# *Making Do with What You Have:*
## Conflict, Firm Performance and Input Misallocation in Palestine

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# Introduction

- There is robust evidence of a negative relationship between conflict and aggregate economic activity

  (Collier et al. 2003; Cerra and Saxena 2008; Blattman and Miguel 2010)

- However, we know surprisingly little when it comes to the *microeconomic mechanisms* behind such aggregate effects

- How does conflict affects the backbone of the economy, namely the firm?

  1. What is the effect of a violent conflict on firm performance and input usage?
  2. What are the mechanisms behind these effects?

# What We Do

- We focus on Palestinian firms operating in the Occupied Palestinian Territories (OPT) during the Second Intifada (2000-2006)
  - Data for a **representative sample of establishments** in the manufacturing sector for the whole period (and before the conflict)
  - Time and spatial **variation in conflict intensity**
  - Long conflict during which the **economy never collapsed**.
- We investigate the relationship between violent conflict, firms' production choices and output value by focusing on one precise mechanism
  - Conflict affects the *functioning and accessibility of markets* for production inputs and final goods
  - Firm demand for production inputs responds accordingly, generating or exacerbating *input misallocation*.

# What We Do: Conceptual Framework

- We develop this intuition within the framework of Hsieh and Klenow (2009, QJE) and derive firm-level implications

- In absence of distortions,
  - firms in the same sector adopt the same technology and combine inputs in the same proportions
- In presence of distortions,
  - firms facing distortions in the accessibility of market for one input demand less of that input with respect to other firms in the same sector

- It follows that **differences in the input usage** between firms in the same sector which are differentially exposed to conflict are informative of the extent of **conflict-induced distortions**.

# What We Do: Empirics

- We exploit both spatial and temporal variation in conflict intensity (number of Palestinian fatalities caused by the Israeli Defense Force (IDF)) and heterogeneity within sector
- We find one s.d. increase in **conflict** intensity to be associated with a **6-9% reduction** in firms' **output value**
- We argue that (at least) part of this negative relationship is explained by **conflict-induced distortions** in the accessibility of markets for **imported material inputs**:
  - Firms operating in conflict environments substitute imported material inputs with domestically produced ones
- We provide evidence on the role of border closures, transportation obstacles and transaction costs as possible sources of (conflict-induced) input distortions
- Conflict affects disproportionally more the most productive firms and sectors: **long-term effects** on productivity.

# The Israeli-Palestinian Conflict and the Second Intifada

- Six-Days War: Israel occupied the West Bank and the Gaza Strip
- 1993: Oslo peace agreements
- 1994-1999: failure of peace process
- Second Intifada (September 2000): period of intensified violence between the IDF and the Palestinians
  - Violent events on both sides: killing of Palestinians in the OPT, terrorist attacks in Israel, assassination of Palestinians leaders, demolitions of Palestinian houses
- Frequent clashes between Palestinians and the IDF in the OPT
- During the Second Intifada (2000-2006):
  - Palestinians killed 234 Israeli civilians and 226 IDF soldiers
  - IDF caused more than 4000 Palestinian fatalities, mostly non-combatants (B'Tselem, 2007).

# Conflict and Economic Activity in the OPT

# Conceptual Framework: Hsieh and Klenow (QJE, 2009)

- Production in each sector $s$ is carried out by a single representative firm which aggregates $M_s$ differentiated inputs by means of a CES production function

- Each firm $i$ in sector $s$ produces using capital, labor and materials according to a Cobb-Douglas

$$Y_{si} = A_{si} K_{si}^{\alpha_s} L_{si}^{\beta_s} M_{si}^{1-\alpha_s-\beta_s}$$

- Firms potentially face:
  - *output distortions* $\tau_{Yi}$: change in the marginal return from producing one unit of output
  - *input distortions* $\tau_{Xi}$: change in marginal product of input $X$

- Firm takes input prices as given and maximizes

$$(1-\tau_{Yi})P_{si}Y_{si} - w(1+\tau_{Li})L_{si} - R(1+\tau_{Ki})K_{si} - z(1+\tau_{Mi})M_{si}$$

# Conceptual Framework: Input Value Ratios

- From the FOC, we derive the **input value ratios**:

$$\frac{RK_{si}}{zM_{si}} = \frac{\alpha_s}{1-\alpha_s-\beta_s}\frac{1+\tau_{Mi}}{1+\tau_{Ki}}$$

$$\frac{wL_{si}}{zM_{si}} = \frac{\beta_s}{1-\alpha_s-\beta_s}\frac{1+\tau_{Mi}}{1+\tau_{Li}}$$

$$\frac{RK_{si}}{wL_{si}} = \frac{\alpha_s}{\beta_s}\frac{1+\tau_{Li}}{1+\tau_{Ki}}$$

# Input Value Ratios and Input Distortions

$$\frac{RK_{si}}{zM_{si}} = \frac{\alpha_s}{1-\alpha_s-\beta_s}\frac{1+\tau_{Mi}}{1+\tau_{Ki}}$$

- Input value ratios
  - In absence of distortions, they would be the same for all firms in the same sector (while productivity $A_{si}$ determines firm size)
  - Do not depend on output distortions $\tau_{Yi}$
  - Are invariant to firm-level prices $P_{si}$ and thus to market structure within sectors

- **Systematic within-sector differences in input value ratios associated with conflict exposure are informative of the relative extent of distortions induced by the conflict.**

# Data

- Information on each Palestinian killed by IDF (B'Tselem), grouped by district × year
- Industry Survey 1999-2006 (PCBS), with 2-digit ISIC code and **district of location**
- Producer Price Index (PPI) for the same years
- Aggregate GDP and trade data (PCBS)
- World Bank Enterprise Survey 2006

▸ Summary Statistics

# Output Value: Specification

We implement the following regression specification

$$\ln\left(P_{si}Y_{si}\right)_{dt} = \delta_t + \gamma_d + \varphi_s + \beta\ fatalities_{dt} + \mathbf{Z}'_{isdt}\ \boldsymbol{\rho} + u_{isdt}$$

where

- $\left(P_{si}Y_{si}\right)_{dt}$ is output value of firm $i$ in sector $s$ located in district $d$ and surveyed in year $t$
- $fatalities_{dt}$ is number of Palestinians killed by IDF in district $d$ and year $t$
- $\delta_t$, $\gamma_d$ and $\varphi_s$ are year, district and sector fixed effects respectively
- $\mathbf{Z}_{isdt}$ is a vector of firm-level controls (fraction of proprietors and family members over total labor).

# Output Value: Results

| | Log of Product Value, $\ln(PY)$ | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| *fatalities* | -0.126** | -0.073*** | -0.063* | -0.089*** | -0.086*** |
| | (0.049) | (0.024) | (0.036) | (0.033) | (0.033) |
| $\frac{\text{Family Workers}}{\text{Total}}$ | | | | -1.522*** | -1.533*** |
| | | | | (0.100) | (0.097) |
| $\frac{\text{Proprietors}}{\text{Total}}$ | | | | -2.713*** | -2.717*** |
| | | | | (0.112) | (0.112) |
| District FE | N | Y | Y | Y | Y |
| Year FE | N | Y | Y | Y | n.a. |
| Sector FE | N | N | Y | Y | n.a. |
| Sector × Year FE | N | N | N | N | Y |
| Observations | 10042 | 10042 | 10042 | 10039 | 10039 |
| $R^2$ | 0.007 | 0.035 | 0.156 | 0.434 | 0.443 |

*Notes.* Standard Errors clustered along both district-year and sector-year dimensions.

