Should I trade or should I go (to war)?

Lessons from the Second Intifada[*]

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This version: March 2015

Do trade shocks affect conflict? The evidence on this question has so far focused mainly on commodity price shocks. This paper moves beyond this focus and uses data from the entire export and import baskets to examine whether changes in Palestinian trade in the second half of the 1990s affected the intensity of the subsequent Palestinian uprising ('second Intifada'). The findings suggest that an increase of USD 10 million in Palestinian exports of a sector employing 10 percent of the locality's private employment reduces conflict intensity in that locality by between 11.5 and 13.8 percent. On the other hand changes in Palestinian and Israeli imports have no significant impact on conflict. The results are robust to instrumenting these trade shocks with factors exogenous to Palestinian localities, including the emergence of new global suppliers and the unilateral trade opening of Israel. The findings can be better explained by the opportunity cost mechanism than by the resentment of Palestinians towards Israel due to the loss of the Israeli market. The effects are particularly large in localities with a higher share of refugees and with higher unemployment rate, pointing to the importance of grievances in determining the reaction to a trade shock.

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1. Introduction

Trade is one of the main channels through which income shocks affect conflict in fragile countries. Increases in exports may raise the incomes for certain sections of the population, thereby raising their opportunity cost of engaging in political violence. Some recent evidence provides indirect support for this mechanism, finding that a rise in international prices of a commodity reduces the probability and intensity of civil conflicts in countries that export that commodity (Bruckner and Ciccone, 2010; Berman and Couttenier, 2014; Dube and Vargas, 2013). However, the robustness of the evidence in support of this mechanism is disputed (Bazzi and Blattman, 2014). This may be due to a number of issues impairing the empirical analysis. First the cross-country heterogeneity of the effects of income shocks on conflict is likely to be large. Second, it is difficult to properly isolate the opportunity cost from other channels that may be concomitantly at play as a result of trade shocks, especially when focusing on commodity exports. Indeed increases in the price of exported commodities may also raise the incentive to fight over the control of the exportables, especially if they are easily appropriable as in the case of extractive commodities (Dal Bó and Dal Bó, 2011; Berman et al., 2014). If the state has sufficient capacity, such exports may also raise the fiscal revenues, which the state can eventually use to quell ongoing revolts (Besley and Persson, 2008). This is the same prediction of the opportunity cost channel, so the two are difficult to distinguish.[3]

This paper tries to address these issues by moving beyond the commodity prices analysis and by focusing on a particular context – the Israeli-Palestinian conflict – which we argue is suitable to credibly isolate the opportunity cost mechanism of trade shocks. It considers how exogenous changes in the entire Palestinian exports (and imports) basket in the second half of the 1990s affected the intensity across localities of the second Palestinian uprising (Second Intifada) between September 2000 and December 2004. This context has three features that make it suitable to isolate the opportunity cost mechanism. First Palestinian exports do not include goods that would raise the gains from appropriation, such as oil or minerals. Second, the Palestinian Authority's (PA) limited ability to tax private earnings should minimize its possibility to use increased exports to curb violence against Israel, or

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[3] In fact Bazzi and Blattman (2014) argue that their results are more consistent with the idea that increased commodity revenues augment state capacity, rather than with the opportunity cost argument.

alternatively to use the funds to increase violence against Israel. Finally, while having some limited degree of autonomy, the PA does not represent a state, as it does not control its own borders, its air space, it does not have an army, nor does it have full control over its territory.[4] Because of that the Israeli-Palestinian conflict is akin to an internal insurgency by a group (the Palestinians) that contest the monopoly of force of the state (Israel) to achieve specific goals.

The advantage of this setting comes at a cost. Israel is not only Palestinian conflict party, it is also the main market for Palestinian exports. This presents two problems for our analysis. First changes in Palestinian exports and imports may be endogenous to the conflict. We tackle this issue by instrumenting export changes with factors plausibly exogenous to conflict, including the growth of Chinese sectoral exports to the world and the changes in Israeli applied trade tariffs to the rest of the world. Second, the fact that Israel is the main Palestinian export market adds a competing explanation to the opportunity cost one. For example the conflict inducing effect of a reduction in exports could be consistent with Palestinians resenting the loss of market in Israel rather than with the reduced opportunity cost of engaging in rebellion from lower exports. We show evidence which does not support the 'resentment' hypothesis. In particular the effects we find are not statistically different between Palestinian exports to Israel and Palestinian exports to the rest of the world. In addition we find no evidence of correlation between changes in Palestinian exports, and exports to Israel in particular, and changes in Palestinian attitudes towards Israel.

In fact the very measures of exposure to trade changes we construct – which are novel in the conflict literature - are more directly related to the opportunity cost mechanism than to the 'resentment' hypothesis. In order to capture the local-level impact of trade changes, for each Palestinian locality we weigh the pre-Intifada (1996-1999) changes in Palestinian sectoral exports (and imports) by the sector's share in the locality's private employment in 1997. To relieve the concern that the locality's employment structure may capture other factors related to the locality's propensity to participate into violence, the analysis controls for a large array of locality-wise geographic and socio-economic variables as well as for indicators of past violence.

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[4] This was even more the case during the period of analysis, which is precedent to Israel's unilateral withdrawal from Gaza.

Our results indicate that an increase in Palestinian exports during the late 1990s is negatively associated with the intensity of the subsequent conflict (the Second Intifada), as measured by the total number of Palestinian fatalities caused by Israel in each Palestinian locality. The results from our preferred specifications suggest that a $10 million reduction in Palestinian exports in a sector employing 10% of private employees in a locality increases the subsequent number of fatalities in that locality by between 11.5 and 13.8 percent. This result is robust to the inclusion of a wide range of local-level socio-demographic and economic characteristics as well as measures of past conflict and labor market conditions. It is also robust to the inclusion of changes in Israeli imports from the rest of the world (excluding from Palestine) as well as changes in Palestinian imports. And it holds also when considering only the immediate aftermath of the shock - the 2000-01 period – during which geographic labor reallocation should have been very limited. This finding appears to be particularly robust for the Palestinian exports to Israel while it is less robust for Palestinian exports to the rest of the world, although the effects of the two export variables are not statistically different. The greater significance of exports to Israel is probably related to the dominance of Israel as a destination market for Palestinian exports. This conflict reducing effect of export surges is particularly significant in localities with a large share of refugees and with a high unemployment rate.

These results support the opportunity cost hypothesis: increases in Palestinian exports reduce the intensity and even the probability of the subsequent conflict by increasing employment opportunities. On the other hand, our results also suggest that Palestinian imports (from anywhere) do not affect conflict intensity nor its probability.[5] This finding indicate that the eventual displacement effect of increased imports is not substantial and/or is compensated by the increased domestic demand which determined also the increase in imports. Similarly changes in Israeli imports from the rest of the world do not affect conflict intensity either once we control for the changes in Palestinian exports.

Aside from the literature on the impact of trade shocks on conflict the paper is also related to the literature on the role of economic factors on violence in the Israeli-Palestinian conflict. The results from previous studies are mixed. Berrebi (2007)

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[5] This result is robust also to excluding Palestinian imports from Israel (as much of Palestinian imports from the rest of the world is registered as Israeli imports).

shows that an individual with higher education and standard of living is more likely to become a suicide bomber, while Sayre (2009) and Saleh (2009) using district-level data find the opposite relationship. In a related study, Miaari et al. (2014) find that a large unemployment shock - i.e. Israel's abrupt imposition of severe restrictions on the employment of Palestinians within its borders at the outbreak of the second Intifada - increased violence in the West Bank.[6] The identification strategy hinges on the assumption that the large variation in the pre-Intifada employment rates in Israel across West Bank localities was unrelated to prior levels of involvement in the conflict. These results may provide some prima facie support for the opportunity cost mechanism for private employees. Our analysis complements this evidence by considering the impact of shifts in another important external flow on conflict. In addition we argue that our analysis is able to overcome two important issues which may affect the identification in Miaari et. al (2014). First it considers a more exogenous economic shock than restrictions on employment, which were imposed by Israel on the Palestinians precisely because of the conflict outbreak. Second, we go a long way towards isolating the opportunity cost hypothesis from the 'resentment' one, which can remains a plausible explanation for the results in Miaari et al. (2014).

From a methodological perspective, the paper is related to the strand of literature identifying the impact of trade shocks on welfare and labour outcomes at the sub-national level. A few studies have used the geographic location of regions within developing countries to study the impact of trade liberalization on local labour markets (e.g. Chiquiar, 2008 and Calì, 2014). In-line with our strategy, others have linked the employment composition of sub-national units to trade changes at the industry level. That is the case in Topalova (2010), who looks at the impact of trade liberalization on poverty across Indian districts. Autor et al. (2012) explore a similar shock to the one we consider here, i.e. the rising import competition from China on local US labour markets. To the best of our knowledge this is the first study that uses this type of approach to look at the relation between trade shocks and conflict.

The paper is organized as follows: the next section places the study in the context of the literature; section 3 describes the evolution of the Palestinian trade and employment patterns before the second Intifada; sections 4 and 5 detail the data and

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[6] The authors find that localities which were relatively more dependent on employment in Israel experienced relatively more fatalities after the restrictions were imposed.

the methodology; section 6 presents the results; and section 7 concludes.

2. Trade patterns prior to the second Intifada

Palestinian tradable production is heavily dependent on Israel, as almost 90% of Palestinian merchandise exports is destined for Israel.[7] Palestinian external trade is de facto regulated by Israel. Following the Oslo accords in 1993, the PT and Israel have become part of a de facto custom union with a common external tariff decided by Israel, which during the 1990s controlled all the borders of the custom union, with no tariffs or quotas imposed between Israel and the PT.[8] While the PT can de jure have its own trade policy, e.g. it can sign trade agreements with third parties, de facto this is not the case. Any imports bounded to the PT have to enter the union via an international border controlled by Israel, which automatically charges the Israeli import tariff for goods from the specific country of origin.

