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# **The Integration of Palestinian-Israeli Labour Markets:**

## **A CGE Approach**

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## **Abstract**

A high number of Palestinian workers used to work in Israel for decades. These people are mostly employed in low-skilled jobs in Israeli sectors which are highly dependent on foreign labour, namely agriculture and construction. With the beginning of the second Intifada in 2000, border restrictions increased severely due to security concerns, limiting employment possibilities for Palestinians and leaving Palestine with severe unemployment and loss of income. Israeli employers have substituted Palestinian workers with an increasing number of foreign workers, mostly from Asia. Growing unemployment among Israeli unskilled workers caused Israel to impose quotas on the employment of foreigners. The purpose of this paper is to estimate the effects for both economies from lifting movement and access restrictions between Israel and the West Bank. The macro-economic effects of the Israeli labour policy are important to determine the absorptive capacity of the Israeli labour market. Therefore, we use an extended version of the single country CGE model STAGE (McDonald, 2009), adapted to a Social Accounting Matrix (SAM) of Israel for the year 2004 (Siddig et al., 2011) to simulate the effects of different Israeli labour policy regimes.

# 1 Introduction

Israeli and Palestinian labour markets were strongly integrated for decades. Palestinian workers commute to Israel on a day-to-day basis where they are usually employed at considerably higher wages than at home. In Israel, the agricultural and construction sectors are particularly highly dependent on the availability of cheap foreign labour. However, political relations between Israel and the Palestinian Territories remain tense. The situation fluctuates between periods of high tensions and somewhat more stability. The first election of the Palestinian Authority in 1995 took place when the peace process was ongoing and borders were open. In 1999 Israel was the biggest employer of Palestinian workers, with 23% of the employed Palestinians working in Israel and the settlements (PCBS, 2010). However, the situation suddenly changed with the outbreak of the second Intifada, the Palestinian uprising, in the last month of 2000. Accordingly, a partial closure of the Israeli-Palestinian border for goods and people was imposed which varies overtime in its degree of restrictiveness. As a result, only 8% of Palestinian employees were still working in Israel and the settlements in 2004, leading to severe unemployment and loss of income in Palestine (PCBS, 2010). Until recently, crossing the border is subject to serious restrictions. Israeli employers have substituted Palestinian cross-border workers with an increasing number of foreign workers, mostly from Asia. A growing unemployment rate among Israeli low and unskilled workers caused Israel to impose quotas on the employment of foreign workers, which are said to crowd out Israeli workers.

Against this background, the objective of this paper is to estimate the potential benefits which would accrue to both economies from lifting labour movement restrictions between Israel and the West Bank. The macroeconomic effects of the Israeli labour policy are crucial to determine the absorptive capacity of the Israeli labour market. Therefore, the study relies on an extended version of the CGE model STAGE (McDonald, 2009) together with a detailed Social Accounting Matrix (SAM) for Israel (Siddig et al., 2011).

The Palestinian Territories consist of the West Bank and the Gaza Strip. These two regions have de facto little economic interactions, face different economic and social development, are ruled by different parties, and experience different treatment from Israel. Regarding the labour market, the regions show significant differences. While unemployment in the West Bank slightly decreased from 28.2% in 2002 to 17.8% in 2009, it remained high at 38.6% in 2009 in the Gaza Strip (see Figure 1; PCBS, 2010). Furthermore, while there are no cross-

border workers from Gaza working in Israel anymore, about 14.0% of West Bank workers are still working in Israel (PCBS, 2010). As the political situation between the governments of the Gaza Strip and Israel remain tense, the blockade of the Gaza Strip is unlikely to be lifted soon. Furthermore, the economic interdependence of the two Palestinian regions is weak, particularly with respect to the labour market: less than 1.0% of West Bank workers have been employed in Gaza since 1995 and vice versa. Accordingly, this paper focuses only on the labour markets of the West Bank and Israel.

