Imports of Intermediate Parts in the Auto Industry

Conference on Measurement Issues Arising from the Growth of Globalization
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Outline

- Motivation and Literature
- Data source
- Trends since 1996
- Focus Mexico (Two specific examples)

Motivation

- Automobile assembly is complex, involves thousands of parts and hundreds of companies. About 70% of the value added originates with supplier companies.
- Parts are sourced globally. About ¼ of parts used in U.S. assembly are imported.

Literature

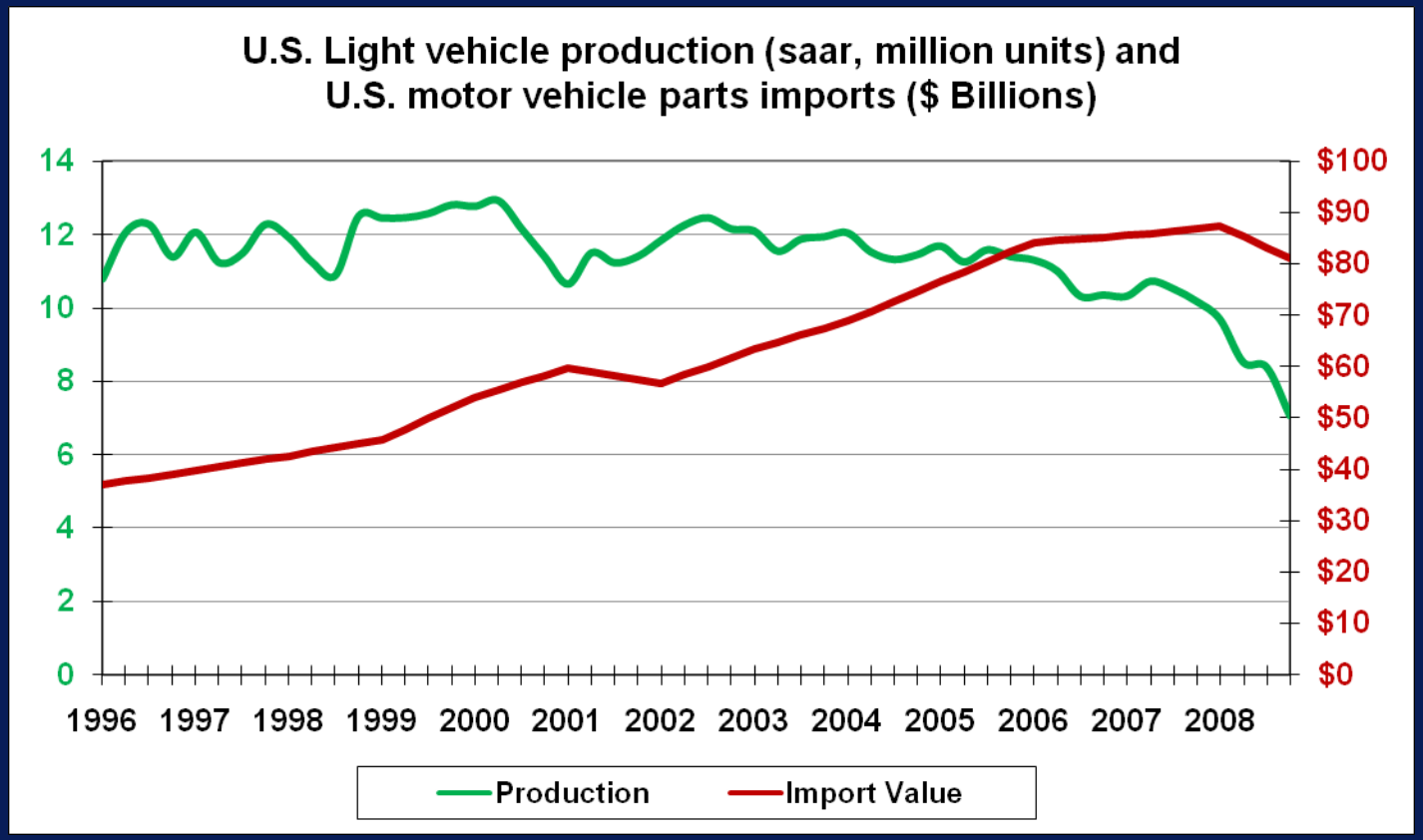
- Sturgeon et al. (2007), Klier and Rubenstein (2008)
- Herzenberg (1991), U.S. Congress (1992), Weintraub and Sands (1998)
- Carillo and Contreras (2007), Gilmer and Canas (2008)

Data

- Since 1996, U.S. imports have been classified according to the Harmonized Tariff System (HTS). That system is coded at a very high level of detail (up to 10 digits).
- To measure imports of intermediate parts by the U.S. auto industry we combed through all codes to identify “new” light-vehicle parts whenever possible.
- For large parts such as engines and transmissions, remanufactured versions are separately coded. We excluded those parts from our analysis. However, we cannot distinguish between new parts, such as engines, that go to the after-market (for example, for installation at a dealer) and new parts that go to the assembly line (original equipment).

