

The labor market impact of mobility restrictions: Evidence from the West Bank^{*}

Massimiliano Cali[†] and Sami H. Miaari[‡]

Using data on Israeli closures inside the West Bank, we provide novel evidence on the labor market effects of conflict-induced restrictions to mobility. To identify the effects we exploit the fact that the placement of physical barriers by Israel was exogenous to local labor market conditions. Check-points have a significant negative effect on employment, wages and days worked, while other barriers have small positive effects on employment and no discernible effects on other variables. We provide evidence that only a very small portion of these effects is due to direct restrictions on the mobility of workers. According to our estimates the labor market costs of the barriers amounted in 2007 to between 4% and 4.4% of GDP.

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[†] Corresponding author, Trade and Competitiveness Global Practice, World Bank, 1818 H Street, Washington, DC 20433. Email: mcali@worldbank.org; Tel: 001 2024739157.

[‡] Department of Labor Studies, Tel-Aviv University, Tel-Aviv 69978, Israel. Email: SamiMiaari@post.tau.ac.il.

1. Introduction

The free and efficient mobility of goods and labor is one of the most important features of any functioning economy. Higher transport costs lower real incomes by reducing the extent to which gains from trade can materialise. Donaldson (forthcoming) estimates that increased railroad access raised real income by 16 percent in the average Indian district at the beginning of last century. Poor infrastructure can also increase the time required for, and cost of commuting to work, affecting both labor market participation and wages (Gibbons and Machin, 2006). In developing countries changes in transport costs also often occur as a result of the use of man-made restrictions to mobility, including check-points and roadblocks. These barriers are a pervasive feature of many economies experiencing civil conflicts, where warring factions control the movement of people and goods and extort taxes.⁴ However, such restrictions to mobility often also exist in relatively peaceful settings. Ben Barka (2012) reports the presence of between 1.8 and 3.2 checkpoints per 100 km along the main corridors in West Africa, which translate into a 7 hours delay per average trip and related, direct and indirect economic losses.⁵

Given the importance of these barriers, it is surprising that little systematic evidence exists on their economic impact. One problem is that the recording of these barriers is typically incomplete due to their temporary nature and to the prevalence of the barriers in low quality and often war-torn institutional settings. This paper tries to start filling this evidence gap by providing novel evidence on the labor market effects of the system of checkpoints, roadblocks and other barriers installed by Israel inside the occupied Palestinian territory (oPt) of the West Bank. This system is part of the broader ‘closure’ regime which was initially put in place by Israel after the first Palestinian uprising in 1987, (‘first Intifada’), as a security measure to control the movement of goods and persons across the borders and within the oPt. The “closure” regime was dramatically expanded during the second Palestinian uprising, known as the ‘second Intifada’, in the first half of 2000s.

Our analysis relies on a number of features, which ensure a relatively clean identification of the effects of restrictions on the labor market. The first is the availability of systematic yearly data on the location of the physical barriers to movement within the West Bank throughout the

⁴ See e.g. Rangel Suarez (2000) for Colombia and National Bureau of Statistics (2011) for South Sudan.

⁵ While the highest concentration is in the Abidjan–Bamako corridor, legacy of the 2011 conflict in Côte d’Ivoire, checkpoints are ubiquitous across countries in the main corridors in West Africa.

2000s, collected by the Applied Research Institute of Jerusalem (ARIJ) and by the UN Office for the Coordination of Humanitarian Affairs (OCHA). In addition, systematic labor market data are also available throughout the last decade of the conflict in the West Bank (and Gaza).⁶ Second, check-points and other barriers to mobility inside the West Bank have been varying in number and location throughout the years; third, as we argue below, the placement of barriers has been related to Israeli security concerns and thus has been largely exogenous to local economic conditions, and labor market conditions in particular. The inclusion of a measure of conflict intensity as a control in the analysis further strengthens the case for the exogeneity of the barriers' effects.

We take advantage of these features to causally identify the *marginal* effect of the barriers' placement on the employment, wages and labor supply of Palestinians in the West Bank over the period 2000-2009. In order to do so we compute a yearly index of barriers' proximity to the individual worker, using a refined spatial unit of analysis and examine its impact on labor market outcomes at the same spatial level. The results suggest that different types of barrier have different effects. Check-points exert a negative impact on the probability of being employed as well as on hourly wages. Our preferred specifications suggest that placing one check-point ten minutes away from a locality reduces its residents' probability of being employed by between 0.14 and 0.15 percentage points and their hourly wage by between 0.54 and 0.63 percentage points. The check-points also have an impact on the quantity of labor supplied by Palestinian workers, decreasing the number of days worked in a month while increasing the number of hours worked per day. The overall net effect on monthly wages is also negative.

On the other hand the other barriers have a small positive impact on employment and no significant impact on other labor variables. We provide some suggestive evidence that this positive effect on employment is due to the increased employment in the public sector, which has been one of the Palestinian Authority's strategies to counter the negative impact of the second Intifada (Miaari, 2009). This positive, public employment effect is also associated with check-points, whose negative impact on private employment far outweighs the public employment effect. In addition our results suggest that there is a beneficial effect, for Palestinians commuting to Israel, of being closer to non-check-point barriers, as some of these other forms of barrier, including agricultural gates, are the main ways through which they can reach their workplace in Israel.

⁶ The Palestinian Bureau of Statistics started to collect the data immediately after its foundation at the end of 1995.

However this result only applies to Palestinian employees holding an official work permit, with which they can continue to gain access to Israel at these barriers, while for informal commuters to Israel the barriers represent an enhanced obstacle to their commute as they cannot use them to access Israel.

The analysis also tries to distinguish between the two main channels through which the restrictions can arguably affect the labor market outcomes. The first concerns the role of the barriers in restricting the movement of labor mainly, (but not only), within the West Bank. This restriction directly affects the ability of the workforce to supply labor. The second channel is more indirect and operates through the negative effect of the barriers on economic activity, via raising the cost of moving goods and labor for firms. These higher costs should eventually reduce the demand for labor. We provide evidence that the first channel only explains at best a very small portion of the labor market effects of the checkpoints, thus suggesting that the effects are largely attributable to the indirect channel.

The paper adds to the broader literature on the effects of conflict within countries using micro data. Much of this evidence is related to the effects of conflict on health and education outcomes (e.g. Bundervoet et al., 2009, Shemyakina, 2011, Verwimp and Van Bavel, 2011). A more limited number of studies focus specifically on the economic impact of conflict, which is a topic more directly related to our study (e.g. Abadie and Gardeazabal (2003) on the Basque country, Miguel and Roland (2011) on Vietnam, and Amodio and Di Maio (2016) on the oPt itself). Closer to the methodology of our study, Ksoll et al. (2010) find that the recent ethnic violence in Kenya caused a 38% drop in revenues of flower exporting firms which was mainly due to the restrictions imposed on workers' mobility. Blattman and Annan (2010) and Rodriguez and Sanchez (2012) are among the few studies that also examine the labor market implications of civil conflict, albeit only for children. Our study complements this literature by looking at the effects on the overall labor market of an arguably more exogenous, conflict-induced shock than violence. In addition it makes an effort to try to unpack the specific channels through which such a shock affects the labor market.

The paper also contributes to the specific literature on the Israeli-Palestinian conflict. As the largest Palestinian export has historically been labor – mainly to Israel – a lot of attention has been devoted specifically to the implications of Israeli border closure, between the oPt and Israel,

for the Palestinian labor market.⁷ By making it more difficult for the Palestinians to reach the Israeli labor market, Israeli closures lower the demand for Palestinian workers in Israel; at the same time, they increase the supply of workers in the Palestinian labor market. That is an important issue given the high degree of dependence of the labor markets in the West Bank and Gaza on Israel, especially before the outbreak of the second Intifada. Miaari and Sauer (2011) find that the tight border closure policy enacted by Israel at the beginning of the last decade negatively affected the employment of Palestinians in Israel, which was mainly replaced by a surge in the inflow of foreign workers.⁸ That is consistent with the theoretical model by Rupper Bulmer (2003), which predicts that in the short run border closures translate directly into spikes in unemployment, in the absence of a wage adjustment in the Palestinian labor market. However Mansour (2010) finds some wage decline for unskilled workers in the West Bank, in response to increases in the supply of skilled workers expelled by the Israeli labor market, suggesting that those skilled workers competed locally for low-skilled jobs.⁹ We complement this literature by examining the effects of mobility restrictions within the oPt while also controlling for the concomitant effects of external closure.

Finally this paper is also related to the literature on the economic impact of the changes in transport and trade costs within countries, whose main focus is on evaluating the impact of transport infrastructure improvements. A natural outcome of such improvements should be the increase in trade between the newly connected regions, which in turn has implication for welfare as well as for the distribution of income. Donaldson (forthcoming) and Faber (2016) find that large transport infrastructure improvements significantly increased trade between regions in British India and in China respectively. Michaels (2008) examines the impact of increased trade, due to highway construction, on the demand for skills across US counties. Other studies focus on the improvement in the accessibility to employment that such types of transport infrastructure development are likely to bring about.¹⁰ Our analysis exploits a very different source of changes

⁷ Angrist (1995 and 1996) provide some seminal analyses of the Palestinian labor market.

⁸ According to the Israeli Central Bureau of Statistics, about 60% of foreign immigrants have been employed in the same industrial jobs that used to be occupied by Palestinians. This pattern was substantial in the period 1995-2005, and explains a good part of the decrease in demand for unskilled Palestinian labor in Israel after the second Intifada.

⁹ Some evidence is also emerging on other labor market effects of the conflict. For example Miaari, Zussman and Zussman, (2012a) find that the second Intifada increased the extent of job separation between Arab and Jewish workers within Israeli firms.

¹⁰ For example, Sanchis-Guarner (2012) looks at the effects of road construction on employment probability, working time and wages in Great Britain via higher accessibility to employment. Gutierrez-i-Puigarnau and van Ommeren

in trade costs and accessibility to employment. These changes are shown to be much more abrupt and frequent than the kind of changes the literature has been examining, but with analytically similar effects.

The rest of the paper is organized as follows. Section 2 provides a brief account on the conflict, with a specific focus on the development of the barriers' system in the West Bank and discusses the channels through which such barriers may affect labor market outcomes; sections 3 and 4 describe the data and the empirical strategy; section 5 discusses the estimation results and section 6 concludes.

2. Barriers and mobility restrictions in the West Bank

2.1. Historical evolution

Restrictions to the mobility of goods and labor across Palestinian borders have been a defining feature of the Israeli occupation of the Palestinian territory, especially since the outbreak of the first Intifada in 1987. Spurred by security concerns, such measures involved periodic “closures” of the West Bank and Gaza Strip concomitant with surges, or expected surges, in the Israeli–Palestinian conflict (Miaari and Sauer, 2011). Along with these restrictions Israel also introduced a system of check-points that constrained the movement of goods and people between areas within the West Bank and Gaza as well as limiting access to certain areas of the West Bank. This system was loosely enforced throughout the 1990s, not representing a serious obstacle to mobility within the regions of the oPt. In fact following the beginning of the Oslo peace process in 1993 many check-points were removed.

However after the outbreak of the second Intifada in September 2000, Israel severely scaled up the restrictions on the mobility of Palestinian goods and people within the oPt as well as between the oPt and Israel. Israel also started the construction of a separation wall, (West Bank wall henceforth), in 2002 with the declared intent of restricting the movement of Palestinians from

(2010) study the effect of changes in commuting time on the labor supply exploiting the relocation of the establishment within the same firm.

the West Bank into Israel for security reasons.¹¹ The system of movement and access restrictions within the oPt, (the ‘internal closure’), became particularly severe within the West Bank and that is the focus of our study.¹² According to the Israeli army, this system was devised as a security measure “to protect its citizens”, (both inside Israeli settlements in the West Bank and in Israel proper), from attacks originating in the West Bank (IDF Military Advocate General, 2012). This feature is important for our identification strategy, as it ensures that the placement of these barriers is exogenous to local labor market conditions. We provide further evidence below that changes in these conditions are indeed not associated with the subsequent placement of barriers.

The system of movement and access restrictions in the West Bank has taken a multitude of forms and is still operational today (2007b). It has been enforced through a web of manned and unmanned physical barriers placed by the Israeli army on roads and at the entrance to villages, towns and cities. These barriers include permanent and partial check-points, which usually control access to main roads, as well as roadblocks, earth mounds, road gates, barrier gates, agricultural gates, trenches and earth walls. Such barriers dramatically increase the travelling time between cities, villages and rural areas, forcing vehicles to make detours via fields or unpaved roads.¹³ These delays translate also into higher direct costs of travelling between areas of the West Bank.