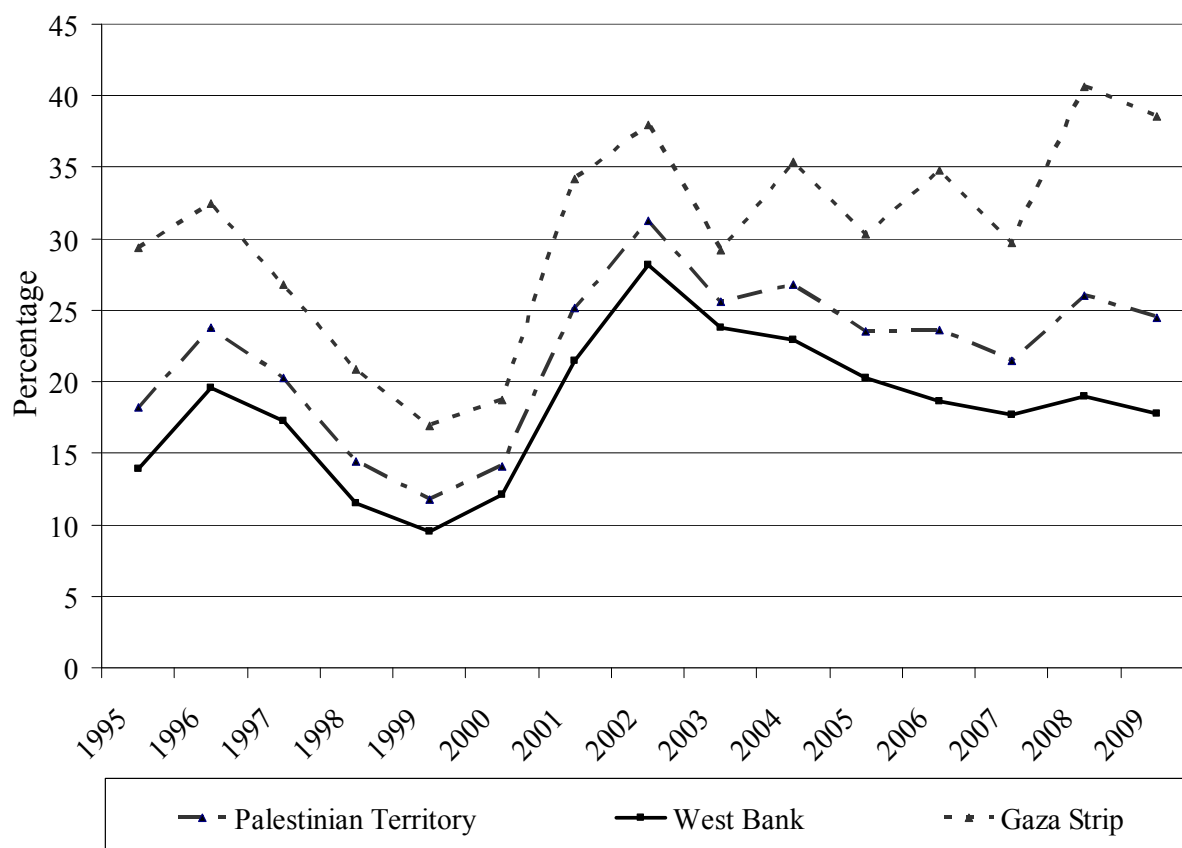
Chapter 2 provides an overview of the Israeli and Palestinian labour markets with a special focus on foreign labour in Israel. Chapter 3 explains the single country CGE model used in this study and describes its underlying database, namely the Israeli SAM for the year 2004. Moreover, this chapter covers the adjustments that are incorporated in the model which capture the intended simulations of labour movements across borders between the West Bank and Israel. Chapter 4 introduces simulated scenarios and subsequently presents and discusses the results of the analysis. In the last chapter, conclusions are drawn and potential policy implications are discussed.

## **2 Labour markets in the West Bank and Israel**

### **2.1 The West Bank labour market**

Economic growth in the West Bank in recent years led to positive trends in the labour market, boosting employment and reducing unemployment. The West Bank labour force is fast growing: during the last 15 years the labour force nearly doubled from 358 thousand to 643 thousand persons in 2009 (PCBS, 2010). The labour force participation rate is increasing too, but it stays at a relatively low level of 43.8% in 2009. This is mainly because of the low participation rate of women of 17.4%. In the Gaza Strip, the labour force participation rate is considerably lower at 37.6% in 2009. As a result of high economic growth after the establishment of the Palestinian Authority in 1995, unemployment strongly declined in the late 1990s (Figure 1). This positive development came to a sudden stop with the outbreak of the second Intifada in 2000, resulting in the closure of the Israeli-Palestinian border as well as the establishment of movement obstacles, such as checkpoints and road barriers within the Palestinian Territories. This led to a strong contraction of the Palestinian economy, which caused high unemployment.

**Figure 1: Unemployment rates in the Palestinian Territories (in percentage, 1995-2009)**



Source: Own compilation based on PCBS (2010).

However, restrictions on access to the Israeli labour market have been the major source of unemployment in the West Bank during this period, since a large portion of the unemployed were previously working in Israel and the settlements (PCBS, 2005). On the eve of the Intifada in 1999, 26% of total West Bank workers were employed in Israel and the settlements, but this rate declined to 13% by 2002 (PCBS, 2010). Since 2002, this number has slightly increased again: in 2009, 14% were working in Israel and the settlements. Due to the high growth of the labour force, even this slight increase implies significant effects in the West Bank. A report by the Palestinian Ministry of Finance states that the number of Palestinians employed in Israel increased by 20% from 2007 to 2008, which led to a significant increase in national income and demand (Palestinian Ministry of Finance, 2009).

Irrespective of their skill level, Palestinians are mainly employed in unskilled or low skilled jobs in Israel, predominantly in agriculture and construction. Nevertheless, the wages Palestinians can receive in Israel are at least 60% higher than the average wage in the West Bank (Bank of Israel, 2010a; PCBS, 2010). Compared to neighbouring countries, the wage level in the West Bank is relatively high (Aix-Group, 2007), which may be mainly due to the

possibility of employment in Israel, which raises the reservation wage (Bulmer, 2003). The reservation wage is the wage below which people would prefer waiting to get a job in Israel rather than working in the West Bank.