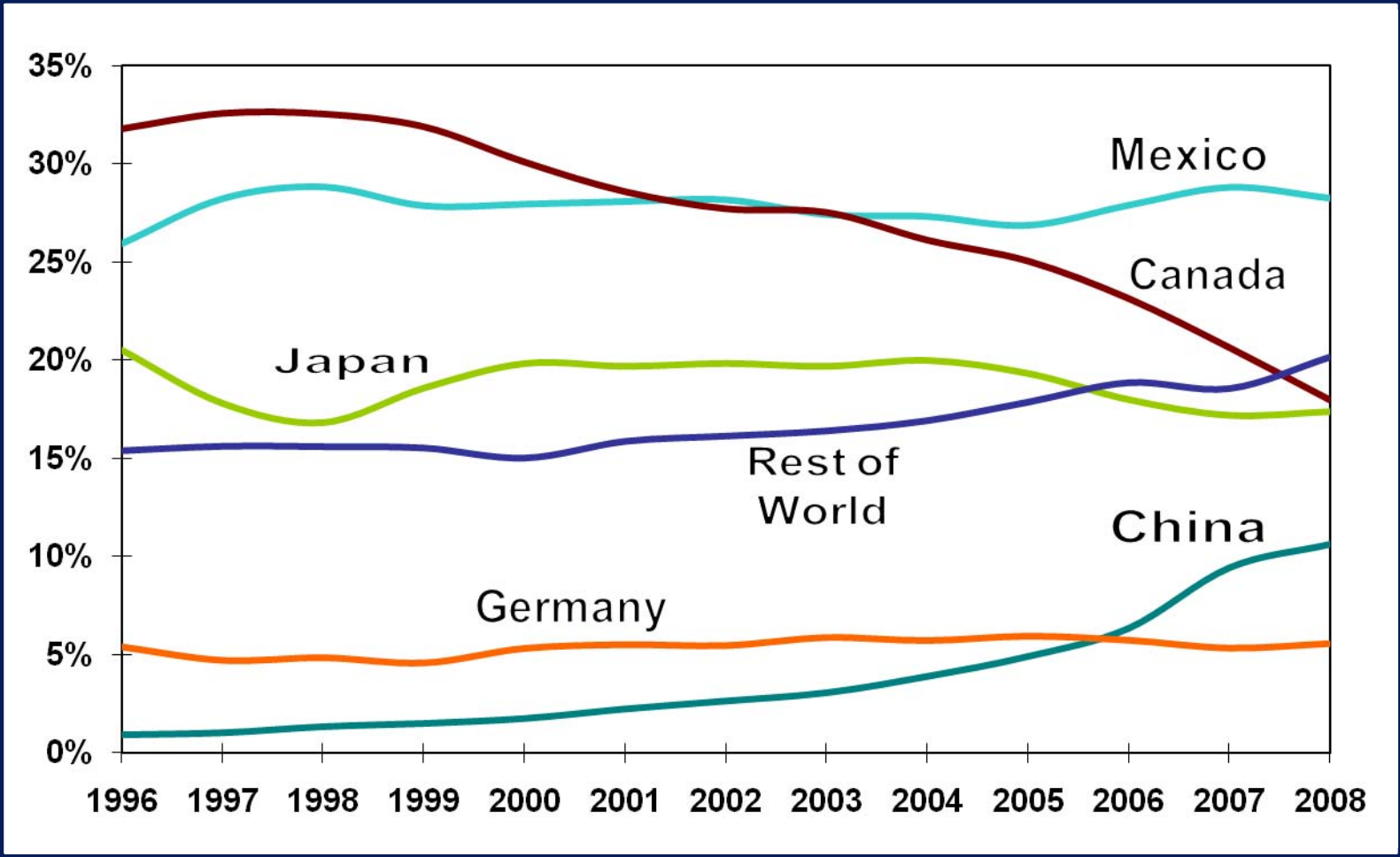
Imports of parts are up

Rising share of imports in cost of materials:
1997: 29%, 2002: 36%



