schooling of individual  $i$  in period  $t$ ; Permits  $_{g,t}$  is the ratio of permits to number of 20-45 y.o. males in governorate  $g$  in period  $t$ .
- Coefficients for dummies for type of locality (rural, refugee camp), years age quarters, and governorates are not reported.

The estimated return to schooling in the internal West Bank labor market (Table V) is about 5.6 percent and is significantly higher than in the above estimation using the full sample (4.6 percent) for it includes the better-paid unskilled workers employed in Israel. The estimation results provide an indication of the indirect impact of the increase in the number of permits, which reduces the labor supply in the West Bank, on the return to schooling in the Palestinian economy. Thus, although adding the permits variable and the interaction between permits and schooling raises the base return to schooling to about 6.6 percent yet an increase in the number of employment permits reduces the overall return to education. Notably, the estimated effect of an increase in employment permits on the return to schooling in the West Bank labor market is lower than for the full sample. This is consistent with the interpretation that the sub-sample estimation reflects only the indirect impact of permits on the wages of

unskilled workers via a reduction in the supply of unskilled labor in the Palestinian economy.

**Table V: Return to Schooling and Employment Permits in Israel**  
**Full Sample: Working in the Palestinian economy (only);**  
**(Males aged 20-45, 2005–2008/Q2); Dependent variable: Log (monthly wage)**

	OLS	OLS	F.E.	One year Difference	One year Diff. – F.E.
	i	ii	iii	iv	v
<b>Schooling</b> $_{i,t}$	0.056 (0.004)***	0.067 (0.006)***	0.065 (0.006)***	0.008 (0.003)**	0.008 (0.003)**
<b>Schooling</b> $_{i,t}^*$ <b>Permits</b> $_{g,t}$		-0.052 (0.017)**	-0.046 (0.019)**	-0.037 (0.018)*	-0.038 (0.017)*
<b>Permits</b> $_{g,t}$		0.696 (0.296)**	0.413 (0.348)	0.223 (0.226)	0.241 (0.232)
<b>Age</b>	0.069 (0.008)***	0.069 (0.008)***	0.066 (0.009)***	0.005 (0.006)	0.004 (0.006)
<b>Age</b> <sup>2</sup> *10 <sup>-3</sup>	-0.812 (0.109)***	-0.801 (0.106)***	-0.766 (0.125)***	-0.133 (0.092)	-0.124 (0.091)
<b>Rural</b>	0.004 (0.026)	0.006 (0.026)	-0.005 (0.025)	-0.030 (0.014)*	-0.027 (0.014)*
<b>Refugee</b>	-0.087 (0.043)*	-0.079 (0.045)	-0.080 (0.037)*	-0.014 (0.022)	-0.014 (0.022)
<b>Governorate</b> <b>F.E.</b>	N	N	Y	N	Y
<b>N</b>	16,603	16,603	16,603	5,309	5,309
<b>R<sup>2</sup></b>	0.18	0.19	0.21	0.01	0.01

**Notes:** \* 10%, \*\*5%, \*\*\* 1% significance

- s.e. are clustered by governorate in parentheses.
- Schooling  $_{i,t}$  is the years of schooling of individual  $i$  in period  $t$ ; Permits  $_{g,t}$  is the ratio of permits to number of 20-45 y.o. males in governorate  $g$  in period  $t$ .
- Coefficients for dummies for type of locality (rural, refugee camp), years age quarters, and governorates are not reported.

It should be mentioned that the results of the estimations of the impact of the permits on the return to schooling in hourly wage were very similar in the OLS and FE estimations. The estimations of in the panel estimations are statistically insignificant. Results of these estimates are available upon request.

