4. The Spatial Dimensions of Poverty in the West Bank: Geography or Checkpoints?

‘Where is Spain? Before the checkpoint, or after the checkpoint?’

Based on a series of maps using geo-referenced data, this chapter presents a powerful visual depiction of spatial disparities in economic outcomes in the West Bank, in the unique context of man-made internal barriers to mobility in addition to external movement restrictions. In this context, the analysis validates our findings on the determinants of poverty: areas characterized by high rates of poverty also tend to be areas with severe mobility restrictions, poor access to markets, high rates of unemployment, a dominance of low-wage sectors, and a reliance on increasingly scarce employment opportunities in Israel. The West Bank defies the stylized facts of economic geography: the economic heart of the West Bank, Ramallah, is a mid-sized city while its most populous city, Hebron, is its poorest. Hebron also faces harsh restrictions in mobility, within the city, the governorate and in its limited access to the rest of the West Bank. Internal mobility restrictions in the form of checkpoints have far-reaching economic implications: the presence of checkpoints is associated with higher transaction costs and uncertainty that manifest in increases in price differentials and unemployment rates. To the best of our knowledge, this is the first attempt to measure the size of the distortions brought on by the internal checkpoints, which is found to be comparable to the transaction costs incurred when crossing the U.S.-Canada border. The ‘immobile’ agricultural sector is particularly vulnerable.

1. Introduction

4.1 The poverty narrative so far is one of a large and widening divergence in poverty and labor market outcomes between the two territories of the West Bank and Gaza. This spatial divergence is driven by the increasing isolation of Gaza from the rest of the world. This chapter now turns to the West Bank, examining its increasing geographical fragmentation and its implications for poverty and the economy. It demonstrates large differences within the West Bank itself, highlighting intra-regional variations through a series of maps, exploring the role of natural and man-made geographic factors in explaining spatial disparities in poverty. The internal mobility restrictions imposed by Israel, unique to the West Bank, play an important role in explaining divergent outcomes within the West Bank. This is strikingly analogous to the role of Gaza’s external barriers in explaining the divergence between the West Bank and Gaza.

4.2 Arguably, one of the most important reasons for this divergence is the external mobility restrictions imposed on Gaza, which has been entirely ‘closed’ with almost all movements across the border controlled by Israel. In practice, this means that few people and a limited number of goods are allowed to travel in and out; in particular, inputs for commercial production are prohibited from entering the area. The lack of inputs and lack of access to markets have resulted

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41 Anonymous girl from a West Bank school dance troupe of 11-12 year olds, when the troupe was invited to perform in Spain.
42 Imports to Gaza declined in real terms by 47 percent% and exports by 66 percent% over the 2000-2008 period (source: PCBS).
in a virtual shut-down of the private sector, which in turn, has been associated with high levels of unemployment, under employment and higher rates of poverty in Gaza.

4.3 The West Bank too is hampered by mobility restrictions, but of a different kind than Gaza. The West Bank is controlled by internal barriers in the form of road closures as well as external barriers. Goods and services still make it across the border, but transportation within the area is restricted and often encounters significant delays. As in Gaza, the mobility restrictions hurt the private sector, albeit to a lesser extent. What is unique to these internal restrictions in mobility is that they artificially create disadvantaged areas within the West Bank, namely those areas where restrictions are most severe. In order to understand the relationship between internal mobility restrictions and economic outcomes, we therefore concentrate on the West Bank. Gaza is very small, highly urbanized, and does not have internal closure obstacles: its spatial story is one of its isolation as a whole rather than one of internal spatial variations in economic outcomes.

**Box 5: How 45 Minutes can Turn into 3 Hours**

A June 2009 article from the BBC, ‘Working the West Bank checkpoints’, documents how internal mobility restrictions enlarge the West Bank for a truck driver commuting between Hebron and East Jerusalem: “It is getting close to 0600 and the moon is still on the horizon. Palestinian storefronts are still closed on the empty streets of Hebron. But workers at the al-Junaidy Dairy Company are finishing the night shift, loading delivery trucks with milk, yoghurt and cheese. At about 0615, truck driver Wael Shyuri climbs into one of the vehicles and rumbles out of the car park. The five tonnes of dairy products he is hauling are to be sold in shops in and around Jerusalem. Mr Shyuri says he makes this same delivery run between three and six times every week. If he is allowed to drive straight from Hebron to Jerusalem, he says the 26 miles (45km) trip would only take about 45 minutes – and he could do two or three trips a day. But it usually takes him two to three hours, he says, and occasionally much longer. “It all depends on what happens at the checkpoints,” he says”. (BBC news, 2009)

**Map 4: Wael’s Route: Hebron to Jerusalem, via the Checkpoint at Beitunya, the only Entry Point for Palestinian Commercial**
Despite its small area, there is a surprisingly large degree of spatial heterogeneity in the West Bank. As in most countries, geography is in large part determined by nature. People settle where there is a hospitable climate, better access to natural resources and water, and access to markets, which predicts that economic activity will form along important rivers, coastal areas, and border passages (see for instance, WDR, 2009). The presence of internal mobility restrictions means that, in the case of the West Bank, the geography of economic activity is also affected by man-made factors including a multitude of checkpoints and other closure obstacles. As a result of Israel’s control of the road-network, a commute between two cities that would normally take 45 minutes in the absence of restrictions, now takes up to three hours or more (Box 5). These internal mobility restrictions effectively enlarge the West Bank fivefold.