The use of barriers has varied across space and time. According to the data collected by ARIJ, their number increased in line with the growing intensity of the conflict in the early 2000s and then peaked in 2007-08, decreasing slowly thereafter. In 2009 our data record 89 checkpoints, 268 roadblocks and earth mounds and 122 barrier gates. The trend in the number of checkpoints between 2000 and 2009 is similar to that of the other barriers, showing a steady increase until 2008 when the number started to decline (Figure 1).¹⁴ In the analysis we exploit this variation over time and across small spatial units in the West Bank to identify the impact of these barriers on local

¹¹ Even before the construction of the wall, and as a response to the outbreak of the second Intifada, the number of Palestinian workers commuting to Israel dropped sharply between 2000 and 2002 (Miaari, Zussman and Zussman, 2012b).

¹² In the remainder of the paper we use the terms closures and barriers interchangeably.

¹³ For example the travel time between the city of Bethlehem (just south of Jerusalem) and Ramallah (just north of Jerusalem) has more than doubled since Palestinian vehicles were not allowed to take the most direct route via East Jerusalem (Palestinian Ministry of National Economy and ARIJ, 2011).

¹⁴ The only exception is the drop in 2004, which may be partly due to incomplete reporting, as that was the first year in which OCHA started recording the closure data. For this reason we also check the robustness of the results below to excluding the year 2004 from the analysis. All the results are virtually unchanged to this exclusion (results available from the authors upon request).

labor markets.

2.2. The possible labor market impacts of the restrictions

While the system of internal closures was not targeted on the basis of local economic conditions, it did however, (and still does), have large effects on the local economy. Virtually all reports on the Palestinian economy in the last decade have argued that the movement and access restrictions are a key constraint to Palestinian economic development (e.g. World Bank (2004, 2007a, 2010 and 2011a), IMF (2010), UNCTAD (2011)). Internal closures stifle economic activity by raising the cost of doing business and increasing uncertainty (World Bank 2004, 2007a, 2007b). The closure system has fragmented the West Bank territory into small and disconnected “cantons” (World Bank, 2007b). A recent World Bank (2011b) study finds that the checkpoints have a significant and large, positive effect on spatial price differences in the West Bank. The lower bound estimate of the effect of two or more checkpoints between cities is an added price difference of up to 10 percent, which is comparable to the transaction costs incurred when crossing the U.S.-Canada border. These types of effects are even larger during periods of curfew when “the wheels of the economy come to a grinding halt.” (World Bank, 2004, p.1).

How are the physical barriers to mobility expected to affect labor market outcomes? It is useful to distinguish between a direct and an indirect channel through which the barriers impact the labor market. The direct channel is related to the role of the barriers in constraining the workers’ ability to reach their workplace. This mechanism involves workers facing an increase in travel time, and often in the cost of commuting, between their place of residence and place of work when access is constrained by the presence of a barrier.¹⁵

The second channel works by reducing firms’ labor demand due to the restrictions on the mobility of goods across locations. This mechanism would increase the degree of autarchy of the locations, since goods from outside the location would become more costly.¹⁶ The restrictions imposed by the barriers would also raise the cost and the availability of production inputs, which

¹⁵ We abstract here from the eventual changes in residential location by the workers induced by the barriers’ placement in order to mimic more closely the West Bank context. As noted by Mansour (2010) the traditional structure of Palestinian society and the period of instability under consideration suggest that change of residence by workers is unlikely to be common. This is confirmed by the analysis of the data below. In addition we keep the residential location fixed in some empirical specifications.

¹⁶ Indeed the share of firms’ sales outside of their own areas in the West Bank (Northern, Central and Southern West Bank) dropped from 58% to 41% between 2000 and 2005, a period of increasing Israeli imposed mobility restrictions (World Bank, 2007a).

are overwhelmingly sourced from outside the location and often from outside of the West Bank. In a simple framework where firms are price-takers, these effects reduce firms' production, revenues and employment by raising the costs of inputs and transport. This is an important channel through which the conflict has adversely affected firms in the West Bank (Amodio and Di Maio, 2016). In a world of increasing returns to scale these restrictions would also force firms to operate at a less than efficient scale of production by reducing their size.¹⁷ These types of effects are akin to the costs of increased autarchy between locations.¹⁸

The interaction between these two mechanisms would determine the labor market outcomes of the barriers. In terms of employment, the direct channel should reduce the probability of being employed outside the worker's own location as the supply curve shifts left-wards. The labor demand curve in the locality should also shift in the same direction but the net effect on employment would depend on shift relative to that in other locations. If as a result of the barriers labor demand falls in other locations more than in one's own location, then this channel would decrease the probability of being employed outside of one's own location. Similarly these channels do not entail unambiguous predictions on the overall probability of being employed. If we take the extreme case of barriers impeding any mobility between locations, everyone will have to work in her own location. Other things being equal, those locations which before the restrictions were net exporters of labor will experience an expansion of the labor supply following the closure, while the restrictions should also reduce labor demand due to the indirect channel. These concomitant shifts in labor supply and demand curves should lead to a reduction in wages in net labor exporting locations. In net labor importing locations, on the other hand, the reduction in labor demand may also be accompanied by a reduction in the labor supply, thus generating ambiguous predictions on wage changes in these locations.

3. Data

¹⁷ It is also theoretically possible – though not plausible - that the barriers may induce an increase in labor demand in certain net good importer locations if local producers can substitute imports with local production and such substitution is large enough to compensate the loss of export markets and the higher costs of inputs.

¹⁸ The importance of such costs is captured in Donaldson (forthcoming), who shows that the large welfare gains of connecting Indian districts through the railway system during the British times are fully explained by the increase in the share of goods sourced from outside of the district.

The bulk of our data comes from two main sources: labor force survey data collected by the Palestinian Central Bureau of Statistics (PCBS) and georeferenced data on various types of physical barriers to movement over time collected by ARIJ. We also complement the latter data with data collected by OCHA.

The Palestinian Labor Force Survey (PLFS) of the West Bank and Gaza Strip began in 1995, following the creation of the Palestinian Authority (PA), and since then it has been conducted every quarter and is based on a nationally representative sample of households. The PLFS surveys each household four times over a period of six quarters: each household stays in the sample for two consecutive quarters, and after a break of two quarters it returns to the sample for two more consecutive quarters. Households are subsequently dropped from the sample. This feature is important as it allows us to generate a panel of individuals over time. Each survey round after 1998 contains approximately 1,300 households in the West Bank. Our sample in the analysis below consists of more than 45,000 individuals over the period considered.

We restrict the sample from the PLFS to individuals in the labor force between the ages of 15 and 64 and surveyed during the forty-four quarters between quarter one of 2000 and quarter four of 2009. The rounds of the survey prior to 2000 are not considered as the data on the barriers for that period are available only for the year 1995, when the methodology of the PLFS sample design was substantially different.¹⁹

The PLFS data includes information on various individuals' personal characteristics, such as age, marital status and education, labor market variables, including employment status, daily wage, number of days worked in the previous month, hours worked in the previous week, occupation and industry, as well as the households' locality of residence and the locality of work place. The latter geographical data is a key element to allow identification of the effects of the closures on the labor market variables. Localities represent the smallest spatial unit for which economic data is available in the West Bank and provide a very refined spatial scale for our analysis. There are 660 localities defined by the PCBS in the West Bank with an average size of 8.5 Km². Of these localities we exclude the 17 localities which form part of the Jerusalem district, for which the barriers do not affect access to the Israeli labor market. In addition half of the remaining localities are not surveyed by the PLFS during the period of analysis as they have no or

¹⁹ In 1995 the survey was conducted in one quarter only and it was an experimental sample.

tiny Palestinian population. In the end our sample consists of 321 localities.

Yearly data on the physical barriers for the years 2000, 2001, 2003, 2006, 2008 and 2009 comes from ARIJ and we complement them with data from OCHA for the remaining years in the period 2000-2009, except for the year 2002 for which data is not available due to the severe unrest occurring in the West Bank in that year.²⁰ We have data on the most important types of barriers, including permanent check-points, partial checkpoints, roadblocks, earth mounds, road gates, agricultural and barrier gates.²¹ Except for the year 2007, our data only allows to distinguish between check-points and other barriers, a limitation which we discuss below.

Checkpoints are infrastructures which inhibit vehicular and pedestrian traffic and are manned by Israeli security personnel, which usually check the documentation of persons crossing the checkpoint and conduct searches of their vehicles and belongings. Unlike permanent checkpoints, partial checkpoints are only occasionally manned.

Earth mounds are mounds of rubble, dirt and/or rocks put in place by the Israeli army (IDF) to prevent vehicular movement along a road, (usually secondary), or a track. Earth mounds are often removed or circumvented and then re-built and/or enlarged (OCHA, 2010). Roadblocks are constructed from one or more concrete blocks of about one cubic meter. Similarly to earth mounds, they are also used to prevent vehicle access to land or roads often at the entrance of villages, towns and cities. Agricultural gates and barrier gates are metal gates which provide the only access through the West Bank wall to the so-called “seam zone”. This is an area lying between the internationally recognized border that separates the West Bank and Israel, (the “green line” in Figure 2), and the wall, (the solid black line in Figure 2), which is almost entirely constructed inside the West Bank territory and whose total length upon completion will be 760 Km.²² These gates usually require permission to be crossed and have specific opening times which may vary

²⁰ We do not have the date on which the barriers were placed in each year so we assume that each barrier has been there since the beginning of the year if observed in that year. This limitation of our data may give rise to some measurement error, which should however be minimized by the fact that we know that the vast majority of the barriers in every year have been present since the beginning of that year.

²¹ Data on other types of barrier, including road barriers, trenches and earth walls is not consistently available over the period of analysis due to the difficulty in monitoring such barriers and is therefore excluded from the analysis. While this may generate some omitted variable bias, its size should be relatively small as these represent minor obstructions and their placement may, to some extent, reflect the placement/existence of the other barriers.

²² The “seam zone” comprises around 8.5% of the West Bank and includes a number of villages and several hectares of agricultural land, which have been cut off from the rest of the West Bank by the wall.

over time. Agricultural gates are used mainly by the owners of the land in the “seam zone” who live on the other side of the wall, while barrier gates are used by the residents of the villages in the “seam zone” to access the rest of the West Bank and by lorries transporting goods from the West Bank into the “seam zone”. The last type of barrier in our dataset is road gates. These are metal gates used to block access to a route and similarly to the other gates usually have varying opening times. For each of the two barrier types (check-points and others) observed in a specific year, we have information on its geographical coordinates and type. Figure 2 shows a map of the West Bank including the check-points, (both permanent and partial), along with the localities’ centroids in 2007. It is clear from the figure that these barriers were spread all over the West Bank territory thus affecting virtually all movements within the region.

ARIJ also collected data on the length of the wall built for each West Bank village crossed by the path of the wall for the years 2002, 2004, 2006, 2008 and 2010. In cases in which a village contains more than one locality, we assign a quota of the village’s length of the wall to each locality on the basis of the share of the village’s areas covered by that locality. We use linear interpolation to obtain the data on the wall length for the missing years.

Data on the number of Palestinians fatalities in each locality since 2000 are taken from B'Tselem, The Israeli Information Center for Human Rights in the Occupied Territories.²³ Widely thought to be accurate and reliable, the data published by B'Tselem record in detail every fatality on both sides during the Second Intifada. Finally the data on the size of localities’ labor markets before our period of analysis come from the 1997 Palestinian population census administered by the PCBS. Summary statistics for key variables at the individual and the locality level are provided in Table 1A and 1B respectively.