Israeli control of the international borders implies that Palestinian exporters and importers have an incentive to use Israeli intermediaries to clear imports and exports. Israeli intermediaries reduce the cost and time of trading relative to those faced by Palestinian traders. According to a report by the World Bank (2010), Palestinian imports and exports are subject to twice the costs of Israeli imports and exports using the same port facilities in Israel. Importing procedures take on average as much as four times longer for Palestinians than for Israelis (40 days vs. 10 days). The incentive for Palestinians to use Israeli traders is reflected in the data. The Bank of Israel (2010) estimated that 58% of the Palestinian imports from Israel in 2008 were through trading companies (most of which was re-export).

The custom union generated preferential access of Palestinian and Israeli goods in the respective markets. As Israel controls the international borders, de facto it establishes unilaterally the trading rules of the union. The opening up of the Israeli import regime in the 1990s eroded the preferential access of Palestinian goods in their dominant export market and imports from the rest of the world have progressively replaced those from the PT, especially in the main labor-intensive sectors.

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[7] Part of this export in the 1990s was due to Israeli firms using Palestinian firms as subcontractors in a number of sectors, such as textile, garments and furniture.

[8] Since the withdrawal of Israel from Gaza in 2005, the border between Gaza and Egypt is no more controlled by Israel although the blockade of Gaza effectively implies no formal trade between Gaza and Egypt.

Partly as a consequence of this shift, manufacturing production in the PT declined in real terms by almost 20% between 1994 and 2009.[9] Palestinian merchandise exports slowed in nominal terms prior to the second Intifada (figure 1). These exports follow closely exports to Israel, which account for more than 90% of total Palestinian exports, confirming the key importance of the Israeli market for Palestinian tradable production. This dominance is partly due to the fact that much of the Palestinian exports to the world transit through Israel, as mentioned above.

Figure1: Palestinian Export to the World and Palestinian Export to Israel, 1996-2000

Source: Authors' elaboration on data from the Palestinian Central Bureau of Statistics

The small increase in nominal exports translated into a decline in exports as a share of GDP from over 10% in 1996 to less than 9% in 1999.[10] Palestinian exports also declined slightly in constant prices during the same period. To put these changes in perspective, figure A1 in the Appendix compares the distribution of percentage changes in Palestinian exports with those in Israeli imports (from the rest of the world) over the same period. This comparison confirms that Palestinian exports generally performed worse than Israeli imports.

These changes in Palestinian trade mask a large variation across sectors. Figure 2 shows the distribution of changes in Palestinian exports across SITC 5-digit

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[9] Authors' calculations based on PCBS' National Accounts.
[10] Authors' calculations based on PCBS' trade data and National Accounts.

sectors.[11] While the shape of the distribution suggests more sectors with negative than positive changes, the variation is large. This is confirmed by looking at the six best and worst performing export sectors during the period (Figure 3). The former include, among others, cucumber and marble and alabaster, exports of which increased by more than $6 million each. At the same time, the building stone sector exhibited a drop of $8 million. These patterns should translate into employment effects at the local level, depending on where these goods are produced and their degree of labor intensity. In the empirical section, we propose measures to capture the impact of this large variation in performance across sectors on the intensity and incidence of the second Intifada at the local level.

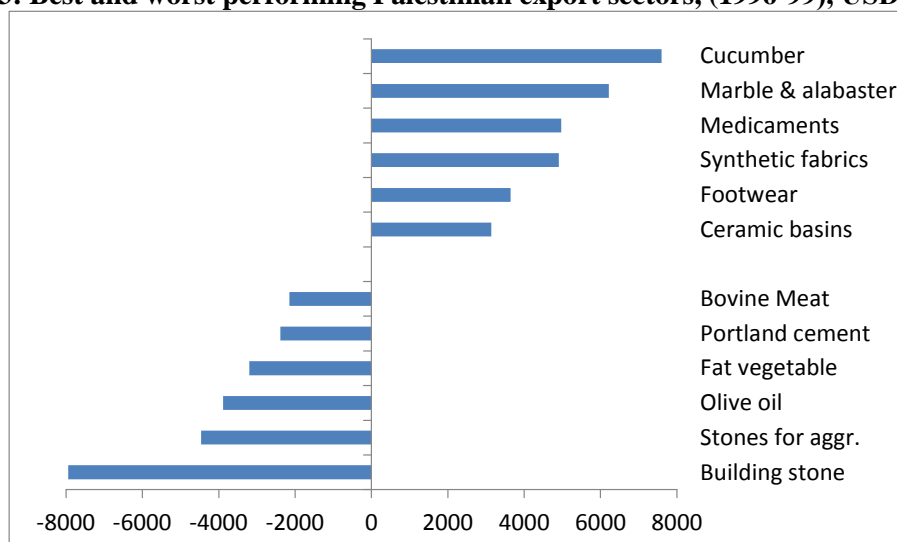**Figure 2: Distribution of changes in Palestinian exports (1996-99), USD '000**
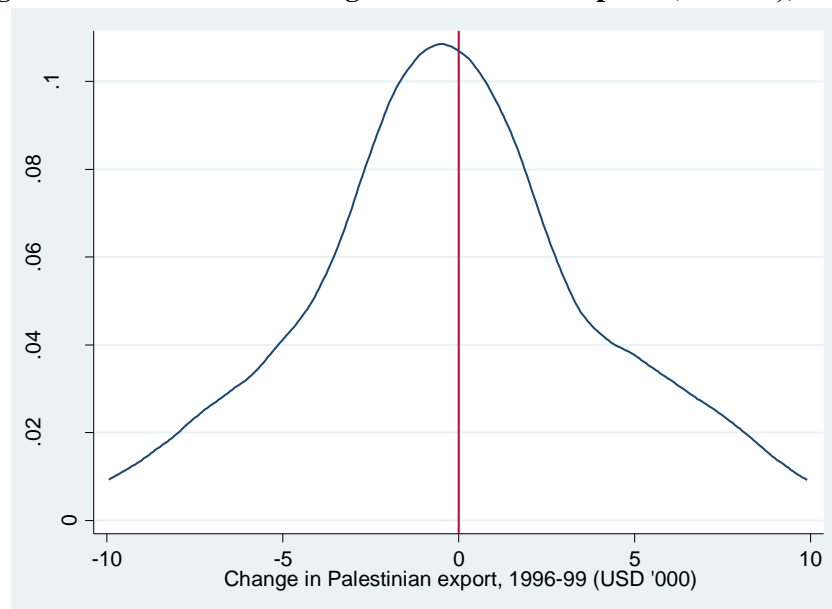
Note: Sectors are recorded at the 5-digit SITC level; Source: PCBS.

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[11] The distribution is obtained through a kernel density function (with 1.5 bandwidth).

Figure 3: Best and worst performing Palestinian export sectors, (1996-99), USD '000

Note: Sectors are recorded at the 5-digit SITC level; Source: PCBS

3. Data

The data in this study are taken from various Palestinian and Israeli sources that include information on the Palestinian labour market, on economic and socio-demographic characteristics of Palestinian localities, on Palestinians fatalities from the conflict, and on Palestinian and Israeli trade. These data were aggregated to the level of the locality, which serves as the unit of analysis and represents the smallest spatial unit for which economic data is available in the West Bank and Gaza. Our sample consists of 532 localities in the West Bank, and 37 localities in the Gaza Strip (see Table 1).

Data on the number of Palestinians fatalities from politically-motivated violence (Palestinians killed by Israelis) during the Second Intifada (September 2000-December 2004) in each locality are taken from B'Tselem - the Israeli Information Center for Human Rights in the Occupied Territories.[12] B'Tselem publishes detailed data records which include every Israeli and Palestinian fatality during the Second Intifada. As in previous studies (Miaari et al., 2014; Cali and Miaari, 2013), the number of Palestinian fatalities killed by Israeli forces is the main measure of conflict intensity across the Occupied Palestinian Territories. This is a suitable measure as most of these fatalities were the result of political demonstrations suppressed by the Israeli army or direct confrontation between the Israeli army and Palestinian armed

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[12] Available at: http://www.btselem.org.

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factions. The evolution of Palestinian fatalities, depicted in figure 4, shows that violence in the West Bank peaked in 2002 and declined through 2003 and 2004, when the second Intifada finally drew to a close. This period was followed by periods of relatively low intensity conflict. In Gaza, after the drop in 2003, violence picked up again in 2004 and lasted until the first half of 2005. During the respective sample periods, 1,278 Palestinian fatalities were recorded in the West Bank. In Gaza, 1,702 Palestinian fatalities were recorded (see Figure 4).

Table 1: Summary Statistics for key variables

		Obs.	Mean	SD	Min	Max
Palestinian fatalities		569	5.04	28.39	0	438.00
Palestinian localities with at least one fatality		569	0.35	0.48	0	1.00
Δ Palestinian exports$_{96-99}$		569	3.53	4.36	-6.21	13.48
Δ Palestinian exports to Israel$_{96-99}$		569	4.53	5.48	-5.20	17.16
Δ Palestinian imports$_{96-99}$		569	25.33	17.61	-4.87	95.18
Δ Palestinian exports to RoW$_{96-99}$		569	-1.00	1.31	-5.29	2.42
	Total Population	569	4,542	18,499	4	353,113
	Share of males in the population	569	0.51	0.03	0.38	1.00
	Share of population between the ages 15-40	569	0.39	0.04	0.27	0.73
Socioeconomic Characteristics in 1997 in locality	Share of population with up to elementary education	569	0.61	0.12	0.25	0.97
	Share of refugees in the population	569	0.28	0.32	0	1.00
	Share of households with more than 8 persons	569	0.34	0.11	0	1.00
	Share of married in the population	569	0.33	0.03	0.17	0.44
Localities in Gaza Strip		569	0.07	0.25	0	1.00
Pre-Intifada Fatalities		569	0.29	1.71	0	22.00
Localities in Jerusalem		569	0.05	0.22	0	1.00
Availability of public utilities in 1997 in locality	Water	569	0.69	0.46	0	1.00
	Electricity	569	0.84	0.37	0	1.00
	Sewage	569	0.11	0.31	0	1.00
	Telephone (landline)	569	0.63	0.48	0	1.00
Locality type	Urban	222	0.23	0.42	0	1.00
	Refugee Camp	222	0.09	0.29	0	1.00
Share of employment in Israel in 1999		222	10.63	6.91	0	36.19
Average wage of employees in Israel in 1999		212	100.97	16.08	52.03	150.16
Share of public sector employment in 1999		222	5.64	3.86	0.00	18.95
Average wage of public sector employees in 1999		209	59.60	35.03	30.66	538.28
Share of private sector employment in 1999		222	9.76	6.81	0.53	41.52
Average wage of private sector employees in 1999		221	61.91	17.36	16.62	150.14

Notes: See Table 1A for variables' description; source: Authors' elaboration using different data set; see text for details.