Spatial inequalities are not by themselves alarming or unnatural: geographical diversity and non-negligible transaction costs imply that there will inevitably be leading and lagging areas. The empirical literature on economic geography (see e.g., World Development Report, 2009) highlights another stylized fact: growth favors densely populated areas, in particular, large cities. By being more likely to be well connected to other leading areas, large cities have an additional advantage in terms of a cost-efficient access to markets. The services sector that is dependent on high-skilled labor, tend to concentrate in these large and well-connected cities. What is different in the West Bank is that these natural tendencies for spatial inequalities have also been influenced by a man-made system of internal closures and mobility restrictions.

This chapter begins with a description of the economic geography of the West Bank followed by a visual examination of the spatial distribution of poverty, identifying well-defined pockets of poverty. Using detailed road closure data provided by UNOCHA, we categorize the areas of the West Bank with the poorest access to the road network, and illustrate how this shapes its economic landscape. By sequentially introducing new variables into the analysis, we explore the role of natural and man-made geographic factors in explaining spatial disparities in poverty. Our main findings are that it is precisely those areas in the south of the West Bank that are most disconnected from the rest of the territory that are also the most vulnerable. Using Hebron, the poorest governorate in the West Bank as an illustrative case, we explore the links between poverty, unemployment, and mobility restrictions. Finally, we attempt to quantify the size of the checkpoint-induced increase in transaction costs that are manifested in increases in price differentials and unemployment rates. To the best of our knowledge, this is the first attempt to measure the size of the distortions brought on by the internal checkpoints in the West Bank.

The Economic Geography of the West Bank

The West Bank is a land-locked region with a land surface area of approximately 5640 square kilometers, slightly smaller than the U.S. state of Delaware. It shares its 307 km western border with Israel and its 97 km eastern border along the Jordan River with Jordan. Despite its small surface area, there is a considerable variation in elevation with the lowest elevation of a little more than 400 meters below sea level (the Dead Sea) and the highest point of just over 1000 meters (tall Asur), close to the geographical center of the West Bank. The world’s lowest city, Jericho, lies just north of the Dead Sea in the West Bank.
According to the most recent population census of 2007, the West Bank has a total population of a little over 2.3 million, and recent estimates suggest it has surpassed 2.5 million. The region is divided into 11 governorates, with governorate capitals of the same name: Jenin, Tulkarm, Nablus, Qalqilyah, Salfit, Ramallah, Jericho, Bethlehem, Hebron, and East Jerusalem. The twin cities of Ramallah and Al-Bireh (henceforth Ramallah) in Ramallah governorate serve as the de facto administrative capital, as well as the political and economic center of the region. It is located in the heart of the West Bank, only 10 km north of East Jerusalem, the hopeful future capital of the Palestinian territories depicts the distribution of the population across the West Bank. The majority of the population is located along a mountainous spine that runs from north to south, in the cities of Jenin, Nablus, Ramallah, Jerusalem, Bethlehem, and Hebron.

### Box 6: Population Structure of the West Bank: Hebron and Ramallah

<table>
<thead>
<tr>
<th>Governorate</th>
<th>Capital city</th>
<th>Governorate Population</th>
<th>Capital Population</th>
<th>city</th>
<th>Capital city population</th>
</tr>
</thead>
<tbody>
<tr>
<td>Jenin</td>
<td>Jenin</td>
<td>256,619</td>
<td>39,004</td>
<td>0.152</td>
<td></td>
</tr>
<tr>
<td>Tubas</td>
<td>Tubas</td>
<td>50,261</td>
<td>16,100</td>
<td>0.320</td>
<td></td>
</tr>
<tr>
<td>Tulkarm</td>
<td>Tulkarm</td>
<td>157,988</td>
<td>51,300</td>
<td>0.325</td>
<td></td>
</tr>
<tr>
<td>Nablus</td>
<td>Nablus</td>
<td>320,830</td>
<td>126,132</td>
<td>0.393</td>
<td></td>
</tr>
<tr>
<td>Qalqilyah</td>
<td>Qalqilyah</td>
<td>91,217</td>
<td>41,739</td>
<td>0.458</td>
<td></td>
</tr>
<tr>
<td>Salfit</td>
<td>Salfit</td>
<td>59,570</td>
<td>8,796</td>
<td>0.148</td>
<td></td>
</tr>
<tr>
<td>Ramallah</td>
<td>Ramallah-Al-Bireh</td>
<td>279,730</td>
<td>65,662</td>
<td>0.235</td>
<td></td>
</tr>
<tr>
<td>Jericho</td>
<td>Jericho</td>
<td>42,320</td>
<td>18,346</td>
<td>0.434</td>
<td></td>
</tr>
<tr>
<td>Bethlehem</td>
<td>Bethlehem</td>
<td>176,235</td>
<td>25,266</td>
<td>0.143</td>
<td></td>
</tr>
<tr>
<td>Hebron</td>
<td>Hebron</td>
<td>552,164</td>
<td>163,146</td>
<td>0.295</td>
<td></td>
</tr>
</tbody>
</table>

