Adjusting to Globalization in Germany

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Introduction

• What are the distributional effects of globalization and trade?
• Does increased foreign competition lead to job losses at home?
• Who are the winners and losers of increased international trade?
  – And are the gains and losses of economic significance?
• How did individual workers adjust to globalization?

Germany is one of the most open economies in the world, so export and import shocks can be expected to have large effects on the labor market.

We consider two trade shock episodes which hit the German economy:
1. The fall of the iron curtain and the rapid transformation of countries in Eastern Europe
2. The rise of China and its integration into the world economy

Contribution

Workers in industries with growing export exposure have lasting earning gains:
1. We analyze at which margin export shocks are capitalized into earnings gains: on-the-job with the original employer or in a different firm but within the original industry?
2. Detect meaningful heterogeneity in the export adjustment mechanisms: Are gains from exports reapplied by all workers or do better skilled workers move more easily?
3. Are the negative consequences of import competition equally distributed across all exposed industries or do they depend on worker or firm characteristics?
4. Do laid-off workers have higher long-run losses if they worked in import competing industries?

Data and Measurement

Individual Data

Data source: 30% sample of the Integrated Labor Market Biographies from the IAB

• We identify all individuals in either 1990 or 2000
• 1. between 22 and 54 years old
• 2. full-time job in manufacturing, wage above marginal-job threshold
• 3. with a tenure of at least two years

Resulting dataset: complete employment biographies of more than 2.4 million individuals in 1991-2000 or 2000-2010

Trade Exposure

Data source: United Nations Commodity Trade Statistics Database (UN Comtrade)

Results

Adjusting to Rising Import and Export Exposure

Table 1: Trade exposure and individual earnings

<table>
<thead>
<tr>
<th></th>
<th>(1) All employers</th>
<th>(2) Same sector</th>
<th>(3) Other Sector</th>
</tr>
</thead>
<tbody>
<tr>
<td>Same 2-digit indy</td>
<td>yes</td>
<td>yes</td>
<td>no</td>
</tr>
<tr>
<td>Export Exposure</td>
<td>0.5245***</td>
<td>0.3528*</td>
<td>0.3017**</td>
</tr>
<tr>
<td>Import Exposure</td>
<td>-0.1038**</td>
<td>-0.5469***</td>
<td>-0.1159**</td>
</tr>
</tbody>
</table>

Note: All results based on a 2.5% subsample. The outcome variable is 10-years earnings obtained by earnings in the base year, cumulated over the ten years following the base year. All models control for demographics, base year earnings, plant size, broad industries and commuting zones. Standard errors, clustered by industry or commuting zone, are in parentheses. Levels of significance: *** 1%, ** 5%, * 10%.

Magnitudes: (Median annual income in 1990: 42,870 €)
Earnings difference of a worker at the 75th percentile and one at the 25th percentile in 1990-2000:
Import exposure: -0.10 x (22.34 - 7.62) = 42,370/100 = -1.2856 (2000-2010: -1.206 €)
Export exposure: 0.52 x (27.00 – 9.19) = 42,370/100 = 3.9906 (2000-2010: +7.865 €)

Heterogeneous Effects

Adjustment by tertile of worker skills (Card, Heining, and Kline, 2013):

Adjustment by tertile of firm quality (Card, Heining, and Kline, 2013):

Adjusting to Job Displacement

The cost of experiencing a mass-layoff in different industries:

Across all industries:
The average worker loses 38 percent of income due to being displaced. Each %-point of additional import exposure increases this loss by additional 0.25 %-points. (Effect of exports is also negative but insignificant.)

Conclusions

• Workers in export intensive industries gain on two different margins:
  1. on-the-job
  2. by moving to a better paying firm within the same sector
• Better skilled workers benefit more. They also switch firms more often.
• Import competition has negative but small effects: 
  1. mostly destroys worker rents at the highest paying firms
  2. better skilled workers adapt more easily by moving to the service sector
• Workers in import competing industries adapt more slowly after a layoff (because their specific human capital is less valuable)

References


Figure 1: Industry level exports to the East vs. World

Rising Eastern trade exposure affects workers depending on industry affiliation (i):

\[ \Delta \text{Im}_{E,i} = \Delta \text{Ex}_{E,i} - \Delta \text{Im}_{E,All} \]  

Table 1: Descriptive overview

<table>
<thead>
<tr>
<th></th>
<th>1990-2000</th>
<th>2000-2010</th>
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<tbody>
<tr>
<td>observations</td>
<td>1,220,897</td>
<td>1,207,948</td>
</tr>
<tr>
<td>mean (sd)</td>
<td>1,207,948</td>
<td></td>
</tr>
</tbody>
</table>

[A] Outcomes, cumulated over 10 years following base year
100 x earnings / base year earnings 873.6 (414.7) 906.2 (372.1)
days employed 2925 (1032) 3179 (881)

[B] Trade exposure
\[ \Delta \text{Ex}_{E,i} = \frac{\text{Ex}_{E,2000-2010} - \text{Ex}_{E,1990-2000}}{\text{Ex}_{E,1990-2000}} \]  

Import exposure
20.211 (16.874) 34.933 (28.079)
p25-p75 interval [9.185; 26.997] [17.089; 50.216]

Export exposure
22.806 (26.198) 28.169 (54.724)
p25-p75 interval [9.185; 26.997] [17.089; 50.216]

Estimating the Effects of Trade Exposure on Worker Careers

How did increasing exposure to trade with China and Eastern Europe affect the earnings of German manufacturing workers in the subsequent decade?

\[ \Delta \text{Ex}_{E,i} = \alpha + \beta_1 \Delta \text{Im}_{E,i} + \beta_2 \Delta \text{Ex}_{E,i} + \phi_1 \text{Im}_{E,All} + \phi_2 \text{Ex}_{E,All} + \epsilon_{i,t} \]  

Identification
Danger of parallel unobservable shocks that simultaneously affect trade and labor market outcomes.

IV approach (Autor, Dorn, and Hanson, 2013; Dauth, Findleisen, and Suedekum, 2014) Instrument the exposure variables with trade flows of Aus, NZ, Jp, Sin, Can, Swe, Nor, UK vis-a-vis the East.