## 2.2 The Israeli labour market

During the second Intifada, the Israeli economy struggled with security and political uncertainty which resulted in stagnating domestic demand. Unemployment rates increased and peaked in 2003 at 10.6%. However, since 2003 the Israeli economy is fast growing, with increasing employment rates and wages. In 2006 the Bank of Israel announced a situation of full employment in Israel with the lowest unemployment rate since two decades of 6.1% and the highest level of labour force participation in history of 56.5%. (Bank of Israel, 2010a). Nevertheless, the unemployment rate began to slightly increase in 2009. Industries that intensively employ low skilled labour were main contributors to this increase in unemployment. Increasing unemployment of unskilled labour has been observed for several years.

## 2.3 Palestinian cross border workers and foreign workers in Israel

Israeli low and unskilled workers have to compete for jobs with foreign and Palestinian workers who are willing to work for lower wages. In Israel there is a minimum wage imposed and Israelis usually are not willing to work below that minimum wage (OECD, 2010). Weak enforcement of the minimum wage law makes it possible to employ foreign and Palestinian workers below that minimum wage (Bank of Israel, 2010b; OECD, 2010). The wage which Palestinians can receive in Israel differs by source (Table 1).

**Table 1: Different reporting on wages for Palestinian workers in Israel, 2005**

Minimum wage in Israel	Wages according to OECD publications <sup>a</sup>	Wages according to PCBS and Bank of Israel publications	Average wage in West Bank (WB) (PCBS)
20 NIS/hour <sup>d</sup>	18 NIS/hour <sup>a</sup>	16 NIS/hour <sup>d</sup>	9 NIS/hour <sup>d</sup>
160 NIS/day	144 NIS/day <sup>d</sup>	127 NIS/day	74 NIS/day
3335 NIS/month	-	2772 NIS/month <sup>b</sup>	1739 NIS/month <sup>c</sup>

<sup>a</sup> Association of Contractors and Builders in Israel (2009) as cited in OECD (2010c). <sup>b</sup> calculated with 22 days. <sup>c</sup> calculated with 23.6 days in WB. <sup>d</sup> calculated with 8 working hours per day.

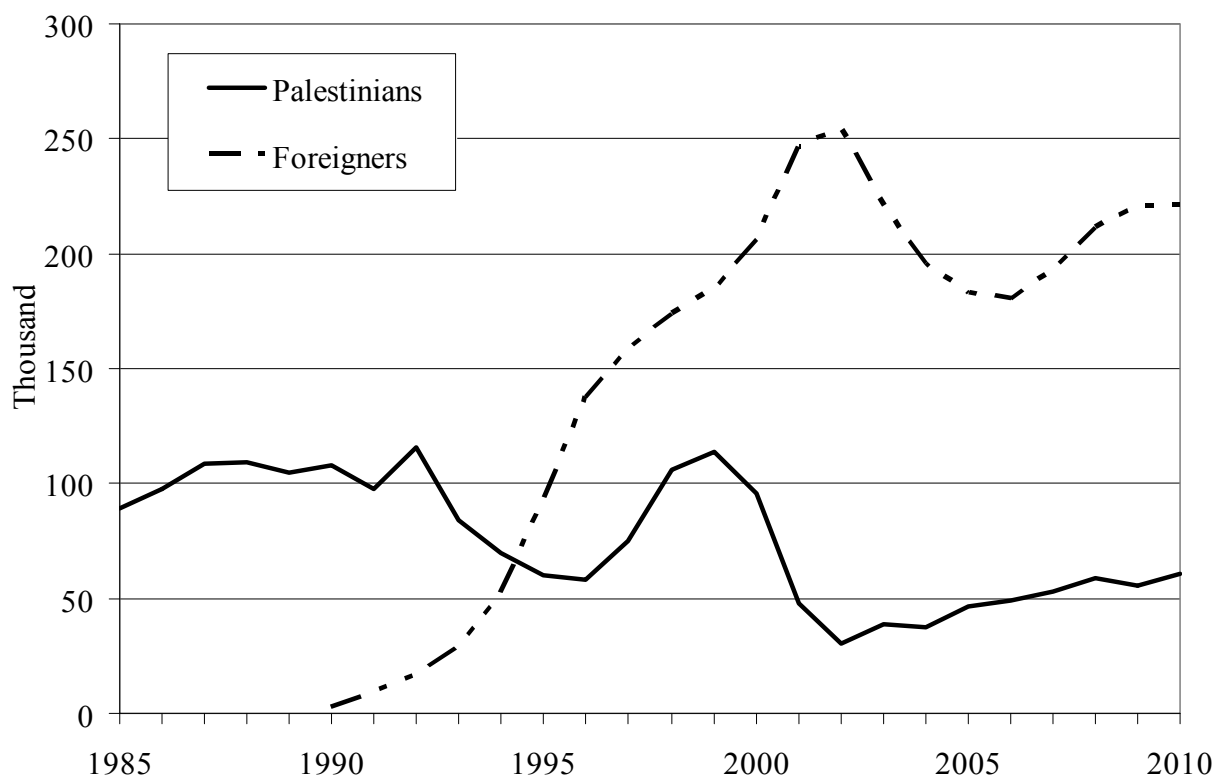
Sources: OECD (2010c), PCBS (2011), Bank of Israel (2010a).