Figure 4: Palestinians killed by Israeli forces in the West Bank and Gaza, 2000-2004
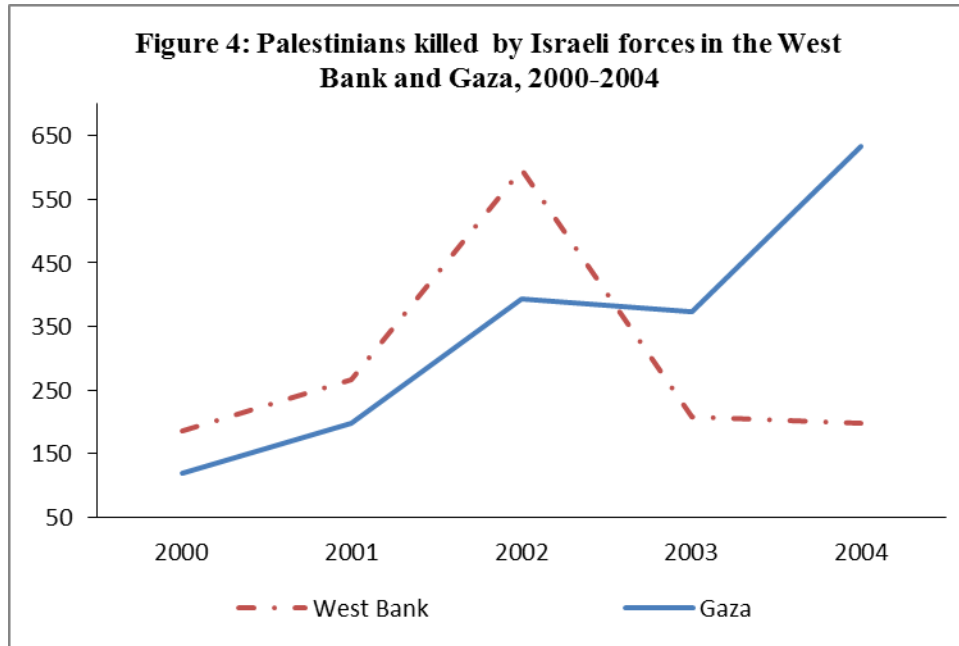
Source: B'tselem

We are also able to identify those Palestinian fatalities which occurred as a result of political demonstrations or confrontation with the Israeli army by examining the description of each fatality provided by B'tselem. As this description is not available for all fatalities, this sub-set of fatalities is incomplete so in the subsequent analysis we use it only for robustness purposes.

Locality-level data on Palestinian sectoral employment as well as on socio-demographic characteristics come from the 1997 Palestinian population census carried out by the Palestinian Central Bureau of Statistics (PCBS). The Palestinian census data includes information about various localities' characteristics, such as total population, share of males in the population, share of population between the ages 15-40, share of population with up to elementary education, share of refugees in the population, share of households with more than 8 persons, share of people married in the population, as well as availability of public utilities. Importantly for our purposes the Census also records data on the employment of the population for all private establishments in the PT at the 2-digit ISIC level.

As explained below, we match this distribution of employment at the locality level with Palestinian and Israeli trade data at the 5-digit SITC level (revision 3) in order to compute the measure of exposure to the trade shocks. Palestinian annual import and export data are taken from the Palestinian Central Bureau of Statistics.

Israeli import and export data (at the 5-digit SITC level) come from the COMTRADE dataset in WITS.[13] We also use world and Chinese exports data from the same source.

Other labor market variables were constructed from two sources. Administrative data on all Palestinians employed in Israel with a permit in 1999 come from the Israeli Ministry of Industry Trade and Labor, which is in charge of issuing the permits. In addition we gathered further labor data, including information on Palestinian private, public and employment in Israel from the Palestinian Labor Force Survey (PLFS). This survey has been administered every quarter since 1995 to a nationally representative sample of households. We restrict the sample from the PLFS to individuals in the labor force between the ages of 15 and above and surveyed during at least one of the four quarters in 1999. As the survey is not stratified at the locality level, we exclude localities in which less than 30 individuals were interviewed in each round in 1999.[14]

Summary statistics for the key variables at the district level are provided in Table 1.

4. Empirical strategy

The identification strategy relies on the variation in the economic conditions of Palestinian localities associated with changes in trading patterns of the PT in the second half of the 1990s. There are three elements in the empirical analysis which ensure a clean identification of the trade shocks on conflict. First, there is a substantial variation across Palestinian localities in the pre-Intifada employment's dependence on tradable sectors. Second, this variation is arguably exogenous to the propensity of the locality's residents to be involved in the conflict with Israel. The inclusion of a wide array of controls potentially driving both the employment structure and the propensity to engaging into conflict reinforces this case for exogeneity. Third, we argue that the factors responsible for the changes in Palestinian trade in the pre-Intifada period, including the competition from emerging suppliers and changes in Israeli trade policy, were largely exogenous to the locality-level conflict. Indeed we show that instrumenting Palestinian exports and imports by changes in Chinese exports to the

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[13] This is available at http://wits.worldbank.org/wits/
[14] Given this narrow geographical definition, many localities do not meet this criterion, leaving us with 241 localities. We drop 42 additional localities for which key variables in the analysis are missing.

world (but Israel) does not change the estimated effects of exports on conflict in any meaningful way.

Specifically, we estimate the following equation using a Negative Binomial regression (with robust standard errors), which is an appropriate method for analyzing count data characterized by many zeros and by over-dispersion, as in the case of our dependent variable (Long and Frees, 2006):

$$(1) \qquad F_{lr} = \gamma_r + \beta_1 \Delta EXP_l + \mathrm{B} X_l + \varepsilon_l,$$

where F is the number of fatalities in each locality l in region r during the period of September 2000 and December 2004.[15] The change in Palestinian exports in each locality, ΔEXP is calculated as the sum of the change in exports in each sector s during the 1996-1999 period weighted by the share of employment in that sector in the locality's total private employment in 1997:[16]

$$(2) \qquad \Delta EXP_l = \sum_{s=1}^{N} \left(\Delta exp_s \times \frac{emp_{ls}^{1997}}{emp_l^{1997}} \right)$$

This measure of exposure to the export changes is close in spirit to Topalova (2010) and should capture the effect of exports on conflict via employment. Thus it should provide for a direct test of the opportunity cost hypothesis.

The key assumption for the validity of the estimation is that $E[\Delta EXP_l \varepsilon_l] = 0$ or more precisely $E[\Delta exp_s \varepsilon_l] = 0$ and $E\left[\frac{emp_{ls}^{1997}}{emp_l^{1997}} \varepsilon_l\right] = 0$. There are three potential sources of endogeneity that could invalidate these conditions and that would need to be accounted for. The first concerns the relationship between the locality-specific employment distribution (the $\frac{emp_{ls}^{1997}}{emp_l^{1997}}$ term in (2)) and the dependent variable in (1). Indeed certain location and characteristics of localities may matter both for the composition of employment and the likelihood (and intensity) of conflict. For example localities close to Israeli settlements may have a relatively high share of employment in settlements (and thus a low share in Palestinian sectors). At the same

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[15] As a robustness the analysis below also test for the effects of export changes on fatalities in the immediate aftermath of the shock.

[16] Note that all the results are robust to computing the changes over the 1997-1999 period or the 1996-2000 period (results available upon request).

time they may experience more or less violence as the settlements are also associated with increased presence of the Israeli army. In order to tackle this issue, aside from region effects (where the regions are Gaza Strip, Jerusalem and the West Bank), the vector X in specification (1) includes a wide range of localities' characteristics that might affect the distribution of employment across sectors and the level of conflict. In particular, it includes an index of locality's proximity to the Israeli settlements in 1996 as computed from Calì and Miaari (2015) as well as the locality's distance to the 1949 armistice line (so-called 'Green Line'), which identifies the internationally recognized borders between Israel and the Palestinian territories.[17] The latter variable may affect both the locality's employment structure (e.g. localities closer to Israel are more likely to have people employed in Israeli industries) and the subsequent violence (e.g. localities closer to the Green Line may be more easily reachable by the Israeli army).

We also include a wide array of socio-demographic variables - taken from the 1997 population Census - that can affect both the employment distribution and the probability of engaging into political violence. They include the total population, share of males in the population, share of the population aged 15-40, share of population with elementary education or below, share of households with more than 8 members, and the share of married individuals.

Availability of infrastructure can also shape both the localities' grievances and their employment distribution, so we include controls for the availability of water, electricity, sewage and landline telephone infrastructure. We also control for the unemployment rate in 1997 (computed from the Census) and for the number of permits to work in Israel in 1999, which Miaari et al. (2014) show to be associated with the subsequent violence. Finally in order to control for the cyclicality of the conflict, the vector *X* includes also the number of Palestinian fatalities in each locality between January 1995 and August 2000 (just before the outbreak of the second Intifada). All of these controls should relieve the potential concern that the locality's employment structure may capture other factors that are also related to the locality's propensity to participate into violence.

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[17] The settlement index is constructed as the sum of the settlements' population (in 1996) within 20Km from the locality's centroid, weighted by the inverse of the distance from the centroid. Settlements' population and location data are taken from ARIJ. Using other distance thresholds (i.e. 10Km or 30Km) or not weighting the index by the distance does not affect significantly the results below (results available upon request).

