



# The effects of labor supply shocks on labor market outcomes: Evidence from the Israeli–Palestinian conflict

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## ARTICLE INFO

### Article history:

Received 2 May 2008  
Received in revised form 30 March 2010  
Accepted 3 April 2010  
Available online 10 May 2010

### JEL classification:

J61  
J21  
D74  
C21

### Keywords:

Immigration  
Labor supply shocks  
Border controls

## ABSTRACT

Since September 2000, as a result of mobility restrictions, the supply of Palestinian workers competing for local jobs in the West Bank has increased by about fifty percent. This paper takes advantage of this unique natural experiment to study the effects of labor supply shocks on labor market outcomes. Using quarterly information on wages and employment in each city in the West Bank, the paper analyzes the short-run adjustment of labor markets to a large inflow of workers separately from the effects of political instability. The results suggest that low-skilled wages are adversely affected by an increase in the supply of low- and high-skilled workers, while high-skilled wages are only weakly negatively related to an increase in their own supply. This is consistent with a scenario in which high-skilled workers compete for low-skilled jobs, pushing the low-skilled into unemployment. This latter hypothesis is confirmed by analyzing the effects of changes in labor supply on unemployment.

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## 1. Introduction

This paper studies the impact of labor supply shocks on labor market outcomes. Despite clear theoretical predictions, numerous empirical papers trying to estimate the effects of labor supply shocks on wages have yielded different, and at times, contradictory results (Borjas, 2003). In September 2000, as a consequence of the second Palestinian uprising, the borders between Israel and the West Bank were closed, preventing Palestinian workers from commuting to their jobs in Israel. The closure of the borders did not generate an immediate, one time, increase in the local labor supply because Palestinian workers expected to return to their jobs in Israel. Instead, as the political instability persisted, workers gave up their expectations of returning to work in Israel, and the local labor supply increased gradually. By 2004 the share of Palestinians commuting to work in Israel had decreased by more than fifty percent, generating a large increase in the supply of workers competing for local jobs in the West Bank.<sup>1</sup>

Aside from restricting mobility into Israel, the security measures imposed by Israel since September 2000 severely restricted the mobility of Palestinians *between* West Bank cities. Consequently, the once homogenous West Bank region was divided into separate local labor markets, in which the mobility of both workers and products was limited.<sup>2</sup> As a result, I argue and provide evidence that labor supply shocks would have been absorbed locally because most past-migrants had to compete over jobs in their original locality of residence. This allows me to take advantage of quarterly variation in local labor supply across cities and over time generated by this unique natural experiment to provide additional evidence on the short-run effects of large inflows of workers on labor market outcomes.<sup>3,4</sup>

The analysis presented in this paper relies on a skill-specific measure of local labor supply to estimate the effects of supply shocks on the wages and unemployment of each skill group. This measure

<sup>2</sup> According to weekly reports of the U.N. Office for the Coordination of Human Affairs in the occupied Territories restrictions on mobility between Palestinian cities in the West Bank were often imposed on incoming and outgoing goods, affecting the trade and transfer of products between the different regions.

<sup>3</sup> Few papers have looked at the short-run dynamics of immigration. See, for example, Cohen-Goldner and Paserman (2006) and Friedberg and Sauer (2004).

<sup>4</sup> Mobility restrictions *between* cities in the West Bank allows the treatment of city-level labor markets as separate. Unlike other studies in the immigration literature, the data allows me to quantify the importance of out-migration in response to the labor supply shock (Card, 1990; Borjas, 2004).

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<sup>1</sup> Unlike other studies in the immigration literature, the paper studies the impact of past-commuters, who for political reasons could not travel anymore, on the wages in the source country. This analysis is relevant to current debates regarding immigration in developed countries and offers an insight into how labor markets in developing countries might respond to the return of large numbers of workers.

calculates the share of the employed locally and the unemployed from the entire working force, which includes workers usually reporting to work in Israel. Workers who report Israel as their work location can be currently employed in Israel or unemployed but expect to return. Thus, this measure incorporates the *expectations* of Palestinian workers about their chances of returning back to Israel.<sup>5</sup>

The main identifying assumption is that variation in the number of workers from each city reporting Israel as their usual place of work varies over time for reasons that are uncorrelated with economic conditions at the city-level, and are determined by Israeli security measures. Of course, one could expect that the decline in economic activity due to political instability might also vary quarterly across different cities and be correlated with the quarterly measure of labor supply attenuating the causal effects of labor supply shocks on wages. To deal with this issue, I include in the regressions city-specific measures of political instability to capture any remaining differences in the demand shocks across cities, along with a time trend to capture demand shocks affecting the entire region, and city fixed effects to capture time-invariant characteristics of each city. I also provide some instrumental variable results and conduct a robustness check to confirm my findings.