4. Estimation Strategy

The identification of the effects of the barriers on the labor market relies on time varying measures of the ‘closeness’ of the physical barriers to the individual’s locality of residence, which proxies for the intensity of the restrictions imposed by the barriers. The main measure we use is constructed as the count of the barriers within 30 minutes of travel time, (by existing roads), from

²³ Available at: <http://www.btselem.org>.

the locality's centroid, weighted by the inverse of their travel time.²⁴ This weight captures the idea that the more distant a checkpoint is, (taking into account the road system), the less it will affect mobility to and from a certain locality. More formally:

$$PB_{lt}^{30 \min} = \sum_{b \in N_{lt}} \left(\frac{1}{d_{bl}^{time}} \right) \{b \in N_{lt} : d_{bl}^{time} \leq 30\} \quad (1)$$

where d_{bl}^{time} is the travel time by road in minutes of barrier b from location l in year t and N is the location-specific number of barriers that satisfy the travel time limit of 30 minutes. Figure 3 presents a map of the area comprising roughly a 30 minutes travel time band around Nablus' locality, which includes all of the elements involved in the computation of the index, i.e. barriers, localities' centroids and the road system. This travel time threshold should ensure that we capture all of the main, relevant barriers affecting the economic life of each locality. In addition, the travel time weight ensures that barriers further away would have a limited effect on the index even if included. Nonetheless this remains an arbitrary distance band. As this variable is key to identifying the closures' effects, we also implement different approaches to construct PB to minimize the concern that the results may be driven by a specific way of computing the measure. The first variant of the index relies on using physical distance rather than travel time as the weight. Therefore we construct the same index as in (1) but replacing d_{bl}^{time} with d_{bl}^{road} which is measured in kilometers. As further variants of the same approach, we also use 20 minutes and 20 Km as the travel time and the road distance bands to construct the alternative indices. We also compute an index as in (1) but without the distance weights, thus relaxing the assumption of variation in the barriers' effects within 30 minutes (or 30 Km). It could also be the case that the closest n barriers, rather than those within a distance boundary, are those mostly constraining the mobility related to a specific locality. In order to account for this possibility, we also experiment with a variant of the index, which considers only the 5 barriers closest to each locality by travel time: $PB_{lt}^{5bar} = \sum_{b=1}^5 \left(\frac{1}{d_{bl}^{time}} \right)$.

We employ the index of closeness to the physical barriers, thus constructed, to measure the

²⁴ We use the network analysis algorithm in ArcGIS in order to compute the distance and the travel time between the locality's centroid and each barrier. The computation is based on georeferenced data on the existing road network in the West Bank in 2001 (which has not changed over the period of analysis). The model also takes into account the ruggedness of the terrain to compute the speed over the road network, which is necessary to calculate the travel time.

reduced form effect of the mobility restrictions on labor market outcomes. The baseline regression reads as follow:

$$lm_{ilqt} = \alpha + \beta PB_{lt} + \Theta X_{iqt} + \mu_i + \gamma_{qt} + \varepsilon_{ilqt} \quad (2)$$

where lm_{ilqt} is one of the labor market variables we are considering (i.e. dummy for being employed, log of hourly wage, log of number of working days in the preceding month or log of the number of working hours per day in the preceding week) for individual i in location l in quarter q and year t ; X is a vector of time varying individual characteristics, including age, its square, years of schooling, marital status and a set of location of residence dummies, (urban area and refugee camp); μ are individual fixed effects (FE) and γ are time (quarter-year) effects. The latter capture all the time varying shocks common to all the individuals throughout the West Bank, such as the political context, the evolution of the Palestinian economy, etc.; ε is the error term.²⁵ Using this FE specification implies that the main source of identification comes from the within group variation in PB variables. Given the type of data we use, β measures the changes in the individual's labor market outcome associated with the change in the barrier index that she - as a resident of a specific locality - is exposed to from one year to the next. Running (2) with FE estimation involves using a linear probability model (LPM) for the specification with the employed dummy as the dependent variable.²⁶

The β coefficient should be interpreted only as the *marginal* (rather than the *total*) effect of the closures on the labor market, i.e. the difference in labor market outcomes between localities according to their distance to the closures. As the restrictions to mobility affect the entire West Bank economy, it is not possible to obtain a counterfactual of localities actually unaffected by the

²⁵ We also include in the regressions a series of time dummies interacted with the Hebron district dummy. These interactions should control for the possible labour market effects of the special status of the city of Hebron on the other localities within the Hebron district. The historical centre of the city of Hebron was split into two parts soon after the Israeli occupation of the West Bank, with one part controlled by Israel and inhabited by Israeli settlers and some Palestinians and the other part controlled by the Palestinian Authority and inhabited by Palestinians. A system of check-points and other barriers inside the city centre has been in place to separate the two parts of the city. While this is accounted for in our barriers' index for the locality of Hebron, we do not include it in the computation of the index for the localities outside the city of Hebron, as the barriers are within the city and thus do not obstruct the transit from these localities to any other place outside the Hebron city centre (and vice-versa). Despite this, the heavy restrictions within Hebron city may still have some impact on the localities in the district, whose economic life often revolves around the city. The set of interactions should help account for this impact. Note that all the results are robust to the exclusion of these interactions (results available from the authors upon request).

²⁶ We prefer using the LPM over alternative methods, such as probit or logit estimation, as FE specifications are inconsistent in non-linear discrete models and the estimation through LPM lends itself to a more straightforward interpretation of the results.

closures, which would be necessary to compute the *total* effects of closures. This problem is typical of studies estimating the economic impact of conflicts within countries, where even the residents of more peaceful regions are usually also adversely affected by conflict-related disruptions (Blattman and Miguel, 2010). In this sense the *marginal* effect we compute is necessarily an under-estimation of the *total* effect of the closures. In addition, our estimates do not take into account other dynamic labor market effects of the barriers, such as those on the ability to accumulate human capital.²⁷ Similarly internal closures are likely to raise the costs of attending schools for students. Such effects are likely to play out in the medium run and therefore are not captured by our analysis.

So far we have assumed that all the barriers have the same effect on the labor market. Although they all restrict movement, they do so in different ways and intensity. In particular, our data only allows us to split the existing barriers into two types: checkpoints – both permanent and partial (*CP*), and road blocks, earth mounds and gates (*REG*), including road gates, barrier gates and agricultural gates. While more refined data would be useful to identify the differential impacts of the various types of barriers, we argue that the key distinction in terms of impact is between checkpoints and other barriers for two main reasons. First, checkpoints restrict the movements of vehicles and people over the main roads within and across the oPt. Because they obstruct important connections between localities, these barriers are expected to have a particularly relevant impact on the movement of goods and labor. On the other hand, the other types of barriers (*REG*) consist of obstructions placed on secondary roads and smaller paths and of gates placed on the wall to allow the transit to and from the “seam zone” as well as to and from Israel. Their restriction is expected to be less damaging than that of the checkpoints. Road-blocks and earth mounds can be overcome by alternative routes, only slightly more costly than the route they obstruct.²⁸ Besides road-blocks and earth mounds, the other gates considered here connect Palestinian communities to the seam zone as well as to Israel and allow for the relatively unhindered transit to people and vehicles with permits. Second, the placement of other barriers is more volatile than that of checkpoints, as they may be introduced and taken out multiple times per year (UN OCHA, 2006). As our data is yearly, this characteristic may introduce some larger source of noise in the recording of

²⁷ Di Maio and Nandi (2013) provide evidence that external closures increase child labor and reduce school attendance in the West Bank.

²⁸ There are a few exceptions to this general rule with road blocks obstructing important passages into towns and cities which may severely increase the congestion on the alternative routes.

other barriers than of check-points.

In order to differentiate between the effects of these two groups of barriers, we modify regression (2) in the following way:

$$lm_{ilqt} = \alpha + \beta_1 CP_t + \beta_2 REG_t + \Theta X_{ilqt} + \mu_i + \gamma_{qt} + \varepsilon_{ilqt} \quad (3)$$

In the analysis below we also check the robustness of the regression to a variety of further time varying controls at the locality level, including the length of the constructed West Bank wall, the Palestinian fatalities, the number of and the share of employment in Israel and Israeli settlements in the year before, as well as the sectoral level.

4.1 Exogeneity

Our main identifying assumption in (2) and (3) is that the placement of physical barriers by Israel is exogenous to the local labor markets in the West Bank. We can identify three possible ways in which this assumption may be violated in our framework. First it may be that individuals respond to the placement of barriers by changing residential location. If this decision is correlated with certain characteristics which also influence the labor market outcomes (e.g. unobserved ability) then the estimated β coefficients would be biased. In our estimation this problem would arise if individuals change locality of residence during the period they are monitored by the survey (six quarters). This is the case for only 83 workers (out of 48,000) in our sample, whom we exclude from the estimation.²⁹

Second, it could be the case that certain unobserved locality characteristics may be related to both labor market outcomes and internal closures. The FE specification captures these possible locality characteristics as long as they are time invariant.³⁰ However there could also be time varying variables which may drive both the placement of barriers and the labor market. In particular, the intensity of the conflict at the locality level is likely to be the main such variable. Locations which are characterised by more violence are likely to experience an increase in barriers

²⁹ We also check for robustness that including them in the estimation does not change our results below in any meaningful way (results available upon request).

³⁰ In fact as long as there are individuals who move locality of residence in the sample, the FE do not capture all of these characteristics. Adding explicitly locality FE to control for that does not change the results (results available upon request). As this addition reduces the degrees of freedom of the model without improving the efficiency of the estimation, we do not include locality FE in the specifications with individual FE.

to movement as well as a deterioration of their labor market conditions. In order to deal with this possible source of bias we use the Palestinian fatalities in each locality in the previous quarter. This variable is arguably the closest available proxy for the intensity of the conflict and has already been used to that end (e.g. Miaari, Zussman and Zussman, 2012b).³¹

The last possible way in which the exogeneity assumption may be violated is due to reverse causality, i.e. the changes in labor conditions drive the placement of barriers by Israel in the West Bank. This channel does not seem to apply in this case, at least according to the Israeli authorities, which, as discussed above, claim to impose these barriers exclusively on the basis of security considerations. It is the desire to protect Israeli citizens, whether in West Bank settlements or within the internationally recognised borders of Israel, that motivates the placement of checkpoints and other barriers in the West Bank by Israel. This motivation bears no relationship with local economic conditions, including the labor market. In order to provide further evidence on the absence of this reverse causality channel, we examine whether changes in local labor market conditions over the last two quarters of each year are correlated with changes in the barriers' variables in the following year:

$$\begin{aligned} \Delta PB_{lt+1} = & \alpha + \phi_1(emp_{lq4t} - emp_{lq3t}) + \phi_2(w_{lq4t} - w_{lq3t}) + \phi_3(h_{lq4t} - h_{lq3t}) + \\ & + \phi_4(f_{lq4t} - f_{lq3t}) + \lambda_l + \gamma_t + \varepsilon_{lt} \end{aligned} \quad (4)$$

Where $\Delta PB_{lt+1} = PB_{lt+1} - PB_{lt}$, emp , w and h are the employment rate, the average hourly wage and the hours worked per week in locality l respectively, f is the number of fatalities and λ is locality fixed effects. We also run the same specification for the other measures of barriers. We use employment, wages and hours per week, which combines the two labor supply measures we use in (2) and (3), as the main variables defining the local labor markets.

The results are presented in Table 2 and confirm that changes in local labor market conditions are not statistically related to subsequent decisions by Israel to place barriers to mobility. The labor market variables are never significant, either when included by themselves

³¹ Following the results in Benmelech et al. (2011) we also include as a further control the number of Palestinian suicide attackers into Israel from each locality lagged one year. This inclusion does not affect any of the results below and due to potential endogeneity concerns we decide to exclude this variable from the reported regressions below (results available upon request).

(columns 1-3), or when included jointly (columns 4-6). These variables' lack of significance also carries through to the specifications using checkpoints (column 5) and other barriers (column 6) as dependent variables. Taken together these results strongly support the exogeneity of the barriers to mobility to the labor market conditions, which gives us confidence in the reliability of the results of the following analysis.

5. Estimation Results

The results from the baseline specifications (2) and (3) for employment probability are presented in Table 3. The standard errors are robust to heteroscedasticity (using the Huber-White correction) and are clustered at the locality level, consistently with the geographical level of identification of the barriers' effects. The internal closures have a positive and significant effect on employment probability even though the magnitude is very small: one extra closure placed 10 minutes away from a locality raises the employment probability for the locality's residents by 0.04% on average (column 1).³² This surprising effect is driven by the coefficient of non-check-point barriers, while the check-points exert a negative effect on employment (column 2). The coefficients suggest that placing one extra check-point 10 minutes away from the locality reduces the probability of being employed in that locality by 0.14 percentage points; on the other hand one extra barrier at the same distance raises the employment probability by 0.06 percentage points.³³ Even though the marginal effect of check-points on employment is more than double that of other barriers, when combining the two types of barriers together through the variable *PB*, that resembles more the pattern of *REG* than *CP*. That is in line with their being considerably more other barriers than check-points; hence as the sum of different barriers, *PB* is more closely correlated to *REG* than to *CP*.³⁴

In column (3) we investigate the source of this surprising positive effect of other barriers on wage employment by differentiating the impact of the barriers between public and private employees. During the second Intifada Miaari (2009) documents evidence of increased hiring in the Palestinian public sector in those Palestinian areas particularly affected by the conflict. Our

³² We exclude discouraged workers and unpaid family members from the sample.