In some specifications, we also account for other local labor market characteristics that might be correlated with changes in exports as well as violence. These controls include the locality-wise distribution of Palestinian workers across the main types of employment (i.e. private and public sector and Israel), their relative wages in 1999 (i.e. the first year these data are available from the PLFS) and the distribution across location types, i.e. urban, rural or refugee camp.

The other two potential sources of endogeneity of ΔEXP concern the relation between Δexp_s and F_l, which may make $E\left[\Delta \exp_s \varepsilon_l\right] \neq 0$. One issue is that to the extent that national exports in one sector may be affected by a locality's conditions, this could lead to reverse causality. However, given the large number of localities, each of them should not exert an important influence over Δexp_s, which is the aggregation over all Palestinian localities. In addition most Palestinian exports are routed to (or through) Israel and there may be a concern that Israel may use its policies to influence these exports also on the basis of the expected conflict intensity. We address these other sources of endogeneity by instrumenting ΔEXP through measures which use plausibly exogenous sources of export changes as explained below.

We also test for the effects of changes in Palestinian imports between 1996 and 1999, ΔIMP, weighted by the employment shares as described in equation (2):

$$(3) \quad F_{lr} = \gamma_r + \beta_1 \Delta EXP_l + \beta_2 \Delta IMP_l + \mathrm{B} X_l + \varepsilon_l$$

Finally we estimate an alternative model to investigate whether changes in Palestinian exports affected the probability of violence in different localities. In order to do this, instead of using the number of fatalities in each locality we construct an indicator variable that equals 1 if the locality experienced a positive number of fatalities during the Second Intifada and zero otherwise.[18] We estimate this specification using a probit model.

5. Results

Table 2 presents the results of the impact of changes in Palestinian exports on

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[18] This variable is also identical to an indicator variable that equals 1 if the number of fatalities in the locality is above or equal to the median number of fatalities across localities and zero otherwise.

conflict intensity. In column 1 we control for socio-demographic factors, infrastructure endowments, distance to the Green Line and to the settlements along with region effects. The results indicate a sizable and negative effect of exports on conflict intensity. A pre-Intifada increase of USD 10 million in Palestinian exports of a sector employing 10% of the locality's private employment reduces subsequent conflict-related fatalities in that locality by 11.5 percent, significant at the 1 percent level.[19] Adding economic controls, including work permits to Israel and the unemployment rate, as well as the Palestinian fatalities prior to the second Intifada (1995-2000), does not affect the export coefficient, which remains significant at the 1 percent level (column 2).

These results support the opportunity cost hypothesis: better economic conditions should raise the opportunity cost of involvement in the conflict thus lowering its intensity. This result is also in line with experts' opinion on the determinants of violence in the West Bank in the current phase (Xinhua, 2014).[20]

In column 3 we add other labor market indicators from the PFLS, including the locality-wise share of private and public employment, the share of employment in Israel as well as the average wages in 1999 (column 3). These are potentially important controls, as they capture the pre-Intifada reliance of the localities on the different types of employers. This addition, however, does not change the main result. In fact the coefficient becomes even more negative and its size (-0.149) implies that an increase of USD 10 million in Palestinian exports of a sector covering 10% of the locality's private employment reduces conflict-related fatalities in that locality by 13.8 percent. The result is again significant at the 1 percent level. This larger absolute value of the coefficient is entirely due to the reduction in sample size (to 199 localities) caused by the inclusion of the additional labor market controls.[21] This smaller sample size provides a robustness check in its own right as it restricts the analysis to comparatively larger localities.

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[19] The incidence rate rations are equal to e^β -1.

[20] The agency reports that the chief of the Israel's Shin Bet security agency Yoram Cohen in a meeting of the Knesset Foreign and Security Affairs committee in February 2014 argued that "the uptick in Palestinian militant attacks against Israelis in the past year can be traced back to the economic grievances Palestinians are suffering from in the West Bank." (Xinhua, 2014).

[21] We check that this is the case by running the same specification as in column 2 but over the restricted sample of 199 localities as in column 3. Comparing the two specifications reveals that the inclusion of the set of extra labor market controls slightly reduces the absolute size of the export coefficient from -0.159 to -0.137 (results available from the authors upon request).

Table 2: The impact of Palestinian exports on conflict intensity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)
Region	All	All	All	WB	Gaza	All	All
Period	2000-04	2000-04	2000-04	2000-04	2000-04	2000-01	2000-01
Sample	All	All	LFS	All	All	All	LFS
Δ Palestinian exports96-99	-0.123***	-0.122***	-0.149***	-0.079***	-1.085***	-0.099***	-0.192***
	(0.028)	(0.029)	(0.055)	(0.028)	(0.310)	(0.036)	(0.074)
Population	0.000*	0.000*	0.000**	0.000*	0.000**	0.000**	0.000***
Male share	-4.597	-4.534	-12.867	-4.084	-51.007	-5.389	-13.785
Age 15-40	-1.217	-1.452	7.207	-0.426	-197.513***	-1.762	-2.412
Education	-2.313**	-2.346**	-1.236	-2.501**	-25.728*	-4.613***	-4.414**
Share refugees	0.132	0.109	-0.175	0.178	1.982	0.024	0.019
Large households (%)	-3.469***	-3.460***	-3.359*	-3.063***	32.790*	0.217	-1.498
Married (%)	-9.751**	-9.666**	-23.390***	-10.296**	129.488*	-4.942	-20.098**
Gaza	0.325	0.340	0.058			-0.707	-0.370
Jerusalem	1.037	1.027	-0.331	0.707		-0.058	-0.783
Public water	0.285	0.285	-0.288	0.050	-2.928**	0.133	-0.435
Public electricity	0.100	0.094	-0.339	0.381	-8.516***	0.717	0.103
Public sewage	1.505***	1.535***	0.527	1.231***	2.026*	1.538***	0.617*
Telephone lines	1.260***	1.253***	1.381***	1.046***	6.619***	1.758***	2.109**
Settlements index	-27.597*	-26.643*	-9.093	-7.967	2,408***	-2.747	21.400
Dist. to Green Line	0.012	0.012	-0.006	0.020**		0.012	-0.010
Work permits to Israel		-0.000	0.000	0.003	-0.003	-0.000	-0.001
Past Pal. Fatalities		-0.021	0.022	-0.182**	0.088	0.025	0.040
Unemployment		0.143	-1.883	0.840	1.220	1.223	-1.940
Empl. Israel (%)			0.003				0.046
Avg. wage emp. Israel			0.018***				0.012
Empl. Public (%)			0.078*				0.104**
Avg. wage emp. pub.			-0.008				-0.027**
Private empl. (%)			0.051**				0.069**
Avg. wage emp. priv.			-0.014**				-0.017**
Urban (%)			1.256***				1.117***
Refugee camp (%)			1.175**				0.601
Observations	569	569	199	532	37	569	199

*Notes: The dependent variable is the number of fatalities from politically motivated violence (Palestinians killed by Israelis) from the outbreak of the Second Intifada (28.9.2000) until Dec 2004 in locality. See Table A1 for the definitions of the independent variables. The regressions are estimated using a Negative Binomial model. Robust standard errors are reported in parentheses. The symbols *, **, *** represent statistical significance at the 10, 5, and 1 percent levels.*

Thus far, we have constrained the effect of exports to be similar across localities in the West Bank and localities in the Gaza Strip. In columns 5-6 we explore different specifications using only localities in the West Bank and in Gaza respectively. The results for Gaza should be interpreted with caution since they rely on a population of only 37 localities so the specification has limited degrees of freedom. These specifications include the same controls that we use in our preferred

specification in column 2. The results confirm the previous findings that an increase in Palestinian exports is negatively associated with the number of fatalities during the Second Intifada. The coefficient for Gaza is considerably larger than that for the West Bank but so is its standard error probably due to the small sample size.[22]

A further concern is that the second Intifada (2000-04) is a relatively long time period during which labor may have moved in response to the shocks, thus potentially undermining the identification strategy. As a robustness check in columns 6-7 we test for the impact of ΔEXP over the immediate aftermath of the shock, i.e. September 2000 to December 2001. The ΔEXP coefficient remains negative and highly significant, and it is not significantly different to the coefficient estimated over the 2000-04 period (cf. columns 6 vs. column 2 and column 7 vs. column 3). This confirms an earlier finding that the geographic mobility of labor is low in the Palestinian territory (Calì and Miaari, 2013).

5.1. Do exports lead to higher employment?

Our analysis tests for a reduced form relation between exports and violence via employment. One potential issue is whether our export variable does indeed affect employment. In order to check the validity of this assumption we test if ΔEXP is correlated with changes in employment at the locality level. As the Palestinian census was carried out in 1997 and 2007, we compute the ΔEXP variable for the period 1997 and 2007 and run the following regression:

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[22] It is worth discussing briefly the rest of the coefficients in Table 2. More populated localities have a higher number of fatalities, although this association is not robust across specifications. A higher level of education is associated with lower conflict intensity, and so are higher shares of large households and of married individuals. Interestingly the availability of a public sewage system and of landline telephone lines are both associated with higher conflict intensity. However the former seems to be explained by the positive correlations between public sewage systems and urban areas and between urban areas and conflict intensity (column 3). The positive coefficient of telephone lines instead may proxy for other omitted variables, such as the connection to the ruling Fatah party. That may be positively related both to conflict intensity and to the availability of telephone lines. The presence of settlements is associated on average with lower violence intensity, although the result is not robust across specifications (and it is the opposite in Gaza). On the other hand localities closer to the Green Line appear to suffer from less violence, perhaps as Israel is able to exert a tighter control there, but the result is only significant for the West Bank. More permits to work in Israel in 1999 (and higher wages to Palestinian employees in Israel) are associated with a higher number of fatalities during the second Intifada probably due to the employment restrictions imposed by Israel at the outset of the Intifada (Miaari et al., 2014). In contrast, higher private sector wages are associated with lower conflict intensity, again supporting the opportunity cost mechanism. Interestingly, in the West Bank Palestinian fatalities prior to the Intifada are negatively associated with conflict intensity in the second Intifada, although the result is not robust for the whole PT and is reversed for the more restricted sample (column 3).

$$(4) \quad \Delta emp_l^{97-07} = \gamma_r + \alpha_1 \Delta EXP_l^{97-07} + B\Delta X_l^{97-07} + \delta f_l^{97-07} + \varepsilon_l$$

where $\Delta EXP_l^{97-07} = \sum_{s=1}^{N} \left(\Delta exp_s^{97-07} \times \dfrac{emp_{ls}^{1997}}{emp_l^{1997}} \right)$ and where X is a vector of locality-level changes (between 1997 and 2007) in all the regressors we used in the main regressions, and f_l^{97-07} is the cumulative number of Palestinian fatalities in locality l between 1997 and 2007. Ideally we would want to compute only changes in private tradable employment as that is the type of employment directly affected by changes in exports. However we can only measure changes in overall employment between 1997 and 2007 due to the restrictions on the availability of the census data for 2007. This necessarily underestimates the effect of exports on employment.[23] This limitation notwithstanding, the results of the estimation (4) confirm the highly significant positive relation between ΔEXP and changes in employment (Table 3). An increase of Palestinian exports by USD 10 million in sector s is associated in a locality employing 10% of its labor force in s with an increase in overall employment by 0.5%. The results hold for the West Bank as well (column 2). In the case of Gaza the size of the coefficient is larger but that is estimated with less precision, again probably due to the much smaller sample size (column 3).