# Output Value: Results

- One standard deviation increase in conflict intensity is associated with a 9% fall in output value
- Robust to the inclusion of controls and sector-year trends

# Output Value: Results

- One standard deviation increase in conflict intensity is associated with a 9% fall in output value
- Robust to the inclusion of controls and sector-year trends
- Far from being causal: omitted variable bias, reverse causality (Dube and Vargas 2013)
- Also, the result captures both **demand** and **supply** side effects
- We focus on the supply side of the economy and look at changes in **input usage**.

# The Mechanism: Conflict, Input Value Ratios and Implied Relative Input Distortions

For every pair of inputs $(X_{si}^1, X_{si}^2)$ with corresponding prices $(p_1, p_2)$, we estimate

$$\ln\left(\frac{p_1 X_{si}^1}{p_2 X_{si}^2}\right)_{dt} = \delta_t + \gamma_d + \varphi_s + \lambda_{12}\, fatalities_{dt} + \mathbf{Z}'_{isdt}\, \boldsymbol{\rho} + \varepsilon_{isdt}$$

and derive the (conflict-induced) implied relative input distortions as

$$\exp\left(\hat{\lambda}_{12}\right) = \frac{1 + \tau_{X_i^2}}{1 + \tau_{X_i^1}}$$

# Input Value Ratios and Fatalities

| | Coefficient of *fatalities* variable ($\lambda_{12}$) | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| $\frac{\text{Value of Capital}}{\text{Value of Labor}}$ | -0.018 | -0.015 | -0.000 | 0.003 |
| | (0.040) | (0.039) | (0.041) | (0.034) |
| $\frac{\text{Value of Capital}}{\text{Value of Materials}}$ | 0.005 | 0.008 | 0.006 | 0.008 |
| | (0.043) | (0.044) | (0.046) | (0.043) |
| $\frac{\text{Value of Labor}}{\text{Value of Materials}}$ | 0.025 | 0.024 | 0.010 | 0.016 |
| | (0.039) | (0.037) | (0.040) | (0.031) |
| $\frac{\text{Value of Domestically Prod. Materials}}{\text{Value of Imported Materials}}$ | 1.216*** | 1.234*** | 1.243*** | 1.296*** |
| | (0.272) | (0.270) | (0.270) | (0.307) |
| $\frac{\text{Family Workers}}{\text{Total}}$ | N | Y | Y | Y |
| $\frac{\text{Proprietors}}{\text{Total}}$ | N | Y | Y | Y |
| Sector FE | Y | Y | n.a. | n.a. |
| Year FE | Y | Y | n.a. | n.a. |
| District FE | Y | Y | Y | Y |
| Sector × Year FE | N | N | Y | Y |

*Notes.* Standard Errors clustered along both district-year and sector-year dimensions.

# Implied Relative Input Distortions

| | Implied Relative Input Distortion | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| $\frac{\text{Labour}}{\text{Capital}}$ | 0.982 | 0.985 | 1.000 | 1.003 |
| | [0.905;1.059] | [0.910;1.060] | [0.919;1.080] | [0.936;1.071] |
| $\frac{\text{Materials}}{\text{Capital}}$ | 1.005 | 1.008 | 1.006 | 1.008 |
| | [0.919;1.090] | [0.920;1.095] | [0.916;1.096] | [0.923;1.093] |
| $\frac{\text{Materials}}{\text{Labour}}$ | 1.025 | 1.024 | 1.010 | 1.016 |
| | [0.948;1.103] | [0.950;1.098] | [0.931;1.089] | [0.955;1.078] |
| $\frac{\text{Imported Materials}}{\text{Domestically Prod. Materials}}$ | 3.375 | 3.434 | 3.465 | 3.655 |
| | [1.578;5.172] | [1.616;5.252] | [1.634;5.295] | [1.459;5.852] |
| $\frac{\text{Family Workers}}{\text{Total}}$ | N | Y | Y | Y |
| $\frac{\text{Proprietors}}{\text{Total}}$ | N | Y | Y | Y |
| Sector FE | Y | Y | n.a. | n.a. |
| Year FE | Y | Y | n.a. | n.a. |
| District FE | Y | Y | Y | Y |
| Sector × Year FE | N | N | Y | Y |

*Notes.* Standard Errors clustered along both district-year and sector-year dimensions.

# The Mechanism: Results

- We find evidence of **conflict-induced distortions** to be relatively higher for imported materials with respect to domestically produced ones
- Results are robust across specifications
- We claim that part of the **negative effect** of conflict on **output value** comes through **distortions in market access** which are disproportionally higher for **imported material inputs**
- Aggregate evidence further validates this finding
  - Net balance of trade increases with conflict intensity ▸ graph
  - Composition of imports changes while composition of exports does not. ▸ graph

# Robustness

- Are changes in input value ratios driven by a fall in *demand*? (non-homothetic production functions)
  - We investigate input value ratios before the conflict (1999)

More

- Is the fall in output value driven by a fall in firm-level *output price*?
  - We look at fatalities and Producer Price Index for industries clustered in specific districts

More

- Are the effects on input value ratios driven by firm-level *input prices*?
  - We look at employment and wages

More

- Is the effect of fatalities capturing only the differential effect of being located closer to the Israeli border?
  - We control for road distance from the border interacted with year fixed effects.

More

# Sources of Distortions

- Firms located in districts which are differentially more exposed to conflict substitute domestically produced materials for imported ones.
- We have argued that these changes are due to conflict-induced distortions in the functioning and accessibility of markets for imported materials.
- We explore 3 possible sources of these distortions:
  1. Border closures
  2. Transportation costs
  3. Transaction costs

# Sources of Distortions: Border Closure

- Border closures
  - adopted by the IDF as a security measure
  - they represent a negative shock to access foreign markets
- Results: border closures differentially affect input usage for firms further away from the border ▸ Table
- Nonetheless, variability along this dimension is orthogonal to the one captured by the *fatalities* measure.

# Sources of Distortions: Transportation and Transaction Costs

- We use data from the World Bank Enterprise Survey (2006)
- Additional information on firms' activity (firm location available at the city/town/village level)
- We look at the differential effect of fatalities on firms' activity according to their importing status
- Importing firms in high conflict localities:
  - consider custom regulations and transportations costs more of an obstacle ▸ Table
  - pay a higher fraction of inputs before delivery ▸ Table
    - change in the terms of the contract between importing firms and foreign suppliers.

# Sector-level Heterogeneity

- We look at the heterogeneous effect of conflict on domestically vs. imported produced material usage across sectors
- We show that **sector-level distortion** in input usage correlate with sector-level variation in:
  - imported input intensity in pre-conflict year
  - output value in pre-conflict year

More

- Conflict affects more firms and sectors that use imported input material more intensively and have higher productivity
- Hints towards long-term effects on the Palestinian economy.

# Conclusions

- We have investigated the impact of conflict on firm performance and input usage in the OPT during the Second Intifada
- Evidence shows that conflict negatively affect firms' output value through the distortions it generates in the accessibility of markets for imported material
  - $\Rightarrow$ Within the same sector, firms operating in high conflict environments substitute domestically produced materials for imported ones
- Input distortions materialize as increase in transportation and transaction costs
- Conflict affects more the most productive sectors in the economy, and may have long-lasting effects.