³³ This positive effect of the other barriers also applies to labor force participation (see column 1 in Table A1 in the annex).

³⁴ The coefficient of correlation between *PB* and *REG* is 0.97, while that between *CP* and *PB* is 0.73.

results are consistent with this evidence as private sector employment is much more negatively affected by both check-points and other barriers than public sector employment. In fact an additional non check-point barrier placed 10 minutes away from the locality increases the probability of public employment in that locality by 1.8%, while it reduces private employment by 1.3%. This positive effect on public employment appears to explain the net positive effect of non-check-point barriers on employment. Check-points on the other hand have no significant impact on public employment while they have a very negative impact on private employment.

Next we investigate to what extent the barriers have a differential impact between Palestinians employed in Israel and the others (column 4). As mentioned above Palestinians commuting to Israel may actually benefit from being closer to some of the closures, including barrier and agricultural gates, as these are the main ways through which they can reach their workplace in Israel. However this access is likely only to apply to Palestinian employees holding a work permit to Israel, while for the informal commuters to Israel the barriers may in fact represent an enhanced obstacle to their commute as they cannot use them to access Israel. The results confirm these hypotheses, with non-check-point barriers increasing the probability of commuters to Israel holding a work permit being, employed relative to other employees, while decreasing the same probability for commuters without a work permit (column 4).³⁵ The check-points also appear to exert the same type of effects on commuters with and without permits but the effects are less precisely estimated than for other barriers. The additional interaction terms for commuters to Israel do not affect significantly the other coefficients of the barriers, including the effects on private-public sector employees, suggesting that most of the effects of the barriers do not work through restrictions to mobility to the Israeli labor markets, a point we return to below.

In the following columns we split the sample into wage and non-wage employees, as these are two different forms of employment which may be affected differently by the barriers. The latter category is dominated by self-employed, who – unlike wage employees - often have no chance of obtaining a formal job outside the locality. The internal closures have a positive but not significant effect on employment probability of wage employees (column 5). When we split the barriers' variable, again the coefficient of non-check-point barriers is positive and significant although

³⁵ An employee is defined as a commuter on the basis of his/her response in the first wave in which he/she is interviewed so as to minimize endogeneity concerns.

smaller than in column (2), while that of check-points is negative but not significant (column 6).³⁶ In column (7) we test for the heterogeneous effects of wage employees across public-private employees and formal-informal commuters to Israel. The results are similar to those for the whole sample of workers in column (4) but the absolute magnitude of the private interaction coefficients is larger for the wage employees, especially for check-points. Conversely the absolute size of the interaction coefficients for commuters to Israel is smaller for wage employees.

In columns (8)-(10) we turn to the results for non-wage employees.³⁷ For these workers, who represent about a third of the entire sample of workers, the barriers have an overall positive association with the probability of being employed, albeit the magnitude of the effect is small (column 7). Again this is driven by a positive effect of non-check-point barriers (column 8). Here this effect is not explained by public sector employment as there are no public employees among the self-employed. On the other hand there is no differential impact of the barriers between commuters and non commuters to Israel, (column 10), consistent with the fact that very few (around 3%), such workers commute to Israel in the first place. These results suggest that non check-point barriers appear to induce, at the margin, more workers to enter self-employment.

In Table 4 we examine the impact of the barriers on other labor market outcomes. The physical barriers exert a negative, but not significant, effect on hourly wages (column 1). That is entirely driven by the check-points (column 2).³⁸ Placing one extra check-point ten minutes away from the locality reduces the hourly wage in the locality by 0.63%, significant at the 1 percent level. The other barriers, on the other hand, exert no discernible effect on hourly wages.

The barriers also mildly affect the amount of time worked. Again, when differentiating between types of barriers, the check-points exert a negative and significant effect on days worked (column 3), while the effect of other barriers is not significant. The result for checkpoints – which is only significant at the 15% level - is potentially consistent with both the direct and indirect channels of the check-points: workers reduce the number of working days due to increased commuting costs, and firms reduce average labor inputs per worker in order to adjust to the

³⁶ This positive effect of the other barriers applies to labor force participation as well (see column 1 in Table A1 in the annex).

³⁷ Note that the sum of wage and non wage employees in columns (5) and (8) is lower than the number of employees in column (1) as the latter includes around 18,000 employees for whom there is a lack of information on employment type.

³⁸ Note that we exclude the tails of the distribution of the wage as well as time worked variables by leaving out the top and bottom 1% of the observations according to those variables.

decrease in production due to the mobility restrictions. On the other hand the presence of check-points increases the number of hours worked in a day, conditional on going to work (column 5). This is consistent with the idea that once the worker reaches the workplace she may want to work more hours to compensate for the lower number of working days. Both effects are also consistent with the empirical evidence on the effect of an increase in commuting costs and time provided by Gutierrez-i Puigarnau and van Ommeren (2010).

The heterogeneous effects of the check-points on hourly wages, working days and hours worked result in a negative and significant net effect of check-points on the overall wage. Our estimates suggest that an extra check-point 10 minutes away from the locality reduces the average monthly wage by 0.37% (Table A1 - column 2 - in the annex).

The results in Tables 3 and 4 suggest the adverse effects of the barriers stem overwhelmingly from the check-points, while the other barriers have either no significant or marginally positive effects, (in the case of employment). Given the heterogeneous effect of the two groups of barriers, in the remainder of the analysis we use only *CP* and *REG* rather than *PB* as the main regressors of interest.

We turn next to a number of robustness tests of the results. First we check that the results do not critically rely on the assumption of the arbitrary distance threshold, beyond which the barriers are not considered to have an effect on the labor market. We construct a number of different measures for the barrier variables as described in section 5, always obtaining similar results to those in Tables 3 and 4. For the sake of brevity we only report the results using the barriers' index defined in terms of road distance rather than travel time. In Table 5 we replicate the regressions in Tables 3 and 4 for check-points and other barriers but using CP^{30Km} and REG^{30Km} instead. All of the results are robust to this change.

While the use of time effects helps us control for the impact of the changing conflict intensity throughout the West Bank, the intensity and impact of the conflict is likely to vary across locations over time. In Table 6 we address this possible issue by adding a set of time varying controls at the locality level. First, we include the number of Palestinian fatalities in the previous quarter, which to our knowledge is the best available measure of the conflict intensity in this

context.³⁹ As explained above, this variable is particularly important to address concerns relating to endogeneity of the barriers' indices due to omitted variables. Second, we add the length of constructed, West Bank wall (in Km) in the locality in order to capture different short-term labor market effects of the wall's construction during our period of analysis. The wall prevents Palestinian workers' from entering the informal Israeli labor market; in addition, it makes it more difficult for landowners and their workers to access their land in the "seam zone". On the other hand, the construction of the wall also provides an opportunity for the local Palestinian labor force to undertake unskilled work in the short-term.

Both the check-points' and other barriers' coefficients are robust to the inclusion of these variables with no significant change in the effect of the check-points on all of the labor market variables. As expected, the number of Palestinian fatalities in a particular quarter is associated with a reduction in the probability of employment in the next quarter, although the effect is not statistically significant except for non-wage employment (column 3). The effect of the West Bank wall on employment probability is also negative and not significant, suggesting that in the short-run the negative impact of the wall, through mobility restrictions, may have been partly offset by the employment opportunities arising from the wall's construction. In the longer run, once the construction is completed, only the negative effects of the wall on the labor market are likely to play a role. The construction of the wall has no significant impact on any of the other labor market variables.

There may also be concerns that unobserved district specific trends in variables correlated with both labor markets and closures may bias the results. In order to address this concern we add to the analysis a series of district-specific time trends. The results, not reported to save space but available upon request, are robust to this inclusion. The magnitude of the coefficients of both checkpoint and other barriers is not statistically different in all cases relative to that of the specifications without the time trends.

5.1 Heterogeneity of the closures' effects

³⁹ We also use the quarterly number of attacks perpetrated inside Israel and originating in each West Bank district to further control for the conflict channel. The results, available upon request, are again robust to the inclusion of this variable.

So far we have estimated the average effect of the barriers across all individuals. However different types of workers may be affected differently. In particular skills and gender may be salient factors shaping the barrier-labor outcomes relation. In order to investigate to what extent that is the case we interact the closure variables with dummies for male and for unskilled individuals, identified as those with less than 12 years of formal schooling (i.e. without a high secondary degree). To save clutter we do not report the results of the split between wage and non- wage employees given that the effects are similar across both types of workers. The results, presented in Table 7, suggest mild differential effects along these dimensions. In particular, non-check-point barriers appear to have more adverse effects on males than females in terms of employment and (mildly) number of days worked. The results for check-points are qualitatively similar but not statistically significant. This mild extra effect for males may be due to the fact that men are more likely to be commuters and hence more likely to be affected by physical barriers than women. On the other hand the barriers seem to have almost no differential effect between skilled and unskilled workers. The only exception is the number of days worked (column 6), which are less negatively affected by check-points for unskilled workers and by other barriers for skilled workers.

The barriers could also have differential effects across sectors. To test for that hypothesis, we estimate a multinomial logit model looking at the impact of barriers on the relative probability of being employed in a certain sector. We work with six macro sectors (agriculture, manufacturing, construction, commerce, transport and communications and other services) and take the other services as the term of comparison. The results, presented in Table 8, suggest a broadly consistent effect of both check-points and other barriers. The most negatively affected sector is agriculture, which experiences an outflow of workers as a consequence of the barriers, particularly check-points (column 1), followed by other services. The adverse effect on agriculture is consistent with increased transport costs associated with the barriers, that may be particularly harmful for a sector which produces relatively perishable products. On the other hand, the least negatively affected sector is manufacturing, a finding which is more difficult to explain given the reliance of manufacturing on transportation and the importance of economies of scale for certain sub-sectors. One possible hypothesis – which we leave for future research - may be the substitution of labor for capital, given the reduced cost of labor and the increased cost of capital goods due to transport restrictions.

As discussed in section 2, the direct effect of the closures on employment may also differ between localities which are net importers and net exporters of labor. To the extent that the closures reduce the mobility of workers, they should have a less detrimental effect on the labor market outcomes of workers residing in labor importing localities. We test this prediction by computing net labor imports for each locality l in 2001, the first year for which the data allows us to construct this variable, and interacting this term with the closure variables.⁴⁰ Although this variable may suffer from endogeneity bias, as it refers to the year after the start of our analysis, it can still provide some interesting insight on the differential impact of the closures. The results in column (1), table 9 indicate that the checkpoints have a slightly less detrimental effect on the probability of being employed for workers residing in net labor importing localities although the difference is not significant at standard levels. The opposite sign holds for other barriers but again the difference is not significant. Neither do checkpoints or other barriers have a differential impact on the other labor market indicators, suggesting little heterogeneity in their effects along the labor exporting dimension.

The impact of the barriers across localities could also differ according to the size of the locality's labor market. Larger markets in a small economy like the West Bank are typically a reflection of economies of scale exploited by firms by serving the domestic market from a few locations. By breaking up the integration of this market, closures may be particularly detrimental for such larger labor markets. That is consistent with the results in column (5), where the interactions between the localities' number of employees in 1997, (according to the population census), and the barrier variables have a negative sign, although they are not statistically significant. The interactions' coefficients are not significant for the other labor market variables, except for working days, (column 7), for which the interaction with the checkpoint is positive and significant. This result could suggest that checkpoints are less likely to hinder the access of residents in larger labor markets to their workplace as they are more likely to work in the same locality.

5.2 Disentangling the channels

⁴⁰ This is computed as the sum of all workers from any other localities j working in l minus the sum of all workers from l working outside of l , all divided by the total workers in l .

The results so far capture the reduced form effects of physical barriers on the labor market. As discussed in section 2, there are two types of channels that may be driving these effects: the direct channel of the barriers restricting the workers' movements; and the more indirect channel, through the harmful effects of the barriers on firms' profitability and demand for labor. Although we do not have data on firms to explicitly test for the latter channel, we can employ a number of strategies in order to isolate the labor movement restricting channel.