Unlike many other countries in the world, the economic and political center of the West Bank, Ramallah, with less than 70,000 people, is not its largest city. That distinction belongs to Hebron city, capital of the southernmost governorate of the West Bank. The towns and villages in the area around Hebron (not shown in the map) are also relatively large in terms of population. According to estimates not reported here, Hebron governorate has some of the highest birth rates and largest average household sizes in the region. What truly sets Hebron apart from other cities in the West Bank is that it has Israeli settlers located within its city borders, and consequently, Israeli Defense Forces (IDF) presence to guard the settlers and control the Israeli road closures and checkpoints inside and around the city.\(^1\) Approximately 80 percent of the city is under Palestinian control (mostly residential and new commercial area) while 20 percent is under Israeli control (that includes the old city). Palestinian control of Hebron is limited to the 20 or 30 square kilometers of the main part of Hebron, which contains around 140,000 Palestinians. In the area of Hebron city where more than 600 Jewish settlers live among 30,000 Palestinians, the Palestinian populations' movements are heavily restricted.\(^2\) Palestinians commuting to work and transporting goods in and around the city often encounter long and uncertain delays.


\(^2\)[http://www.washingtonpost.com/wp-dyn/content/article/2010/03/07/AR2010030702702.html](http://www.washingtonpost.com/wp-dyn/content/article/2010/03/07/AR2010030702702.html)
Map 5: Population Structure of the West Bank

Economic center
- 6796 - 25000
- 25001 - 50000
- 50001 - 100000
- 100001 - 150000
- 150001 - 163146

Main roads
- Main
- Regional
- Local
- Governorates

Population
- 42320 - 50000
- 50001 - 100000
- 100001 - 200000
- 200001 - 400000
- 400001 - 552164
CHAPTER 4

4.8 The services sector makes by far the largest contribution to the West Bank’s GDP (33.8 percent private and 23.2 percent public in 2008, see Table 6 in Chapter 3), followed by manufacturing (13.8 percent), construction (7.4 percent), and agriculture (5.3 percent). The declining contribution of agriculture relative to a decade ago could reflect a modernization of the economy where the private sector is becoming more services oriented. However, it is also plausible that this decline reflects the constraints faced by the sector as a result of increasing restrictions on internal mobility of goods and services in the West Bank.

4.9 This growth in the services sector exemplifies Ramallah’s rise as the West Bank’s economic capital. With a high-skilled services sector, there is anecdotal evidence that businesses from Jerusalem and elsewhere are relocating to Ramallah, and people are moving into the city from other parts of the West Bank where job opportunities are fewer. Most international organizations and foreign embassies are currently based in Ramallah, bringing with them resources that are large relative to the domestic economy of the West Bank, which is still largely aid dependent. Nearly all of the hundreds of millions of dollars of aid (see Chapter 6) go through Ramallah, which has arguably been a stimulating force behind Ramallah’s economic recovery following the second Intifada. The arrival of these new businesses and organizations increases the demand for real estate, which reportedly preceded Ramallah’s recent building boom (see e.g., Reuters, 2010). This expansion of Ramallah’s economy, largely fueled by international aid money, potentially helps attract higher-skilled private sector services. One of these, with the highest worker productivity in the West Bank, the pharmaceuticals industry, is also among a select few industries experiencing rapid growth. Five of the six pharmaceuticals industries in the West Bank are currently located in Ramallah (see e.g., USAID, 2009).

4.10 Hebron accounts for roughly one-third of the West Bank’s GDP, and in contrast to Ramallah, is dominated by manufacturing and agriculture. The largest industries in Hebron include stone cutting (the governorate holds roughly 60 percent of the West Bank and Gaza’s national reserve in marble), manufacturing of leather and shoes (used to be one of the largest industries until a decade ago; see USAID, 2009), manufacturing of plastic pipes (see USAID, 2009), dairy products (home to major dairy product manufacturer Al-Junaidi) and other agricultural produce. It is locally also known for its grapes, figs, limestone, and glassblowing factories.