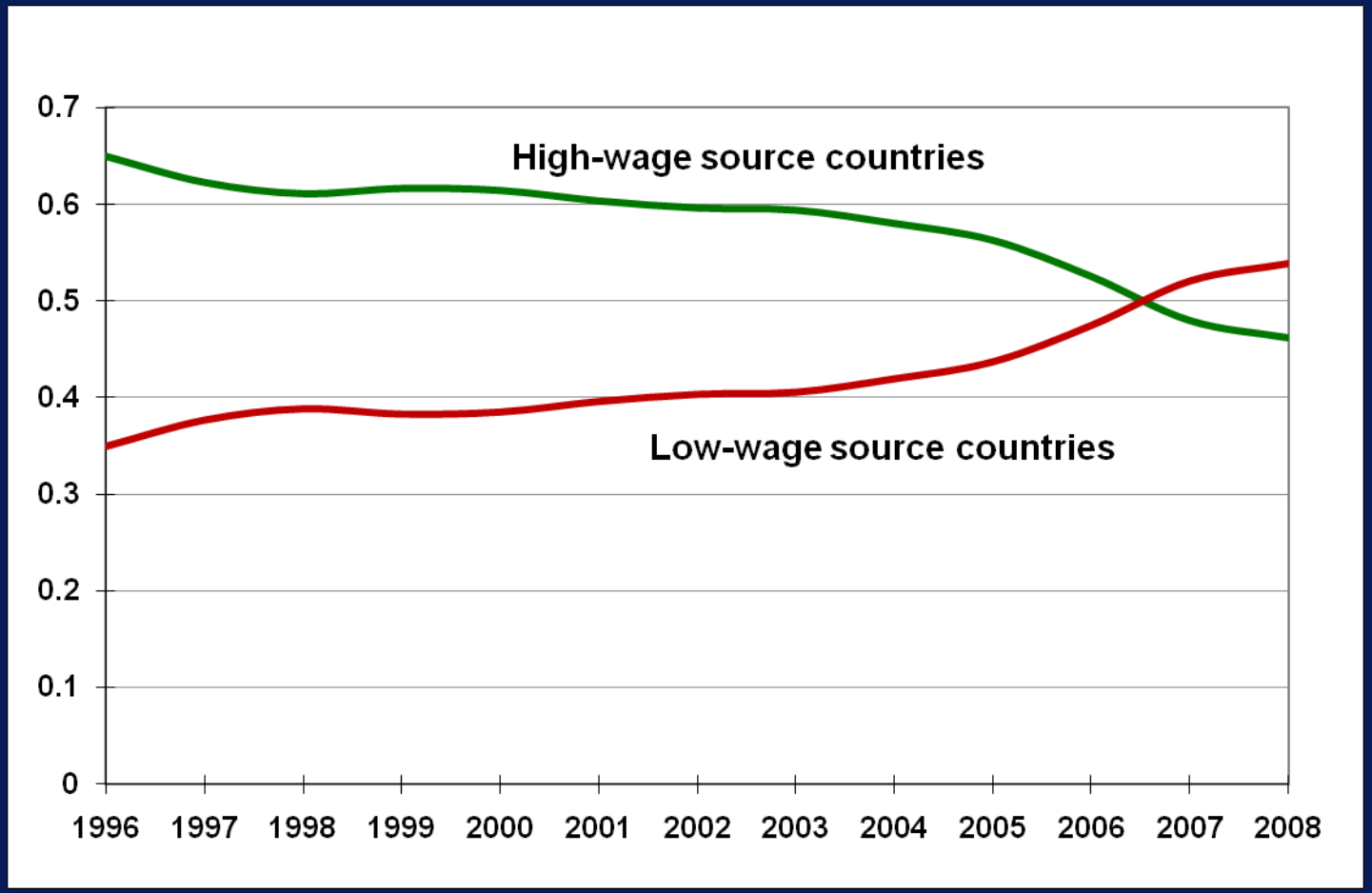
Rise and fall among top 5 countries

US motor vehicle parts imports (%)