In sum, the estimation results provide evidence for the negative effect, both direct and indirect, of employment in Israel, specifically permitted employment, on the return to schooling among Palestinians in the West Bank. Thus, increasing permits for employment in Israel by the amount of 10 percentage points of the male 20–45 year-old population in a particular Palestinian governorate is expected to reduce the return to schooling by 0.75 percent whether the individual is employed in Israel or the West Bank (Table V, Columns ii and iii). This result may hinder the accumulation of

human capital by Palestinians. The same increase in permits is correlated with a reduction of the return to schooling inside the Palestinian economy by 0.5 percent by pushing up the wages of unskilled workers. To certain extent his wage increase might affect the profitability of Palestinians enterprises employing unskilled labor.

## **IX. Conclusions and Implications**

The study *provides circumstantial evidence for the short-run impact of permits for employment in Israel on the Palestinian labor force in the West Bank*. It utilizes a database that combines the Palestinian Labor Force Surveys with Israeli administrative data on employment permits at the governorate level. Merging the two types of data makes it possible to quantify the changes in employment status and location (i.e. unemployed, employed in Israel, employed in the West Bank, etc.) and in the return to schooling that coincided with changes in the number of permits.

The paper provided evidence that an increase of a 100 employment-permits in Israel in a West Bank governorate coincided with:

1. **An increase in employment and a reduction in unemployment among qualified (married 30–45 year-old) unskilled males:** The cross section estimates point that the total employment in the Palestinian and the Israeli economies increased by 86 qualified males, and the employment in the Israeli economy increased by 50 qualified males.<sup>20</sup> The panel estimations point that the above increase in permits coincided with an increase of 60 qualified males who started working, of whom 42 were unemployed in the previous period.
2. **A switch of employment from the West Bank to the Israeli economy by about 19 qualified (30–45 year-old) males** – About half of the Palestinian permit holders who switched from employment in the Palestinian economy in 2007 to the Israeli economy in 2008 were employed in the Palestinian construction industry and presumably had relevant experience for employment this industry in Israel.
3. **No replacement of non-permitted workers by permitted workers:** An increase in the number of permits is positively correlated, though only weakly, with an increase in the number of non-permitted workers employed in Israel. This finding

---

<sup>20</sup> The reasons for the increase of merely 50 qualified males employed in the Israeli economy (including the settlements) when the number of permits in Israel (only) include different geographical and period definitions and plausible misreporting either in the statistical or in the administrative data. Section V provides further details.

seems to negate the common working-assumption that permitted workers replace non-permitted workers.

- 4. Erosion of the return to schooling:** The increase in the number of permitted unskilled workers in Israel raises the wages of unskilled Palestinians. Since this is not accompanied with a similar wage increase for skilled Palestinians, the return to schooling is eroded by 13 percent<sup>21</sup> when 100 permits are granted to the above illustrative governorate. There is also evidence of an increase in the wages of unskilled workers in the internal Palestinian labor market which might adversely affect Palestinian employers.

Notably, unskilled Palestinians are the beneficiaries of any positive effects of an increase in the number of employment permits, i.e. they will have a greater likelihood of employment and a higher wage. There is no evidence that permits had any significant effect on the employment or wages of skilled Palestinians. This is consistent with Mansour (2010)'s finding for the early 2000s and can be ascribed to the manual labor jobs in which Palestinians are employed in Israel.

The above results point to the trade-off between the immediate benefits and and long-term adverse effects of employment in Israel for the Palestinian economy; an increase in the number of work permits leads to an immediate improvement in the employment status and wages of unskilled Palestinians though it erodes the incentive to invest in human and possibly physical capital, which are the engines of modern growth.<sup>22</sup> Hence, the results of the micro-econometric analysis using a new source of data confirm the assumptions of Schiff (2004) and Astrup and Dessus (2005) who highlighted the above tradeoff. In fact, Schiff claimed that employment in Israel harms Palestinian productivity.

Schiff (2004) suggested that the Palestinian government impose a fee on employment in Israel in order to moderate the tradeoff between short-term benefits and long run growth. This would reduce the very large wage premium of Palestinian workers in Israel and thus prevent both the erosion of the return to schooling and the upward pressure on wages inside the Palestinian economy, which might reduce profitability of Palestinian enterprises. To the extent that Palestinian labor has a

---

<sup>21</sup> The return to a year of schooling drops from 5.8 percent when no permits are available to 5 percent when 100 permits are granted to males in the illustrative governorate.