The wages for 2005 range from 127 NIS per day published by the Palestinian Central Bureau of Statistics up to the level of the minimum wage of 160 NIS per day. Even when calculating with the lowest wage rate, this wage rate is 70% higher than the wage Palestinian workers would earn on average in the West Bank. If the minimum wage were applied to Palestinian workers, the wages they would receive in Israel would be more than double wages in the West Bank. On the other hand, the wage rate foreigners (non-Palestinians) receive is on average higher than that for Palestinians (OECD, 2010c). Moreover, Palestinian workers are subject to lower social contributions and fees than foreign workers, but employers in Israel pay for transportation costs of Palestinian workers.

As shown in Figure 2, high numbers of Palestinians used to work in Israel for decades. The number decreased with intensifying tensions in the early 1990s, but recovered after the first election of the Palestinian Authority in 1995. The steep decline that begins in 2000 marks the outbreak of the second Intifada in which the number of workers coming from the Gaza Strip fully ceased. Since 2003 there is a slight increase, but the number of Palestinian workers barely reaches the low level in 1995.

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**Figure 2: Palestinian and foreign workers in Israel (in thousand, 1985-2010)**



Source: Own compilation based on Bank of Israel (2011)

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There are three Israeli sectors which are highly dependent on non-Israeli workers, namely agriculture, construction, and homecare. In 2008, 30% of all employees in construction and 37% of all employees in agriculture were non-Israeli (Bank of Israel, 2009). Non-Israelis are employed in these sectors partly because their wages are low and partly because employers cannot find Israelis who are willing to work in these jobs.

Since 1993 the labour flow of Palestinians to Israel became irregular due to gradually increasing access restrictions. Reasons for the increased restrictions were security concerns, not economic ones. Changing security procedures increased uncertainty of whether the workers would be able to reach their workplace, even for those holding permits. This situation affected both employers and employees negatively (Aix-Group, 2007).

The increased access restrictions led employers to successfully lobby for workers from abroad. Since 1990 workers from abroad are allowed to work in Israel. These are mainly Asian workers who receive working permits which they have to renew every three months. During the first 10 years, the number of foreign workers in Israel increased strongly and continued to increase during the second Intifada. At the same time, the number of issued permits remained almost constant since 1995 with approximately 60 thousand permits released annually (Bank of Israel, 2008; OECD, 2010) and with quotas on foreign labour in agriculture and construction. The increasing number of foreigners which can be observed is therefore mainly caused by illegal workers (people who stay in Israel after their working permit ended). The decline of foreign workers in 2003 was caused by a period of stricter enforcement of return as well as an economic recession in the Israeli economy. In recent years the number of foreign workers in Israel has been rising again.

### **3 Analytical Framework and Data**

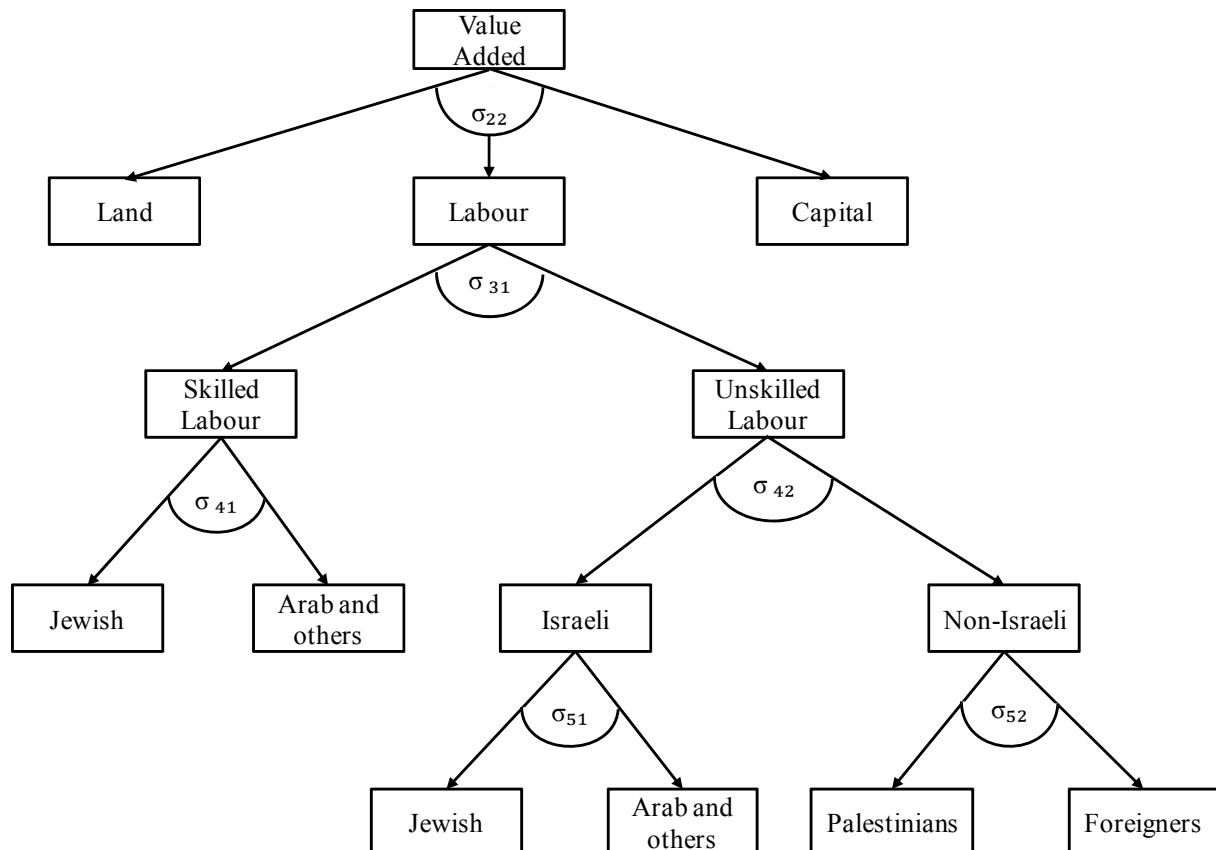
#### **3.1 Main features of the STAGE model**

