

# **NAFTA and the auto industry- links between the U.S. and Mexico**

**FED@YOURDESK webinar**

**Federal Reserve Bank of Chicago**

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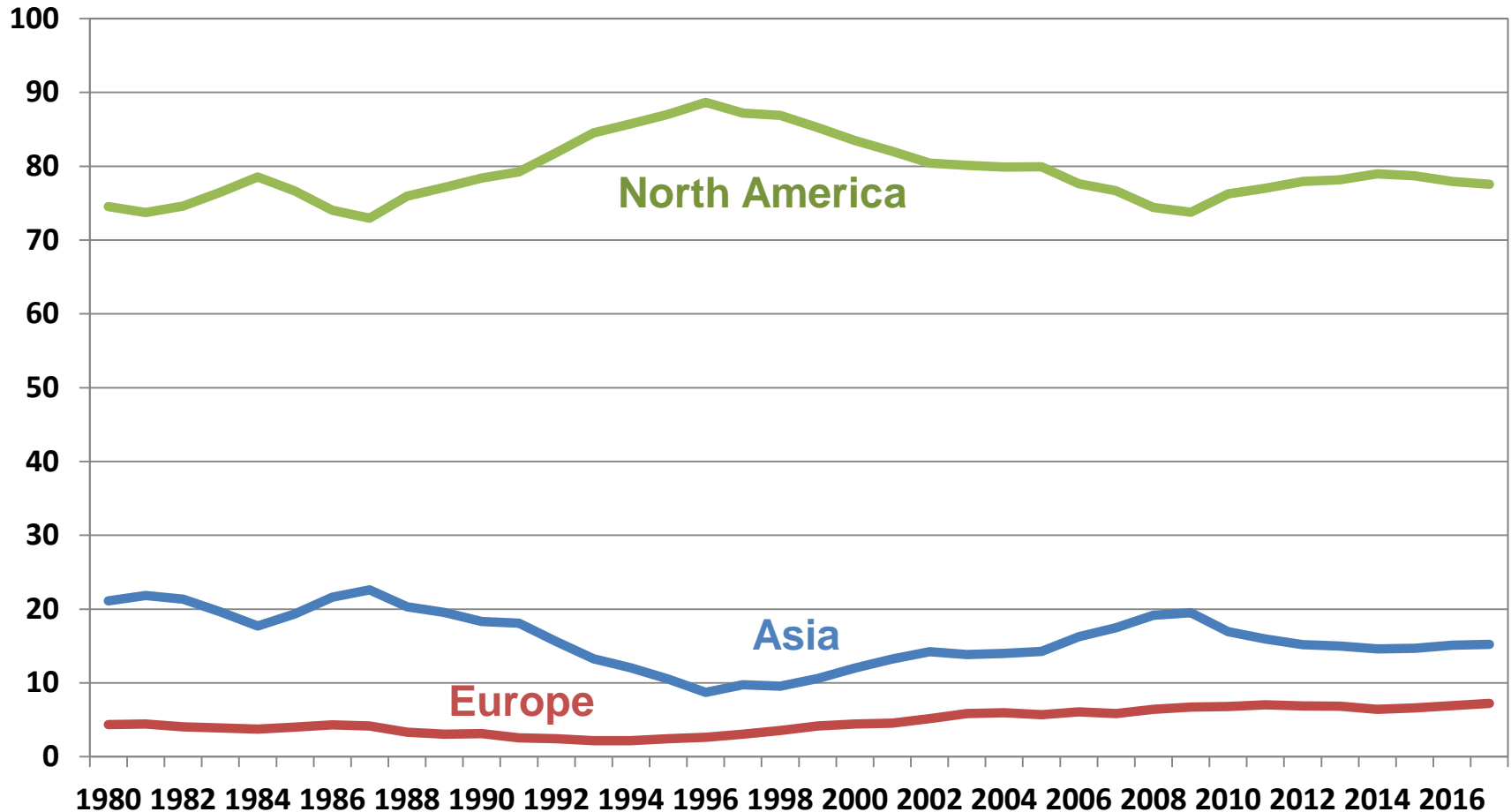
*The analysis and conclusions set forth are those of the author and do not indicate concurrence by other members of the research staff or the Federal Reserve Bank of Chicago*

# Outline

- **North American production geography**
- **Growth in Mexico**
- **Trade in vehicles**
- **Supply chain integration**