<sup>22</sup> In addition, a reduction in the return to schooling is likely to enhance population growth at the expense of schooling to the extent that Palestinian fertility follows the standard Beckerian quantity-quality pattern, i.e. a low return to schooling induces parents to prefer more but less-educated offspring over fewer but better-educated ones. This argument is modeled by Azarnert (2011).

certain amount of market power in the Israeli labor market, the fee could also increase total Palestinian revenue from employment in Israel.

In contrast to Schiff's recommendation, Palestinian workers in Israel rarely pay income tax for their reported income is typically below the taxable income threshold in Israel (about NIS 4,700 as to 2011). Apparently, such income, which is significantly higher than the average monthly wage in the Palestinian economy, would be taxed in the Palestinian economy. This discrepancy is evident in the Palestinian income tax data: in 2010 about USD 140 Million were levied from workers in the West Bank while merely USD 0.5 Million were collected from workers in Israel.<sup>23</sup> De-facto, this situation generates tax incentives for Palestinian workers to seek employment in Israeli economy rather than in the Palestinian economy as suggested by Schiff. This tax incentive could harm both Palestinian employers and unskilled Israeli employees.

Another policy tool, i.e. the age restriction on employment in Israel – which moderates the tradeoff between immediate benefits and long-run harm to the Palestinian economy – is already in place. This policy was instituted by Israel for security reasons, but has beneficial economic side effects. As a result of this policy, young Palestinians are not diverted from investing in human capital<sup>24</sup> which will be productive in the future while at the same time older Palestinians, who are less likely to accumulate human capital, benefit from employment in Israel. In addition, Nandi and Di Maio (2010) provided evidence that offspring of Palestinians who are employed in Israel were more likely to stay in school and to delay entering the labor market in comparison to those who ceased to work in Israel. Therefore, employment of older Palestinians in Israel may be both beneficial in the short run and to a certain extent even productive for human capital accumulation, with little harm in the long run.

We believe that the wise management of Palestinian employment in Israel using tools beyond the number of permits – such as fees, age restrictions, managed geographic distribution – could stimulate the Palestinian economy while reducing the risks to its long-term development.

---

<sup>23</sup> Palestinian MOF budget reports of December 2010, Table 5.

[http://www.pmf.ps/en/news/plugins/spaw/uploads/files/15012011\\_eng.html](http://www.pmf.ps/en/news/plugins/spaw/uploads/files/15012011_eng.html)

<sup>24</sup> Employment in Israel can divert young Palestinians from investing in human capital both directly due to foregone income during the years of schooling and indirectly by reducing the lifetime return to schooling.

## Data Sources

- **Palestinian Labor Force Surveys (1999–2008)**. According the data purchasing agreement: "The Palestinian Central Bureau of Statistics granted the researchers access to relevant data in accordance with license no. SLN20091117-07, after subjecting data to processing aiming to preserve the confidentiality of individual data in accordance with the General Statistics Law – 2000. The researchers are solely responsible for the conclusions and inferences drawn upon available data."
- **Employment Permits in Israel (January 2005 to June 2008)**: Matash (Ministry of the Interior).
- **Permits for Employment in the Settlements (January 2005–June 2008)**: Israeli MOD, Coordinator of Government Activities in the Territories