# Summary Statistics

| | Obs. | Mean | St. Dev. | Min | Max |
|---|---|---|---|---|---|
| Palestinians Killed by IDF (District × Year) | 112 | 35.044 | 42.010 | 0 | 210 |
| Log of Output Value | 11397 | 11.741 | 1.511 | 0 | 19.656 |
| Log of Output Value per Worker | 11397 | 10.297 | 1.165 | -2.303 | 18.023 |
| Log of Value of Capital | 14221 | 10.138 | 1.942 | 0.693 | 18.531 |
| Log of Value of Labor | 10243 | 10.492 | 1.24 | 5.994 | 16.746 |
| Log of Value of Materials | 14160 | 11.308 | 2.045 | 3.932 | 18.769 |
| Log of Value of Domestic Materials | 14160 | 8.826 | 3.138 | 0 | 18.785 |
| Log of Value of Imported Materials | 14160 | 6.456 | 4.801 | 0 | 18.688 |
| Fraction of Family Workers | 14284 | 0.167 | 0.247 | 0 | 1 |
| Fraction of Proprietors | 14284 | 0.444 | 0.324 | 0 | 1 |

*Notes.* Values are in New Israeli Shekel (NIS).

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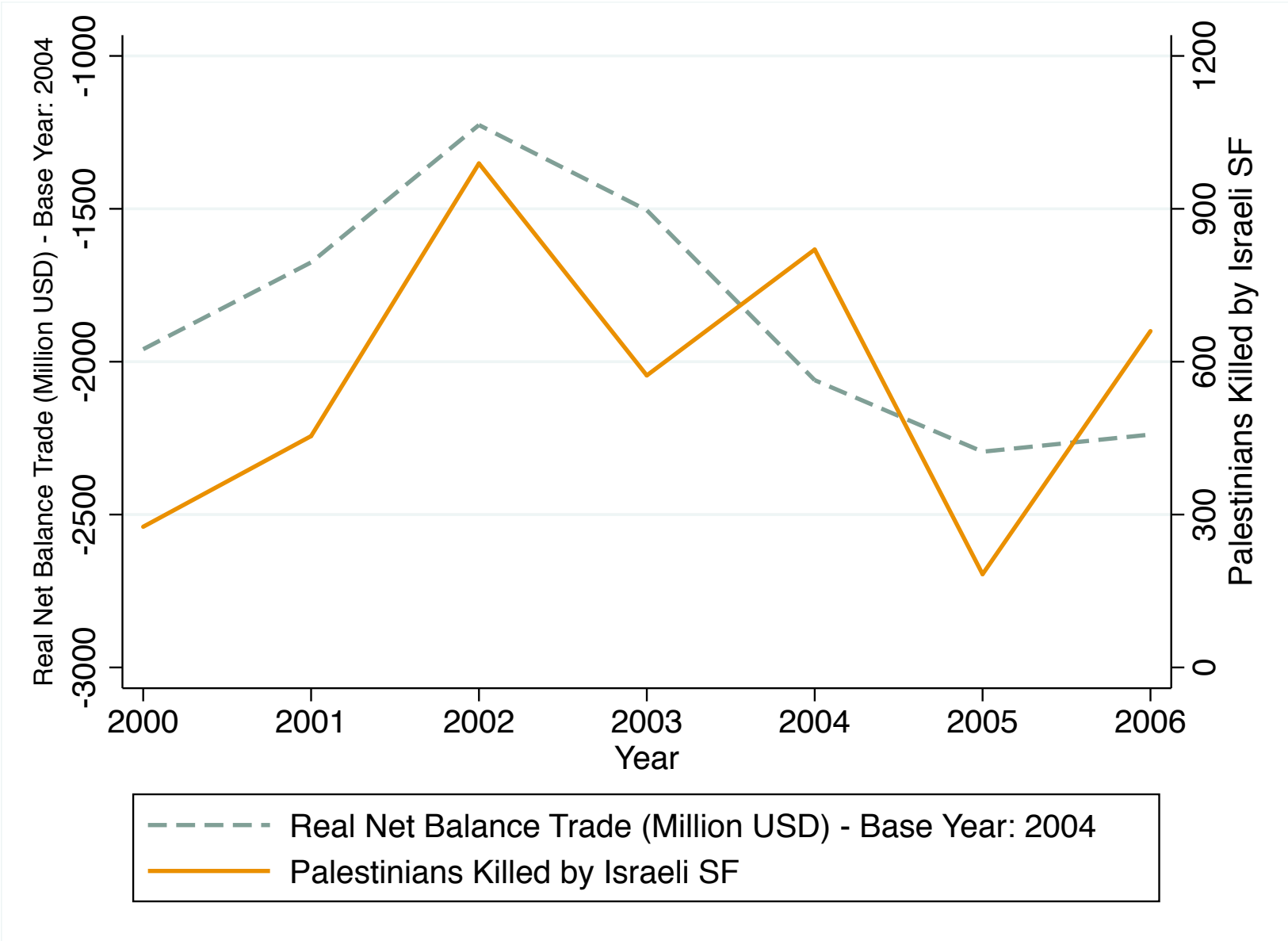
# Evidence Supporting the Mechanism: Net Trade Value