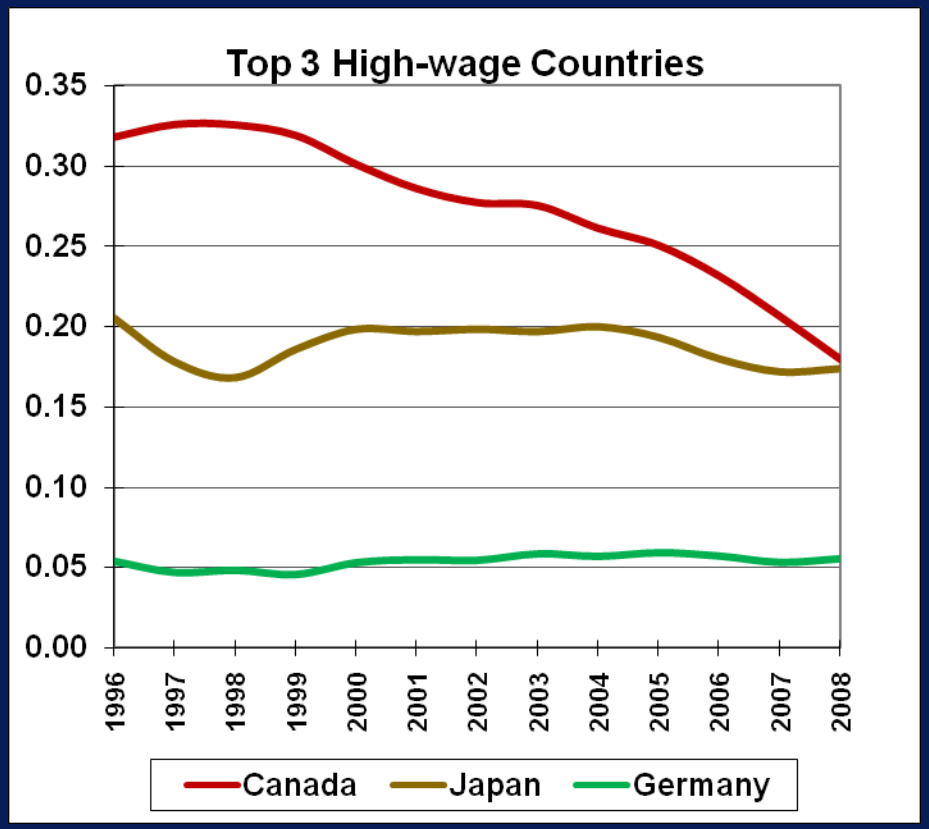


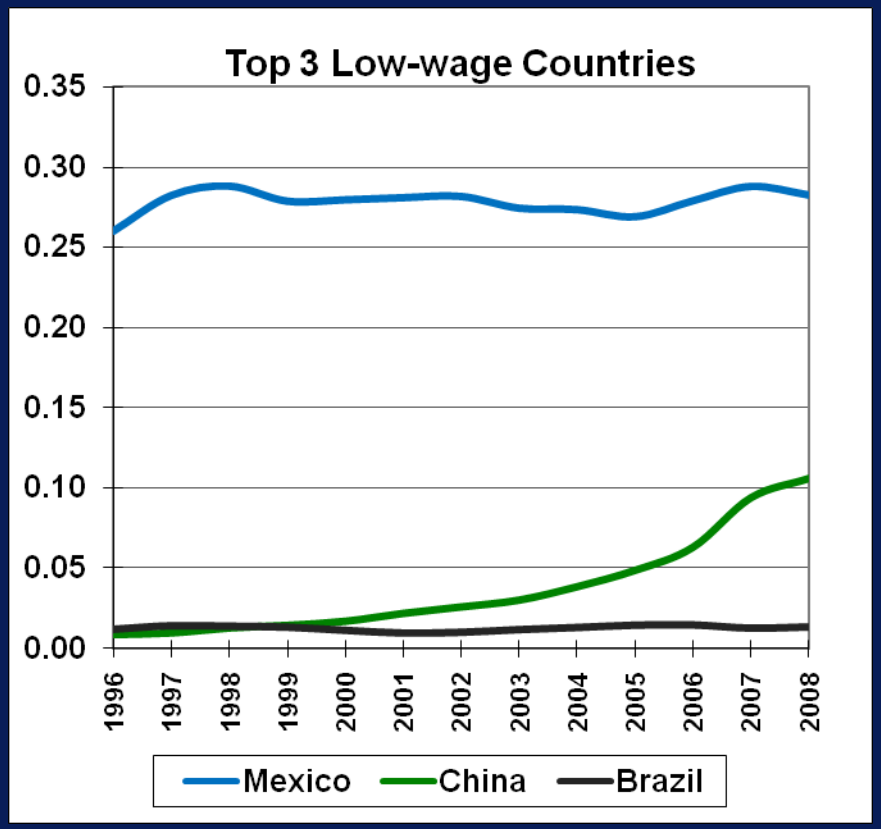
Growth for low-wage countries

Share of motor vehicle parts imports

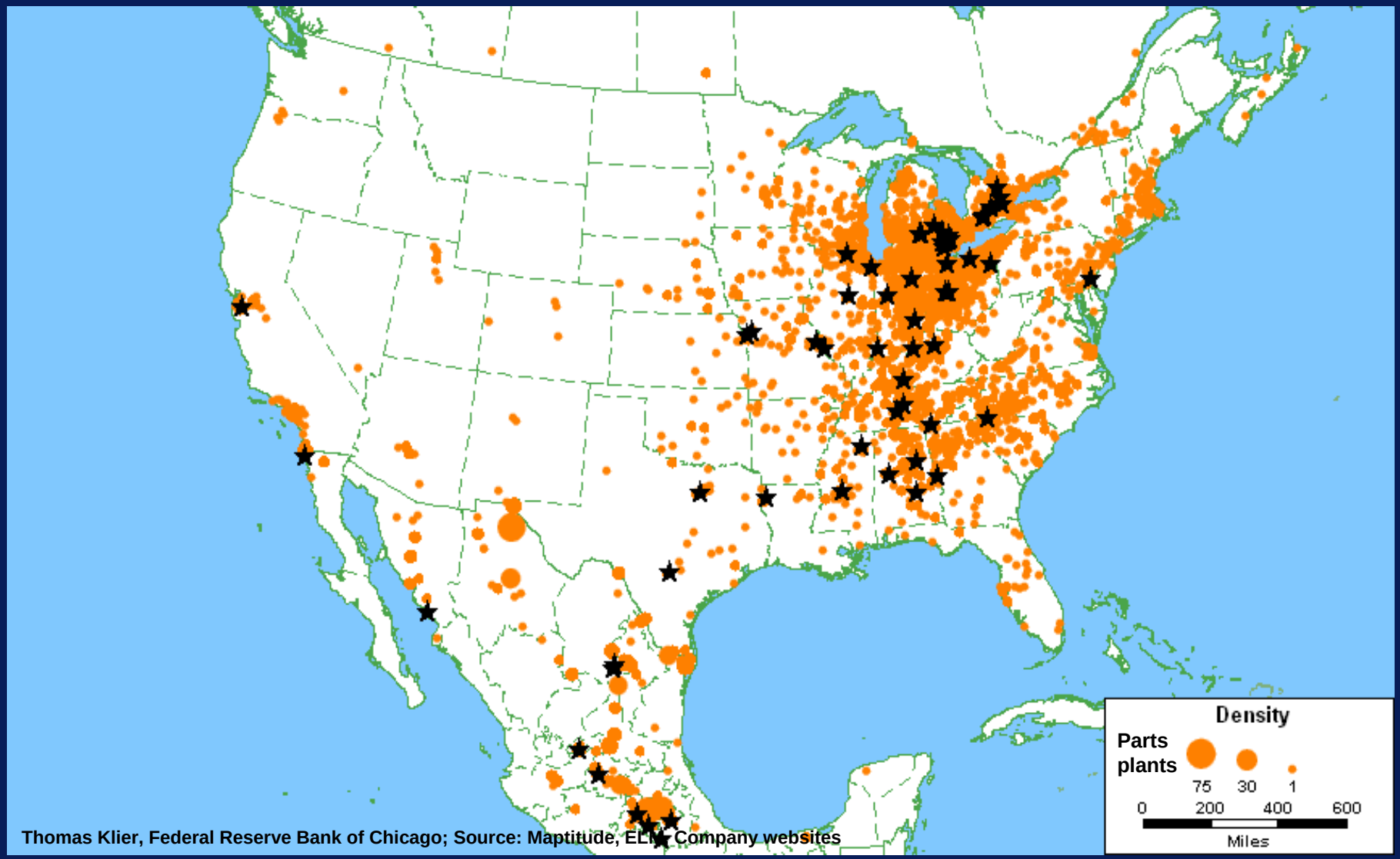


Canada down, China up





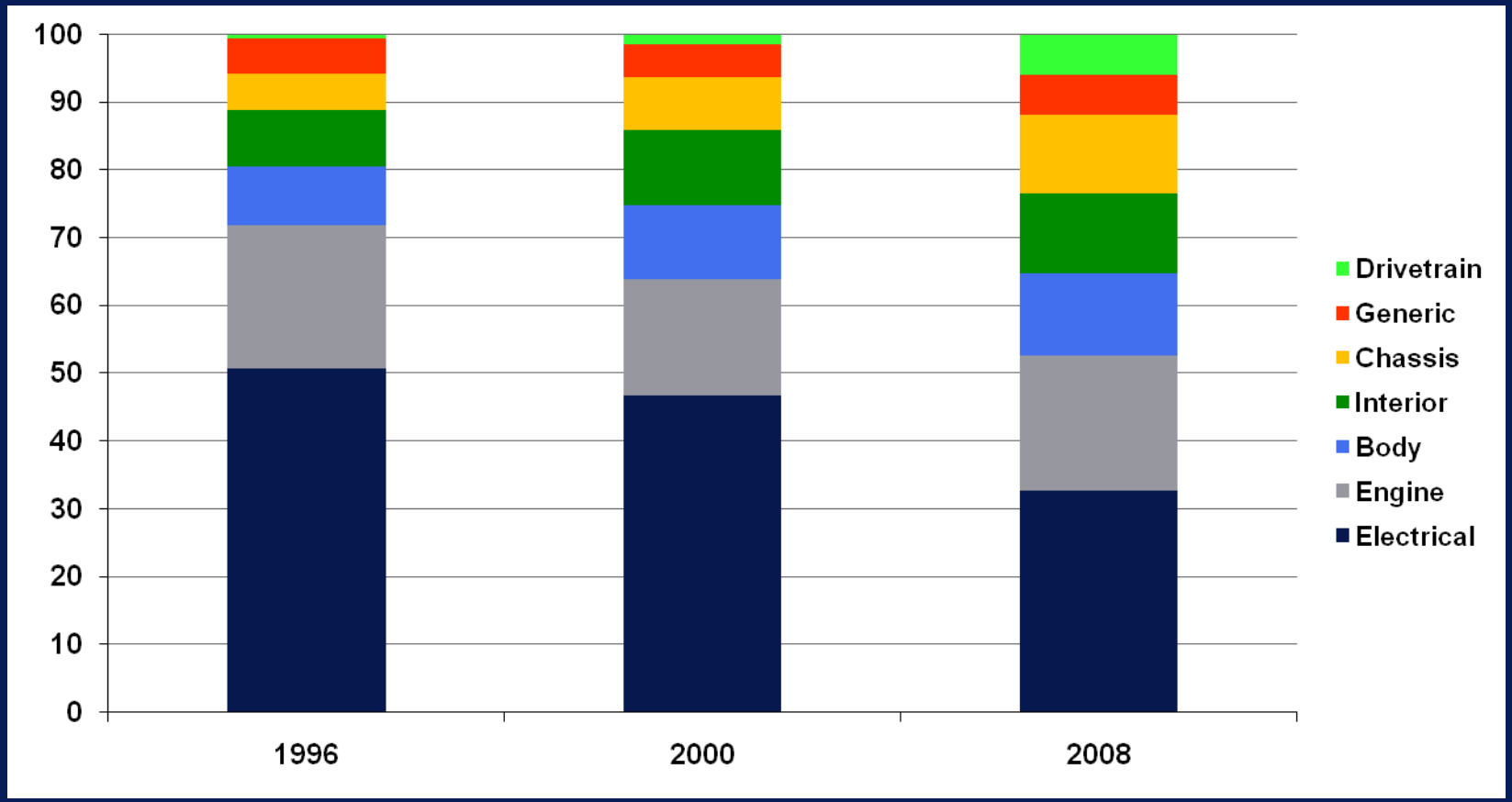
Mexico: largest source of parts



Thomas Klier, Federal Reserve Bank of Chicago; Source: Maptitude, ELM, Company websites

Change in Mexican parts production

Motor vehicle parts imports from Mexico by major subsystem



Example 1: aluminum wheels

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- **Most U.S.-based production has been moved to low-wage countries in last decade.**
- **Leading sources of imports: Mexico and China.**
- **Hayes-Lemmerz and Superior Industries as market leaders. The two companies closed four U.S. plants since 2007. Today almost all their aluminum wheels are produced in Mexico (two U.S. plants are left).**
- **Mexico's cost advantage vs U.S. production represents about 20%. It is associated with processing functions (casting, heat treatment, machining, painting).**