## Bibliography

- Angrist, Joshua D. (1995). "The Economic Returns to Schooling in the West Bank and Gaza Strip" *The American Economic Review*, 85, No. 5, 1065-1087.
- Angrist, Joshua D. (1996). "Short-Run Demand for Palestinian Labor" *Journal of Labor Economics*, 14, No. 3, 425-453.
- Antonio Ciccone, Elias Papaioannou (2009). "Human Capital, the Structure of Production, and Growth" *Review of Economics and Statistics*, 91, No. 1, 66-82.
- Aranki, Ted Nabil (2004) "The Effect of Israeli Closure Policy on Wage Earnings in the West Bank and Gaza Strip" *Working Papers from Örebro University, Swedish Business School*.
- Astrup, Claus , and Sebastien Dessus (2005) "Exporting Goods or Exporting Labor?: Long-term Implications for the Palestinian Economy," *Review of Middle East Economics and Finance*, 3, No. 1, 39-61.
- Azarnert , Leonid V. (2011) "Guest-Worker Migration, Human Capital and Fertility" *Cesifo Working Paper* No. 3429.
- Becker, Gary S., Edward L. Glaeser and Kevin M. Murphy (1999) "Population and Economic Growth" *The American Economic Review* 89, No. 2, Papers and Proceedings of the One Hundred eleventh Annual Meeting of the American Economic Association. 145-149.
- Benmelech, Effi, Claude Berrebi and Esteban Klore (2010). "The Economic Cost of Harboring Terrorism" *Journal of Conflict Resolution*, 54, No. 2, 331-353.
- Cohen, Daniel & Soto, Marcelo (2007) "Growth and human capital: good data, good results" *Journal of Economic Growth*, 12, No. 1, 51-76
- Flabbi, Luca, Stefano Paternostro, and Erwin R. Tiongson. (2008) "Returns to education in the economic transition: A systematic assessment using comparable data, *Economics of Education Review*, 27, Issue 6, 724-740,
- Galor, Oded and David N. Weil (2000) "Population, Technology, and Growth: From Malthusian Stagnation to the Demographic Transition and beyond" *The American Economic Review*, 90, No. 4, 806-828.
- Mansour Hani (2010). "The Effects of Labor Supply Shocks on Labor Market Outcomes: Evidence from the Israeli-Palestinian Conflict" 3rd revision.
- Miaari Sami H., and Robert M. Sauer (2006) "The Labor Market Costs of Conflict: Closures, Foreign Workers, and Palestinian Employment and

Earnings" IZA discussion paper no 2282. Forthcoming in: *Review of Economics of the Household*

- Nandi, Tushar K., and Michele Di Maio. (2010). "Conflict, economic shock, and child labor in Palestine" HiCN Working paper.
- PCBS (2010). *Labor Force Surveys: 2010 First Quarter*.
- Palestinian MOF. Fiscal reports of December 2010 (2011).
- Rosenzweig, Mark R. (2010) "Microeconomic Approaches to Development: Schooling, Learning, and Growth" *The Journal of Economic Perspectives*, 24, No. 3, 81-96.
- Schiff, Maurice (2004) "Trade Policy and Labor Services: Final Status Options for the West Bank and Gaza World Bank", *IZA Discussion paper No. 1029*, and *World Bank Policy Research Working Paper No. 2824*. <http://ssrn.com/abstract=515923>.
- Trostel, Philip, Ian Walker, and Paul Woolley (2002), Estimates of the economic return to schooling for 28 countries, *Labour Economics*, 9, No. 1, 1-16.

## **Appendix A: Permits for Employment in Israeli Settlements and Industrial Zones in the West Bank**

The employment of Palestinians in Israeli settlements and industrial zones in the West Bank is regulated by a mix of Jordanian and Israeli labor laws, as well as military regulations. Unlike the permits for employment in Israel, there is no quota on employment permits for the settlements, nor are they subject to the abovementioned age and personal status restrictions (e.g. being married and above the age of 29). Similarly, the Israeli employers in the settlements are not required to submit reports on work hours and wages to the Israeli authorities, who in turn do not issue wage slips, as they do for Palestinians employed in Israel. Thus, we can measure Palestinian employment in the settlements using the number of permits granted without taking into consideration whether they are utilized or not. However, the data on these permits is less likely to reflect actual Palestinian employment than the data on utilized permits for employment in Israel.<sup>25</sup> Another shortfall of the permit data for the settlements is the lack of systematically recorded data on permits for employment in the Jordan Valley, which is therefore omitted from the analysis

The personal characteristics of the holders of settlements-permits reflect the different criteria for getting a work permits in Israel and the criteria for a employment-permit in the Settlements. Many settlement-permit holders are bachelors.