4.11 On the face of it, Hebron has several comparative advantages over a mid-size city like Ramallah. Its large population and proximity to other population centers implies potential access to a large market. Hebron is also strategically located, in terms of its proximity to a potential canal linking the Red Sea and the Dead Sea and in the event of a future gateway to Gaza. The potential for

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43 See the Wikipedia page on Ramallah (section on the economy): http://en.wikipedia.org/wiki/Ramallah
44 The economies of Nablus and Bethlehem are based to a lesser extent on the services sector. Nablus, houses the Palestine Securities Exchange and the al-Quds Financial Index, and the nearby An-Najah national university is the largest university in the Palestinian territories. The economy is based on a mix of services, manufacturing, and agriculture. Tourism and related sectors such as hotels, shopping and handicrafts are the main industries in Bethlehem. Its manufacturing sector includes stone cutting and textiles. In contrast, the cities of Jenin and Jericho, are primarily based on agriculture.
45 See e.g., The American Task Force on Palestine article entitled “Bringing the Palestinian economy out of recession”: http://www.americantaskforce.org/daily_news_article/2010/09/14/1284436800_0
46 The “Valley of Peace Initiative”: There are tentative plans to develop the Arabah Valley in the south of the West Bank (just south of Hebron), between the Red Sea and the Dead Sea, as part of an economic cooperation initiative between Israel, Jordan
the [Hebron] district to play a significant role in the growth and development of the economy is unmatched”, says Al-Herbawi, an advisor to the mayor of Hebron (see footnote 5). However, the significant presence of IDF in the city and the consequently severe internal mobility restrictions currently hamper Hebron’s ability to take advantage of these natural advantages: the local services sector (shops and restaurants) have been particularly badly hit as a result of the curfews and forced store closures imposed by the IDF (Box 6).

3. An Unusual Geography

4.12 There are at least two unusual features of the West Bank’s geography:

4.13 First, the largest city in the West Bank, Hebron, is among the least developed economic areas in the region. While it has a large economy, it is primarily based on low wage sectors. In contrast, Ramallah, with a much smaller population, is the center of economic activity in the region, driven by growth in the services sector. This is unusual because in most countries, the largest cities also tend to be the most vibrant economically (see e.g., WDR, 2009). In densely populated areas, local businesses have access to large markets and in turn, people are drawn to areas with abundant economic opportunities. Thus, high economic growth is followed by population growth, and vice versa.

4.14 Why isn’t Hebron economically vibrant and conversely, why isn’t Ramallah larger given its economic growth? A potential explanation might be that while Hebron is densely populated, the populated areas in and around the city are poorly connected due to the severe mobility restrictions imposed by the IDF. Hebron has a number of Israeli settlements within the city, and a part of the city is under Israeli control. A UNOCHA 2010 report argues that “Israeli settlements and their continuous expansion have the single largest impact on the configuration of the system of access restrictions applied to the Palestinian population”47. In fact, Hebron city has the highest number (11) of permanently manned checkpoints within the city itself.

4.15 Moreover, as the next sections will demonstrate, the city as a whole, as is true of other cities in the West Bank like Nablus, is also poorly connected to the rest of the West Bank and to international markets. This means that Hebron is unable to tap into its potential as a city with a large market access. This stylized fact of economic geography, that economic outcomes favor well-connected areas, also explains why Ramallah is currently the West Bank’s economic center. It is strategically located just 10 km north of Jerusalem, giving Ramallah better access to international markets and services, and possibly explaining the location of most of the international organizations and embassies, and its resulting role as the entry point for most

and the Palestinians. Part of the plan is to connect the Red Sea with the Dead Sea via a 166 km long canal. If that were to materialize, the development plans for the area along the canal include convention centers, hotels, restaurants, parks, artificial lakes, green houses for winter fruits, and a high speed railway.

A future gateway to Gaza: As the West Bank’s most southern governorate, Hebron is also ideally located for a future gateway to Gaza. Cautious plans to re-establish a link between the two regions by means of a railway have indeed been made (the project name is “Arc”; see e.g., Khamaisi, 2010), which would make Hebron the first stop after Gaza.

47 West Bank Movement and Access Update, June 2010; UN OCHA oPt
international aid. Finally, Ramallah is situated in the geographical center of the West Bank, and is closer than Hebron to other major cities in the West Bank. Our data shows that while mobility in Ramallah is hampered by internal restrictions, these restrictions are more severe in Hebron.

4.16 Is Hebron’s large population a residual of its past as an economic center? Hebron has been the largest governorate in the West Bank at least since 1997, and possibly considerably longer (PCBS). One potential explanation for its large population may be related to its endowment of natural resources, as it holds roughly 60 percent of the territory’s national reserve in marble (which makes up for a large contribution to the West Bank’s GDP) and about half of the territory’s goldsmith’s industry (see footnote 5). Taken together, it may be reasonable to expect that in the future, population growth in Ramallah will be rapid, and if Hebron becomes better connected, it ought to see rapid economic growth as well.

4.17 The second unusual geographical feature of the West Bank is that the area along the West Bank side of the Jordan River (the area’s only river) is not a populated area. In most countries, riverbeds and coastal areas tend to be the more densely populated. Why is this not the case in the West Bank? Firstly, the river is a dead end, draining into the land-locked Dead Sea, making the Jordan River ill-suited as a trade route. Secondly, the local climate is warm with little rainfall due its low altitude and it being located on the eastern side of the West Bank’s mountainous spine. Moreover, it is a relatively shallow river with a modest water flow, although the river is a source of irrigation for the Jordan valley. Finally, the Jordan Valley is currently part of Israel’s military zone, which implies that the entire area is under full Israeli control (including the bridge to Jordan).