# Vehicles are produced where sold

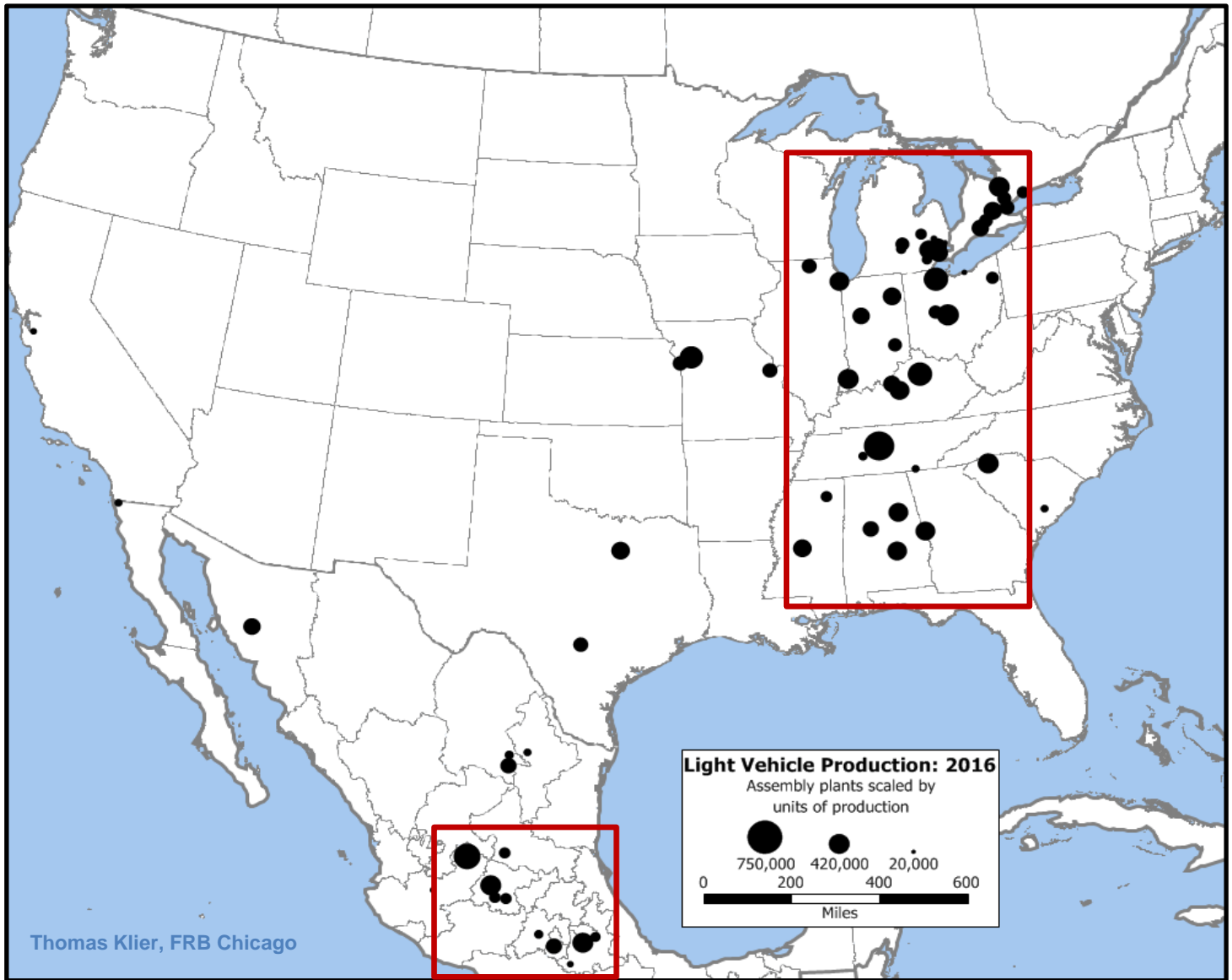
U.S. light vehicle sales by major production region, %