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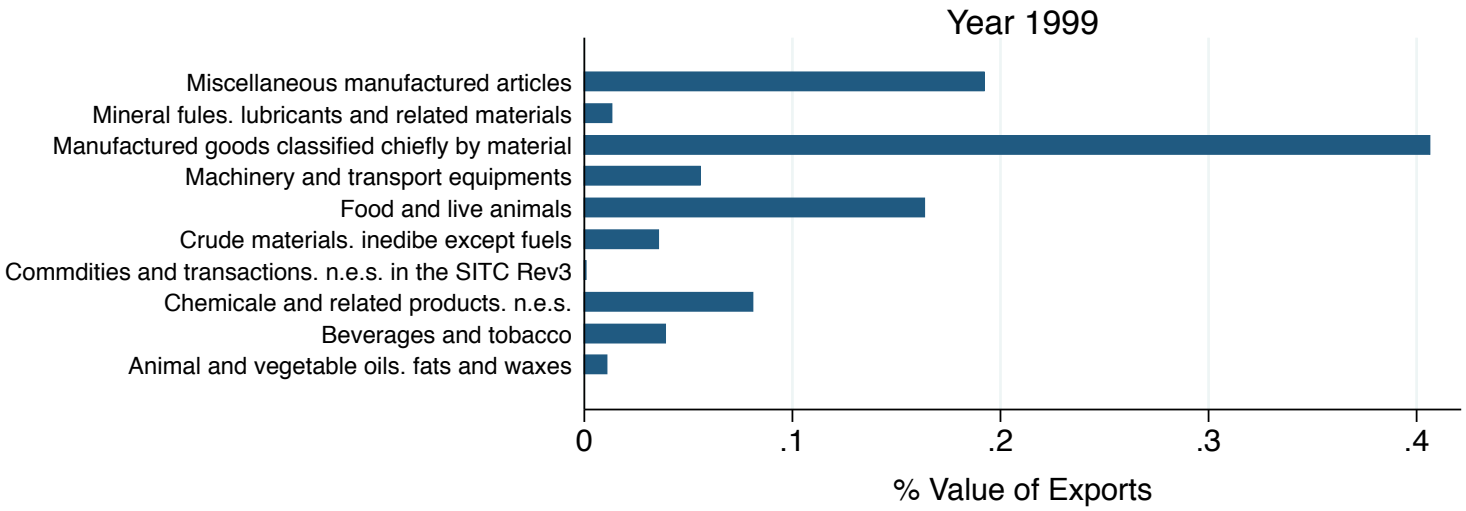
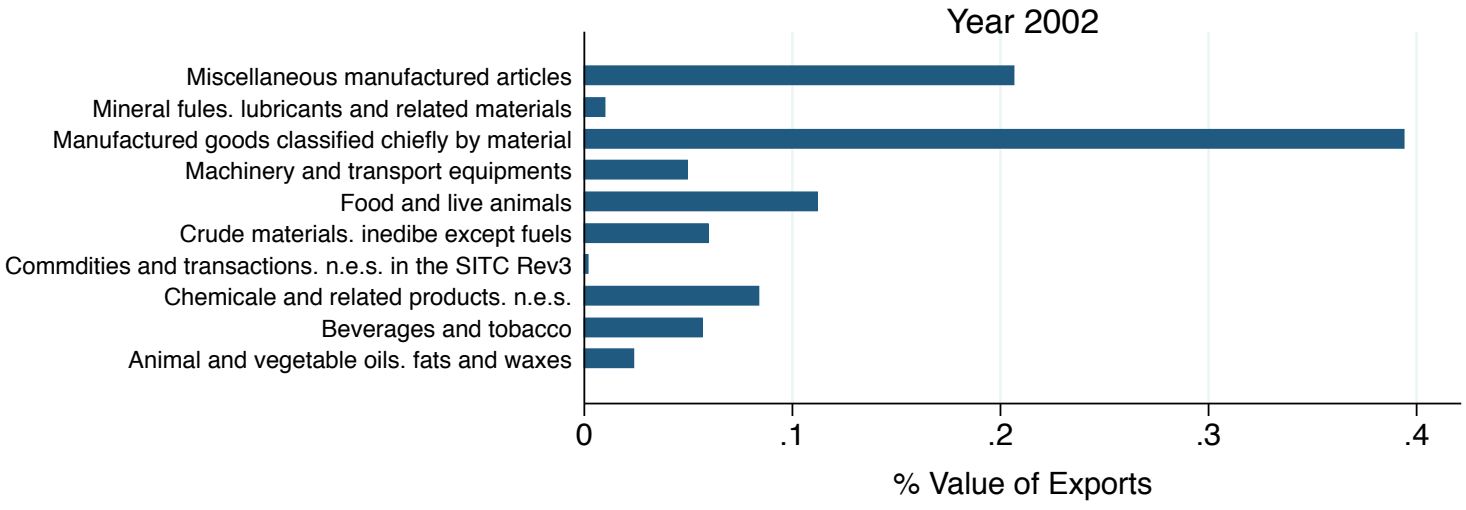
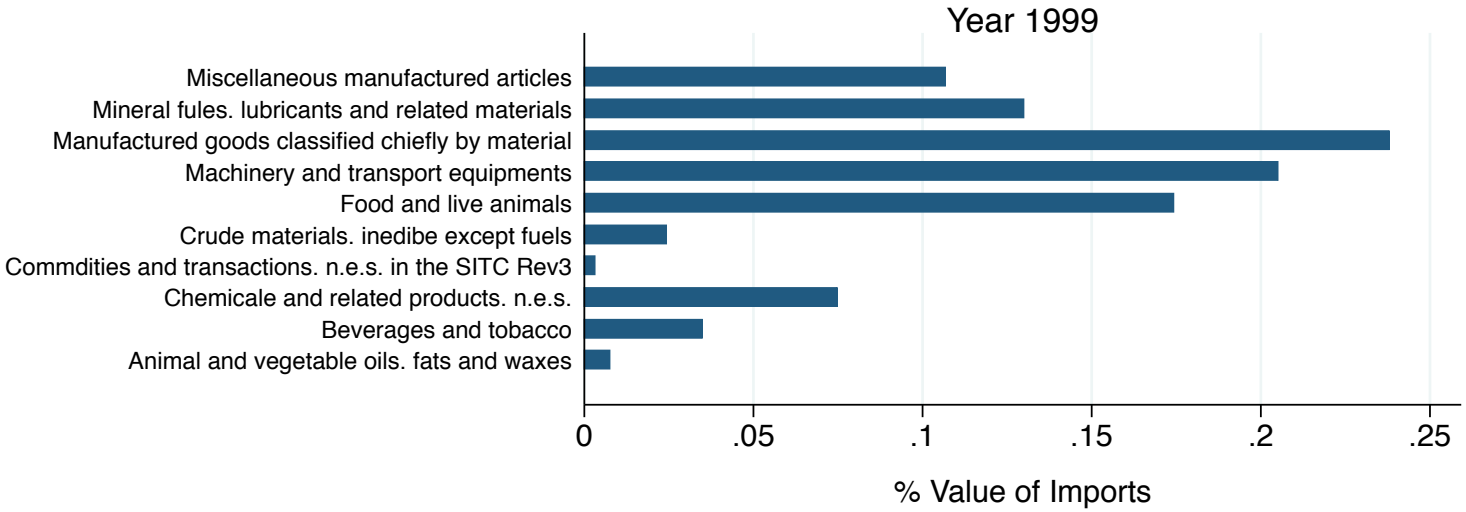
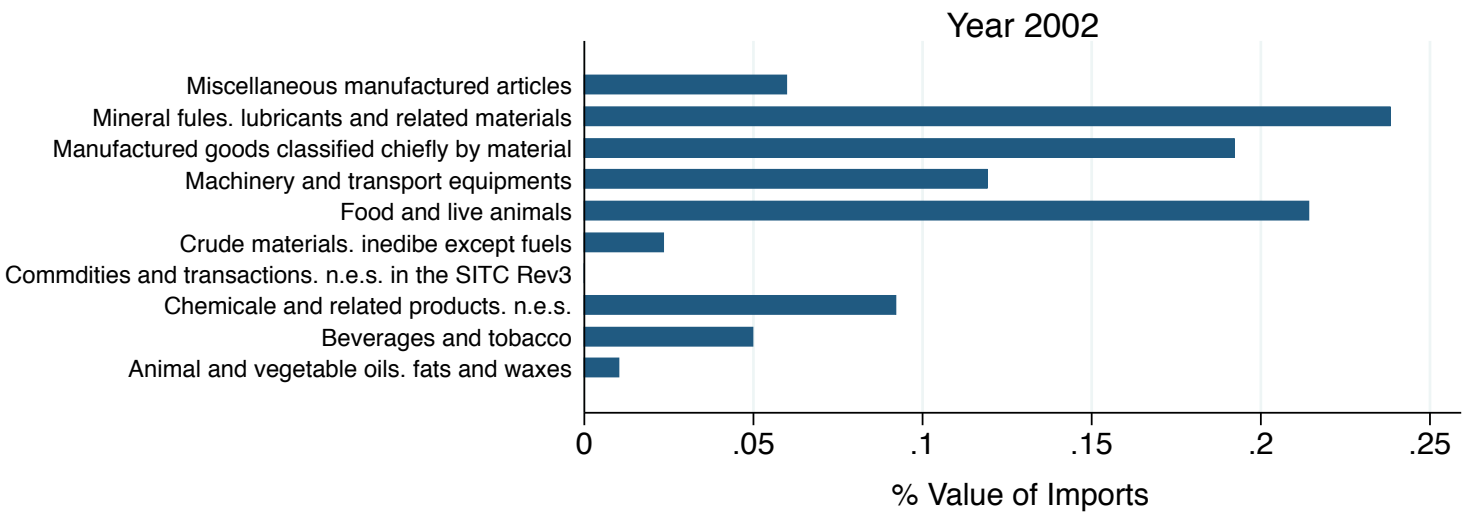
# Trade Composition: Exports