Table 3: The relation between Palestinian exports and employment

	(2)	(5)	(6)
	All	West Bank	Gaza
	Δ emp$_{97\text{-}07}$	Δ emp$_{97\text{-}07}$	Δ emp$_{97\text{-}07}$
Δ Palestinian exports$_{97\text{-}07}$	0.005***	0.005***	0.017
	(0.002)	(0.002)	(0.009)
Other controls	YES	YES	YES
Observations	466	442	24
R-squared	0.076	0.051	0.894

*Notes: The dependent variable is the changes in employment rate between 1997 and 2007 in locality. Other controls include all of the variables (measured in change between 1997 and 2007) included in Table 2 column 2 (except unemployment). The regressions are estimated using a OLS model. Robust standard errors are reported in parentheses. The symbols *, **, *** represent statistical significance at the 10, 5, and 1 percent levels.*

5.2. Additional trade variables

In Table 4, we explore if other trade changes hitting the Palestinian economy

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[23] We cannot use the LFS to compute changes in employment as LFS data is only available since 1999.

matter in determining the subsequent conflict intensity. The first such change is the change in import ΔIMP defined in the same way as ΔEXP (i.e. weighted according to equation (2)). Interestingly, the coefficient on changes in imports is small, negative, and highly insignificant (column 1). This suggests that the eventual displacement effect of increased imports on domestic producers is not substantial and/or is compensated by the increased domestic demand which determined also the increase in imports in the first place. This addition does not affect the coefficient on change in Palestinian exports, which remains significant and of similar magnitude to that in Table 2, column 2.

Table 4: The impact of Palestinian trade on conflict intensity

	(1)	(2)	(3)	(4)
Sample	All	All	All	LFS
Δ Palestinian exports$_{96-99}$	-0.116***	-0.121***	-0.116***	-0.150***
	(0.029)	(0.029)	(0.028)	(0.052)
Δ Palestinian imports$_{96-99}$	-0.005		-0.004	-0.016
	(0.005)		(0.008)	(0.011)
Δ Israeli imports from RoW$_{96-99}$		0.002	0.001	-0.007
		(0.003)	(0.004)	(0.004)
Settlements index	-27.039*	-26.736*	-27.008*	-23.451
	(14.421)	(14.521)	(14.433)	(15.868)
Dist. to Green Line	0.011	0.011	0.011	0.002
	(0.010)	(0.010)	(0.010)	(0.012)
Other controls	YES	YES	YES	YES
Observations	569	569	569	199

Notes: The dependent variable is the number of fatalities from politically motivated violence (Palestinians killed by Israelis) from the outbreak of the Second Intifada (28.9.2000) until Dec 2004 in locality. See Table A1 for the definitions of the independent variables. Other controls include all the controls in Table 2, column 2. The regressions are estimated using a Negative Binomial model. Robust standard errors are reported in parentheses. The symbols *, **, *** represent statistical significance at the 10, 5, and 1 percent levels.

If Israel had changed its trade policies in response to the forthcoming second Intifada, that could bias our estimate of the effects of Palestinian exports on conflict. In order to control for this possibility, we construct a locality-wise measure of changes in Israeli imports from the rest of the world between 1996 and 1999, $\Delta IsrImp,$ again weighted by the employment shares as described in equation (2).[24] The coefficient on changes in Israeli imports from the rest of the world is small, positive

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[24] We subtract Palestinian imports from Israel from the Israeli imports from the rest of the world as a large part of Palestinian imports are processed through Israeli firms and are recorded as part of Israel's total imports. The result is also robust to including Palestinian imports from Israel (results available from the authors upon request).

and again not significant (column 2). Once again the export coefficient is unaffected by this inclusion. This result is consistent with the fact that Israel may not have used its trade policy in connection to expected surge in violence during the 1990s. It also suggests that once we control for changes in Palestinian exports any residual effect of Israeli imports on Palestinian employment is marginal.

When we include both import variables in the same specification, they continue to be not significant while the export coefficient is again unaffected (column 3). And that is also the case when we run the specification over the smaller LFS sample of larger localities (column 4).

5.3. Alternative explanation

As Israel is the main destination for Palestinian exports, an alternative explanation for the relationship between changes in exports and violence may be the resentment of Palestinians towards Israel for the loss of exports in the Israeli market. We check for the plausibility of this explanation in two ways. First we examine to what extent Palestinian exports to the main market Israel are the main channel through which changes in trade affect violence. In order to do so in Table 5 we split the export variable into changes in exports to Israel and changes in exports to the rest of the world (always weighted by the employment shares). If resentment towards Israel due to the loss of market rather than the opportunity cost hypothesis was the main reason for the increased violence we would expect exports to Israel to have a much larger effect than exports to the rest of the world (RoW). Te results indicate that both variables are negative but the latter is just above the 10% significance threshold, while exports to Israel is significant at the 1% level (column 1). However the size of the RoW coefficient is not statistically different to that of Israel, suggesting that the two have a similar impact on violence. The higher significance of the Israeli coefficient is likely due to the fact that Israel accounted for over 90% of Palestinian exports in the 1990s. The results are similar when adding the import variables as well (column 2).

Table 5: The impact of Palestinian exports on conflict intensity by destination

	(1)	(2)
Sample	All	All
Δ Palestinian exports to Israel$_{96\text{-}99}$	-0.131*** (0.038)	-0.119*** (0.040)
Δ Palestinian exports to RoW$_{96\text{-}99}$	-0.173 (0.152)	-0.129 (0.165)
Δ Palestinian imports$_{96\text{-}99}$		-0.004 (0.008)
Δ Israeli imports from RoW$_{96\text{-}99}$		0.001 (0.005)
Settlements index	-26.373* (14.415) 0.012	-26.938* (14.396) 0.011
Dist. to Green Line	(0.010) -0.131***	(0.010) -0.119***
Other controls	YES	YES
Observations	569	569

Notes: The dependent variable is the number of fatalities from politically motivated violence (Palestinians killed by Israelis) from the outbreak of the Second Intifada (28.9.2000) until Dec 2004 in locality. See Table A1 for the definitions of the independent variables. Other controls include all the controls in Table 2, column 2. The regressions are estimated using a Negative Binomial model. Robust standard errors are reported in parentheses. The symbols *, **, *** represent statistical significance at the 10, 5, and 1 percent levels.

Second, we test to what extent the change in exports have affected the Palestinian attitudes towards Israel. To do that we use data on opinions elicited through repeated surveys administered by the Palestinian Center for Policy and Survey Research (PSR). Every poll has almost 1,200 observations, with approximately 65% of them from the West Bank and Jerusalem and the rest from the Gaza Strip. We focus in particular on the responses to two questions: whether the individual "support or oppose armed attacks against Israeli targets" and whether he/she "supports peace negotiations with Israel". We compute the shares of respondent who answered positively to each of the question at the district level, as that is the smallest geographic unit of analysis allowed by the stratification of the sample. We then regress the change in this share over the period 1996-99 on the $\Delta EXP_{96\text{-}99}$ as well as region dummies and the total number of Palestinians killed by Israeli forces during the period. The results, presented in Table 6, show no significant correlation between the changes in attitudes towards Israel and the changes in exports, whether over the 1996-99 or the 1996-2000 period. And the lack of correlation holds also when considering changes in exports to Israel and the rest of the world separately (columns 4-8). If anything a mild positive correlation emerges between changes in exports to Israel and changes in support for attacks against Israeli targets, although it

does not hold when considering the 1996-2000 period.

Table 6: The relation between Palestinian exports and Palestinian attitudes towards Israel

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
	Δ support peace negotiations		Δ support attack vs. Israelis		Δ support peace negotiations		Δ support attack vs. Israelis	
Δ Palestinian exports$_{96-99}$	0.016 (0.052)		0.107 (0.067)					
Δ Palestinian exports$_{96-00}$		0.003 (0.020)		0.030 (0.023)				
Δ Palestinian exports to Israel$_{96-99}$					0.040 (0.051)		0.134* (0.070)	
Δ Palestinian exports to RoW$_{96-99}$					0.176 (0.127)		0.281 (0.251)	
Δ Palestinian exports to Israel$_{96-00}$						0.009 (0.116)		0.058 (0.141)
Δ Palestinian exports to RoW$_{96-00}$						-0.007 (0.194)		-0.019 (0.218)
Observations	15	15	15	15	15	15	15	15
R-squared	0.285	0.280	0.454	0.399	0.357	0.281	0.501	0.403

Notes: The dependent variable is the changes in the share of interviewed that answer yes to the relevant question in the district. Other controls include regional dummies and the number of Palestinians killed by Israelis in the 1996-99 period (or 1996-2000 according to the specification). The regressions are estimated using a OLS model. Robust standard errors are reported in parentheses. The symbols *, **, *** represent statistical significance at the 10, 5, and 1 percent levels.