First, for each locality l at time t we generate indices of barriers reflective of the obstacles they impose to commuters. Specifically, we compute the share of the overall workforce resident in l which commutes to each locality j for work in 2003, (the first year such data is available). We then use these, (time invariant) shares to weigh the number of check-points and other barriers between l and each locality j at any point in time. More formally:

$$CP_l^t = \sum_{j=1}^{n_l} \left[N_{lj}^t \times \frac{L_{lj}^{2003}}{L_l^{2003}} \right]$$

where N_{lj}^t is the number of check-points between l and j at time t , L_{lj}^{2003} is the number of commuters from l to j in the base period, L_l^{2003} is the total workforce resident in l in the base period and n_l is the number of localities destination of commuters from l . This index weighs each barrier only on the basis of the size of the commuters' flow that the barrier affects. For instance if no worker from locality l commuted to locality j in 2003, then the check-points on the route between the two localities will have zero weight in computing the CP index for locality l . This weighting scheme allows us to explicitly isolate the effect of the barriers through the restriction on workers' mobility. That is different to the barriers' indices that we have used so far, which weigh the barriers only according to their distance from their locality, thereby capturing the effect of the barriers through both channels.

In addition, we also compute more direct indices (CP_{it} and REG_{it}) of friction for commuters by calculating for each resident i in location l the (time-varying) number of barriers between l and her workplace j keeping j constant from the first round she is interviewed. This allows to minimize the endogeneity of the workplace selection to the barriers' placement. This way of computing the index allows to capture the direct constraint imposed by the barrier on the individual commuter on her way to work.

We then add these indices in turn to the specifications with the full set of controls (as in Table 6). The results are presented in Table 10 and suggest little effect of these variables on the

labor market indicators. The indices are never significant across specifications (see columns 1-4 for CP_l^t and REG_l^t and columns 5-8 for CP_{it} and REG_{it}). As these indices are only available since 2003, their inclusion induces a restriction of the sample. In the bottom panel of table 10 we replicate the regressions without the indices over the same samples. The comparison of the two sets of regressions reveals that the coefficients of the barriers are virtually unaffected by the inclusion of the barriers' indices. To the extent that these indices capture the movement restriction channel of the closures, the results suggest that only a very small portion of the labor market impact of the barriers is mediated via this channel.

These results find broad confirmation from examining the extent to which the barriers affect the probability of being employed outside of one's own locality. As shown in Table 11, the check-points around a locality significantly increase the probability of its residents becoming commuters. An extra check-point 10 minutes away from the locality raises the probability of commuting outside one's own locality by 0.45% and out of district by 0.48%. This result is consistent with the adverse effects of these barriers on the local economy, which more than offset the effect of the increase in the cost of commuting outside of the locality. On the other hand the other barriers do not exert any significant effects on commuting probability, which is a further confirmation that check-points appear to be the key barrier affecting labor markets in the West Bank. Interestingly this positive effect of check-points on commuting occurs only in net labor exporting localities (columns 5-6), which may offer more limited opportunities to reallocate workers across jobs following a negative shock.

Finally we exploit the questions in the PLFS about the labor supply decisions of workers to provide further evidence of the relatively limited impact of direct restrictions to labor mobility in explaining the overall labor market effects of closures. In particular, the questionnaire asks workers why they were absent from work in the previous week. For each locality in each quarter we compute the share of respondents who reported closure as the reason for their absence. We use this share as a proxy for the extent to which closures restrict workers' ability to reach their workplace in each locality and quarter. In column (1) of table 12 we present the results of adding this variable to the employment regression. This share has no significant association with employment probability. This addition impacts the absolute size of neither the checkpoint nor the other barriers' coefficients (see Table 6, column 1), confirming once again that the direct effect of closures on workers' mobility explains an insignificant part of the observed effects of closures on

employment. That is the case also for the checkpoints' impact on wages, which is little affected by the addition of the new variable (column 2). The latter has a positive and significant association with wages, suggesting that employers pay a small premium to workers from locations which are disproportionately affected by the restrictions. The coefficient of checkpoints on the number of days worked is also unaffected by the inclusion of the new variable, which has a negative, but not significant, association with the days worked (column 3), in line with the results in table 6. We obtain the same results when we use a different variable to construct the proxy for the closures' restrictiveness on workers' mobility, i.e. the share of workers who reported closures as the reason for working less than 35 hours in the previous week (column 4). This variable is particularly relevant to measuring the effects of the barriers via their restriction to mobility on the supply of labor.

We also use these two questions to generate two individual level dummies. The first takes the value of 1 if the worker's response to the question about her absence from work is "closure". Similarly the second takes the value of 1 for the same answer to the question about working less than 35 hours. The former dummy has the expected negative association with the number of days worked but again the size of the checkpoint coefficient is unchanged (column 5). The checkpoint coefficient is also robust to the addition of these different variables when the dependent variable is the number of hours worked per week (columns 6-8). The coefficients of the new variables are negative and significant, implying that individuals in localities which are most affected by the closures' mobility restrictions and individuals who are mostly affected by the restrictions work fewer hours per working day. This pattern confirms the findings from previous tables, according to which the closures increase the number of hours worked per day due to the employers' rather than the workers' adjustment of the production to the restrictions.

Taken together, these results suggest that the direct effect of the closures in restricting workers' access to the workplace is responsible for only a very small share of the labor market impact of closures in the West Bank. In the absence of adequate firm-level data we can only speculate that the bulk of the closures' effects may be driven by the other channel identified in section 2, i.e. the reduction in the firms' profitability and labor demand.

5.3 Quantifying the overall marginal effects of the barriers

The estimated coefficients of the checkpoints allow us to provide a quantification of the marginal effects of the closures for the entire West Bank labor market. We compute the costs associated with these effects for the year 2007 and note that the results would be similar taking any of the other recent years in the sample. The effects we capture refer to the difference in labor market outcomes between localities, according to whether they are more or less surrounded by checkpoints. As explained above this difference provides a lower bound estimation of the actual total effect of the checkpoints.

We use the checkpoint's and the other barriers' coefficients in column (1) in table 6, (-0.014 and 0.006 respectively), which represent our preferred estimations, in order to compute the marginal effect of the barriers on employment for the entire West Bank (table 13 provides the breakdown). As the average value of CP^{30min} in 2007 was 1.59 and the active labor force was 524,806, the checkpoints were responsible for approximately 11,682 more unemployed workers.⁴¹ On the other hand the other barriers – with an average value of 4.82 in 2007 - induced 15,177 fewer unemployed workers. Considering the average daily wage and the average days worked per month, this effect translates into a monetary gain of New Israeli Shekel 72 million, or approximately USD 18 million.

We also use the checkpoint coefficient in column (3) (-0.063) in order to compute the marginal effect of checkpoints on hourly wages, while the other barriers exert no significant effect. Using the average daily wage and the average number of days worked per month and accounting for the lower number of employed people just computed, the reduction in wages due to the checkpoints was equivalent to NIS 881 million, or approximately USD 223 million in 2007.

Finally the checkpoint coefficients in columns (5) and (7), along with the average number of days worked per month and the average daily wage allow us to compute the net marginal monetary effect of the checkpoints via the labor supply. This effect is slightly positive and turns out to be NIS 155 million or around USD 39 million.

These estimates suggest therefore that the overall cost of the checkpoints on the West Bank labor market amount to around USD 166 million, which is mainly determined by the reduction in the wages. This cost is not negligible, equivalent to 4.4% of the West Bank GDP in 2007.

In the absence of data on self-employed and employers we have applied to both categories the same average wage as for wage employees. However self-employed workers – who represent

⁴¹ We exclude discouraged workers from the active labor force in line with the definition used in the analysis.

the bulk of non wage employees - typically have lower earnings than wage employees. Hence we also provide an alternative computation by assuming 17% lower earnings for non wage employees relative to wage employees, in line with recent estimates of self-employed-employees earning differentials for a large sample of lower-middle income countries, the group Palestine belongs to (Gindling et al., 2016). Applying this earning penalty to the self-employed share of the labor force (46.5%) to compute their wage, the computation of the losses from the barriers is slightly reduced to USD 153 million.

6. Conclusion

This paper has provided new evidence on the impact on the labor market of an extensive system of mobility restrictions, which was imposed by Israel in the West Bank in the 2000s. While the stated aim of the closures is to protect Israeli citizens from Palestinian attacks originating from the West Bank, the closures have a very significant impact on the West Bank economy. Using individual level regressions for a large sample of workers between 2000 and 2009, the paper finds that check-points substantially reduce the probability of being employed, the hourly wages and the number of days worked, while raising working hours per day worked. On the other hand the other types of barrier have a more limited impact. We argue that the results are causal in nature and they are robust to different specifications and variables' definitions and a wide range of controls.

Moreover, by matching locality and individual specific commuting patterns with the barriers' location, we provide suggestive evidence that restrictions to workers' mobility explain a very marginal portion of the effects of check-points. Therefore we hypothesize that the bulk of the closures' effect on the labor market would be explained by the other main channel we identified, i.e. a reduction in firms' profitability and labor demand. However further research using firm level data would be needed to explicitly test for this hypothesis.

The analysis is likely to provide an underestimation of the actual labor market effects of the barriers as it cannot capture the general equilibrium effects nor the dynamic effects (e.g. through lower human capital accumulation) of mobility restrictions. Notwithstanding these limitations, our estimates suggest that the checkpoints have non negligible effects on the West Bank labor market. In our preferred estimation, placing one check-point ten minutes away from a locality decreases the probability of being employed by 0.14 percentage points, the hourly wage

by 0.63 percent and days worked by 0.22 percent, while it increases the hours per working day by 0.4 percent. On the other hand placing an extra other barrier at the same distance increases employment probability in the locality by 0.06 percentage points. This effect appears to be driven by the increase in public sector employment associated with the additional barriers placed near the locality, consistently with the evidence presented in Miaari (2009).

Taking the year 2007 as an example, we estimate that these effects translate into costs of between USD 153 and 166 million or between 4% and 4.4% of West Bank GDP. Most of these costs are due to lower wages, suggesting that labor markets have adjusted to the restrictions more through prices than through quantities.

References

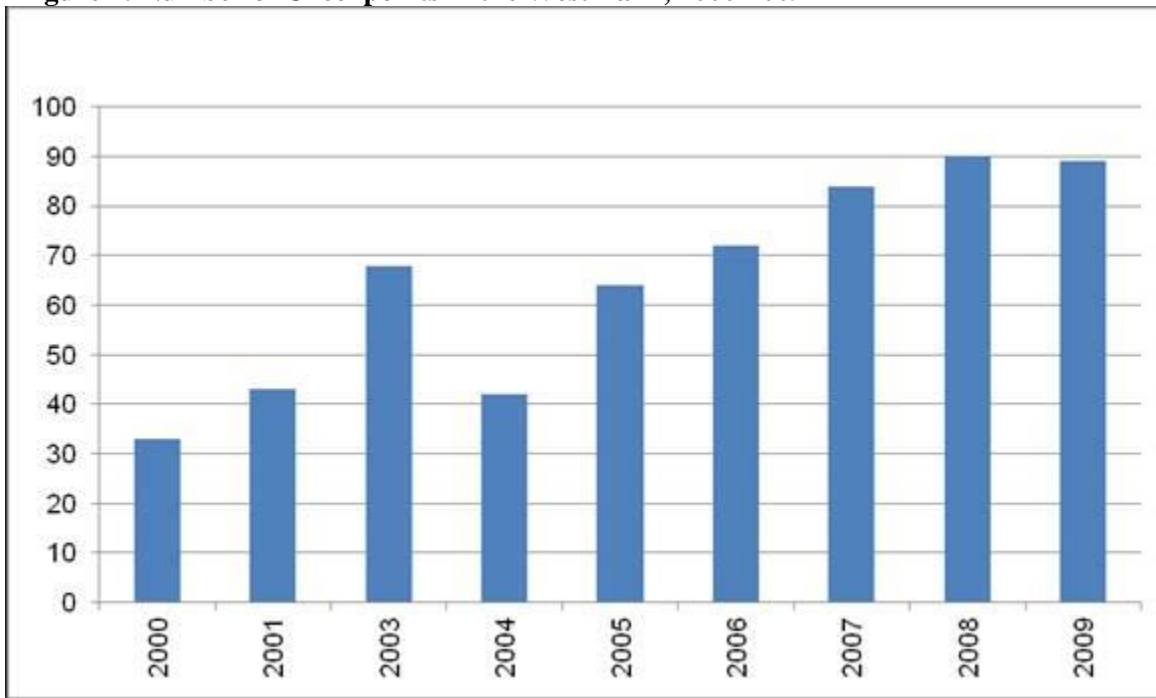
- Abadie, A., and J. Gardeazabal (2003). The Economic Costs of Conflict, *American Economic Review*, 93(1): 113-132.
- Amodio, F. and M. Di Maio (forthcoming). Making Do with What You Have: Conflict, Input Misallocation, and Firm Performance, *Economics Journal*.
- Angrist, J.D. (1995), The Economic Returns to Schooling in the West Bank and Gaza Strip, *American Economic Review*, 85:1065-1087.
- Angrist, J.D. (1996), Short-run Demand for Palestinian Labor, *Journal of Labor Economics*, 14: 425-453.
- Ben Barka, H. (2012). Border Posts, Checkpoints, and Intra-African Trade: Challenges and Solutions, African Development Bank.
- Benmelech, E., Berrebi, C. and E. Klor (2011). The Economic Cost of Harboring Terrorism, *Journal of Conflict Resolution*, 54(2) 331–353.
- Blattman, C. and J. Annan (2011). The Consequences of Child Soldiering. *Review of Economics and Statistics*, vol. 92(4): 882-898.
- Bundervoet, T., P., Verwimp and R. Akresh (2009). Health and civil war in rural Burundi, *Journal of Human Resources*, 44(2): 536-563.
- Cogan, J. F. (1981). Fixed costs and labor supply, *Econometrica*, 49(4): 945–63.
- Di Maio, M. and T., Nandi (2013). The effect of the Israeli-Palestinian conflict on child labor and school attendance in the West Bank, *Journal of Development Economics*, 100: 107-116.
- Donaldson, D. (forthcoming). Railroads of the Raj: Estimating the Impact of Transportation Infrastructure, *American Economic Review*.
- Faber, B. (2014). Trade integration, market size and industrialisation: Evidence from China's national trunk highway system, *Review of Economic Studies*, 81 (3): 1046–70.
- Gindling, T.H., Mosaad, N. and D. Newhouse (2016). Earnings premiums and penalties for self-employment and informal employees around the world, *Policy Research working paper; no. WPS 7530*. Washington, D.C.: World Bank Group.
- Gutierrez-i Puigarnau, E. and J.N. van Ommeren (2010). Labor supply and commuting, *Journal of Urban Economics*, 68(1): 82–89.

