The Costs of Remoteness: Evidence from German Division and Reunification

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Motivation

• What determines the spatial distribution of economic activity?

• Main competing explanations:
  – Institutions
  – Natural Advantage
  – Culture
  – Market Access

• Very difficult to empirically disentangle the effects of these factors.
This Paper

• We exploit German division and reunification as a natural experiment to provide evidence for the importance of market access.

• Key Idea: Division and Reunification exogenously changed the relative market access of West German cities close to the East-West border.
Plan of the Presentation

1. Sketch of the theoretical model
2. Empirical strategy
3. Main result
4. Further evidence
5. Conclusion
Theoretical Model

• There are N locations which are endowed with an exogenous stock of housing (immobile resource).

• Firms produce Dixit-Stiglitz varieties of a manufacturing good with IRS and use labor as the only input.

• Manufacturing varieties are subject to (iceberg) transport costs.

• Consumers demand both housing and the manufacturing varieties.

• Population is perfectly mobile across locations and in the long-run migration equalizes real wages.
Calibration

- To examine the qualitative predictions of the model we calibrate to the 1939 distribution of population across the cities in our sample.
- We simulate the division of Germany and allow the population of the West German cities to adjust to this exogenous shock.
Figure 1: Simulated Change in West German City Population
By distance in km from the East–West Border
Figure 2: Differences in Simulated Population Changes within and beyond 75km of E–W border for small and large West German cities.
Data

• We focus on a sample of West German cities which had at least 20000 inhabitants in 1919.
• We aggregate cities that merge during the sample period.
• Observations:
  – Pre-war: 1919, 1925, 1933, 1939
Empirical Strategy

• Difference-in-Differences Estimation:
  – Compare population growth in West German cities close to the East-West border with other West German cities both before and after division.

• Baseline Specification:

\[ \text{Popgrowth}_{ct} = \beta \text{Border}_c + \gamma (\text{Border}_c \times \text{Division}_t) + d_t + \varepsilon_{ct} \]
Figure 3: Indices of Treatment & Control City Population
Figure 4: Difference in Population Indices, Treatment – Control
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<td>-0.746***</td>
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<td>Border × Year 1950-60</td>
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**Notes:** Standard errors are heteroscedasticity robust and adjusted for clustering on city. * denotes significance at the 10% level; ** denotes significance at the 5% level; *** denotes significance at the 1% level.
Tax Incentives and Subsidies

- The West German regions close to the East German border were subject to an extensive support program in the form of:
  - Investment subsidies
  - Tax breaks
  - Infrastructure investments
- Ziegler (1992) estimates that during the 1980s about half of West German regional policy spending was allocated to the border area.
- While it is difficult to evaluate the causal impact of these policies they clearly have not prevented a decline of the border cities.
Robustness: Is it Really Loss of Market Access?

- The decline of the border cities is consistent with our model.
- There is no simple explanation for the decline in terms of institutions, endowments or culture.
- However, there are other possible explanations for the decline:
  - Fear of further armed conflict
  - Differences in industrial structure
  - Differences in war-related disruption
- In the paper we provide a number of pieces of evidence to rule out these alternative explanations.
Figure 6: Simulated and Estimated Division Treatments

Note: Simulated division treatments based on the parameter configuration that minimizes the sum of squared deviations between the simulated and estimated division treatments for small and large cities. Lowess is a locally weighted linear least squares regression of the division treatment against distance to the East–West German border (bandwidth 0.8).
Summary

- West German cities close to the East-West border substantially decline after division relative to other West German cities.

- The evidence suggests that this decline can be largely explained by the change in market access of these cities.

- While institutions and natural advantage are certainly also important, market access plays a substantial role in determining economic prosperity.