Source: Author's calculations based on Wards Autoinfobank

# North America's auto production footprint

2016

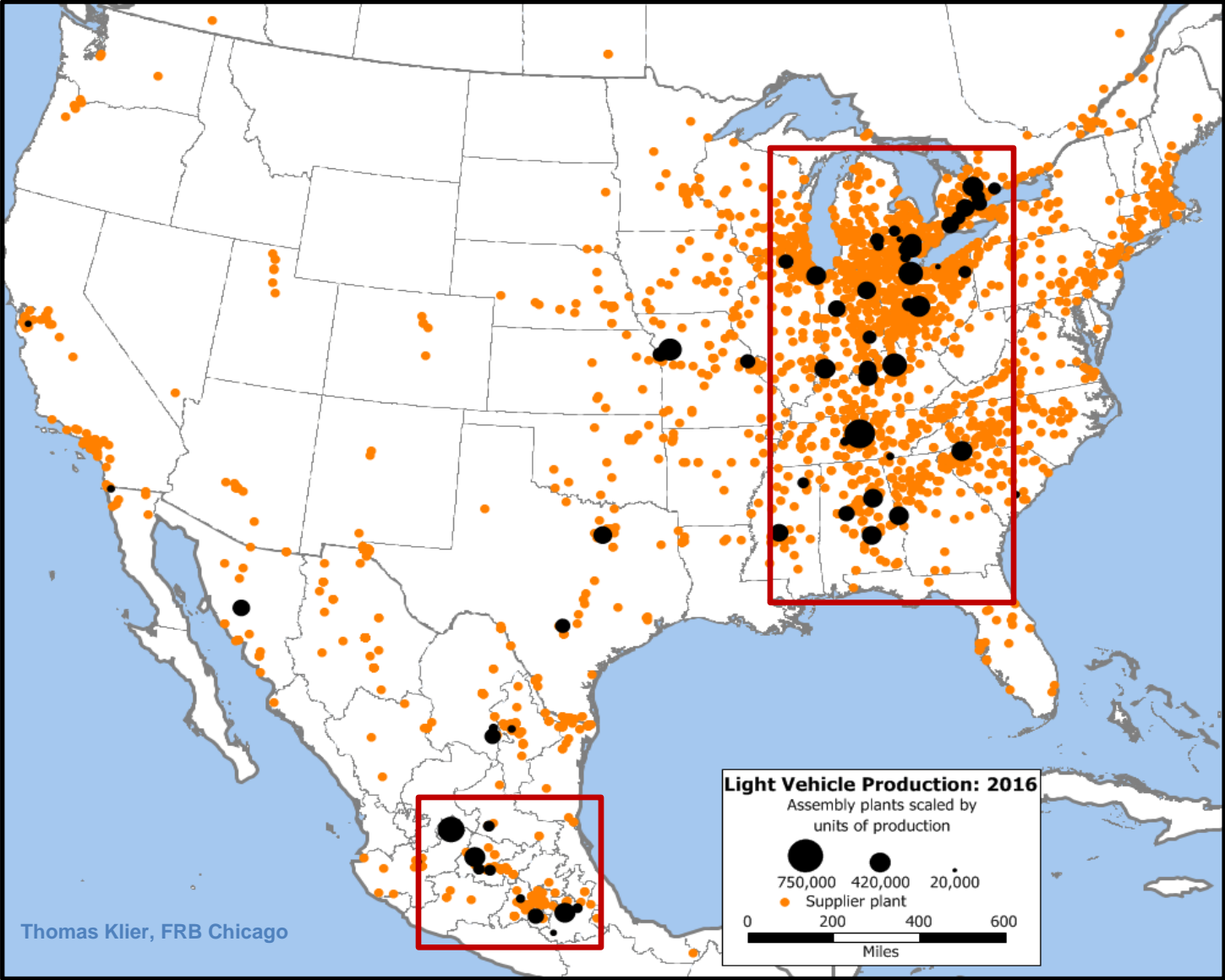


Thomas Klier, FRB Chicago

Source:  
Wards,  
Maptitude

# Parts and vehicle assembly co-locate

2016



Source:  
Wards,  
ELM,  
Maptitude

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# Mexico is now larger than Canada

Share of NAFTA's light vehicle production (%)

Country	1995	2000	2010	2016
Canada	16	17	17	13
<b>Mexico</b>	<b>6</b>	<b>11</b>	<b>19</b>	<b>20</b>
U.S.	78	72	64	67
Total	100	100	100	100
<i>Vehicles (millions)</i>	<i>14.9</i>	<i>17.2</i>	<i>11.9</i>	<i>17.7</i>