While not necessarily conclusive, these results are not consistent with the hypothesis that it was the resentment towards Israel for the loss of export markets that drives the violence inducing effect of Palestinian exports reduction.

5.4. Alternative conflict measures

So far we have used the total number of Palestinians killed by Israeli forces as the main measure of conflict intensity. However not all fatalities occurred necessarily as a result of Palestinians participating into the political violence. In fact B'tselem identifies various instances of Palestinians killed while not taking part into the hostilities. Those fatalities should not be considered when testing for the opportunity cost motive to engage in violence. To address this issue we use as dependent variable only the number of Palestinian fatalities as a result of participation into the hostilities or political demonstrations. As the data do not allow the classification of every recorded fatality, we use this variable only as a robustness check for our results. This check in Table 7 suggests that the export coefficient is highly robust to the use of this

alternative measure of conflict intensity. In fact its absolute magnitude is larger for the overall exports as well as for the exports to Israel and to the rest of the world. And the coefficient of the latter becomes significant at the 10 percent level (column 3), confirming the importance of all changes in exports in affecting the opportunity cost of engaging into violence. Conversely, the import variables continue to be irrelevant in explaining conflict intensity in this case as well.

Table 7: The impact of Palestinian trade on a different measure of conflict intensity

Dep. variable	(1)	(2)	(3)	(4)
	Palestinian fatalities during hostilities & demonstrations			
Δ Palestinian exports$_{96-99}$	-0.142***	-0.131***		
	(0.041)	(0.042)		
Δ Palestinian exports to Israel$_{96-99}$			-0.168***	-0.157***
			(0.049)	(0.052)
Δ Palestinian exports to RoW$_{96-99}$			-0.283	-0.268
			(0.200)	(0.212)
Δ Palestinian imports$_{96-99}$		-0.011		-0.010
		(0.009)		(0.009)
Δ Israeli imports from RoW$_{96-99}$		-0.003		-0.004
		(0.005)		(0.005)
Settlements index	-29.556*	-29.963*	-28.912*	-29.098*
	(17.258)	(17.056)	(17.156)	(16.954)
Dist. to Green Line	0.014	0.014	0.013	0.014
	(0.015)	(0.015)	(0.015)	(0.015)
Other controls	YES	YES	YES	YES
Observations	569	569	569	569

Notes: The dependent variable is the number of fatalities from politically motivated violence during demonstration (Palestinians killed by Israelis) from the outbreak of the Second Intifada (28.9.2000) until Dec 2004 in locality. See Table A1 for the definitions of the independent variables. Other controls include all the controls in Table 2, column 2. The regressions are estimated using a Negative Binomial model. Robust standard errors are reported in parentheses. The symbols *, **, *** represent statistical significance at the 10, 5, and 1 percent levels

In Table 8 we investigate whether changes in exports also affect the probability of conflict. To that end we estimate alternative models where instead of using the number of fatalities as our dependent variable, we use an indicator variable that takes the value of 1 if a locality experiences any fatalities throughout the Second Intifada and zero otherwise. The results, based on a probit model, suggest that changes in exports do affect the probability of conflict as well. The coefficients indicate that an increase in Palestinian exports by USD 10 million in a sector employing 10% of private employees in a locality reduces the probability of conflict

in that locality by between 5.3 and 5.5 percent (columns 1-2). This effect goes up to between 6.3 and 6.9 percent in the case of exports to Israel, while is it not significant for the exports to the rest of the world (columns 3-4). Again, the effect of changes in imports is not significant (columns 2 and 4).

Table 8: The impact of Palestinian trade on conflict probability

Dep. variable	(1)	(2)	(3)	(4)
		Dummy at least 1 fatality		
Δ Palestinian exports$_{96-99}$	-0.050***	-0.053***		
	(0.017)	(0.018)		
Δ Palestinian exports to Israel$_{96-99}$			-0.056**	-0.064**
			(0.026)	(0.026)
Δ Palestinian exports to RoW$_{96-99}$			-0.085	-0.114
			(0.106)	(0.107)
Δ Palestinian imports$_{96-99}$		0.002		0.003
		(0.006)		(0.006)
Δ Israeli imports from RoW$_{96-99}$		-0.000		-0.001
		(0.003)		(0.003)
Settlements index	-7.498	-7.729	-7.292	-7.261
	(12.319)	(12.403)	(12.272)	(12.403)
Dist. to Green Line	0.013	0.014	0.013	0.014
	(0.008)	(0.008)	(0.008)	(0.008)
Other controls	YES	YES	YES	YES
Observations	569	569	569	569

Notes: The dependent variable is a dummy for whether the locality experienced at least one fatality from politically motivated violence (Palestinians killed by Israelis) from the outbreak of the Second Intifada (28.9.2000) until Dec 2004. See Table A1 for the definitions of the independent variables. Other controls include all the controls in Table 2, column 2. The regressions are estimated using a probit model. Robust standard errors are reported in parentheses. The symbols *, **, *** represent statistical significance at the 10, 5, and 1 percent levels.

5.5. Endogeneity of Δ*exp*

We have argued that our trade measures are exogenous to local level conditions related to the conflict. In order to substantiate this argument and address any remaining concerns of endogeneity, we instrument the export (and other import) measures. In order to do so we use instruments based on two plausibly exogenous sources of Palestinian export changes.

The first is the changes in Chinese export supply over the same period (1996-1999). This is arguably an important source of competition of Palestinian exports especially in Israel. Indeed unlike imports from PT, Israeli imports from China dramatically increased between 1995 and 2000 (figure A2). In order to ensure the exogeneity of Chinese exports changes to Israeli conditions (which may be related to

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the conflict prospects), we take the changes in Chinese sectoral exports to the world but Israel. We replace the Palestinian exports with this variable in equation (2) to generate the first instrument ($\Delta ChnExp$). A rise in Chinese sectoral exports may also be related to a general increase in the world demand in those sectors. To control for this effect we also add an instrument, which is constructed again as in equation (2) but using world sectoral exports instead of Palestinian exports ($\Delta WldExp$).

The second source of exogenous changes in Palestinian exports is Israeli trade policy. In particular Israel, as much of the rest of the world, undertook a substantial process of (unilateral) tariff liberalization during the 1990s, which reduced import duties in most sectors. The scale of this reduction can be gauged in figure A3, which reports the distribution of the non-zero Most Favoured Nation (MFN) tariff differences between 1993 and 2004 (the only years during that period for which data are available in WITS). This reduction in Israeli tariffs caused a reduction in the preferential access of Palestinian exports to their major destination market, thus effectively acting as a reduction in demand for Palestinian goods from Israel.[25] Again we use the change in Israeli tariffs to replace the changes in Palestinian exports in equation (2) to generate the instrument for ΔEXP (i.e. $\Delta IsrMFN$).[26] The main problem with this instrument is that it covers a larger period of time than do the changes in pre-Intifada trade that we are considering. In addition, despite the process of trade liberalization in the 1990s followed that of many other countries, we cannot rule out the possibility that Israel's trade policy may be related to the expected variation in conflict with the Palestinians. Because of these reasons we also check the robustness of the results to excluding this instrument from the first stage estimation.

We instrument the ΔEXP with this series of variables in the following first stage specification:

(5) $\Delta EXP_{lr} = \gamma_r + \alpha_1 \Delta ChnExp_l + \alpha_2 \Delta WldExp_l + \alpha_3 \Delta IsrMFN_l + \mathrm{B}X_l + \mu_l$

The results of this specification, presented in table A2, suggest that these instruments are good predictors of changes in Palestinian exports over 1996-1999. In particular

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[25] As a de facto custom union, Palestinian and Israeli goods do not pay any duties to access the reciprocal markets.

[26] Unlike trade data, we cannot sum tariff rates over the sectors to match the 5-digit SITC level data of MFN tariff with the 2-digit ISIC employment data. Instead we take the average of tariff rates across 5-digit SITC sectors weighted by Palestinian total exports in each sector. In this way we ensure that the changes in Israeli tariffs are weighted by the importance they may have for Palestinian sectoral exports.

Δ*ChnExp* is negatively associated with Palestinian export changes in line with the idea that Chinese exports may displace Palestinian exports. Conversely the coefficient of Δ*WldExp* is positive and significant as world demand positively affects Palestinian exports as well. Similarly, Δ*IsrMFN* has a positive and significant coefficient consistent with the hypothesis that a reduction in Israeli import tariffs to the rest of the world induces also a reduction in Palestinian exports (as competition in the Israeli market increases). The results are robust to excluding Δ*IsrMFN*, which increases the displacement effect of Chinese exports vis-a-vis Palestinian exports (column 2). These instruments appear to be relevant also in explaining Palestinian exports to Israel and to the rest of the world. It is noticeable that the effect of Israeli tariff is of opposite sign in the case of Palestinian exports to the rest of the world than in the case of Palestinian exports to Israel (column 5). This suggests a re-orientation of Palestinian exports away from the Israeli market as a result of a reduction in preferential access to Israel.

Following Cameron and Trivedi (2013), we use these instruments to extract the endogenous component of Δ*EXP* $\widehat{\mu_{lr}}$ computed from equation (5) and add that in equation (1), which becomes:

(6) $F_{lr} = \gamma_r + b_1 \Delta EXP_l + BX_l + \widehat{\mu_{lr}} + \varepsilon_l$

The coefficient of Δ*EXP* should not suffer from the endogeneity bias as the estimated residuals from the first stage should purge the eventual endogenous component of the export index. This formulation ensures the computation of consistent standard errors (Cameron and Trivedi, 2013).[27]

Table 9 presents the results of this equation, which confirm the robustness of the effects of changes in Palestinian exports on subsequent conflict intensity. The coefficient is slightly larger in absolute term than the comparable coefficient in table 2, column 2. That is especially when excluding Δ*IsrMFN* from the instrument set (column 2). However the magnitude of the Δ*EXP* coefficient is not statistically different from that in table 2, thus confirming that the endogeneity bias is limited in this context. The results also hold for Palestinian exports to Israel (columns 3-4), while they are weaker for Palestinian exports to the rest of the world, probably due to the relatively weak power of the instruments in predicting this variable.