- IDF Military Advocate General (2012). Legal issues in Judea & Samaria: Movement and access restrictions, Israel Defence Forces, available at: http://www.law.idf.il/602-2215-en/Patzar.aspx#paragraph_8
- International Monetary Fund (2010). Macroeconomic and fiscal framework for the West Bank and Gaza: Sixth review of progress, Staff Report for the meeting of the Ad Hoc Liaison Committee, September.
- Ksoll, C., Macchiavello, R. and A. Morjaria (2010). Guns and Roses: The Effect of Ethnic Violence on an Export-Oriented Industry, mimeo.
- Jaeger, D. and D. Paserman (2008). The cycle of violence? An empirical analysis of fatalities in the Palestinian-Israeli conflict. *American Economic Review*, 98 (4): 1591-1604.
- Mansour, H. (2010). The effects of labor supply shocks on labor market outcomes: Evidence from the Israeli-Palestinian conflict, *Labour Economics*, 17(6): 930-939.
- Miaari, S. (2009). The Public -Private Wage Differential in The West Bank And Gaza Strip Before And During The Second Intifada. *EUI Working Papers*, MWP 2009/13, MAX Weber Programme.
- Miaari, S.H. and Sauer, R.M. (2011). The labor market costs of conflict: Closures, foreign workers, and Palestinian employment and earnings. *Review of Economics of the Household*, 9: 129-148.
- Miaari, S., A. Zussman and N. Zussman (2012a). Ethnic conflict and job separation, *Journal of Population Economics*, Vol. 25(2): 419-437.
- Miaari, S., A. Zussman, and N. Zussman (2012b). Employment Restrictions and Political Violence in the Israeli-Palestinian Conflict, *Journal of Economic Behavior & Organization*, Volume 101, May 2014, Pages 24–44.
- Michaels, G. (2008). The effect of trade on the demand for skill — Evidence from the interstate highway system, *Review of Economics and Statistics*, Vol. 90(4): 683-701.
- Miguel, E. and G. Roland (2011). The Long Run Impact of Bombing Vietnam, *Journal of Development Economics*, Vol. 96(1): 1-15.
- National Bureau of Statistics (2011). South Sudan Cost to Market Report, Juba: South Sudan.
- Palestinian Ministry of National Economy and ARIJ (2011). The economic costs of the Israeli occupation for the occupied Palestinian territory, Ramallah and Bethlehem.
- Rangel Suarez, A. (2000). Parasites and predators: Guerrillas and the insurrection economy of Colombia, *Journal of International Affairs*, 53(2): 577-601.

- Rodriguez, C. and Sanchez, F. (2012). Armed conflict exposure, human capital investments and child Labor: Evidence from Colombia. *Defence and Peace Economics*, Vol.23 (2): 161-184.
- Ruppert Bulmer, E., (2003), The Impact of Israeli Border Policy on the Palestinian Labor Market, *Economic Development and Cultural Change*, v. 51: p. 657-676.
- Sanchis-Guarner, R. (2012). Driving up Wages: The Effects of Road Improvements in Great Britain, SERC DP 120, London School of Economics.
- Shemyakina, O. (2011). The Effect of Armed Conflict on Accumulation of Schooling: Results from Tajikistan. *Journal of Development Economics*, vol. 95: 186-2000.
- UNCTAD (2011). Developments in the economy of the occupied Palestinian territory, Geneva: UNCTAD Secretariat.
- UN OCHA (2006). Territorial Fragmentation of the West Bank, May, Jerusalem.
- UN OCHA (2010). West Bank: Closure and Access, June, Jerusalem.
- World Bank (2004). Four Years – Intifada, Closures and Palestinian Economic Crisis: An Assessment, Washington, DC: World Bank.
- World Bank (2007a). West Bank and Gaza investment climate assessment, Washington, DC: World Bank.
- World Bank (2007b). Movement and access restrictions in the West Bank: Uncertainty and inefficiency in the Palestinian economy, Washington, DC: World Bank.
- World Bank (2010). The Underpinnings of the Future Palestinian State: Sustainable Growth and Institutions, Economic Monitoring Report to the Ad Hoc Liaison Committee, September, Washington, DC: World Bank.
- World Bank (2011a). Building the Palestinian State: Sustaining Growth, Institutions and Service Delivery, Economic Monitoring Report to the Ad Hoc Liaison Committee, April, Washington, DC: World Bank.
- World Bank (2011b). West Bank and Gaza coping with conflict? Poverty and inclusion in the West Bank and Gaza, Report No. 61293, Washington, DC: World Bank.