# Trade Composition: Imports

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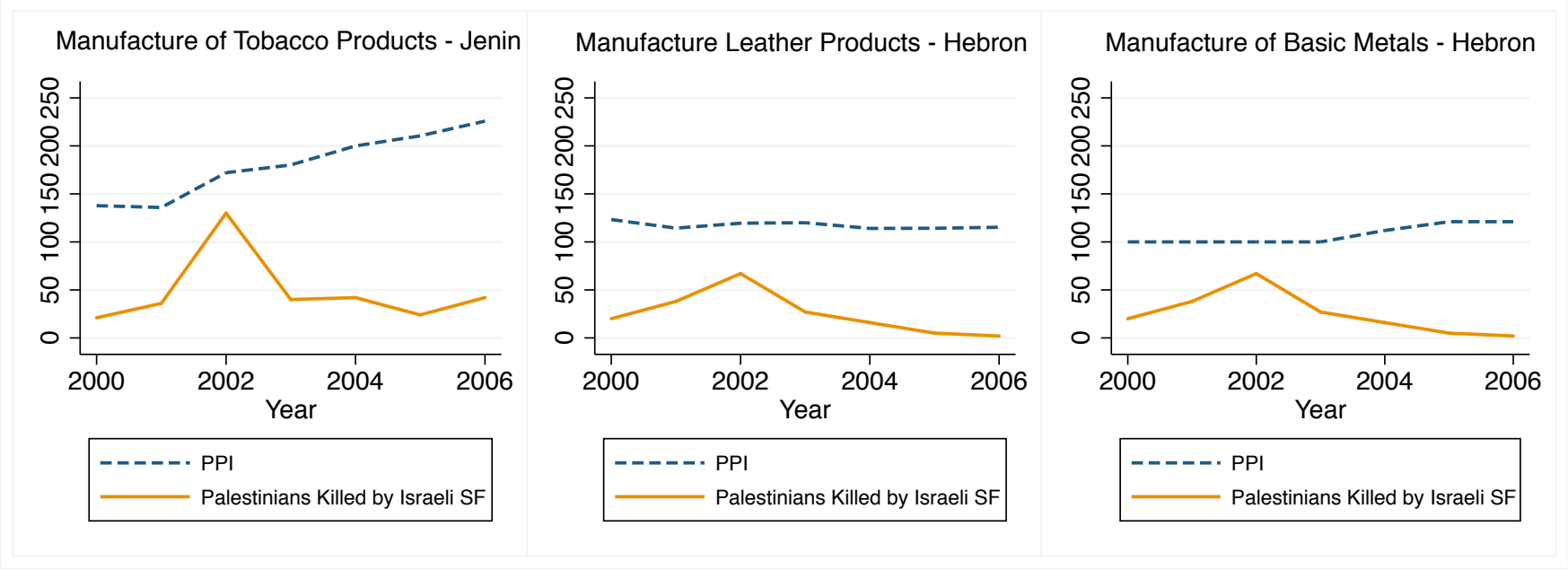
# Robustness: Output Prices

- What if the fall in output value is driven by a fall in firm-level **output price**?

  ⇒ We look at fatalities and Producer Price Index for industries clustered in specific districts

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# Robustness: Input Prices

- What if the effects on input value ratios are driven by firm-level **input prices**?

  $\Rightarrow$ We look at employment and wages

- An increase in employment or wages (if correlated with conflict) would make $\frac{wL}{z^e M^e}$ higher in conflict areas, biasing $\frac{1+\tau_{M^e}}{1+\tau_L}$ upwards.

# Wages

| | Log of Wages, $\ln(W/L)$ | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *fatalities* | -0.070** | -0.072** | -0.079** | -0.076** |
| | (0.035) | (0.035) | (0.035) | (0.034) |
| $\frac{\text{Family Workers}}{\text{Total}}$ | | -2.014*** | -2.015*** | -2.032*** |
| | | (0.071) | (0.071) | (0.084) |
| $\frac{\text{Proprietors}}{\text{Total}}$ | | -2.250*** | -2.242*** | -2.224*** |
| | | (0.081) | (0.081) | (0.075) |
| Sector FE | Y | Y | n.a. | n.a. |
| Year FE | Y | Y | n.a. | n.a. |
| District FE | Y | Y | Y | Y |
| Sector × Year FE | N | N | Y | Y |
| Observations | 8891 | 8891 | 8891 | 7302 |
| $R^2$ | 0.156 | 0.443 | 0.459 | 0.476 |

*Notes.* SE clustered along both district-year and sector-year dimensions.

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# The Role of Firm Localization

- Is the effect of fatalities capturing the differential effects according to distance from the border?

  $\Rightarrow$ We control for road distance from the closest entry gate interacted with year fixed effects

- Allows to control for any nationwide shock which has differential impact according to distance from the border.

# The Role of Distance from the Border

| | Implied Relative Distortion | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| Labour / Capital | 1.001 | 1.007 | 1.021 | 1.024 |
| | [0.931;1.071] | [0.937;1.076] | [0.946;1.095] | [0.959;1.0 |
| Materials / Capital | 0.996 | 0.999 | 0.999 | 1.000 |
| | [0.919;1.073] | [0.920;1.079] | [0.915;1.082] | [0.928;1.0 |
| Materials / Labour | 1.007 | 1.004 | 0.991 | 0.997 |
| | [0.918;1.097] | [0.919;1.089] | [0.901;1.081] | [0.933;1.0 |
| Imported Materials / Domestically Prod. Materials | 3.234 | 3.300 | 3.334 | 3.441 |
| | [1.584;4.884] | [1.618;4.982] | [1.639;5.030] | [1.398;5.4 |
| Family Workers / Total | N | Y | Y | Y |
| Proprietors / Total | N | Y | Y | Y |
| Sector FE | Y | Y | n.a. | n.a. |
| Year FE | Y | Y | n.a. | n.a. |
| District FE | Y | Y | Y | Y |
| Sector × Year FE | N | N | Y | Y |

*Notes.* Standard Errors clustered along both district-year and sector-year dimensions.