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[27] The estimated residual in the first stage is almost invariably not significant in the second stage thus the standard errors do not have to be computed through bootstrapping (Cameron and Trivedi, 2013).

Table 9: The impact of Palestinian trade on conflict: tackling endogeneity

Dep. Variable	(1)	(2)	(3)	(4)	(5)	(6)	(7)
	Palestinian fatalities during the 2nd Intifada						
Pred. Δ Palestinian exp.96-99	-0.162*** (0.037)	-0.175*** (0.038)			-0.145*** (0.046)	-0.172*** (0.037)	-0.172*** (0.052)
Pred. Δ Palestinian exp. to Israel96-99			-0.153*** (0.052)	-0.128** (0.053)			
Pred. Δ Palestinian exp. to RoW96-99			-0.136 (0.208)	0.104 (0.262)			
Pred. Δ Palestinian imports96-99					0.021 (0.030)		-0.006 (0.037)
Pred. Δ Israeli imp. from RoW96-99						0.008 (0.007)	0.008 (0.009)
Instruments	All	ΔChnExp ΔWldExp	All	ΔChnExp ΔWldExp	All	All	All
Observations	569	569	569	569	569	569	569

	(8)	(9)	(10)	(11)	(12)	(13)	(14)
Sample	LFS	All	All	All	All	All	All
Region	All	West Bank	West Bank	Gaza	Gaza	All	All
Dep. Variable	Palestinian fatalities during the 2nd Intifada					Fat demo	Dummy
Pred. Δ Palestinian exp.96-99	-0.220*** (0.070)	-0.121*** (0.035)		-1.803 (1.116)		-0.140*** (0.054)	-0.083*** (0.025)
Pred. Δ Palestinian exp. to Israel96-99			-0.123** (0.048)		0.180 (1.744)		
Pred. Δ Palestinian exp. to RoW96-99			-0.146 (0.197)		4.352 (5.254)		
Instruments	All	All	All	All	All	All	All
Observations	199	532	532	37	37	569	569

Notes: The regressions are estimated using a Negative Binomial model except column 14 which is estimated through a probit model. See Table A1 for the definitions of the independent variables. Other controls include all the controls in Table 2, column 2. Robust standard errors are reported in parentheses. The symbols *, **, *** represent statistical significance at the 10, 5, and 1 percent levels.

The results are also robust to including the predicted import variables using the same instrument set (columns 5-7). These variables continue to be not significant even in these specifications.[28] The ΔEXP coefficient is also robust to using the restricted LFS sample (column 8) and it is also robust when considering the 532 localities in the West Bank (columns 9-10). On the other hand it is not robust for the 37 localities in Gaza (columns 11-12). Finally, the results also hold for fatalities as a result of hostilities or demonstrations (column 13) as well as for conflict probability

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[28] The results are also robust to including the non instrumented import variables (results available upon request).

(column 14). The instrumentation again slightly raises the effect of changes in exports on the latter: a USD 10 million increase in export in a sector which employs 10% of private employees in a locality is associated with a reduction in the probability of conflict in that locality by 8.2%.

5.6. Heterogeneity

These export changes exert a sizable effect on conflict across Palestinian localities on average. However these effects may well differ across localities according to various characteristics. We try to test for some of this heterogeneity by interacting our main export measure with a series of variables that could shape the importance of the opportunity cost channel of conflict.

Table 10: The heterogeneity of the impact of export changes on conflict intensity

	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)
Dep. variable				Palestinian fatalities during the 2nd Intifada				
Pre-Intifada Fatal. x ΔPalExp	0.002							0.004
	(0.028)							(0.028)
Refugee (%) x ΔPalExp		-0.174**						-0.187**
		(0.084)						(0.089)
Male (%) x ΔPalExp			1.565***					1.510***
			(0.582)					(0.564)
Large HH (%) x ΔPalExp				-0.147				-0.132
				(0.192)				(0.209)
Unemployment (%) x ΔPalExp					-0.383			-0.143
					(0.244)			(0.262)
Age 15-40 (%) x ΔPalExp						0.553		0.819
						(0.469)		(0.584)
Educated (%) x ΔPalExp							0.160	0.283
							(0.160)	(0.174)
Other controls	YES	YES	YES	YES	YES	YES	YES	YES
Observations	569	569	569	569	569	569	569	569

*Notes: The dependent variable is the number of fatalities from politically motivated violence during demonstration (Palestinians killed by Israelis) from the outbreak of the Second Intifada (28.9.2000) until Dec 2004 in locality. See Table A1 for the definitions of the independent variables. Other controls include ΔPalestinian exports$_{1996-99}$ and all the controls in Table 2, column 2. The regressions are estimated using a Negative Binomial model. Robust standard errors are reported in parentheses. The symbols *, **, *** represent statistical significance at the 10, 5, and 1 percent levels.*

The results are presented in Table 10, where we include one interaction term at

a time along with all the usual controls (columns 1-7) and then all of them together (column 8). Export shocks appear to affect conflict more in localities with a higher share of refugees and with higher unemployment rate, while they have lower effect in localities with a higher share of males. The first two results point to the importance of grievances in determining the reaction to a trade shock consistently with Calì and Mulabdic (2014). In particular the refugee status is connected with the displacement by Palestinians as a result of the creation of the state of Israel in 1948, which is often associated with Palestinian grievances vis-à-vis Israel. On the other hand the result for the proportion of males in the population is surprising and may be consistent with the hypothesis that a low share of males may be associated with a large share of males in Israeli jails, thus again with a relatively high level of grievances among the local population.

Perhaps surprisingly, neither past fatalities, nor the level of education or the share of young adult in the population are associated with significantly different effects of changes in export on conflict intensity.

6. Conclusions and policy implications

This paper has exploited unique datasets from the Israeli-Palestinian conflict and a new empirical approach to provide a clean test of the opportunity cost mechanism linking trade shocks and conflict. It has examined the impact of the changes in Palestinian trade – and exports in particular - during the late 1990s on the intensity and probability of subsequent conflict across Palestinian localities. We argue that these trade changes are largely exogenous to local Palestinian conditions, as they are the result of the emergence of competing suppliers, chiefly China, and of the Israeli trade liberalization, which eroded the preferential access of Palestinian goods to their main export market. We also provide evidence in support of this exogeneity of the trade shocks.

Our findings suggest sizable effects of changes in exports on conflict intensity. An increase of USD 10 million in Palestinian exports of a sector employing 10% of the locality's private employment reduces subsequent conflict-related fatalities in that locality by between 11.5 and 13.8 percent. This increase also reduces the probability of the eruption of conflict in the locality by between 5.3 and 5.5 percent. On the other

hand, neither Palestinian imports nor Israeli imports from the rest of the world appear to affect conflict.

The results are robust to the inclusion of a wide range of locality-level geographic, socio-demographic and economic characteristics and to using different measures of conflict intensity and time periods. The effects are particularly robust in the case of exports to Israel, although the evidence suggests that also exports to the rest of the world seem to matter in explaining conflict. In fact the effects of exports to Israel and to the rest of the world are not statistically different. This fact along with the lack of relation between changes in Palestinian exports to Israel and changes in Palestinian attitudes towards Israel suggest that our results are consistent with the opportunity cost rather than the 'resentment' hypothesis.

The support for the opportunity cost hypothesis in conflict situations is in line with an increasingly large literature on the conflict-reducing impact of positive economic shocks (e.g. Miguel et al., 2004; Bruckner and Ciccone, 2010; Hull and Imai, 2013; Dube and Vargas, 2013). In terms of the specific evidence on the Israeli-Palestinian conflict, the findings are consistent with those of Miaari et al. (2014), who show that adverse employment shocks (due to the closure of the Israeli labour market) increased the intensity of conflict during the second Intifada.

Our findings point to several policy implications. They suggest that dealing with adverse employment shocks in conflict prone environment is a priority to avert conflict and/or reduce its intensity. At the same time the promotion of labor intensive export sectors appear to be a useful strategy in this context. The evidence in the paper suggests that the trade policy of a country's trading partners may offer an effective way of doing so for example by increasing preferential market access.

In the specific Israeli-Palestinian context, the findings support the idea that facilitating Palestinian trade can be an important strategy to reduce the risk of conflict. This entails a better control by Palestinians of their own border, an improved system for tax collection, and renewed trade agreements with Israel on a more equal footing. Improving trade will also require the development of a strong Palestinian private sector. A large amount of evidence suggests that this development cannot be achieved without the removal of the many Israeli measures which restrict the activity of the Palestinian private sector, such as movement and access restrictions, the West Bank

wall, the blockade in Gaza, and impediments to access to natural resources (World Bank, 2007; 2013; UNCTAD, 2011; Calì and Miaari, 2013).

In addition, our results point to the crucial importance of Palestinian sales to the Israeli market (rather than to any other market) as a way to reduce the probability of intense conflict. On the one hand, this suggests the importance of facilitating the purchase of Palestinian goods and services by Israelis. That is also in line with the finding by Miaari et al. (2014) on Palestinian workers in Israel. On the other hand, this dependence on Israel implies a high exposure of the Palestinian private sector to shocks to the Israeli market, such as the Israeli trade liberalization of the 1990s. As we have shown, these economic shocks can have important consequences for conflict. Therefore it is crucial to enable Palestinian exporters to diversify in terms of markets. Intensifying trade links with the Arab economies would be a natural starting point. That would require Palestinian sovereignty over its own trade policy, as well as the development of trade facilitation measures linking the PT with its neighboring Arab countries.

Finally, our findings support the hypothesis that economic opportunities affect the dynamics of the Israeli-Palestinian conflict. This is consistent with previous studies showing that improved private employment opportunities in Israel reduce the intensity of the conflict (Miaari et al. 2014). How to guarantee such opportunities and how changes in trade policies might interact with local political institutions operating within the Palestinian-Israeli conflict are fruitful avenues for future research.