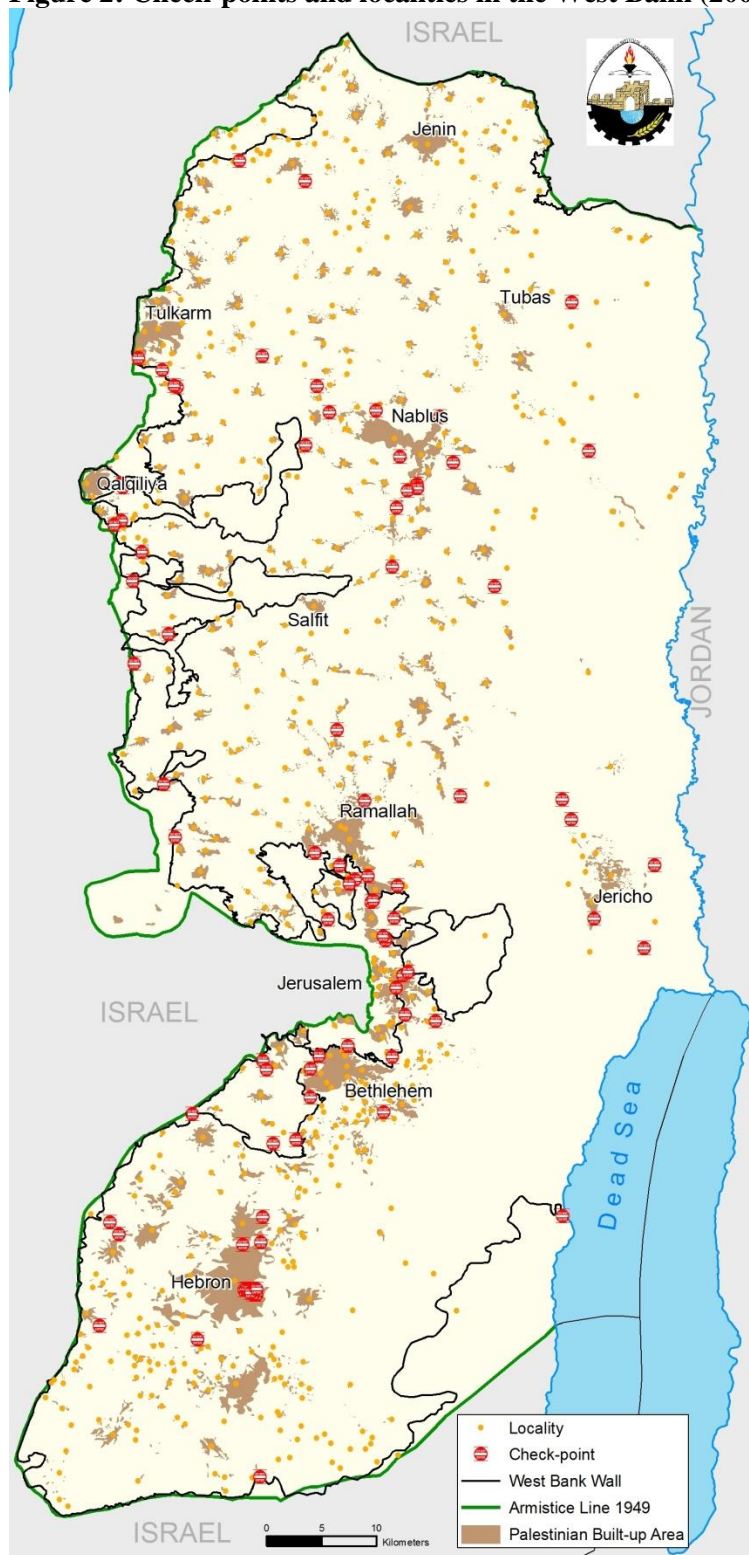
Figures and tables

Figure 1: Number of Checkpoints in the West Bank, 2000-2009



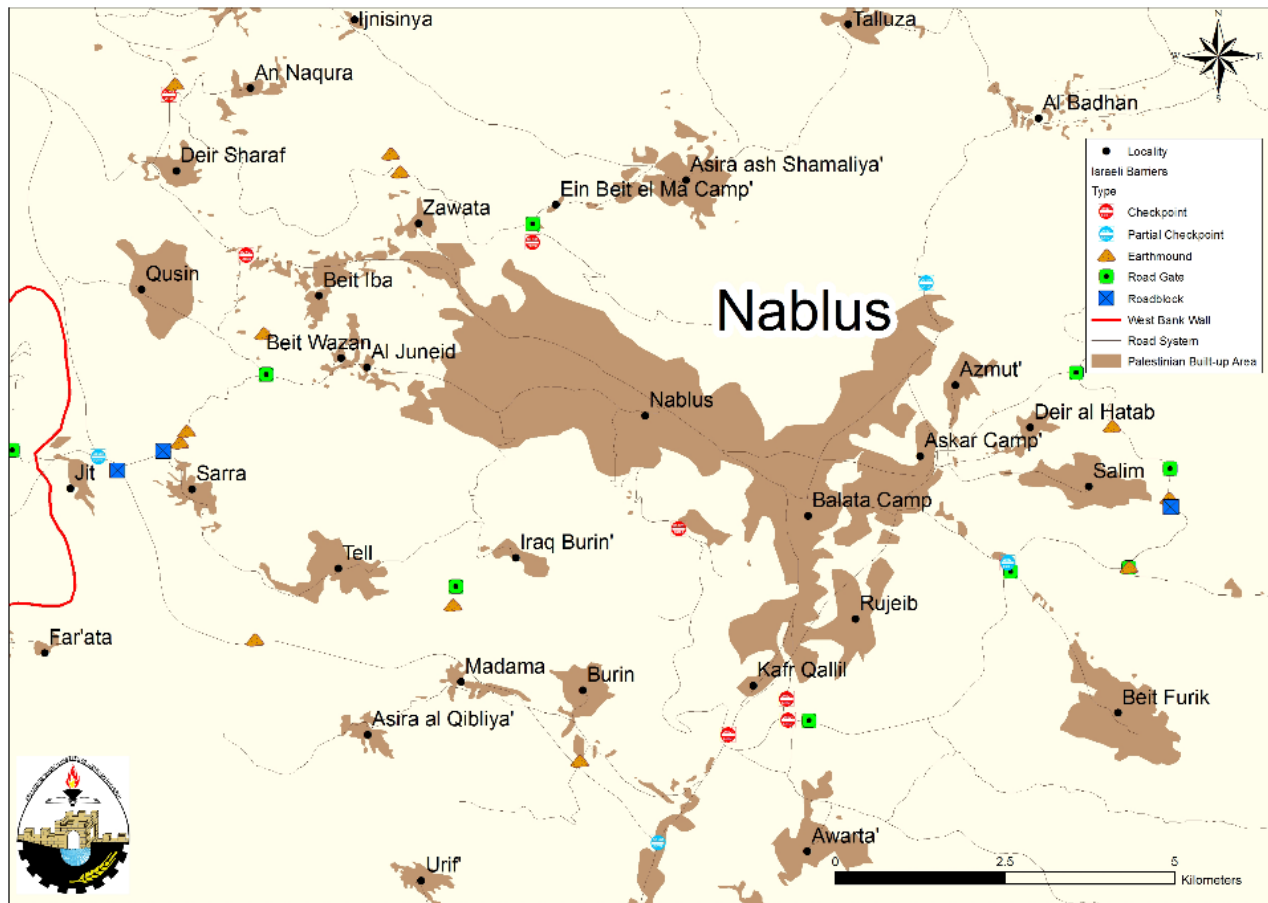
Source: Authors' calculations on ARIJ data

Figure 2: Check-points and localities in the West Bank (2007)



Source: ARIJ

Figure 3: Check-points and other barriers in the Nablus areas (2007)



Source: ARIJ

Table 1A: Summary Statistics for key Variables

	Obs.	Mean	SD
Employment Rate	186,389	0.776	0.417
Hourly Wage	83,786	10.186	8.670
Work Days Per Month	91,992	22.044	5.533
Work Hours Per Day	87,068	9.238	6.401
Male	186,389	0.853	0.354
Schooling	186,389	10.324	3.860
Age	186,389	34.539	11.259
Married	186,389	0.656	0.475
Locality type	City	186,389	0.383
	Refugee camp	186,389	0.129
	Village	186,389	0.488

Source: Authors' elaboration on Palestinian Labor Force Surveys

Table 1B: Summary Statistics for key Variables (Locality Level)

	Obs.	Mean	SD
<i>Annual Data</i>			
PB ^{30min}	1,935	4.817	3.578
CP ^{30min}	1,935	1.130	0.926
REG ^{30min}	1,935	3.687	3.015
Length of the West Bank wall	1,935	0.478	1.426
Nr. of employees in 1997	1,918	1.278	2.727
CP ₁ [‡]	1,100	0.030	0.070
REG ₁ [‡]	1,199	0.094	0.139
CP _{1t}	1,699	0.634	0.776
REG _{1t}	1,700	3.028	2.559
<i>Quarterly Data</i>			
Nr. of Palestinian fatalities	7,028	0.158	0.806
Absent due to closure	7,028	0.094	0.768
Work less than 35 hrs due to closure	7,028	0.300	1.345

Source: Authors' elaboration on Palestinian Labor Force Surveys

Table 2: Testing for reverse causality

(1)	(2)	(3)	(4)	(5)	(6)
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	ΔPB^{30min}	ΔPB^{30min}	ΔPB^{30min}	ΔPB^{30min}	ΔCP^{30min}	ΔREG^{30min}
$\Delta emp_{(t-1)}$	-0.2158 (0.2374)			-0.1330 (0.2751)	0.0485 (0.0726)	-0.1814 (0.2548)
$\Delta wage_{(t-1)}$		0.0036 (0.0027)		0.0034 (0.0027)	0.0001 (0.0007)	0.0033 (0.0025)
$\Delta hours_{(t-1)}$			-0.0054 (0.0052)	-0.0039 (0.0059)	-0.0003 (0.0016)	-0.0036 (0.0055)
$\Delta fat_{(t-1)}$	0.0037 (0.0343)	0.0028 (0.0345)	0.0019 (0.0343)	0.0029 (0.0346)	0.0137 (0.0091)	-0.0108 (0.0321)
Locality effects	YES	YES	YES	YES	YES	YES
Time effects	YES	YES	YES	YES	YES	YES
Observations	1,347	1,327	1,347	1,327	1,327	1,327
R-squared	0.499	0.497	0.499	0.498	0.474	0.446
Nr. of localities	282	282	282	282	282	282

*Robust standard errors (Huber-White method) in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. The regressors are measured as changes in the variables between the third and the fourth quarter of the preceding year (see main text for more details).*

Table 3: The effect of closures on employment probability

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)
	All employment				Wage employment			Non wage employment		
<i>PB</i> ^{30min}	0.0043** (0.0020)				0.0034 (0.0022)			0.0042** (0.0021)		
<i>CP</i> ^{30min}		-0.0139* (0.0083)	0.0076 (0.0113)	0.0046 (0.0112)		-0.0026 (0.0086)	0.0319** (0.0148)		-0.0102 (0.0104)	-0.0073 (0.0102)
<i>REG</i> ^{30min}		0.0061*** (0.0022)	0.0178*** (0.0031)	0.0174*** (0.0031)		0.0041* (0.0024)	0.0206*** (0.0036)		0.0057** (0.0023)	0.0058*** (0.0021)
<i>CP</i> ^{30min} <i>x</i> <i>Empl.</i> <i>Private</i>			-0.0393** (0.0170)	-0.0435** (0.0173)			-0.0773*** (0.0214)			
<i>REG</i> ^{30min} <i>x</i> <i>Empl.</i> <i>Private</i>			-0.0309*** (0.0044)	-0.0250*** (0.0039)			-0.0270*** (0.0046)			
<i>CP</i> ^{30min} <i>x</i> <i>Empl.</i> <i>Israel w permit</i>				0.0466 (0.0407)			0.0507 (0.0396)			-0.0690 (0.0814)
<i>REG</i> ^{30min} <i>x</i> <i>Empl.</i> <i>Israel w permit</i>				0.0286*** (0.0100)			0.0215* (0.0113)			0.0137 (0.0158)
<i>CP</i> ^{30min} <i>x</i> <i>Empl.</i> <i>Israel w/o permit</i>				-0.0186 (0.0389)			-0.0147 (0.0371)			0.0382 (0.1026)
<i>REG</i> ^{30min} <i>x</i> <i>Empl.</i> <i>Israel w/o permit</i>				-0.0327*** (0.0101)			-0.0263** (0.0114)			0.0025 (0.0200)
Obs.	186,341	186,341	157,079	157,079	113,133	113,133	102,501	55,119	55,119	50,032
R-sq. within	0.0250	0.0251	0.0333	0.0340	0.0424	0.0424	0.0490	0.0144	0.0145	0.0153
Nr. Workers	74,477	74,477	59,177	59,177	50,873	50,873	43,804	27,231	27,231	23,556

Robust standard errors (Huber-White method) clustered at locality level in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include individual fixed effects and a set of basic controls include years of schooling, age, age squared, marital status, tenure, urban area / refugee camp residence dummies, time effects and Hebron district-time interaction.

Table 4: The effect of closures on wage and labor supply

	(1) Wage	(2) Wage	(3) Work days	(4) Work days	(5) Work hours	(6) Work hours
PB^{30min}	-0.0013 (0.0041)		-0.0027 (0.0024)		0.0036 (0.0034)	
CP^{30min}		-0.0630*** (0.0229)		-0.0217 (0.0132)		0.0396** (0.0168)
REG^{30min}		0.0051 (0.0038)		-0.0007 (0.0028)		-0.0002 (0.0033)
Obs.	83,758	83,758	91,963	91,963	87,039	87,039
R-sq. within	0.0148	0.0154	0.0154	0.0156	0.0070	0.0072
Nr. workers	41,966	41,966	43,877	43,877	43,172	43,172

Robust standard errors (Huber-White method) clustered at locality level in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include individual fixed effects and a set of basic controls include years of schooling, age, age squared, marital status, tenure, urban area / refugee camp residence dummies, time effects and Hebron district-time interaction.

Table 5: The effect of closures on labor market variables, robustness for barriers

	(1) All empl. Empl.	(2) Wage employment Empl.	(3) Empl.	(4) Non wage employment Empl.	(5) Empl.	(6) Wage	(7) Wage employment Work days	(8) Work hours
CP^{30Km}	-0.0142** (0.0067)	-0.0061 (0.0058)	0.0276** (0.0110)	-0.0071 (0.0082)	-0.0030 (0.0078)	-0.0598*** (0.0149)	-0.0222** (0.0102)	0.0363*** (0.0113)
REG^{30Km}	0.0048*** (0.0015)	0.0032* (0.0016)	0.0136*** (0.0026)	0.0042** (0.0016)	0.0041*** (0.0016)	0.0029 (0.0026)	-0.0011 (0.0019)	0.0001 (0.0022)
$CP^{30Km} \times Empl.$ Private			-0.0708*** (0.0171)		-0.0407 (0.0336)			
$REG^{30Km} \times Empl.$ Private			-0.0177*** (0.0036)		-0.0031 (0.0039)			
$CP^{30Km} \times Empl.$ Israel w permit			0.0602* (0.0326)		0.0369 (0.0800)			
$REG^{30Km} \times Empl.$ Israel w permit			0.0118 (0.0091)		0.0048 (0.0144)			
$CP^{30Km} \times Empl.$ Israel w/o permit			-0.0338 (0.0305)		-0.0474 (0.0676)			
$REG^{30Km} \times Empl.$ Israel w/o permit			-0.0160* (0.0092)		0.0118 (0.0133)			
Observations	186,341	113,133	102,501	55,119	50,030	83,758	91,963	87,039
R-squared	0.0251	0.0424	0.0481	0.0145	0.0155	0.0157	0.0157	0.0074
No. of workers	74,477	50,873	43,804	27,231	23,555	41,966	43,877	43,172

Robust standard errors (Huber-White method) clustered at locality level in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include individual fixed effects and a set of basic controls include years of schooling, age, age squared, marital status, tenure, urban area / refugee camp residence dummies, time effects and Hebron district-time interaction.