This study uses the single country Computable General Equilibrium (CGE) model STAGE (McDonald, 2009). In the STAGE model, production technologies can be specified as nested Constant Elasticity of Substitution (CES), which is the main feature for the purpose of this study. STAGE is calibrated using an Israeli Social Accounting Matrix (SAM) for the year 2004.

### 3.2 Modelling of the labour market

Domestic production of the model is extended to use a five-level production process. Each level involves CES or Leontief aggregations of primary or aggregated inputs to produce aggregates. Using CES technology allows for the assumption of imperfect substitution in factor demand between specific factor groups. The optimal combination of primary inputs is determined by relative factor prices and the substitutability determined by the specific CES elasticities. In the first level of the production nesting, aggregate intermediate input and aggregate value added are combined to form domestic output in fixed shares. Aggregate intermediate input is a Leontief aggregation of intermediate inputs, while aggregate value added is a combination of primary inputs using CES technologies. The inputs forming aggregate value added are capital, land, and aggregate labour, with the substitution elasticity  $\sigma_{22}$  determining the substitution possibilities among them (Figure 3).

**Figure 3: Labour nesting**



Source: own compilation.

Aggregate labour differentiates in the third level between unskilled and skilled labour. In the fourth level, first, skilled labour is composed of Jewish and Arab (and others) Israeli skilled

labour groups, which are imperfect substitutes. This is because there is broad recognition that in Israel ethnicity affects employment, which is partly due to service in the Israeli Defence Forces (IDF) (OECD, 2010a, b). While Jewish Israelis (with the exemption of the religious Haredim) serve for two to three years in the army, Arabs generally do not serve in the army. Accordingly, those who did serve in the IDF are supported with privileges in the labour market. This discriminates against those who did not serve. Nevertheless, it is common for countries to reward people who served in the army. In Israel, however, some minority groups do not serve and thus such supporting practices affect one population group more than the other (OECD, 2010c). Second, unskilled labour is composed of Israeli unskilled labour groups and non-Israelis. Non-Israelis mostly work in unskilled jobs in Israel, regardless of their skill-level (PCBS, 2005).

The fifth level consists of the unskilled branch of the labour nest. The Israeli unskilled labour group is a composite of Jewish and Arab (and others) labour groups. Non-Israelis are distinguished between Palestinians and workers from the rest of the world.

### **3.3 The database**

#### **3.3.1 The Israeli SAM**

The Israeli 2004 SAM used in this study is compiled by the Agricultural and Food Policy Group at the University of Hohenheim, documented in Siddig et al. (2011), and characterised by several distinctive features. First, the SAM differentiates between activities and commodities. Second, the SAM provides detailed data on trade and transportation margins. Third, the government account is separated from the detailed tax account. Fourth, the SAM provides detailed data on factors of production and households as it distinguishes between 10 household groups. Furthermore, labour is disaggregated into 36 subaccounts that differ according to profession and ethnicity. The SAM contains data on seven skilled professions in different occupations in addition to unskilled labour groups. In terms of ethnic differentiation, it distinguishes between Jews and non-Jews, which include female and male labour groups. Additionally, there are four non-Israeli labour groups incorporated in the SAM, representing legal and illegal Palestinian cross-border workers and foreign workers from the rest of the world.

The sources of the data used to compile the SAM include the Israeli Central Bureau of Statistics (ICBS), the Central Bank of Israel (BOI), and the Israeli Tax Authority (ITA). In addition, data from sources outside of Israel are used to fill-in some gaps from the domestic

reports. External sources include the World Trade Organization (WTO), the Organisation for Economic Co-operation and Development (OECD), and the World Bank.

### **3.3.2 Additional databases**

There are two additional data sets used for this analysis. The first is a matrix of quantities of primary inputs, which is needed because the SAM contains information on values only. Finally, a series of elasticity values completes the database, including elasticities of substitution of imports and exports related to domestic commodities, elasticities of substitution for the CES functions in the production nest, income elasticities of demand as well as Frisch parameters for each household group for the specification of a CES demand system.

## **4 Policy scenarios and results**

### **4.1 Policy scenarios**

Two scenarios are run to estimate the effects of different labour policy regimes with regard to Palestinian workers in Israel.