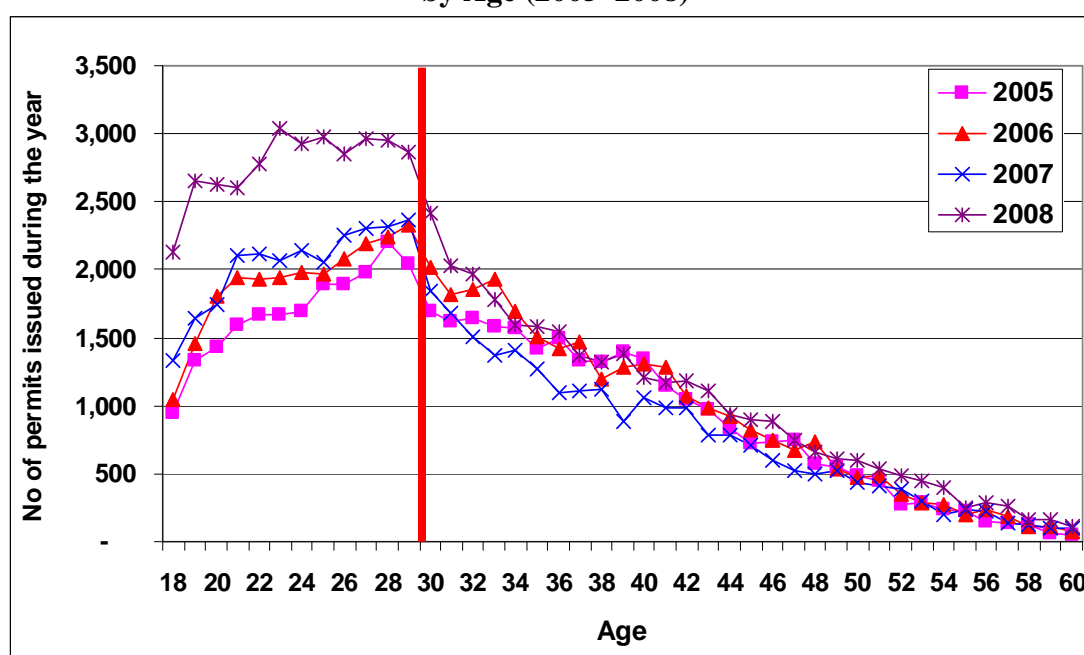
---

<sup>25</sup> A low utilization rate is a plausible explanation for the gap between the number of Palestinians who reported to the PCBS that they were employed in the settlements in the previous week (about 10 thousand in 2010 Q2) and the number of permits issued to work in the settlements (about 21 thousand in that quarter).



In addition, and the age profile of holders of the settlements-permit mirrors the age-profile of the holders of the Israel-permits: the share of young settlements-employment-permits holders is large, and it declines with age among Palestinians older than 30 years, the effective minimum age for getting a work permit in Israel (compare Figures V and A-I). These features suggest that the two types of permits are substitutes and that some permitted workers in the settlements switched to employment in Israel, when it was possible, probably because of the higher wages paid in Israel.