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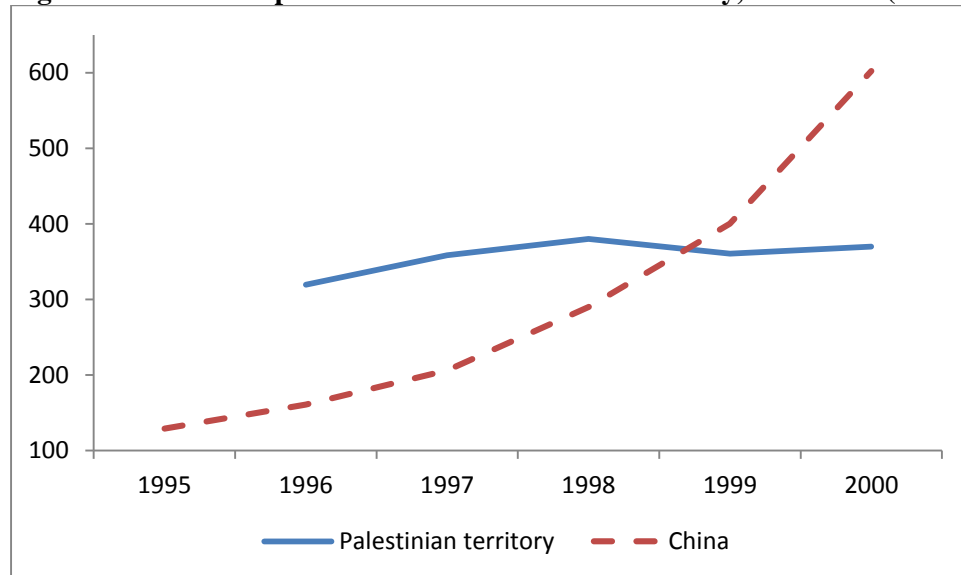
Annex: Additional Figures and Tables

Figure A1: Distribution of relative changes in Israeli imports and Palestinian exports (1996-99)
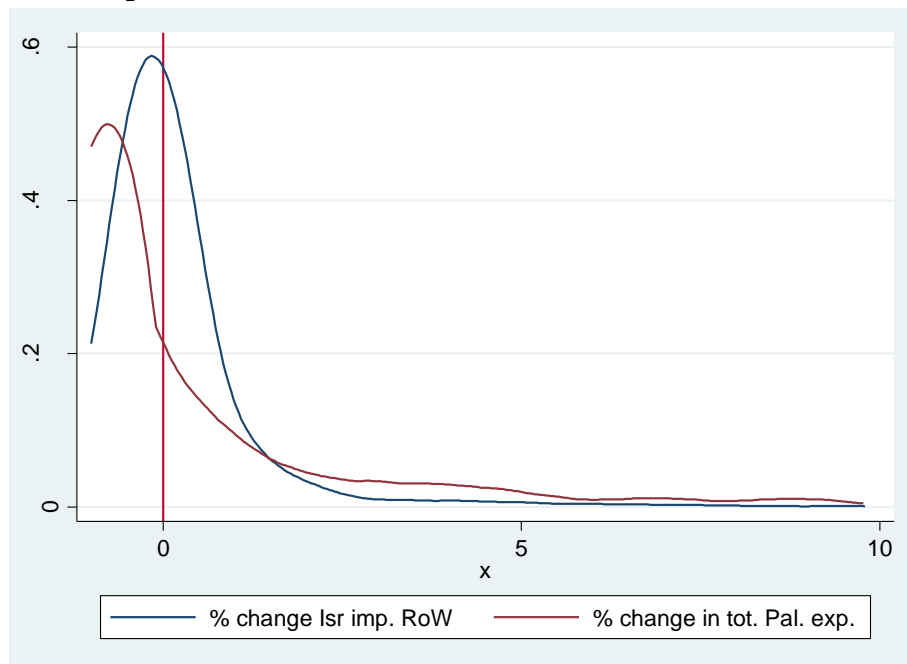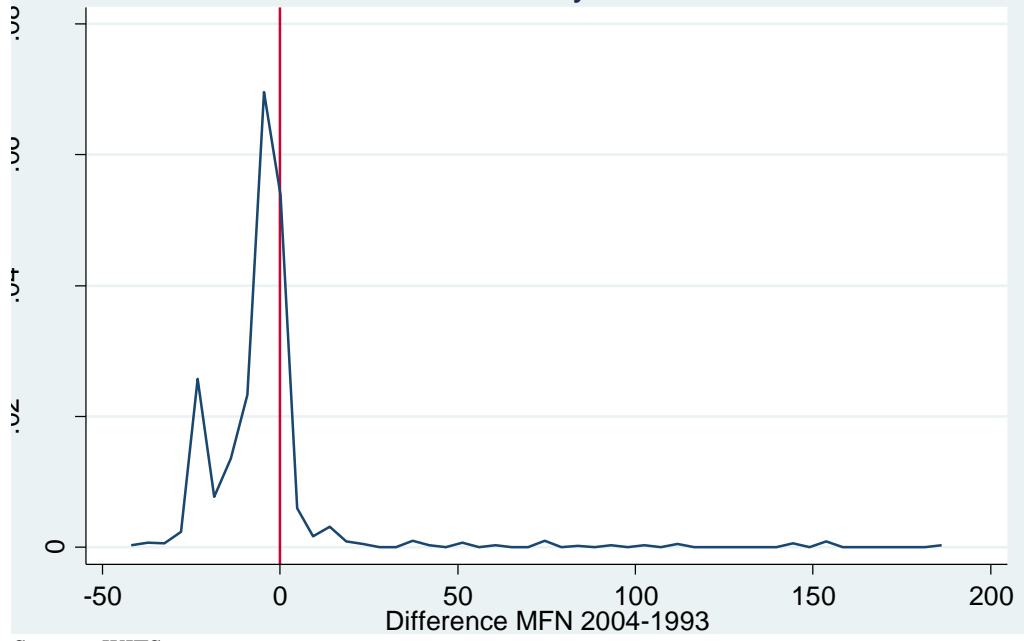

Note: Sectors are recorded at the 5-digit SITC level
Source: PCBS and COMTRADE

Figure A2: Israeli imports: China vs. Palestinian territory, 1995-2000 (USD mln)

Source: COMTRADE and PCBS

Figure A3: Changes in Israeli MFN tariffs (5-digit SITC Rev. 3), 1993-2004

Source: WITS

Table A1: Variables' description

Variable	Description
Palestinian Fatalities	Average number of fatalities from politically-motivated violence (Palestinians killed by Israel) from the outbreak of the Second Intifada (28.9.2000) until December 2004 in locality. For Palestinian fatalities, the locality is the locality where the fatal wounding occurred. There are a handful of cases in which the fatal wounding occurred inside Israel. In those cases, we considered the locality of residence of the attacker, or the closest geographical locality.
Localities with at least one fatality	Dummy variable which takes 1 if the locality has more than zero fatalities and 0 if it has 0 fatalities.
Localities with number of fatalities greater than the median	Dummy variable which take 1 if the locality is above the median of share of fatalities out of population and 0 if below.
Change in the Palestinian exports to Israel between the years 1999 and 1996	Sum of the change in the Palestinian exports to Israel in each sector between the years 1999 and 1996, weighted by the 1997 employment share in that sector in each locality from the total employees in the same locality.
Change in the Israeli import from the rest of the World between the years 1999 and 1996	Sum of the change in the Israeli import from the rest of the world (except Palestine) in each sector between the years 1999 and 1996, weighted by the 1997 employment share in that sector in each locality from the total employees in the same locality.
Change in the total Palestinian exports between the years 1999 and 1996	Sum of the change in the total Palestinian export in each sector between the years 1999 and 1996, weighted by the 1997 employment share in that sector in each locality from the total employees in the same locality.
	population in the same locality.
Change in the total Palestinian Imports between the years 1999 and 1996	Sum of the change in the total Palestinian imports in each sector between the years 1999 and 1996, weighted by the 1997 employment share in that sector in each locality from the total employees in the same locality.
	population in the same locality.
Change in the total Palestinian exports to the rest of the World between the years 1999 and 1996	Sum of the change in the total Palestinian exports from the rest of the world (except Israel) in each sector between the years 1999 and 1996, weighted by the 1997 employment share in that sector in each locality from the total employees in the same locality.
Share of employment in Israel in 1999	Share of Palestinian workers employed in Israel out of total working age in 1999 in locality.
Average wage of employees in Israel in 1999	Average daily wage of employees in Israel in 1999 in locality.
Share of public sector employment in 1999	Share of public sector employees out of total working age in 1999 in Locality.
Average wage of public sector employees in 1999	Average daily wage of public sector employees in 1999 in locality.
Share of private sector employment in 1999	Share of private sector employees out of total working age in 1999 in Locality.
Average wage of private sector employees in 1999	Average daily wage of private sector employees in 1999 in locality.
Fatalities between January 1995 and August 2000	Average number of fatalities from politically motivated violence (Palestinians killed by Israelis) from 1995 until the outbreak of the Second Intifada (28.9.2000) in locality.

Table A2: Instrumenting Palestinian exports through exogenous shocks

Dep. variable	(1)	(2)	(3)	(4)	(5)	(6)
	Δ Palestinian exports$_{96\text{-}99}$		Δ Palestinian exports to Israel$_{96\text{-}99}$		Δ Palestinian exports to RoW$_{96\text{-}99}$	
Δ Chinese exports to the world but Israel	-0.002***	-0.006***	-0.002***	-0.007***	-0.000**	0.002***
	(0.001)	(0.000)	(0.001)	(0.001)	(0.000)	(0.000)
Δ World exports	0.001***	0.001***	0.001***	0.001***	-0.000***	0.000
	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)	(0.000)
Δ MFN tariff	0.801***		1.303***		-0.502***	
	(0.130)		(0.155)		(0.034)	
Other controls	YES	YES	YES	YES	YES	YES
Observations	569	569	569	569	569	569
R-squared	0.557	0.501	0.585	0.492	0.687	0.445

*Notes: The regressions are estimated using an OLS model. Robust standard errors are reported in parentheses. The symbols *, **, *** represent statistical significance at the 10, 5, and 1 percent levels. Other controls include all the controls in Table 2, column 2.*