4.18 The central hypothesis explored in this chapter is the role of man-made and natural barriers to mobility in explaining spatial differences in economic outcomes in the West Bank. One important element of this analysis involves understanding the effect of a unique feature of the West Bank—the presence of internal barriers, in particular, checkpoints—on accessing economic opportunities, markets and employment. In the absence of any measure of effective distance and travel time in household surveys such as the PECS or the LFS, we use multiple sources of data to estimate these measures. These include individual and household level survey data, an exceptionally rich GIS data set, and highly disaggregated price data. The GIS data allows us to map the localities sampled by the household surveys along with the road network and road closure obstacles, primarily focusing on checkpoints (See Annex for details).
Box 7: Measuring Distance in the Presence of Checkpoints

We use the GIS data to construct two important variables: (1) the distance from each locality to its nearest governorate capital using the road network, and (2) the number of checkpoints between the two locations. A locality is then defined to be “restricted” if it has at least one checkpoint en route to the nearest governorate center or “unrestricted” if it is not hampered by any checkpoints. Since we do not observe the routes most popularly travelled between locations, we estimate the route by minimizing the travel time over all possible routes, given the constraints of road closure obstacles. Map 6 below shows examples of such routes over the road network, along with the checkpoints, between two city pairs. In the left panel, for instance, the blue line maps the shortest route in terms of travel time involves one full time and two part-time checkpoints between Nablus and Jenin. However, to travel between Ramallah and Hebron (right panel), a similar time-minimizing route involves crossing three full-time and one part-time checkpoint (June 2009).

Map 6: Imputed Routes between Locations
4. Understanding Spatial Disparities in Poverty

4.19 This section begins with a visual depiction of the spatial distribution of poverty in the West Bank (Map 7). In terms of both the percentage of poor as well as the absolute number of poor, Hebron, the most populous governorate, clearly stands out as the West Bank’s poorest area. In contrast, Ramallah and Nablus have the lowest poverty headcount rates while Salfit and Jericho, relatively sparsely populated governorates have the lowest number of poor.

Map 7: Head-Count Poverty (Left Panel) and Absolute Number of Poor (Right Panel)

48 Note that the spatial distribution of head-count poverty (left panel of Map 7) is estimated by means of spatially smoothing local observations of poverty, i.e. each point on the map measures the weighted average of the locality poverty rates, where localities located closer to the point on the map are given more weight. A popular alternative to estimating small area poverty is the approach put forward by Elbers et al. (2003), which imputes household consumption poverty into a population (or agricultural) census, and then aggregates the imputed poverty estimates at the small area level. This might give more accurate estimates when the spatial heterogeneity is particularly large. However, this methodology requires access to unit-record census data.
4.20 Despite these large spatial disparities in poverty, the relationship between poverty and distance to urban centers is similar to what is typically observed in developing countries. The left panel of Figure 56 shows the relationship between head-count poverty and the distance to the nearest governorate capital. We find that poverty is lowest in the vicinity of the major cities, and that poverty increases when moving away from the cities. Not surprisingly, larger households in the West Bank are also more likely to be live farther from economic centers, and more likely to be poor (right panel Figure 56).

**Figure 56: Poverty and Household size Increase with the Distance to Nearest City**

4.21 In what follows, we sequentially examine the correlation between poverty and access to markets (with and without mobility restrictions), education, employment, the sectoral distribution of the private sector, and labor mobility. The results are compelling – the odds against Hebron are overwhelming: its high poverty rates are accompanied by severe mobility restrictions, poor access to markets, high rates of unemployment, dominance of low-wage sectors, and a heavy reliance on employment opportunities in Israel. It is no coincidence that Hebron remains the poorest governorate in the West Bank.

4.22 In addition to Israeli border restrictions governing the movement of Palestinians between the West Bank, Gaza, Israel and Jordan, internal movement restrictions are an omnipresent feature in the West Bank. Although, the Israeli authorities have started lifting some of these restrictions, most noticeably between the urban centers of Ramallah, Nablus, Qalqiliya, Jericho and Salfit (see e.g., the “West Bank movement and access update” by UNOCHA, 2009), no such restrictions have been lifted in Hebron.

4.23 The very design of these restrictions implies that some areas are more affected than others. For instance, many of these restrictions are in place to facilitate the travel of Israeli settlers between Israel and their settlements in the West Bank, and as a result, leave important segments of the main road network blocked for the use of residents of the West Bank. Among the areas most affected are Hebron, East-Jerusalem and the Jordan Valley, which are also key centers of
manufacturing and agricultural production.\textsuperscript{49} According to the November 2009 UNOCHA update, toward the end of 2009, the West Bank had a total of 578 closure obstacles, including 69 full-time checkpoints, 21 part-time checkpoints, and 488 miscellaneous unstaffed obstacles such as road gates (that may serve as so-called ‘flying checkpoints’), road blocks, earth mounds, earth walls, road barriers and trenches (see UNOCHA, 2009). Map 6 plots, for each point on the map, the number of checkpoints one would encounter when travelling from there to the nearest governorate capital.\textsuperscript{50} The right panel of Map 8 shows the number of checkpoints within a 5km radius of the governorate capital, which yields one measure of checkpoint-induced mobility restrictions for each governorate.