For both scenarios the labour market closures are modelled as follows: The Israeli labour market for skilled and unskilled labour has full employment and adjusts by variation of the wage rate, thus assuming that the minimum wage law is not enforced. The scenarios are defined by varying factor supply for the respective non-Israeli labour groups.

#### **4.1.1 Base Scenario**

First, a base scenario is run, replicating the 2004 Social Accounting Matrix and thus reflecting a restrictive border policy against Palestinians. Furthermore, quotas on foreign workers are in place, hence only a limited number of foreigners and Palestinians are allowed to work in Israel. Besides workers with an official permit, workers from Palestine and the rest of the world who are working illegally in Israel are taken into account.

#### **4.1.2 Pre-Intifada scenario: increasing the number of Palestinian workers to the pre-Intifada level**

Second, a scenario is run in which the border for Palestinians to Israel is opened and the number of Palestinians working in Israel is increased to meet the pre-Intifada level. Thus, the number of Palestinian cross-border workers is increased from 50 thousand in the base

scenario to 114 thousand in this scenario. With respect to the Palestinian labour supply, it is assumed that it is elastic, which implies that there are additional workers from the West Bank available who are willing to work for the same wage rate or a lower wage rate than they can receive in Israel under the base scenario. The high unemployment rate in the West Bank and the high gap between the wages Palestinians can receive in Israel and the wages they receive in the West Bank support this assumption.

## 4.2 Results

This section presents and analyses changes under the pre-Intifada scenario as percentage deviations from the base scenario. Effects on the Israeli economy are presented first. Afterwards, potential effects on the Palestinian economy are discussed

### 4.2.1 Effects on the Israeli economy

The increased Palestinian labour supply in Israel – from 50 thousand to the pre-Intifada level of 114 thousand – changes the relative availability of factors and thus directly affects returns to factors. As displayed in Table 2, the average wage rate of labour decreases while capital and land become relatively scarce, resulting in increasing returns. The effect is particularly strong for land because it is used in agricultural sectors which mainly employ unskilled labour and are therefore strongly affected by the change in Palestinian labour supply (Table 4).

**Table 2: Effects of the pre-Intifada scenario on the wage rates of different factor groups**

Factors and aggregated factors	Wage rate changes in %
Capital	0.295
Land	0.861
Labour	-0.098
Skilled labour	0.168
Unskilled labour	-3.486
Israeli unskilled labour	-2.547
Non-Israeli unskilled labour	-5.050
Palestinian labour	-16.856
Foreign labour from the rest of the world	-4.178

Palestinian labour is employed in unskilled jobs in Israel. The increase in quantity of unskilled labour makes skilled labour relatively scarce, causing wages for skilled labour to increase by 0.2% while wages of total unskilled labour decreases by 3.4%. Main contributors to decreasing wages for unskilled labour are non-Israelis who experience a decrease in wages

of 5.1%, but also wages of unskilled Israelis decrease by 2.5%. Finally, wages of Palestinian cross-border workers fall by 16.9%, while the wages of foreigners decrease by 4.2%.

**Table 3: Macroeconomic effects of the pre-Intifada scenario in Israel, selected variables**

Variables	Change in %
Gross domestic product (GDPVA)	0.322
Exchange rate	0.053
Producer price index (PPI)	-0.055
Imports	0.494
Exports	0.841

As shown in Table 3, the Israeli GDP grows by 0.3%. Palestinians use to work in Israel on a day to day basis, what implies that they do spend their income not in Israel but in the West Bank. Increased Palestinian labour use therefore increases workers' remittances flowing from Israel to the West Bank. Thus, the exchange rate depreciates to absorb this reduction in the current account, which increases the competitiveness of exports. Producer prices in Israel decline slightly by 0.06%. Lower producer prices and higher income lead to increased import demand, despite the depreciation of the exchange rate.

Table 4 presents sectoral effects on prices, domestic production, and exports as well as shares of unskilled labour in the total labour input per sector. Output prices are determined by the price of value added, prices for intermediate inputs, and export prices, while purchaser prices are determined by producer prices and import prices. Therefore purchaser prices deviate from output prices. Since Israel is a small country, world market prices are not affected by changes in the Israeli market. Thus, for wheat, for example, 74% of total Israeli demand for wheat is imported; hence the purchasing price is largely influenced by the world market price and changes only slightly compared to the strong decline in the output price.

Regarding the impact on the different sectors of the economy, three groups of sectors can be distinguished. First, for sectors in which the share of unskilled labour in the total labour is high, lower wages for unskilled labour reduce input costs and result in a decrease in the composite price of output (PX). Agricultural sectors such as wheat, other crops (except cereals), milk, and vegetables-fruit production as well as construction are main employers of unskilled labour. Therefore, these sectors show a relatively high decrease in output prices (PX), but do not produce considerably more goods, expressed by a relatively low percentage increase of the quantity produced (QX). This is because the increase in domestic demand as

well as export demand for the goods of these sectors is relatively low (Table 4 (QE) and Table 5 (QCD)). Domestic demand increases only slightly because demand for agricultural goods as well as construction is assumed to be inelastic with respect to prices and income. Exemptions are the other crops sector and to a smaller extent the wheat producing sector with exports increasing by 1.8% and 1%, respectively. Therefore, their production also considerably increases compared to the other agricultural sectors and the construction sector.