Table 6: The effect of closures on labor market variables, further controls

	(1)	(2)	(3)	(4)	(5)	(6)
	All empl.	Wage emp	Non-wage emp	Wage employment		
	Emp	Emp	Emp	Wage	Work days	Work hours
<i>CP</i> ^{30min}	-0.0139*	-0.0022	-0.0089	-0.0632***	-0.0220*	0.0395**
	-0.0084	(0.0087)	(0.0101)	(0.0231)	(0.0132)	(0.0169)
<i>REG</i> ^{30min}	0.0061***	0.0041*	0.0058**	0.0051	-0.0007	-0.0002
	-0.0022	(0.0024)	(0.0023)	(0.0038)	(0.0028)	(0.0033)
Fatalities _(q-1)	-0.0004	-0.0012	-0.0024*	0.0007	0.0007	0.0002
	(0.0008)	(0.0012)	(0.0012)	(0.0021)	(0.0010)	(0.0018)
Wall (km)	-0.0061	-0.0041	0.0001	-0.0027	-0.0019	-0.0017
	(0.0046)	(0.0041)	(0.0040)	(0.0089)	(0.0049)	(0.0068)
Observations	186,341	113,133	55,119	83,758	91,963	87,039
R-squared	0.0251	0.0425	0.0146	0.0154	0.0156	0.0072
No. of workers	74,477	50,873	27,231	41,966	43,877	43,172

*Robust standard errors (Huber-White method) clustered at locality level in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include individual fixed effects, time effects, a set of controls including years of schooling, age, age squared, marital status, tenure, urban area / refugee camp residence dummies, and Hebron district-time effects.*

Table 7: The effects of the barriers on labor market variables by gender and skills

	(1) Emp	(2) Emp	(3) Wage	(4) Wage	(5) W_days	(6) W_days	(7) W_hours	(8) W_hours
<i>CP</i> ^{30min}	0.0000 (0.0126)	-0.0085 (0.0091)	-0.0395 (0.0378)	-0.0675** (0.0264)	-0.0203 (0.0139)	-0.0344*** (0.0119)	0.0165 (0.0235)	0.0361* (0.0201)
<i>REG</i> ^{30min}	0.0127*** (0.0032)	0.0091*** (0.0030)	0.0095 (0.0063)	0.0086* (0.0045)	0.0037 (0.0026)	0.0032 (0.0029)	0.0019 (0.0048)	-0.0006 (0.0040)
<i>CP</i> ^{30min} <i>x</i> <i>Male</i>	-0.0158 (0.0126)		-0.0282 (0.0285)		-0.0018 (0.0153)		0.0280 (0.0216)	
<i>REG</i> ^{30min} <i>x</i> <i>Male</i>	-0.0075** (0.0033)		-0.0054 (0.0056)		-0.0055* (0.0030)		-0.0026 (0.0049)	
<i>CP</i> ^{30min} <i>x</i> <i>Unskilled</i>		-0.0070 (0.0070)		0.0066 (0.0165)		0.0187* (0.0099)		0.0050 (0.0158)
<i>REG</i> ^{30min} <i>x</i> <i>Unskilled</i>		-0.0039 (0.0025)		-0.0054 (0.0041)		-0.0062** (0.0028)		0.0006 (0.0040)
Obs.	186,341	186,341	83,757	83,757	91,962	91,962	87,038	87,038
R-sq. within	0.0252	0.0252	0.0155	0.0155	0.0156	0.0157	0.0073	0.0073
Nr. Workers	74,477	74,477	41,966	41,966	43,877	43,877	43,172	43,172

*Robust standard errors (Huber-White method) clustered at locality level in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include individual fixed effects, time effects and a set of controls including years of schooling, age, age squared, marital status, tenure, urban area / refugee camp residence dummies, Hebron district-time effects, locality's number of Palestinian fatalities killed by Israeli forces in the preceding quarter and the length of the locality's portion of the West Bank wall.*

Table 8: The effect of the barriers on the reallocation of labor across sectors

	(1) Agriculture	(2) Manufacturing	(3) Construction	(4) Commerce	(5) Transport & Comm.
<i>CP</i> ^{30min}	-0.5928*** (0.0157)	0.1609*** (0.0098)	0.0435*** (0.0106)	0.0743*** (0.0096)	0.0785*** (0.0146)
<i>REG</i> ^{30min}	-0.0156** (0.0061)	0.0695*** (0.0049)	0.0248*** (0.0050)	0.0186*** (0.0051)	0.0170** (0.0075)
Observations	165,047	165,047	165,047	165,047	165,047

*The regressions are estimated using a multinomial logit model. Robust standard errors are reported in parentheses.; *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include time effects and a set of controls including years of schooling, age, age squared, marital status, tenure, urban area / refugee camp residence dummies, Hebron district-time effects, locality's number of Palestinian fatalities killed by Israeli forces in the preceding quarter and the length of the locality's portion of the West Bank wall.*

Table 9: The effects of barriers on the labor market by type of locality

	(1) Emp	(2) Wage	(3) W_days	(4) W_hours	(5) Emp	(6) Wage	(7) W_days	(8) W_hours
<i>CP</i> ^{30min}	-0.0186* (0.0095)	-0.0701*** (0.0254)	-0.0281** (0.0119)	0.0424** (0.0188)	-0.0189** (0.0086)	-0.0565** (0.0255)	-0.0278* (0.0161)	0.0334* (0.0189)
<i>REG</i> ^{30min}	0.0086*** (0.0028)	0.0069* (0.0040)	0.0046* (0.0026)	-0.0028 (0.0036)	0.0068*** (0.0025)	0.0084** (0.0040)	-0.0002 (0.0032)	-0.0007 (0.0037)
<i>CP</i> x net labor import	-0.0008 (0.0544)	0.1988 (0.2308)	0.1225 (0.0811)	-0.0318 (0.1788)				
<i>REG</i> x net labor import	0.0492 (0.0340)	-0.0922 (0.0619)	0.0003 (0.0243)	0.0553 (0.0530)				
<i>CP</i> x tot empl.					0.0017 (0.0013)	-0.0011 (0.0018)	0.0021** (0.0010)	0.0019 (0.0016)
<i>REG</i> x tot empl.					-0.0001 (0.0002)	-0.0006*** (0.0002)	-0.0001 (0.0001)	0.0001 (0.0003)
Observations	155,856	70,571	77,716	73,547	184,249	82,353	90,500	85,608
R-sq. within	0.0299	0.0151	0.0166	0.0079	0.0257	0.0157	0.0158	0.0074
Nr. workers	63,189	35,714	37,483	36,843	73,608	41,313	43,216	42,513

*Robust standard errors (Huber-White method) clustered at locality level in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include individual fixed effects, time effects and a set of controls including years of schooling, age, age squared, marital status, tenure, urban area / refugee camp residence dummies, Hebron district-time effects, locality's number of Palestinian fatalities killed by Israeli forces in the preceding quarter and the length of the locality's portion of the West Bank wall.*

Table 10: Disentangling the effects of closures

	(1) Emp	(2) Wage	(3) W_days	(4) W_hours	(5) Emp	(6) Wage	(7) W_days	(8) W_hours
CP^{30min}	-0.0287** (0.0133)	-0.1112*** (0.0272)	-0.0566*** (0.0181)	0.0797*** (0.0205)	-0.0025 (0.0097)	-0.0890*** (0.0279)	-0.0570*** (0.0146)	0.0740*** (0.0203)
REG^{30min}	0.0044 (0.0027)	0.0008 (0.0051)	0.0013 (0.0031)	-0.0006 (0.0047)	-0.0005 (0.0018)	0.0054 (0.0053)	-0.0003 (0.0024)	-0.0024 (0.0040)
CP_l^t	-0.0666 (0.0651)	-0.1177 (0.1104)	-0.0340 (0.0734)	-0.0365 (0.0919)				
REG_l^t	0.0451 (0.0470)	0.0632 (0.0810)	-0.0273 (0.0617)	0.0624 (0.0770)				
CP_{it}					0.0004 (0.0051)	0.0181 (0.0133)	0.0029 (0.0074)	-0.0111 (0.0121)
REG_{it}					-0.0010 (0.0029)	0.0024 (0.0051)	0.0012 (0.0033)	0.0065 (0.0049)
Regressions without controls for labor mobility restrictions								
CP^{30min}	-0.0289** (0.0136)	-0.1110*** (0.0270)	-0.0584*** (0.0186)	0.0813*** (0.0210)	-0.0025 (0.0097)	-0.0883*** (0.0278)	-0.0568*** (0.0146)	0.0738*** (0.0204)
REG^{30min}	0.0043 (0.0027)	0.0007 (0.0050)	0.0013 (0.0031)	-0.0007 (0.0048)	-0.0005 (0.0018)	0.0053 (0.0053)	-0.0003 (0.0024)	-0.0024 (0.0040)
Obs.	79,924	37,410	41,195	38,985	87,113	43,521	47,904	45,008
R-sq. within	0.0080	0.0199	0.0152	0.0102	0.0329	0.0208	0.0133	0.0086
Workers	38,918	20,784	21,862	21,457	33,807	20,793	21,570	21,270

*Robust standard errors (Huber-White method) clustered at locality level in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include individual fixed effects, time effects and a set of controls including years of schooling, age, age squared, marital status, tenure, urban area / refugee camp residence dummies, Hebron district-time effects, locality's number of Palestinian fatalities killed by Israeli forces in the preceding quarter and the length of the locality's portion of the West Bank wall.*

Table 11: The effects of the barriers on the probability of commuting

	(1) Full sample Out of locality	(2) Out of district	(3) Net labor importing Out of locality	(4) Out of district	(5) Net labor exporting Out of locality	(6) Out of district
CP^{30min}	0.0449*** (0.0170)	0.0481*** (0.0156)	-0.0050 (0.0102)	0.0013 (0.0169)	0.0925*** (0.0243)	0.0850*** (0.0244)
REG^{30min}	-0.0025 (0.0023)	-0.0019 (0.0021)	0.0005 (0.0032)	0.0042 (0.0032)	-0.0016 (0.0033)	-0.0029 (0.0030)
Observations	139,337	165,009	27,668	32,890	83,879	103,421
R-sq. within	0.0080	0.0144	0.0059	0.0057	0.0128	0.0233
Workers	62,416	73,336	11,848	13,818	38,958	47,467

*Robust standard errors (Huber-White method) clustered at locality level in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include individual fixed effects, time effects and a set of controls including years of schooling, age, age squared, marital status, tenure, urban area / refugee camp residence dummies, Hebron district-time effects, locality's number of Palestinian fatalities killed by Israeli forces in the preceding quarter and the length of the locality's portion of the West Bank wall.*

Table 12: Disentangling the effects of closures on the labor market by workers' answers

	(1) Emp	(2) Wage	(3) W_days	(4) W_days	(5) W_days	(6) W_hours	(7) W_hours	(8) W_hours
CP^{30min}	-0.0139* (0.0084)	-0.0642*** (0.0230)	-0.0217 (0.0133)	-0.0242* (0.0128)	-0.0215 (0.0131)	-0.0231* (0.0138)	0.0407** (0.0168)	0.0363** (0.0167)
REG^{30min}	0.0061*** (0.0022)	0.0051 (0.0038)	-0.0008 (0.0028)	-0.0007 (0.0027)	-0.0004 (0.0027)	-0.0007 (0.0030)	-0.0002 (0.0033)	-0.0002 (0.0033)
Absent due to closure (%)	0.0005 (0.0018)	0.0109*** (0.0040)	-0.0026 (0.0019)				-0.0127*** (0.0032)	
Less than 35 hrs due to closure (%)				-0.0079*** (0.0020)				-0.0115*** (0.0020)
Absent due to closure					-0.0671*** (0.0222)			
Less than 35 hrs due to closure						-0.2204*** (0.0229)		
Observations	186,341	83,757	91,962	91,962	91,740	84,888	87,038	87,038
R-sq. within	0.0251	0.0157	0.0156	0.0165	0.0160	0.0225	0.0078	0.0084
Nr. of workers	74,477	41,966	43,877	43,877	43,798	42,759	43,172	43,172

*Robust standard errors (Huber-White method) clustered at locality level in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include individual fixed effects, time effects and a set of controls including years of schooling, age, age squared, marital status, tenure, urban area / refugee camp residence dummies, Hebron district-time effects, locality's number of Palestinian fatalities killed by Israeli forces in the preceding quarter and the length of the locality's portion of the West Bank wall.*

Table 13: Quantifying the overall marginal effects of the barriers

	Checkpoint Effect	Other Barriers Effect	Total Effect
Average Value in 2007	1.59	4.82	
<i>Marginal Effect on Employment</i>			
Number of Employees	-11,682	15,177	3,495
New Israeli Shekel (mln)	-241.5	313.8	72.3
USD (mln)	-61.2	79.5	18.3
<i>Marginal Effect on hourly wages</i>			
New Israeli Shekel (mln)	-881.6		-881.6
USD (mln)	-223.3		-223.3
<i>Marginal Effect on labour supply</i>			
New Israeli Shekel (mln)	154.9	-	154.9
USD (mln)	39.2	-	39.2
<i>Total marginal effects</i>			
New Israeli Shekel (mln)	-968.2	313.8	-654.4
USD (mln)	-245.3	79.5	-165.8

Note: the table assumes equal average wages for wage employees and self-employed. Source: Authors' estimates on the basis of closures data from ARIJ, Palestinian Labor Force Survey and coefficients' estimates in Table 6 (see text for details).

Appendix: Only for online publications

Table A1: The effects of barriers on other dependent variables

	(1) In labor force	(2) Monthly wage (ln)
CP^{30min}	0.0056 (0.0038)	-0.0370** (0.0187)
REG^{30min}	0.0027*** (0.0008)	0.0035 (0.0035)
Observations	448,070	88,526
R-squared	0.0068	0.0272
Number of individuals	157,373	42,667

*Robust standard errors (Huber-White method) clustered at locality level in parentheses; *significant at 10%; **significant at 5%; ***significant at 1%. All regressions include individual fixed effects, time effects and a set of controls including years of schooling, age, age squared, marital status, tenure, urban area / refugee camp residence dummies, Hebron district-time effects, locality's number of fatalities in the preceding quarter and the length of the locality's portion of the West Bank wall.*