\textbf{Map 8: Checkpoints and Mobility Restrictions}

<table>
<thead>
<tr>
<th>Number of checkpoints to nearest governorate capital</th>
<th>Number of checkpoints within a 5 km radius of the governorate capital</th>
</tr>
</thead>
</table>

4.24 While the two maps display different definitions of mobility restrictions, by both measures, the Hebron governorate represents the most severely restricted area in the West Bank. It is important

\textsuperscript{49} Much of West Bank’s agricultural production is located in the Jordan Valley. The Hebron governorate is home to some of the largest manufacturing sites.

\textsuperscript{50} This yields a number for each of the 620 localities observed in the West Bank. We then apply spatial smoothing to obtain the continuous map.
to note that even the cluster of checkpoints located south of Ramallah, while outside the Hebron governorate, still poses a mobility restriction for Hebron because it blocks the main and only route connecting Hebron to the rest of the West Bank.

Box 8: A World without Checkpoints?

Map 9: A Hypothetical Scenario: What would Market Access be in the Absence of Checkpoints?

Map 10: Ramallah’s Access to the Road Network

What would the West Bank look like in the absence of checkpoints? We consider a hypothetical scenario of access to markets in the absence of any checkpoints. We define “access to markets” as the share of the population that can be reached (from a specified location on the map) within a certain amount of time. Following this definition, we adopt an approach put forward by Deichmann (1997) that computes market accessibility as a spatially weighted average of population. The resulting outcome is purely a function of the existing road network and the distribution of the population where spatial variations indicate that some points are better connected than others (See annex for details).

As Map 9 shows, even in the absence of any checkpoints, Hebron is not well connected to the rest of the West Bank. Only one main road connects Hebron to Ramallah and the rest of the West Bank, whereas Ramallah is located on or close to four main roads (Map 9). Estimates of market access are low for most parts of the Hebron governorate, and only comparable to a few remote corners of the West Bank that are sparsely populated. Thus, Hebron’s limited market access is not attributable to the presence of checkpoints alone but is also related to a general lack of road infrastructure linking it to the rest of the West Bank.
Not surprisingly, spatial disparities in poverty within the West Bank are unrelated to disparities in the access to education. This finding is in line with the relative equal access to services documented in Chapter 2. Map 11 shows the spatial distribution of average levels of education, and that educated individuals are most likely to reside in or around the major cities. The dark “pockets” indicate higher levels of average years of schooling, especially in cities with a nearby university, and Hebron is no exception. The average years of schooling in Hebron are on par with the rest of the West Bank. Figure 57 shows this relationship in greater detail: education levels decline with distance to the nearest governorate capital.

Clearly, this does not translate into labor market outcomes. Map 12 highlights two large pockets of unemployment in the West Bank. One of them is Hebron, which is consistent with the high poverty estimates for the Hebron governorate. The other area with high unemployment rates is located west of Ramallah, along the border with Israel. However, poverty rates for that area are average. What this area does have in common with Hebron, as we show later, is that they both rely on Israel for employment opportunities, and it is precisely this source of employment that has been hit particularly badly in terms of job losses.
4.27 As Figure 58 shows, unemployment rates are lower in or around the city, which are the hubs of economic activity. Judging from the map (Map 12), this seems to be less true of Hebron. The positive relationship between unemployment and distance to the city, however, is consistent with the relationship between distance to economic centers and poverty and education.

4.28 What explains these pockets of unemployment and poverty in and around Hebron? Map 13 reveals a clear geographical pattern in the sectoral distribution of private sector employment. Agriculture is located in the Jordan Valley, Hebron and parts of Jenin. The manufacturing sector is spread throughout the West Bank with a large cluster occupying the border area between Hebron and Bethlehem (home of some of the West Bank’s largest stone-cutting manufacturers). Construction is concentrated west of Ramallah, and around Bethlehem. Finally, the West Bank’s services economies can be found in the Ramallah area, and in the north of Jenin.

4.29 In particular, the economy of Hebron is largely based on agriculture and manufacturing, sectors that are both labor intensive and low-wage. In contrast, Ramallah stands out as a more service-oriented, high-wage economy, which is consistent with the low estimates of poverty for the area. This finding is also consistent with the spatially-blind cross-tabulations between poverty and sectors of employment reported in Chapter 3: poverty is highest among agricultural workers, and lowest among workers in the services sector.