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# Robustness: Demand-side Effects

- With homothetic production function, input usage does not vary with firm size

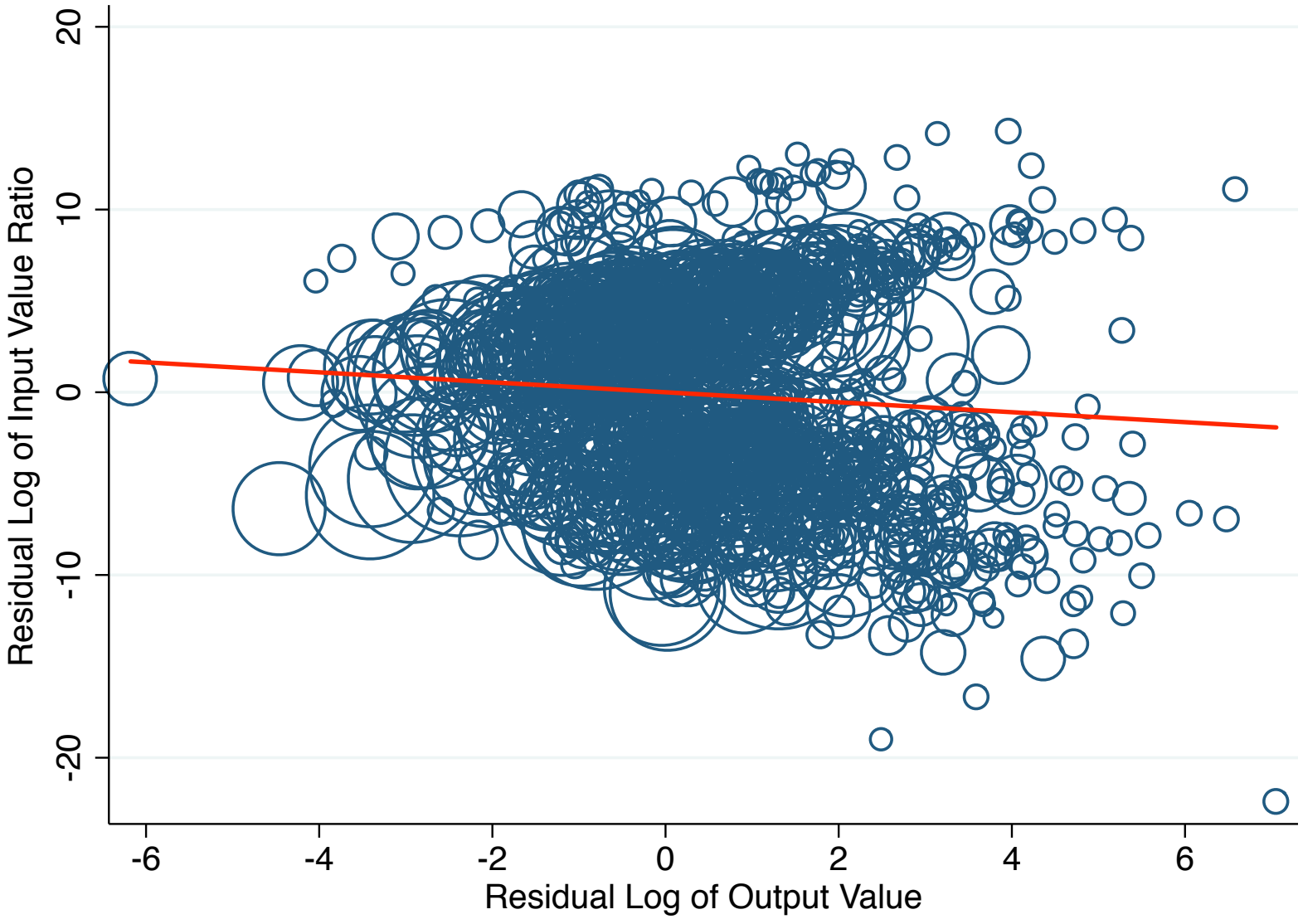
- Non-homothetic production functions: changes in demand may lead to changes in input usage

  $\Rightarrow$ If smaller firms are relatively more intensive in domestically produced materials with respect to foreign produced ones, our findings could no longer be interpreted only in light of the proposed supply-side mechanism

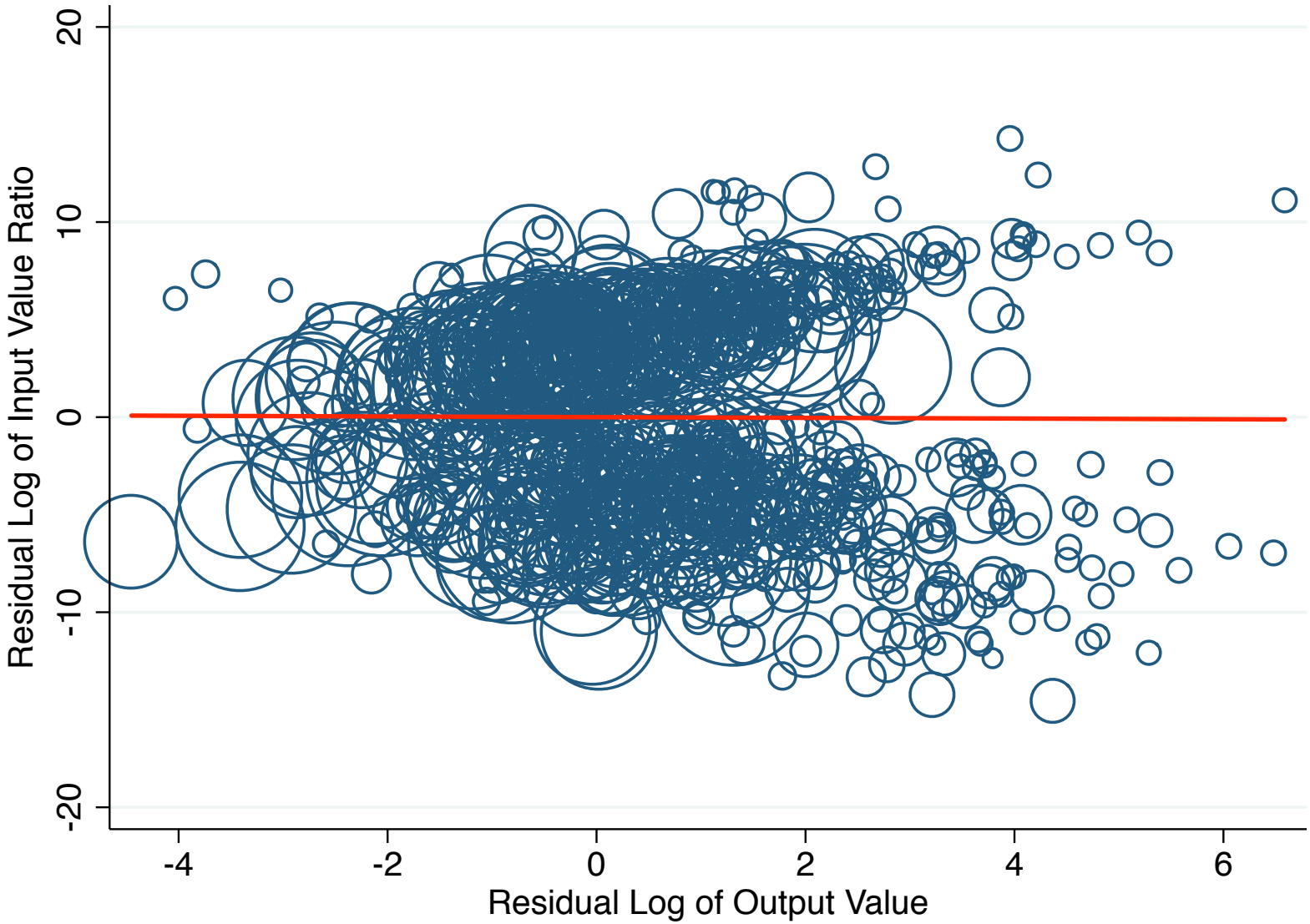
- Does input usage correlate with firm size?

  $\Rightarrow$ We investigate input value ratios in 1999 (no conflict).