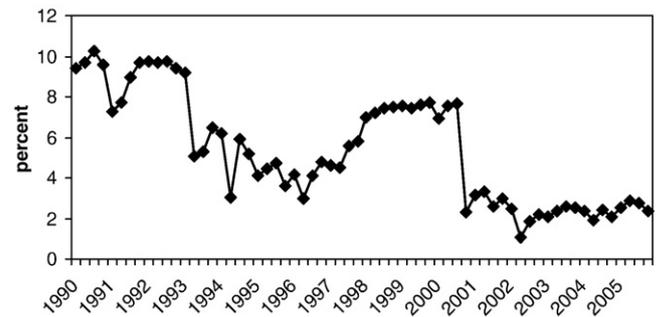
The most conservative results in the paper suggest that a 10% increase in the supply of low-skilled workers reduces low-skilled wages by about 1%. Interestingly, an increase of 10% in the supply of high-skilled workers also reduces low-skilled wages by about 1.5–2%. This suggests that high-skilled workers who could not commute to Israel anymore competed for low-skilled jobs, pushing the low-skilled into unemployment. This hypothesis is confirmed by estimating the effect of labor supply on low-skilled unemployment rates. I find that an increase in the number of low- and high-skilled workers who report Israel as their usual work location reduces the unemployment rate among the low-skilled. As for the high-skilled workers, the results suggest that an increase in their own labor supply decreases their wages slightly, but these effects are not as precisely estimated. An increase in the low-skilled labor supply has no effect on high-skilled wages. The wage results are consistent with the effects on the unemployment rates of high-skilled workers. Differences in the effects across skill groups also suggest that the estimates are not picking up demand-related factors or direct effects of the political instability which, as previous research has shown, have impacted all workers (Miaari and Sauer, 2006).

The second section of the paper outlines the most notable events in the Palestinian–Israeli conflict since 1967 and their economic relations. The third section discusses the data. The identification strategy and the results are presented in the fourth section. I conclude and discuss the results in the fifth section.

## 2. Background

After the Israeli occupation of the West Bank of the Jordan River and the Gaza Strip in 1967, a large proportion of Palestinian workers commuted to Israel on a daily basis, mainly to supply labor services in the construction, manufacturing, and agriculture industries. By 1982, 48% of the men aged 18–64 in Gaza and 36% in the West Bank were employed in Israel (Angrist, 1996). During the late 1980s and early 1990s, the flow of Palestinian labor to Israel fluctuated in response to major political events such as the first Palestinian uprising (1987–1993), the Gulf War (1991), the Oslo agreement (1993), and also as a consequence of new Israeli policies that aimed to reduce the dependency on Palestinian unskilled labor. The most noted policy was to allow foreign non-Palestinian workers to enter the Israeli labor market. According to the Israeli Central Bureau of Statistics (2004), during 1995–2004 about 60% of foreign non-Palestinian workers were

<sup>5</sup> In fact, according to this measure, the largest increase in the local labor supply occurred in late 2001, well after the actual closure of the borders in 2000, and continued to vary over time as workers adjusted their expectations.



**Fig. 1.** Employed Palestinian as a share of total employed persons in the Israeli business sector.

Source: Bank of Israel, Data Series Database. Labor Force, Employment and Wages, 1990:3–2005:4.

allocated in the same industries that traditionally hosted Palestinian workers.

In September 2000, the violence between Israel and the Palestinians reached a peak when as a response to the visit of Ariel Sharon to the Haram al-Sharif/Temple Mount the second Palestinian uprising (the al-Aqsa Intifada) started. Palestinian movement to Israel was severely limited, and the number of workers commuting to Israel dropped sharply. The political instability since September 2000 has differed in intensity and character between cities in the West Bank, between the West Bank and Gaza, and over time. For a more detailed description of the different periods of violence during 2000–2004, see Jaeger and Paserman (2008). Fig. 1 depicts the share of Palestinians employed in the Israeli business sector for the 1990–2005 period. The focus of this paper is on the short-run effects of the increase in the Palestinian domestic labor supply after September 2000.<sup>6,7</sup>

Along with changes in the border policies toward foreign non-Palestinian workers (which aimed to lower the demand for Palestinian labor), Israel responded to Palestinian attacks and local disruptions by enacting a number of policies that affected Palestinian mobility in the West Bank and the Gaza Strip and into Israel. These policies included: a reduction in the number of work permits issued to Palestinians, a change of group permits (based on age and marital status) to individual permits, curfews imposed on Palestinian cities, external and internal closures, and, finally, in 2002 Israel began to build a separation barrier.

Several studies have considered the Israeli–Palestinian labor markets. Angrist (1996) used quarterly time-series on person-days under curfew in the West Bank and Gaza as an exogenous supply shock to identify the effects on wages paid to Palestinians employed in Israel. His analysis utilized data from 1981 to 1991. This study, in contrast, is primarily interested in the response of Palestinian wages in the local labor market, uses a different data set, and employs a different identification strategy.

More recent studies have attempted to estimate the cost of the political conflict on the labor market (Aranki, 2004a, b; Friedberg and Sauer, 2004). Specifically, Miaari and Sauer (2006) used data from the 1999 to 2004 period to estimate the effects of foreign workers in Israel and temporary closures on Palestinian employment rates in Israel and their monthly earnings. Accordingly, their estimates included the effect of moving from better-paid jobs in Israel to lower-paid ones at home. The current study, however, primarily focuses on estimating the effects of the increase in the Palestinian labor supply on wages and

<sup>6</sup> The 1993–1997 period is also characterized by a reduction in the number of Palestinians commuting to Israel that might have had an effect on domestic wages and employment. It is not analyzed in this paper because the disruptions to the supply of labor were temporary so that workers expected to return to the Israeli market and thus not creating a permanent supply shock in the Palestinian market.

<sup>7</sup> Notice in Fig. 1 that the share of employed Palestinians in Israel declines sharply in September of 2000, as the borders closed. However, the sharp increase in the local labor supply, depicted in Fig. 2a and b, did not occur until the third quarter of 2001. This reflects the difference between actual employment and the adjustment of expectations about work location.

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