4.30 As we might expect, we find that in general, employment in services declines with distance from the nearest governorate capital, while employment in agriculture increases with distance to the urban center. Figure 59 confirms that poor private sector workers are more likely to be employed in agriculture and manufacturing, and less likely in services. Agriculture becomes the dominant sector of employment among the poor at a distance of 6 km from the governorate capital or further. Among the non-poor, the services sector remains the dominant sector of employment at all distances from the nearest governorate capital.
Map 13: Sectors of Private Sector Employment

Agriculture

Manufacturing

Construction

Services
4.31 How does the distribution of location of work fit into these spatial patterns? The right panel of Map 13 shows the spatial distribution of employment in Israel while the left shows the spatial distribution of individuals that reside and work in the same locality. It is striking that the spatial distribution of employment in Israel is very similar to the geographic distribution of unemployment. In other words, in areas where there is more unemployment, we find more workers that rely on job opportunities in Israel: with Hebron and the area west of Ramallah along the border with Israel both standing out. The tightening of border regulations and the reduction in the number of working permits for Palestinians since the second Intifada probably means that a significant share of those currently unemployed (in these border areas) used to go to work in Israel prior to the second Intifada. The fact that these very same areas also have high rates of unemployment might point to the limited availability of jobs within these areas.

4.32 Comparing the right panel of Map 14 with Map 13 suggests that many of the workers from Hebron who work across the border in Israel are likely involved in agriculture, whereas those who cross the border west of Ramallah are most likely construction workers. Thus, even those workers who have jobs in these areas are possibly employed in low-skill jobs, as Palestinians who work in Israel tend to be less educated on average (see Chapter 3).
5. The Economic Implications of Checkpoints

4.33 In any economy, restrictions on the movement of goods and services introduce both transaction costs and uncertainty, with visible implications, the first of which is a widening of spatial price deviations, i.e. a distortion of the "law of one price". In time, if inefficiencies brought on by within-country trade barriers persist, there may be a restructuring of economic activity, with unemployment increasing and private sector wages decreasing in locations where restrictions are tightened. Long and unpredictable delays arguably hurt the agricultural sector the most. “The stakes are highest for fresh produce, as the whole shipment could spoil if not delivered on time” (Akkaya et al., 2008). The added costs may induce a reduction in sales, either because higher consumer prices have lowered demand, or in the more extreme case, if high transaction costs have led traders to look elsewhere for their supply. This puts pressure on the profits and wages of agricultural producers and their employees.

4.34 In this section, we examine the economic implications of checkpoints starting with the relationship between poverty, unemployment and mobility restrictions. Next, we present evidence
of the checkpoint-induced increases in transaction costs by examining spatial price differentials that stem from mobility restrictions. Figure 60 compares poverty estimates for agricultural and non-agricultural workers residing in mobility “restricted” and “unrestricted” localities. Not only is the negative impact of mobility restrictions most apparent for those involved in agriculture, poverty is also higher in “restricted” localities that are located away from the major urban centers, where most of the agricultural workers live. Among non-agricultural workers, on the other hand, those living in “restricted” localities appear to have lower poverty rates. How is that possible? One explanation could be that checkpoints are more often placed along routes that see large flows of Palestinians, in areas that are economically more active. In line with this hypothesis, “restricted” areas also have a higher share of private sector employment and higher private sector wages, which may explain the lower poverty rates (see Table 36 in the Annex to Chapter 4).

![Figure 60: Poverty Rates in Restricted and Unrestricted Areas, by Sectors](image)

4.35 In order to understand the effect of checkpoints on economic outcomes, ideally, one would like to compare the same location with and without a checkpoint at the same point of time. In the absence of this counterfactual, we compare economic outcomes for the same location at different points of time through a regression that isolates changes in locality unemployment rates related to past changes in mobility restrictions, while separately accounting for the effect of selected determinants of employment. The results, reported in Table 37 in the Annex, support the hypothesis that an increase in the number of checkpoints in a locality will subsequently increase its unemployment rate.

4.36 Over and above the relationship between poverty, unemployment and mobility restrictions, checkpoints lead to increased transaction costs. Most directly, the resulting delays increase transport costs through higher costs of labor and other inputs such as fuel. The extra travel time also means that any given vehicle will on average be transporting lower trade volumes per time unit, which implies a higher fixed cost per transaction. Uncertainty is also introduced by the unpredictability of waiting times at the checkpoints (see Box 5 in this chapter). These unanticipated delays may result in penalties, or even a discontinuation of trade, if on-time delivery is demanded (see e.g., World Bank, 2007, 2008). Even if no penalties are incurred, delays may result in damage to the shipment, especially for perishable goods, which too adds to the costs.
4.37 Checkpoints effectively introduce man-made ‘borders’ that divide up the West Bank into different economic areas. Crossing these ‘borders’ for trade between areas, comes with costs analogous to crossing national borders for international trade. Based on the literature of border crossings (see Box 9), the following analysis attempts to quantify the effect of crossing within-country ‘borders’.

<table>
<thead>
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<th>Box 9: The Economic Costs of Trade Barriers</th>
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| To illustrate the economic costs of trade barriers, Akkaya et al. (2008) use a one-day retail price survey of selected agricultural products from 11 towns and cities in the West Bank conducted on February 15, 2006, which shows spatial price differences to be very large, up to 400 percent. As February 15 is no different from any other day, they associate these price gaps with “the extent to which agricultural markets in the West Bank have been subject to the uncertainties of closures”. While traders will be aware of these price differences, it will not always be in their best interest to act on it as “the risks of a shipment being tied up at an internal crossing point outweigh any benefit of price arbitrage”.

