Auto production footprints: Comparing Europe and North America

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The Globalization of the Automotive Industry
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Disclaimer
The analysis and conclusions set forth are those of the author and do not indicate concurrence by other members of the research staff or the Federal Reserve Bank of Chicago
Light vehicle production is concentrated

Seems strikingly similar

North America, 2013

Europe, 2013

70 plants, 16.1 million units

80 plants, 14.6 million units
Light vehicle production is concentrated

North America, 2013

Europe, 2013

73% of region’s assembly

78% of region’s assembly
Objective

• Explain apparent similarity in Europe’s auto assembly footprint in comparison with the one in North America. Offer historic context.
• Why of interest? Focus on changes in Europe over the last 25 years and provide context.
• Find: as Europe’s economic space grew larger, an auto corridor emerged. That corridor is quite similar to North America’s auto alley.
Why does auto production concentrate?

• Spatial concentration of economic activity is common in manufacturing.

• “The benefits of agglomeration ultimately reflect gains that occur when proximity reduces transportation costs” (Ellison et al, 2010)

• Main argument applies to auto assembly.
North America
100 years ago: Demand growth leads to establishment of branch plants

Ford, 1917

GM, 1955
Since 1980: Emergence of Auto Alley

• Two factors:

  – Detroit carmakers abandon the “branch assembly plant” system

  – Foreign-based carmakers enter the as producers (primarily in U.S. and Canada)
Parts production & vehicle assembly co-locate

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Transportation infrastructure matters
Europe: Polycentric legacy
Which Europe?

16 countries with light vehicle output of at least 100,000
1990: Western Europe dominates

Light vehicle production, by plant
1990: Legacy of national champions
Economic space opens up in early 90s

• Two important changes
  – Borders in W-EU less important – for production
  – Economic space doubles in size as over a dozen countries join the EU

• Plus: competitive challenges
  – Arrival (and anticipated growth) of Japanese producers
  – Productivity gap for European producers
2013: Europe’s auto region dominates
Europe’s auto corridor emerges

Light vehicle production shares by geography

<table>
<thead>
<tr>
<th></th>
<th>Western corridor</th>
<th>Eastern corridor</th>
<th>Outside corridor</th>
<th>All</th>
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<td>2013</td>
<td>56</td>
<td>22</td>
<td>22</td>
<td>100</td>
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</tbody>
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Corridor share rises from 68% to 78% as the Eastern corridor share more than quintuples.
Production centered on demand
Transportation infrastructure matters
Parts production & vehicle assembly co-locate
Summary

• Production of automobiles exhibits agglomeration in both Europe and North America

• Underlying forces:
  - Proximity to market and inputs
  - Transportation infrastructure

• Europe
  – Expansion of economic space re-shaped the industry footprint
  – Those changes took place despite the absence of a “European Detroit”
  – Today’s production is much less dependent on the nation state model
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Extra slides
Weber: Optimal location varies by industry

**Bulk-reducing industry**
such as steel

**Bulk-gaining industry**
such as auto assembly
Plant openings – shift balance eastward
Plant closings since 1990
Legacy of national champions eroding
Legacy of national champions eroding faster in production

Home country share in European* production and sales

<table>
<thead>
<tr>
<th></th>
<th>Production share</th>
<th>Sales share</th>
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<tbody>
<tr>
<td></td>
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</tbody>
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* Europe production and 2013 sales = 16 producing countries
1990 sales = W-EU countries only