Example 1: aluminum wheels

Cost structure of cast aluminum wheels

Category	Mexico	U.S.
Materials	**30%**	**24%**
Processing	**41%**	**52%**
SG&A	**4%**	**4%**
Profit	**9%**	**7%**
Other	**16%**	**13%**
Total	***100%***	***100%***

Example 2: seats and seat parts

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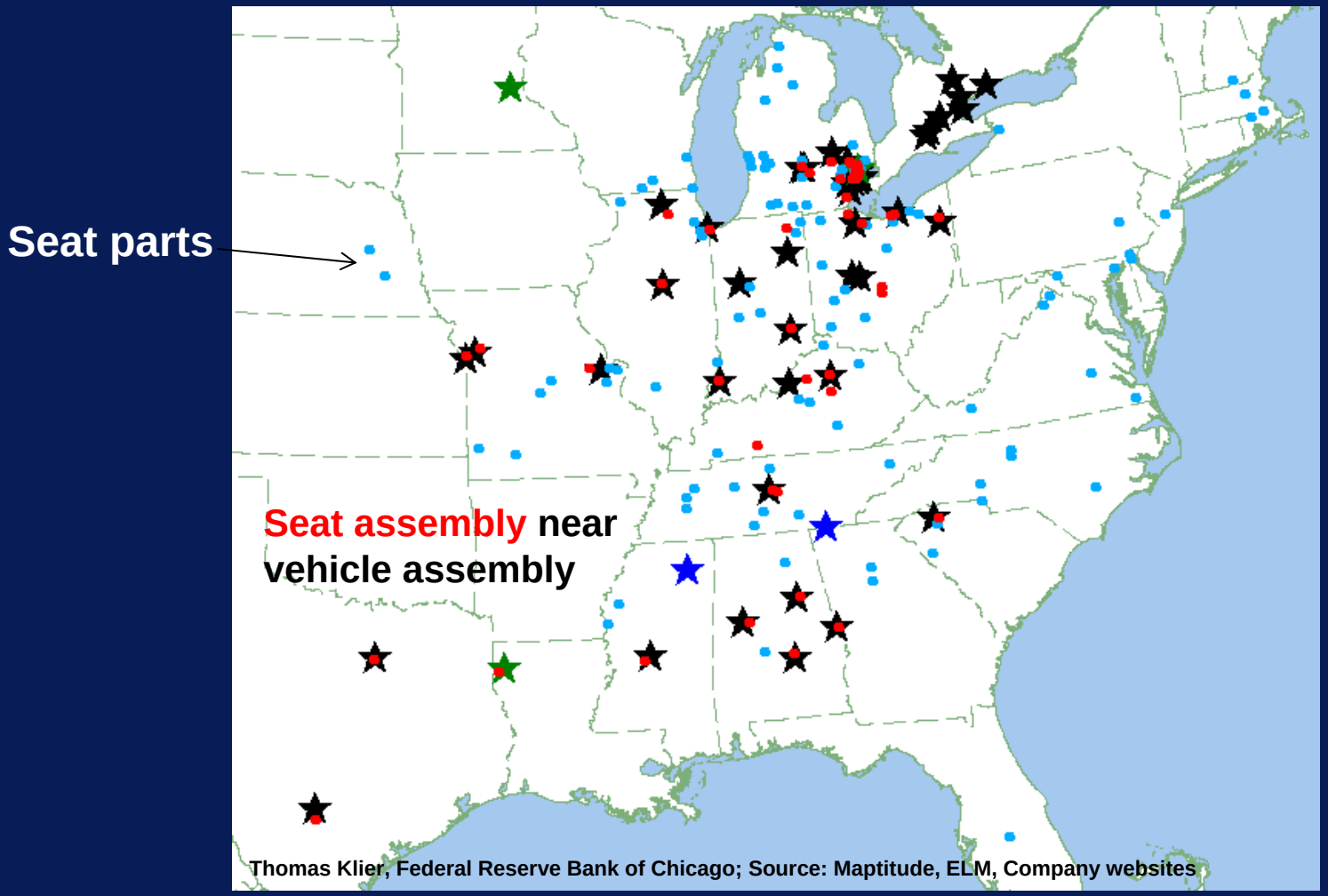
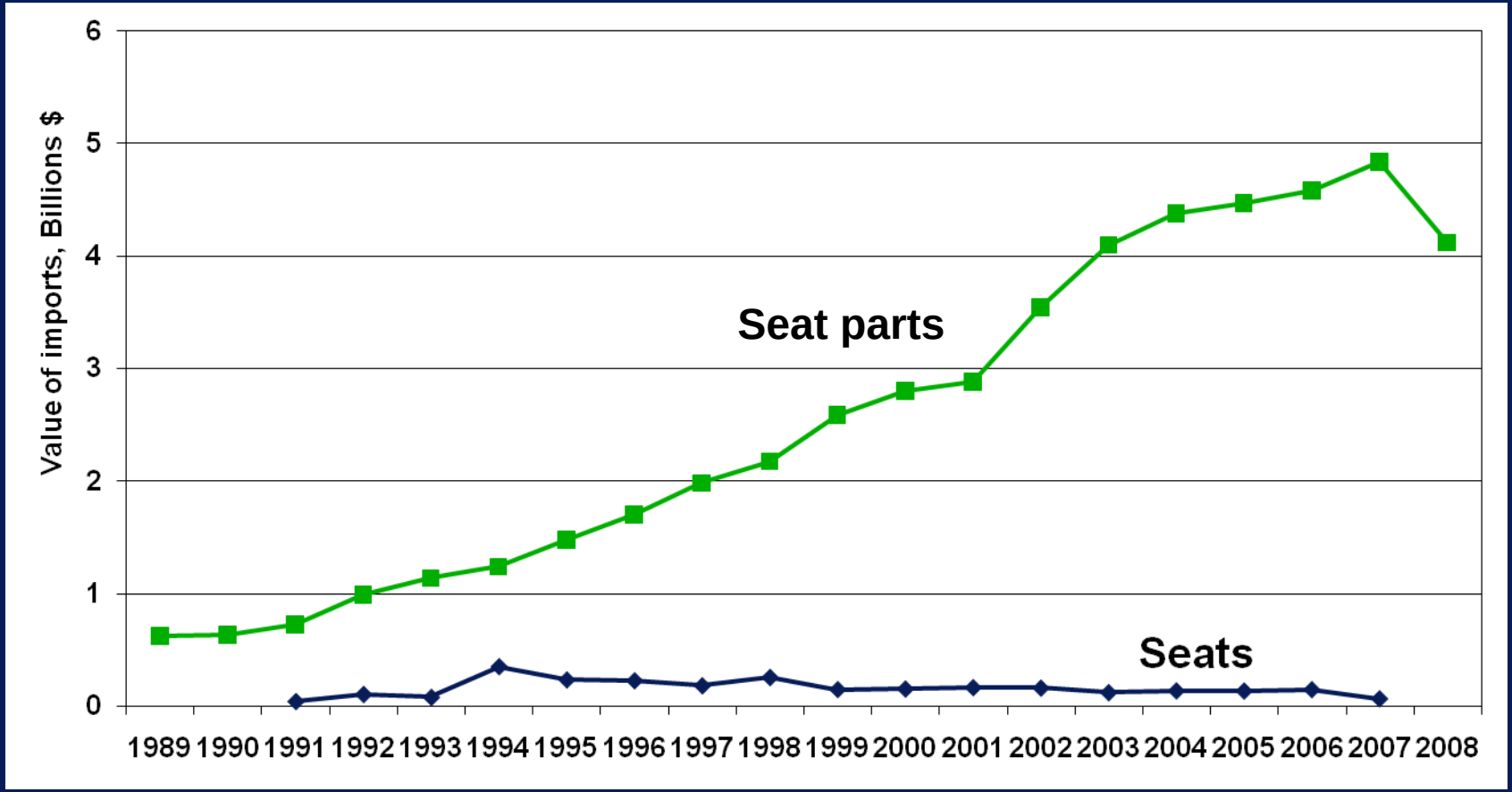
- Seat assembly demonstrates complexity of supply chains of parts in vehicle industry.
- Plants producing finished seats are always located very close to vehicle assembly plant.
- Many of the parts that go into a seat are imported. 2/3 of seat part imports originate in Mexico.

Seat parts vs seat assembly



Seat parts are imported, seats aren't



Summary

- U.S. vehicle assembly relies on growing share of imported parts.
- Growing share of motor vehicle parts imports originates in low-wage countries.
- Supply chain of domestically produced intermediate parts often includes imported parts.

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