Source: Author's calculations based on Wards Autoinfobank

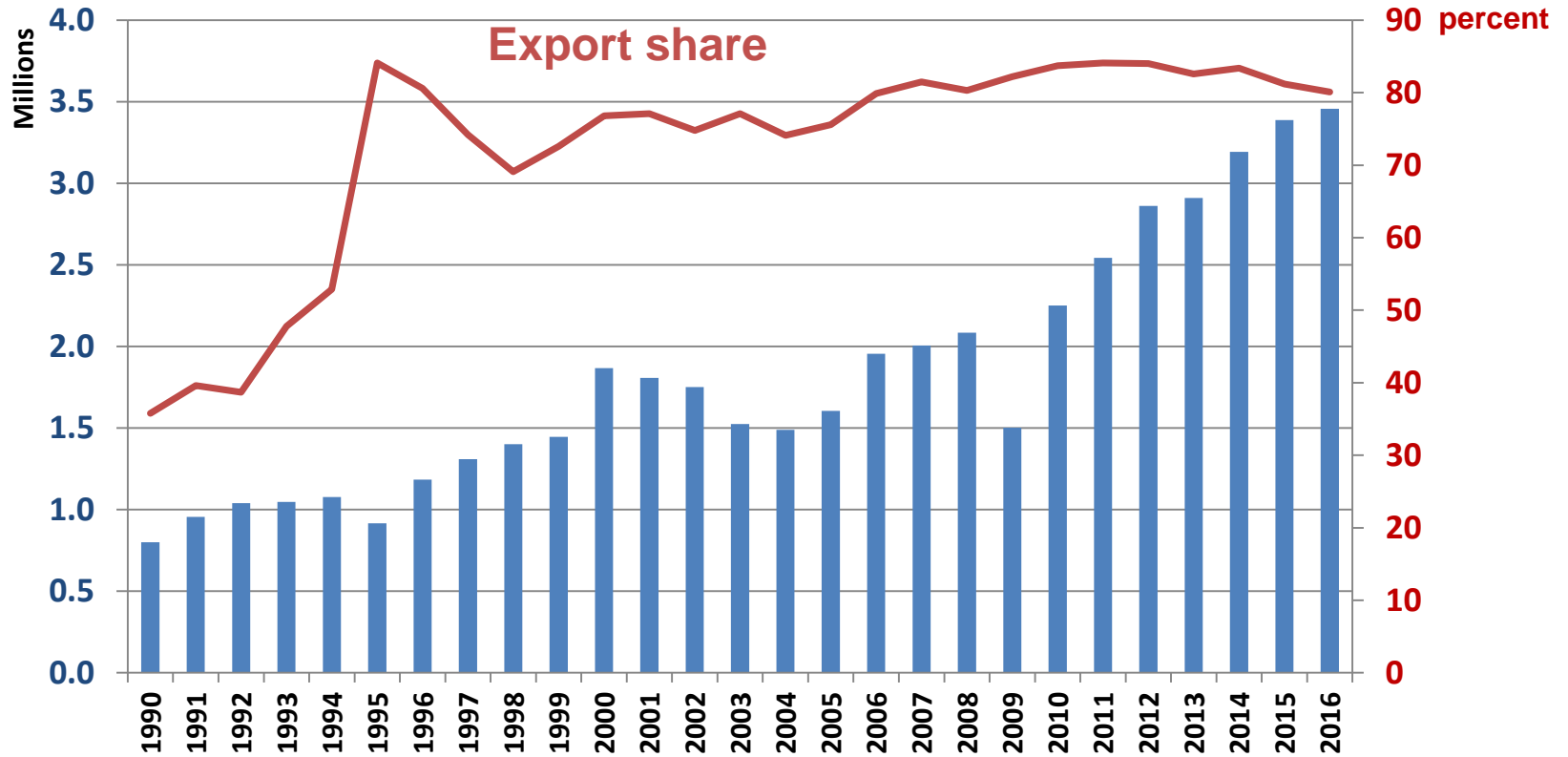
# Mexico's auto industry: 3 eras

- Pre-NAFTA
  - Long history of vehicle production in Mexico
  - Importance of industry-specific trade policy
- NAFTA removes trade barriers and quotas over 10-year transition period (1995-2004)
  - Mexico becomes fully integrated into North American production space
- Since 2004
  - Assembly plant count increases from 11 to 21 (2019). Only two of the additional plants are by a Detroit producer
- *Note: Light vehicle production in Mexico:*
  - *1960: 50k; 1970: 193k; 1980: 490k; 1990: 800k*