**Table 4: Effects of the pre-Intifada scenario on production and unskilled labour input, selected sectors**

sectors	Change in %				Share of unskilled labour in total labour input (%)			
	Price of output (PX)	Purchaser price (PQD)	Domestic production (QX)	Exports (QE)	Israeli unskilled	Palestinian	For-eign	Total unskilled
Wheat	-0.219	-0.027	0.520	1.080	10.3	3.4	24.0	37.7
Other crops	-0.244	-0.259	1.182	1.782	9.9	3.8	27.1	40.7
Milk	-0.223	-0.229	0.217	0.776	10.0	2.8	19.5	32.3
Vegetables and fruits	-0.180	-0.225	0.282	0.752	9.9	3.8	27.1	40.7
Electronic equipment	-0.018	-0.023	1.382	1.496	7.1	2.7	0.6	10.3
Manufactures (nec.)	-0.002	-0.035	2.630	2.689	6.9	1.9	0.4	9.2
Construction	-0.392	-0.398	0.262	0.985	4.4	9.2	26.7	40.3
Communication	0.097	0.053	0.347	0.259	4.1	0.6	0	4.7
Public services	0.041	0.042	0.210	0.232	4.9	0.6	3.7	9.2

Second, electronic equipment and manufactures (not else classified, nec.) represent the industrial sector. The share of unskilled labour in these sectors is around ten percent or less. On the one hand, lower input costs decrease the price of output (PX); however, the price decreases by a much smaller amount compared to that in the agricultural and construction sectors. On the other hand, the second group of sectors can realise relative high production increases of 1.4% and 2.6%, respectively, in response to increasing consumption and export demand.

The third group of sectors consists mostly of service sectors and is represented by the communication and the public services sectors in Table 4. These sectors employ little unskilled and Palestinian labour. The selected sectors experience increased wages for skilled labour, resulting in rising input costs. At the same time, the quantity produced also increases, driven by higher domestic and export demand. The increase in the domestic demand in Israel is driven by the higher income of Israeli households.

**Table 5: Effects of the pre-Intifada scenario on household welfare**

	Household income (%)	Equivalent variation (EV)	Household consumption by commodity (QCD) (change in %)								
			Other crops	Milk	Vegetable and fruits	Electronic equip.	Manu-factures (nec.)	Construc-tion	Water transport	Communi-cation	Public services
hj1	0.070	0.359	0.054	0.079	0.078	0.161	0.205	0.125	0.135	0.183	0.201
hj2	0.024	0.501	0.039	0.062	0.062	0.150	0.191	0.120	0.124	0.167	0.185
hj3	0.064	1.291	0.042	0.083	0.082	0.268	0.340	0.190	0.230	0.320	0.342
hj4	0.123	2.114	0.026	0.077	0.077	0.337	0.426	0.238	0.290	0.403	0.430
hj5	0.186	4.404	0.023	0.090	0.090	0.526	0.671	0.442	0.426	0.567	0.639
hao1	0.000	0.094	0.035	0.050	0.050	0.086	0.111	0.087	0.064	0.080	0.098
hao2	-0.018	0.105	0.031	0.049	0.049	0.107	0.138	0.099	0.084	0.108	0.126
hao3	-0.002	0.174	0.038	0.073	0.073	0.230	0.292	0.171	0.194	0.267	0.290
hao4	0.023	0.112	0.020	0.058	0.058	0.235	0.300	0.187	0.195	0.263	0.291
hao5	0.095	0.125	0.021	0.079	0.078	0.434	0.556	0.396	0.339	0.440	0.512

**Israeli household groups:**

hj1	Jewish households in first income quintile
hj2	Jewish households in second income quintile
hj3	Jewish households in third income quintile
hj4	Jewish households in fourth income quintile
hj5	Jewish households in fifth income quintile
hao1	Arabic and other households in first income quintile
hao2	Arabic and other households in second income quintile
hao3	Arabic and other households in third income quintile
hao4	Arabic and other households in fourth income quintile
Hao5	Arabic and other households in fifth income quintile



Regarding effects on different household groups (Table 5), incomes of Jewish household groups rise more than those of Arab and other non-Jewish (henceforth, Arab) ones, and those of high income quintiles rise more than those of low quintiles. This is due to the different ownership of factors. Compared to Jewish households, Arab households have a larger share in unskilled labour, which experiences a fall in wages. Moreover, compared to Arab households, Jewish households own more skilled labour. The lowest quintiles show a higher increase in income than the second and the third quintiles. This is because their income is composed of less unskilled labour and a higher share of transfers, which are increasing. Household income is not only composed of income from factors, but also contains transfers from government, enterprises, other households, and from the rest of the world. Transfer payments increase because government, enterprise, and aggregated household income increase, leading to increased transfers from these institutions.

Despite the negative impact on the income of some household groups, the equivalent variation (EV) is positive for all household groups. The EV is the monetary amount which would have to be paid to the household groups for them to reach the same utility level as they had in the situation with the policy imposed without price or income changes. Hence, positive EVs imply that all household groups reach a higher utility level under the policy scenario.