# All Sectors: Output Value vs Input Value Ratio



# Restricted Sample: Output Value vs Input Value Ratio



# Implied Input Distortions: Restricted Sample

| | Implied Relative Distortion: Restricted Sample | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| $\frac{\text{Labour}}{\text{Capital}}$ | 0.988 | 0.990 | 0.995 | 1.000 |
| | [0.887;1.088] | [0.896;1.084] | [0.897;1.093] | [0.921;1.0 |
| $\frac{\text{Materials}}{\text{Capital}}$ | 1.027 | 1.030 | 1.022 | 1.013 |
| | [0.930;1.124] | [0.931;1.129] | [0.918;1.126] | [0.917;1.1 |
| $\frac{\text{Materials}}{\text{Labour}}$ | 1.060 | 1.059 | 1.046 | 1.038 |
| | [0.964;1.156] | [0.966;1.152] | [0.946;1.147] | [0.963;1.1 |
| $\frac{\text{Imported Materials}}{\text{Domestically Prod. Materials}}$ | 3.480 | 3.545 | 3.536 | 3.627 |
| | [1.435;5.524] | [1.491;5.599] | [1.498;5.574] | [1.356;5.8 |
| $\frac{\text{Family Workers}}{\text{Total}}$ | N | Y | Y | Y |
| $\frac{\text{Proprietors}}{\text{Total}}$ | N | Y | Y | Y |
| Sector FE | Y | Y | n.a. | n.a. |
| Year FE | Y | Y | n.a. | n.a. |
| District FE | Y | Y | Y | Y |
| Sector × Year FE | N | N | Y | Y |

*Notes.* Standard Errors clustered along both district-year and sector-year dimensions.

# Robustness: Demand-side Effects

- We restrict the sample to those sectors where input value ratios are not systematically correlated with output value and find very similar results
- Findings seem not to be driven by sectors where production functions is non-homothetic
- Evidence is supportive of our supply side mechanism on conflict-induced distortions in accessibility of markets.

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# Input Value Ratios, Fatalities and Border Closures

| | Dependent Variable: $\ln z^d M^d_{si} / z^f M^f_{si}$ | | | |
|---|---|---|---|---|
| | (1) | (2) | (3) | (4) |
| *fatalities* | 1.263*** | 1.279*** | 1.290*** | 1.340*** |
| | (0.247) | (0.247) | (0.246) | (0.289) |
| *closure days* $\times$ $dt_{\text{passage}}$ | 0.010** | 0.010** | 0.010** | 0.009* |
| | (0.004) | (0.004) | (0.004) | (0.005) |
| $\frac{\text{Family Workers}}{\text{Total}}$ | N | Y | Y | Y |
| $\frac{\text{Proprietors}}{\text{Total}}$ | N | Y | Y | Y |
| Sector FE | Y | Y | n.a. | n.a. |
| Year FE | Y | Y | n.a. | n.a. |
| District FE | Y | Y | Y | Y |
| Sector $\times$ Year FE | N | N | Y | Y |

*Notes.* Standard Errors clustered along both district-year and sector-year dimensions.

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# Obstacles to Firms' Operations

| | (1) | (2) | (3) | (4) | (5) |
|---|---|---|---|---|---|
| PANEL A | Customs/Trade Regulations as Main Obstacle | | | | |
| *fatalities* | -0.227*** | -0.247*** | -0.101 | -0.016 | -0.042 |
| | (0.05) | (0.05) | (0.10) | (0.09) | (0.09) |
| *Importer* | 0.287 | 0.355 | 0.336 | 0.393 | 0.309 |
| | (0.34) | (0.34) | (0.32) | (0.30) | (0.30) |
| *fatalities* × *Importer* | 0.249*** | 0.237*** | 0.246*** | 0.234*** | 0.292*** |
| | (0.06) | (0.06) | (0.06) | (0.06) | (0.06) |
| PANEL B | Trasportation as Main Obstacle | | | | |
| *fatalities* | -0.254*** | -0.257*** | -0.144* | -0.062 | -0.075 |
| | (0.07) | (0.07) | (0.08) | (0.07) | (0.07) |
| *Importer* | 0.255 | 0.305 | 0.304 | 0.386 | 0.393 |
| | (0.34) | (0.34) | (0.33) | (0.31) | (0.28) |
| *fatalities* × *Importer* | 0.296*** | 0.288*** | 0.293*** | 0.258*** | 0.301*** |
| | (0.07) | (0.07) | (0.06) | (0.07) | (0.06) |
| Population 1997 | N | Y | Y | Y | Y |
| Sales in 2003 | N | N | N | Y | Y |
| Employment in 2003 | N | N | N | Y | Y |
| Year Started | N | N | N | Y | Y |
| Other Controls | N | N | N | N | Y |
| District FE | N | N | Y | Y | Y |
| Observations | 10042 | 10042 | 10042 | 10039 | 10039 |
| $R^2$ | 0.007 | 0.035 | 0.156 | 0.434 | 0.443 |

*Notes.* Standard Errors clustered at the locality level.

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# Contracts with Foreign Suppliers

| | Percentage of Inputs Paid Before Delivery | | | | |
|---|---|---|---|---|---|
| | (1) | (2) | (3) | (4) | (5) |
| *fatalities* | -0.013 | -0.003 | -0.009 | -0.010 | -0.013 |
| | (0.02) | (0.01) | (0.02) | (0.03) | (0.03) |
| *Importer* | 0.110 | 0.100 | 0.107 | 0.090 | 0.090 |
| | (0.07) | (0.07) | (0.08) | (0.08) | (0.08) |
| *fatalities* × *Importer* | 0.039** | 0.041*** | 0.041*** | 0.051*** | 0.062*** |
| | (0.02) | (0.01) | (0.01) | (0.02) | (0.01) |
| Population 1997 | N | Y | Y | Y | Y |
| Sales in 2003 | N | N | N | Y | Y |
| Employment in 2003 | N | N | N | Y | Y |
| Year Started | N | N | N | Y | Y |
| Other Controls | N | N | N | N | Y |
| District FE | N | N | Y | Y | Y |
| Observations | 10042 | 10042 | 10042 | 10039 | 10039 |
| $R^2$ | 0.007 | 0.035 | 0.156 | 0.434 | 0.443 |

*Notes.* Standard Errors clustered at the locality level.