# Exports drive Mexico's strong growth

## Light vehicle production in Mexico

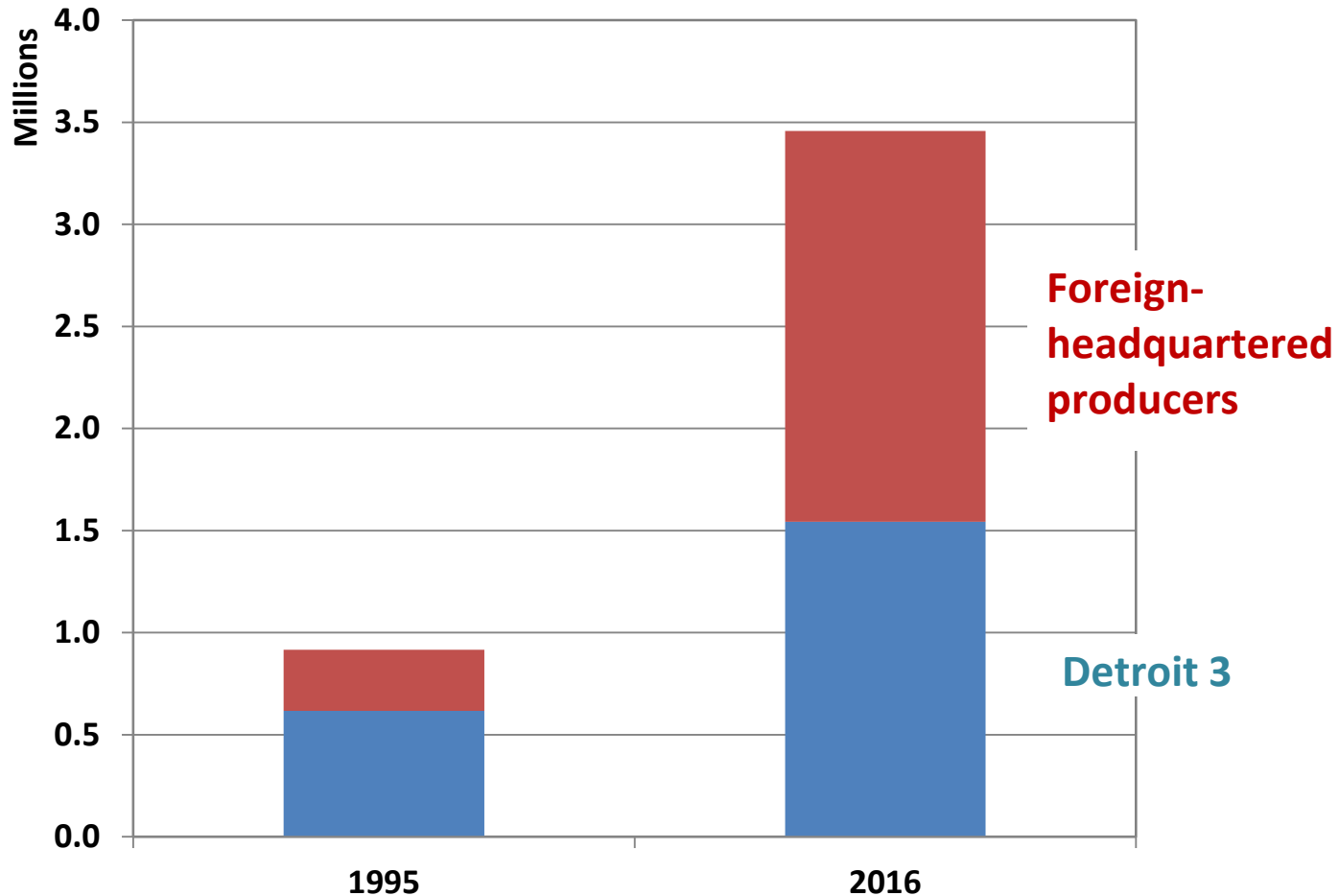


Production has increased by 2.5 million units since 1995

Source: Author's calculations based on Wards Autoinfobank

# Non-D3 producers driving growth

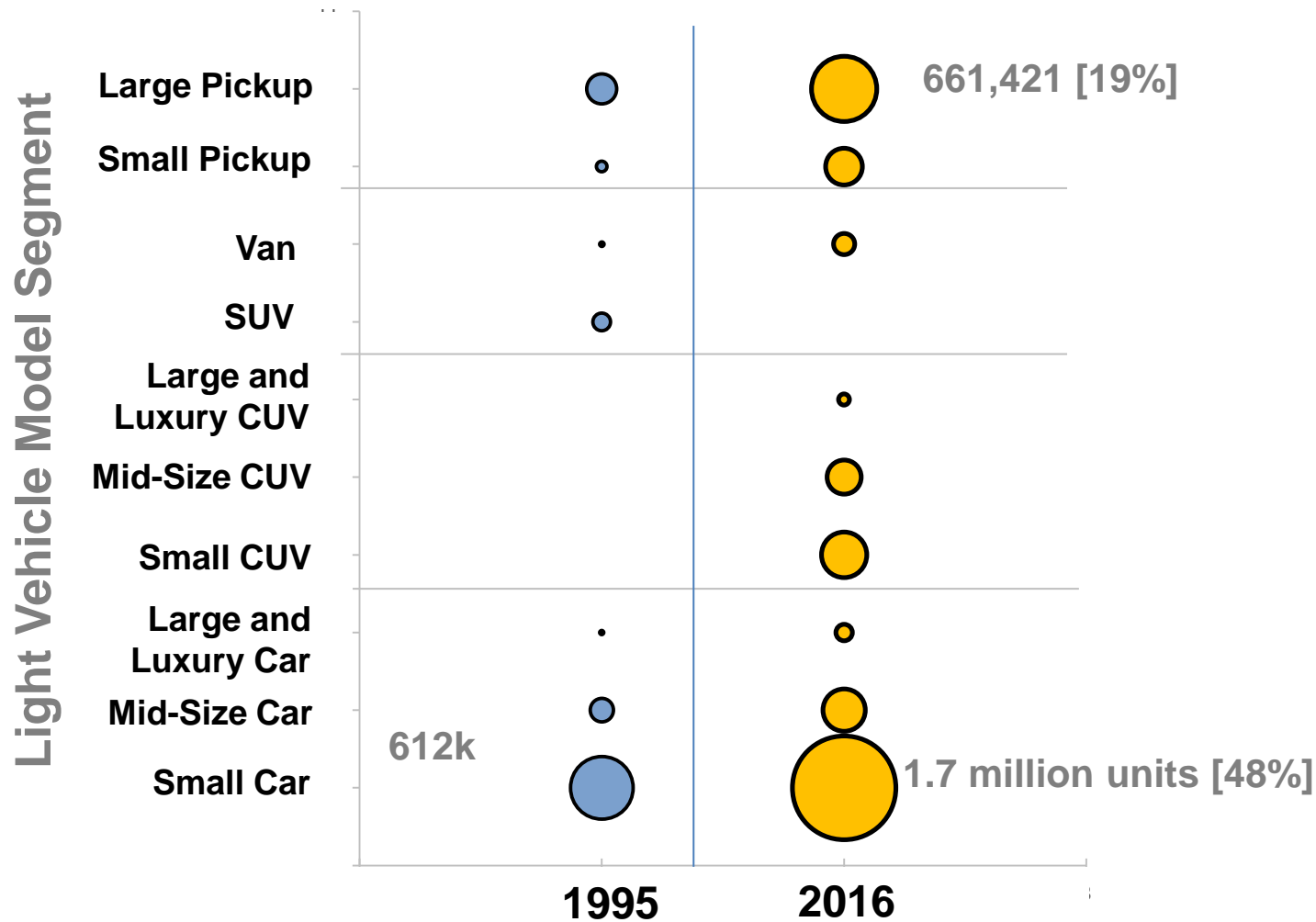
Mexico light vehicle production, by nationality of producer