**Figure A-I: Distribution of Employment-Permit holders in the Settlements by Age (2005–2008)**



**Source:** Calculations based on Israeli MOD, Coordinator of Government Activities in the Territories data.

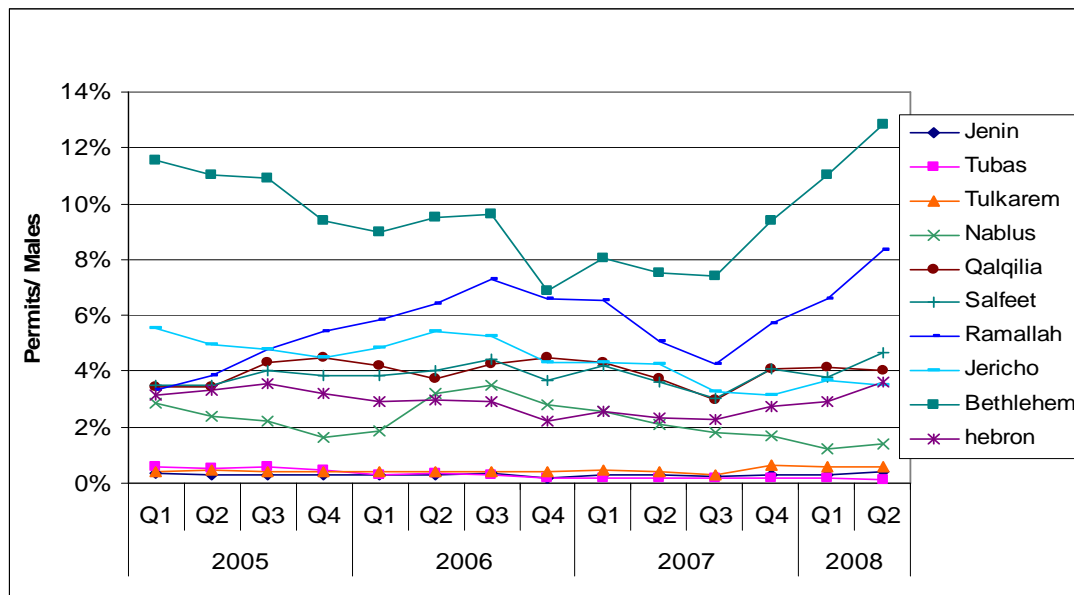
**Note:** excluding permits for employment in the Jordan Valley

We generated a measure of the valid settlement employment permits in each governorate and for each quarter by summing up the fraction of the quarter during which each permit was valid.<sup>26</sup> This measure overstates the number of reported workers since it includes permitted workers who stopped working while the permit was still valid. This measure is divided by the number of males in the relevant governorate in order to reflect the proportion of permit holders in the male population.

<sup>26</sup> For instance, a three-month permit that was issued on April 1<sup>st</sup> is translated into 2/3 of a valid permit in the second quarter and 1/3 of a valid permit in the third quarter.

The changes in the proportions of valid settlement permits among the 20–45 year-old male population by governorate (Figure A-II) shows that employment in the settlements was most important for the residents of the Bethlehem governorate, of whom between 7 and 13 percent held a valid permit and the residents of the Ramallah governorate where this proportion varied between 4 and 8 percent. One can assume that it is also important for the residents of Jericho, whose employment in the Jordan Valley settlements is excluded from this analysis for technical reasons. Employment in the settlements accounted for less 5 percent of the population in other governorates.

**Figure A-II: Distribution of Valid Permits by Governorate (2005–2008)**



**Source:** Calculations based on Israeli MOD, Coordinator of Government Activities in the Territories and PCBS data.

**Note:** excluding permits for employment in the Jordan Valley

It is important to note the low inter-temporal volatility in the number of valid settlement permits during 2005–06, which is in contrast to the volatility of employment in Israel (Figure VI). This constitutes a major obstacle in estimating the impact of employment in the settlements on the Palestinian labor force. Specifically, the measure is highly correlated with the governorates' fixed effects and was dropped from the FE estimations (Table III) due to multi-collinearity.