Engel and Rogers (1996) were the first to quantify the effect of crossing a border on prices (the border between the U.S. and Canada in their study). Many have since adopted their approach to study the border effect for different countries, and using variations on their original model (see e.g., Parsley and Wei, 2001; and Engel et al., 2003). This analysis in this chapter is the first to quantify the effect of crossing within-country ‘borders’.

4.38 To the best of our knowledge we are the first to attempt to quantify the size of the distortions brought on by internal mobility restrictions. In order to do this, we estimate the increase in price differentials, a proxy for transaction costs, induced by checkpoints between neighboring localities. We regress absolute spatial price differentials on the number of checkpoints that separate the locations. For each location in our sample we only include the price differential with the nearest neighbor, as these are most likely to trade. In the absence of arbitrage, the difference in prices for a given good between two locations is bounded by the transaction costs incurred when transporting and selling a unit of the good from one location to the other. Spatial price differentials therefore serve as a proxy for transaction costs. The regression coefficients provide estimates of the percentage point increase in transaction costs that are incurred with the addition of checkpoints.

4.39 As an illustration, Map 15 plots the spatial variations in prices for two selected food items: tomatoes (top panel) and potatoes (bottom panel). The maps in the left panel are based on locality level unit value prices; while the maps on the right show the governorate level prices obtained by the PCBS for the same goods (see Box 14 in Annex for more details). Our regressions are at the locality level. We include the comparison between locality and governorate prices as a consistency check. The price maps confirm that prices exhibit substantial spatial variation, and are higher in the main centers of economic activity, Ramallah and Nablus. For a full description of the price data, list of food items considered, and the methodology please refer to the Annex to chapter 4.
CHAPTER 4

Map 15: Spatial Price Variations

Locality Unit Values (Left Panel)  Governorate Prices (Right Panel)
The results, presented in Table 8, show that checkpoints indeed have a significant and sizeable positive effect on spatial price differences. The economic effect of two checkpoints or more is an added price difference of up to 10 percent, depending on the category of consumer goods, which is roughly comparable to the transaction costs incurred when crossing the U.S.-Canada border (see e.g., Engel et al., 2003). The regressions control for the distance between locations, which too is positively and significantly associated with price differentials, as expected.

It is conceivable that our estimated impact of checkpoints on transaction costs is in fact conservative. Note that no arbitrage implies that price differentials may vary anywhere below the transactions costs, and thus may be considerably lower. In theory, only for locations that actually trade with each other may we expect the price differential to match the transaction costs. For this reason, the regressions would ideally only include pairs that trade with each other. Since we do not observe domestic trade, our regressions will inevitably include non-trading pairs. This means that any two locations may well be separated by high transaction costs, yet show very small price differences, simply because they have similar production functions or have close neighbors with similar production functions (reasons for the pair to not trade). Including such pairs in the regression will weaken the link between actual transaction costs and observed price differentials, and thereby yield a downward bias of the effect of checkpoints on transaction costs.

We work with a subsample of pairs that are more likely to interact with each other, namely pairs that are each other’s nearest neighbor, in an effort to reduce the above mentioned bias. Results not reported here show that including all pairs indeed reduces the estimated impact of checkpoints from a 7-10 percent to a 1-3 percent increase in the price differential. In both regressions the coefficients are statistically significant.

This chapter presents a powerful visual depiction of spatial disparities in economic outcomes in the West Bank, a region unique in the world in terms of the presence of man-made internal barriers to mobility. Based on a series of maps and innovative use of multiple sources of data, the analysis validates our findings on the determinants of poverty and presents evidence on the role of natural and manmade geographic factors, in particular, checkpoint-induced mobility restrictions, in explaining spatial variations in outcomes.

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51 Vegetables: cucumber, eggplant, green pepper and cauliflower
52 Fruits: lemons, bananas and water melons
A better understanding of the role of internal mobility restrictions will require an extension of the analysis in this chapter along three dimensions. First, our analysis does not account for all roadblocks, earth walls, earth mounds and road gates (which are numerous), primarily due to missing information on the dates during which these obstacles have been in operation. We are currently also assuming the same waiting time (transaction cost) for each checkpoint, as we have no information that allows us to distinguish between checkpoints. Adding these missing variables and updating the analysis accordingly, is an important step. Second, the poverty map presented in this chapter is obtained by spatially averaging locality estimates of poverty, which does not take advantage of any census data that might be available. A third area of future analysis is to explore the economic impact of the relative easing of mobility restrictions. This must take into account not only the number of checkpoints, but also their location and cost to the economy. Another question that is of interest is the link between internal road closures and international trade. Finally, our analysis confirms that there is a significant intra-regional variation in consumer prices that is currently not accounted for in the measurement of real consumption and hence poverty. It is conceivable that a more accurate account of spatial price differences will have implications for poverty comparisons between different regions, and for designing and targeting policy interventions where they are most needed.