Source: Author's calculations based on Wards Autoinfobank

# What is produced in Mexico?

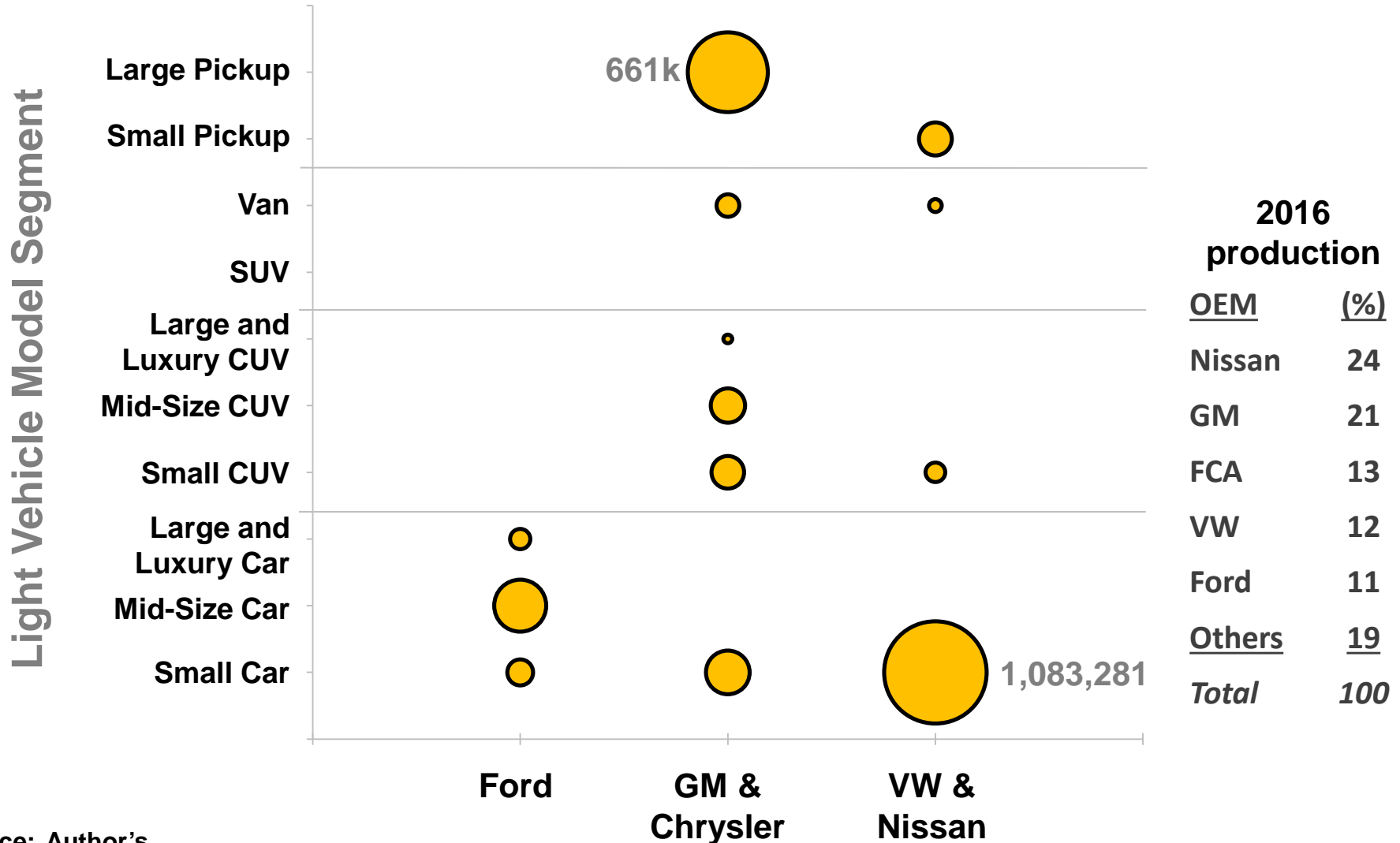
LV production in Mexico, by segment, 1995 vs 2016