## Appendix B – Main Empirical results for Unskilled and Skilled Males

**Table B-I: Main Empirical Results of Granting employment permits**  
(Unskilled Males aged 20-45, 2005–2008/Q2)

		$\beta_1$ Qualified (aged 30-45)	$\beta_2$ Unqualified (aged 20-30)	F-Test $\beta_1 = \beta_3$	R <sup>2</sup>
		i	ii	iii	iv
<b>Levels: Cross-Section Analysis (N=39,366)</b>					
<b>1</b>	<b>Employed</b>	0.890 (0.378)**	0.491 (0.442)	3.27 [0.082]	0.05
<b>2</b>	<b>Unemployed</b>	-0.613 (0.297)	-0.318 (0.401)	7.20 (0.012)**	0.03
<b>3</b>	<b>- Employed in the Israeli economy (including Settlements)</b>	0.541 (0.168)***	-0.132 (0.220)	13.71 [0.001]***	0.04
<b>4</b>	<b>- Employed in the Palestinian economy</b>	0.353 (0.365)	0.617 (0.356)*	1.40 [0.24]	0.05
<b>Transitions: Panel Analysis (N=18,825)</b>					
<b>5</b>	<b>Started working</b>	0.597 (0.180)***	0.061 (0.324)	3.64 [0.067]*	0.01
<b>6</b>	<b>From unemployment to employment</b>	0.463 (0.135)***	-0.048 (0.240)	4.63 [0.04]**	0.01
<b>7</b>	<b>Started working in the Israeli Economy</b>	0.557 (0.166)***	0.089 (0.117)	7.82 [0.001]***	0.02
<b>8</b>	<b>- Started working in the Israeli Economy with a permit †</b>	0.502 (0.131)***	0.052 (0.081)	8.83 [0.006]***	0.02
<b>9</b>	<b>- Started working in the Israeli Economy without a permit †</b>	0.239 (0.117)**	0.102 (0.112)	1.26 [0.272]	0.02
<b>10</b>	<b>Started working in the Palestinian Economy</b>	0.442 (0.194)**	-0.060 (0.267)	3.00 [0.09]	0.01
<p><b>Notes:</b> * 10%, **5%, *** 1% significance. Robust SE in parentheses clustered by governorate. The estimates are derived from FE regressions and do not add up. † Data on employment with and without permits is available since 2006. N=13,335</p>					

**Table B-II: Main Empirical Results of Granting employment permits**  
*(Skilled Males aged 20-45, 2005–2008/Q2)*

		$\beta_1$ Qualified (aged 30-45)	$\beta_2$ Unqualified (aged 20-30)	F-Test $\beta_1 = \beta_3$	R <sup>2</sup>
		i	ii	iii	iv
<b>Levels: Cross-Section Analysis (N=14,439)</b>					
<b>1</b>	<b>Employed</b>	0.778 (0.379)**	0.468 (0.396)	0.98 (0.33)	0.36
<b>2</b>	<b>Unemployed</b>	-0.689 (0.355)*	-0.283 (0.223)	3.22 (0.083)*	0.02
<b>3</b>	<b>- Employed in the Israeli economy (including Settlements)</b>	0.238 (0.162)	0.223 (0.167)	0.01 [0.941]	0.03
<b>4</b>	<b>- Employed in the Palestinian economy</b>	0.513 (0.379)	0.216 (0.424)	0.41 [0.53]	0.33
<b>Transitions: Panel Analysis (N=6,749)</b>					
<b>5</b>	<b>Started working</b>	0.583 (0.393)	0.697 (0.447)	0.04 (0.839)	0.01
<b>6</b>	<b>From unemployment to employment</b>	0.221 (0.318)	0.275 (0.144)*	0.02 (0.88)	0.01
<b>7</b>	<b>Started working in the Israeli Economy</b>	0.002 (0.054)	0.075 (0.077)	0.50 [0.486]	0.02
<b>8</b>	<b>- Started working in the Israeli Economy with a permit †</b>	-0.025 (0.064)	0.122 (0.096)	0.02 [0.134]	0.01
<b>9</b>	<b>- Started working in the Israeli Economy without a permit †</b>	-0.015 (0.067)	0.209 (0.069)***	8.29 [0.008]***	0.01
<b>10</b>	<b>Started working in the Palestinian Economy</b>	0.622 (0.377)	0.216 (0.424)	0.01 [0.92]	0.01
<p><b>Notes:</b> * 10%, **5%, *** 1% significance. Robust SE in parentheses clustered by governorate.  The estimates are derived from FE regressions and do not add up.  † Data on employment with and without permits is available since 2006. N=4,998</p>					