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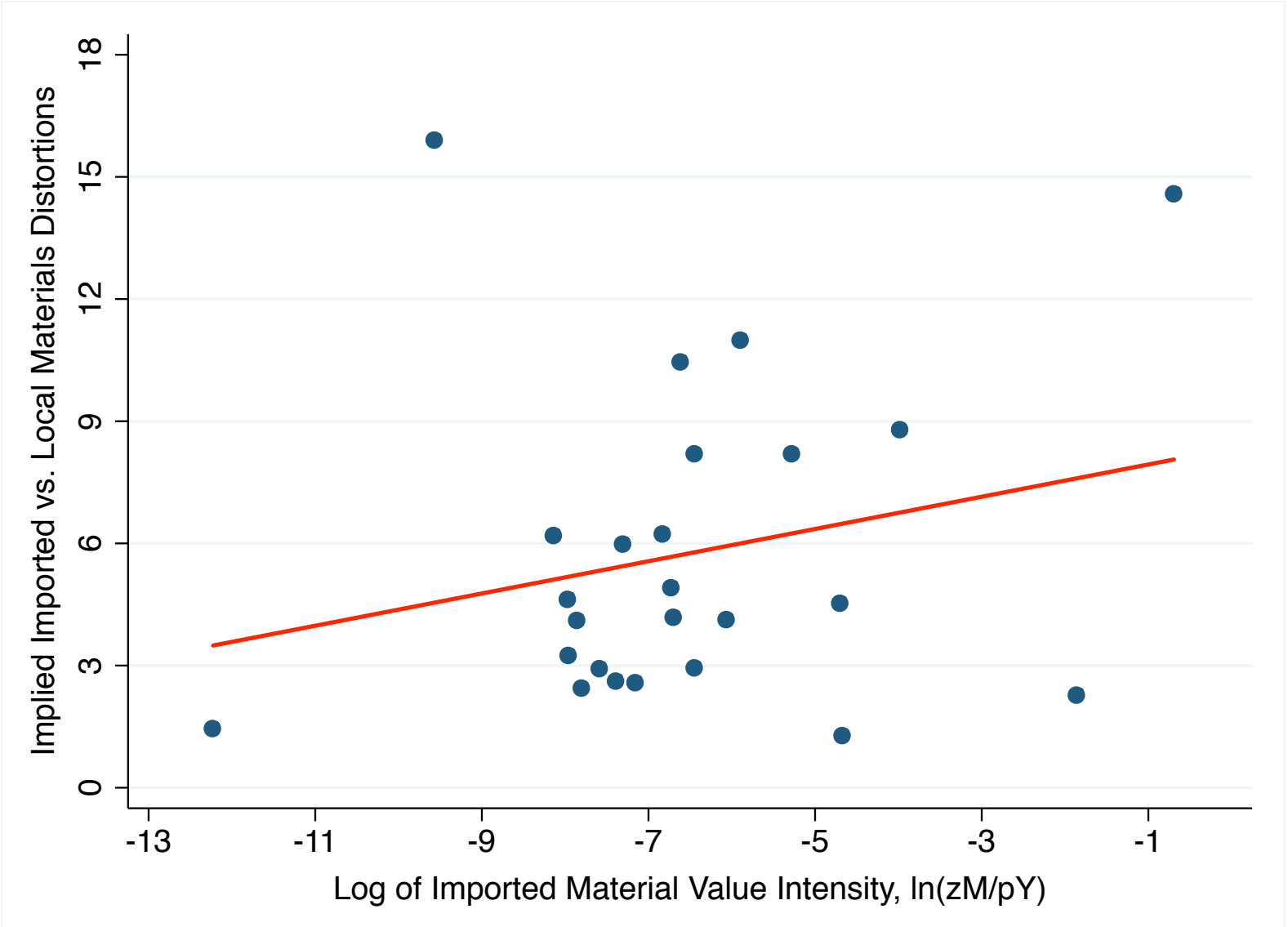
# Sector-level Heterogeneity: Most and Least Affected

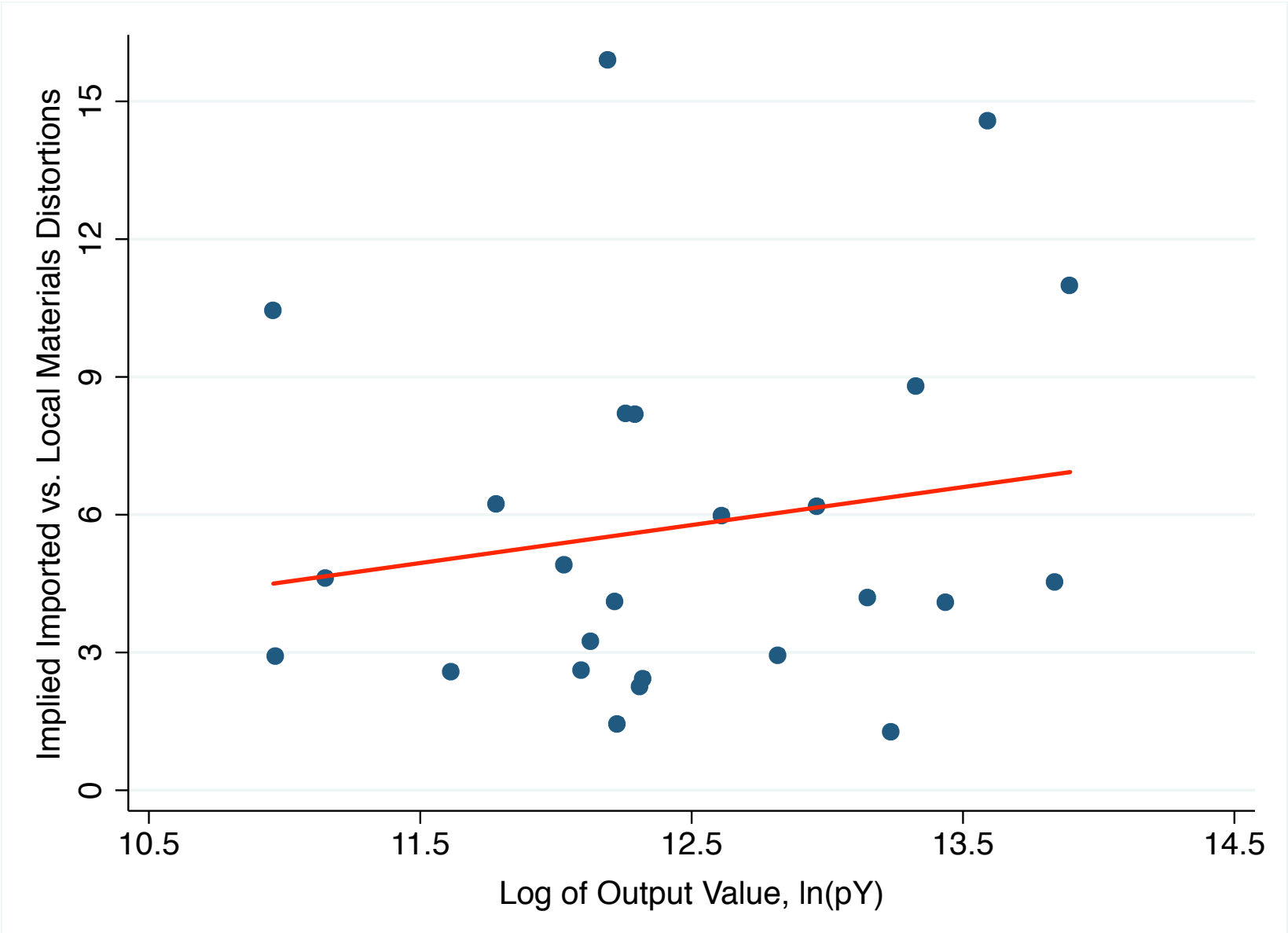
| | *Most Affected* |
|---|---|
| 1 | (34) Manufacture of motor vehicles, trailers and semitrailers |
| 2 | (23) Manufacture of coke, refined petroleum products and nuclear fuel |
| 3 | (21) Manufacture of paper and paper products |
| 4 | (37) Recycling |
| 5 | (24) Manufacture of chemicals and chemical products |

| | *Least Affected* |
|---|---|
| 25 | (20) Manufacture of wood and of products of wood and cork, except furniture; articles of straw and plaiting materials |
| 24 | (36) Manufacture of furniture; manufacturing n.e.c. |
| 23 | (35) Manufacture of other transport equipment |
| 22 | (32) Manufacture of radio, television and communication equipment |
| 21 | (14) Other mining and quarrying |

# Sector-level Distortions and Pre-Conflict Imported Input Material Value Intensity



# Sector-level Distortion and Pre-Conflict Output Value

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