Source: Author's calculations based on Wards Autoinfobank

# Who produces what?

LV production in Mexico, by segment, 2016



Source: Author's calculations based on Wards Autoinfobank

# Exposure to Mexico varies by OEM

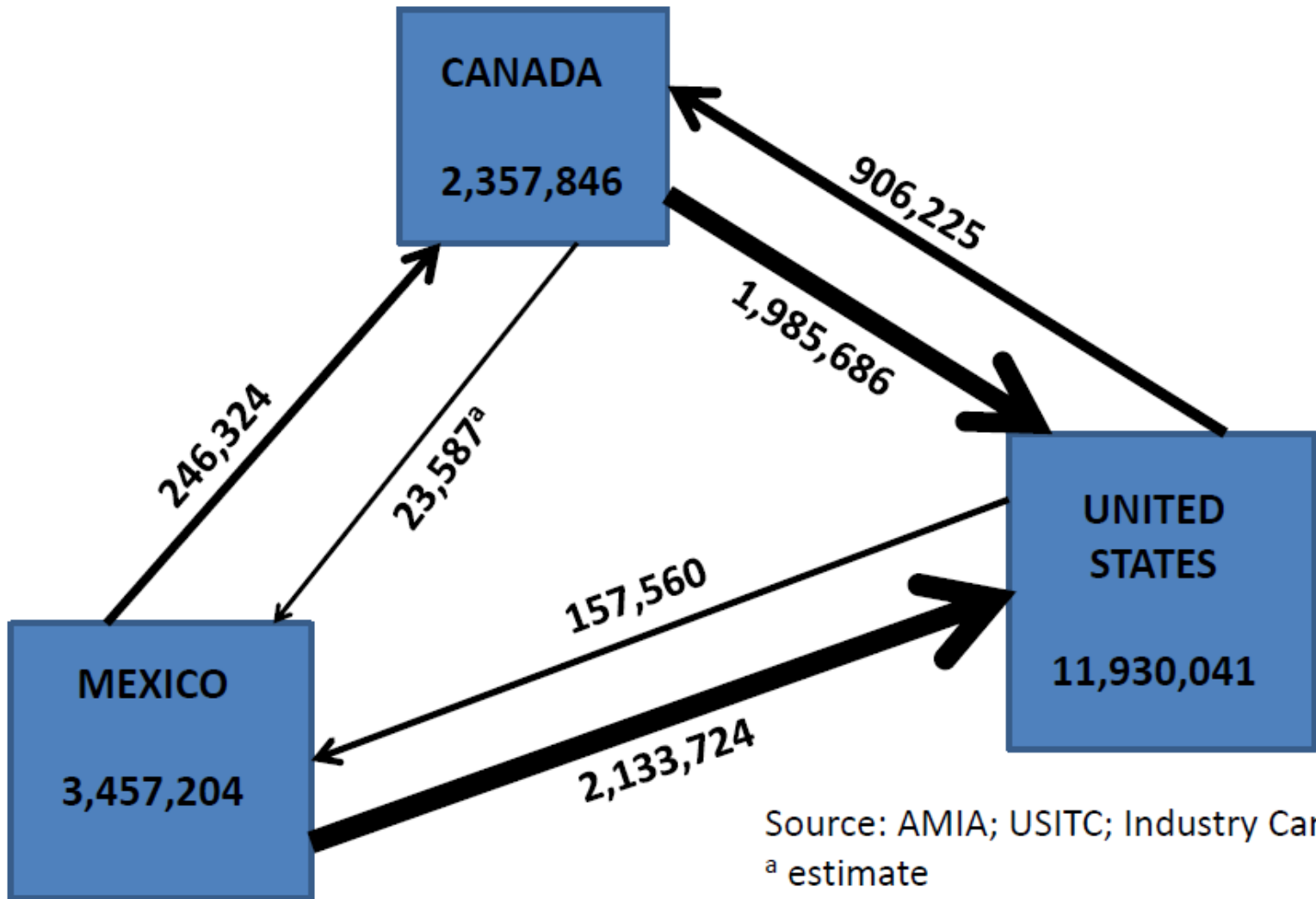
Share of NAFTA light vehicle production in Mexico, by OEM