This is also reflected in the quantity of household consumption by commodity (QCD). While prices for some goods decrease and prices for other goods increase, the change in the quantity of household consumption is positive for all goods and household groups. While all households are positively affected, as indicated by the positive EV changes, households in higher income quintiles benefit relatively more compared to households in lower quintiles. Therefore, the income gap between poor and rich households widens.

#### **4.2.2 Effects on the West Bank economy**

Cross-border workers from the West Bank who work in Israel experience a substantial, 16.9%, fall in wages; however, the substantial increase in the number of workers results in an increase in the overall labour income of Palestinians working in Israel, from 1374.0 NIS million in the base scenario to 2524.4 NIS million in the pre-Intifada scenario (Table 6). Therefore, the West Bank economy as a whole benefits from this increase in income. In the pre-Intifada scenario, remittances of Palestinians working across the border in Israel account for 25.5% of the GDP for the West Bank in 2004. In relation to the West Bank's GDP in 2010, 16 355.8 NIS Million (in constant 2004 prices), remittances still account for 15.5% of the 2010 GDP, indicating the relevance of worker remittances for the West Bank's economy.

Thus, the simulated policy reduces unemployment in the West Bank by employing more Palestinian workers and simultaneously increases the West Bank's income. It is expected that this increase would encourage domestic production and investment.

**Table 6: Palestinian workers remittances from Israel and West Bank GDP (2004)**

	Base Scenario	Pre-Intifada Scenario
Workers remittances from Israel	1374.0 NIS Million	2524.4 NIS Million
West Bank GDP	Share of remittances in the West Bank GDP	
9899.1 NIS Million	13.8%	25.5%

Source: PCBS, 2011

Large revenues from worker remittances can cause negative effects on the economy, resulting in an appreciation of the real exchange rate – a paradox known as Dutch disease. In this regard, less Palestinians employed in Israel could imply a chance for the Palestinian economy to enhance growth. Nevertheless, a study by Astrup and Dessus (2005) found that increased export competitiveness for the Palestinian territories was insufficient to compensate for losses in income after closure of the Israeli labour market, indicating that cross-border employment is an important contributor to the living standard in the Palestinian territories.

#### **4.2.3 Testing for the sensitivity of the results to the level of the substitution elasticities $\sigma_{42}$ and $\sigma_{52}$**

To build confidence in the results of the employed model and particularly in the substitution elasticities used in the labour market equations, several sensitivity analyses are run. These analyses show that two of the elasticities have an especially strong influence on the results. These elasticities are the substitution elasticity between Israeli and non-Israeli unskilled workers,  $\sigma_{42}$ , and the substitution elasticity between Palestinian and foreign workers,  $\sigma_{52}$  (Figure 3).

Increasing the substitution elasticity between Israeli and non-Israeli unskilled workers,  $\sigma_{42}$ , increases negative effects on poor Israelis. Assuming the elasticity is 8 instead of 4 reduces the positive change in the quantity of goods consumed (QCD), while effects remain positive. On the other hand, when assuming an almost perfect substitutability between Israeli and non-Israeli unskilled workers, which means setting the elasticity to 100, the change in the QCD becomes negative for poor Israeli households. The substitution elasticity between Israeli and non-Israeli unskilled workers is likely to vary with the political situation. It describes the

extent of the reluctance of employers to employ non-Israelis and, in particular, Palestinians. In case of strong conflicts, this reluctance is expected to be higher than in more peaceful situations.

When increasing the substitution elasticity between Palestinian and foreign workers,  $\sigma_{52}$ , from 6 to either 12 or 100, the effects found in the labour market are stronger. One effect is that the wage of aggregated labour decreases. The main effect, however, is that the allocation of wages between Palestinians and foreigners changes. Palestinians wages drop less if  $\sigma_{52}$  is high and foreigners experience a higher drop in wages. Differences in the effects on Israeli households are not large. Moreover, effects on the macroeconomic level are very small, but positive when the elasticity is increased.

## **5 Conclusions and outlook**

In this paper we examine the potential effects of a liberalised labour market policy in Israel with respect to cross-border workers from the West Bank. For this purpose we simulate a scenario which increases the number of Palestinians working in Israel from 50 thousand to the pre-Intifada level of more than 100 thousand.

The results indicate that a liberalised labour market policy would be able to increase domestic production and enhance economic growth in Israel. A liberalised labour market policy would widen the income gap between poor and rich households by increasing the factor income of rich household groups and by even reducing the factor income to some poor household groups. However, the negative effect of decreasing factor income is smaller than positive effects accruing to all household groups from a decrease in prices and an increase in transfer income, resulting in welfare gains for all household groups in Israel.

The West Bank economy would benefit from a liberalised labour market policy as labour income of Palestinians in Israel would strongly increase. Nevertheless, such an inflow of money in the West Bank from employment abroad could also have negative effects on the Palestinian economy. Previous studies have found a positive effect from the transfer of high labour income from Palestinian cross-border workers to the West Bank, but further research is needed to analyse the effects of such income transfers on the West Bank's economy. We therefore envisage to endogenise the Palestinian labour supply in a first step and to combine the CGE model for Israel with a CGE model for the West Bank in a second step. We also plan to depict the Israeli minimum wage in the CGE model and to improve the empirical base of labour substitution elasticities applied.

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