Carmaker	1995	2016
Nissan	17	45
GM	4	20
FCA	8	18
Ford	5	13
VW	100	82
Honda	0	13
Toyota	0	7
<i>MEX total</i>	<i>6</i>	<i>20</i>

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# Trade in light vehicles within NAFTA, 2016



# Mexico has broadest export base

Light vehicle production in NAFTA countries, by destination, 2014, in percent

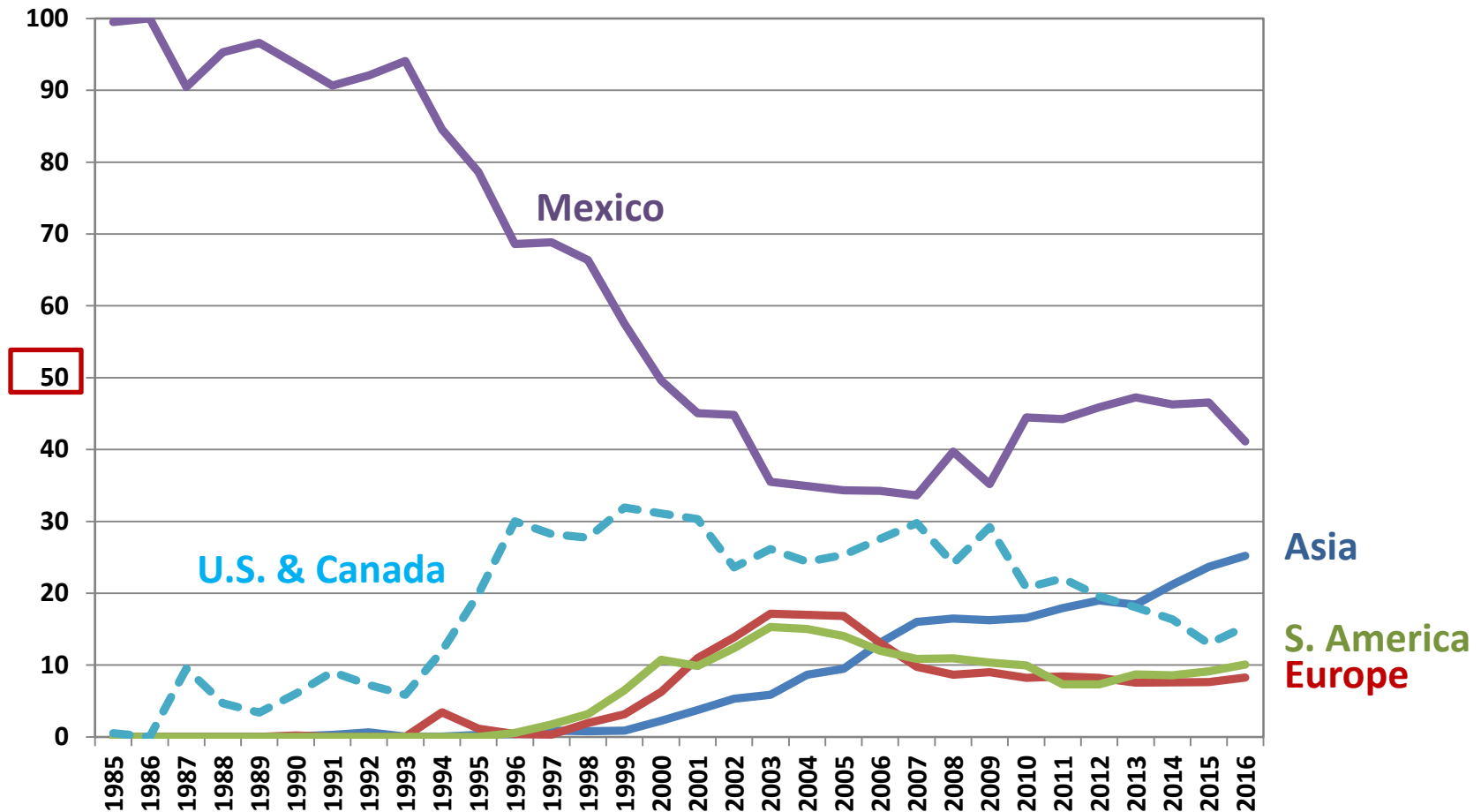
Destination	Mexico	Canada	U.S.
Domestic	18	12	79
EX to other NAFTA	59	79	9
EX elsewhere	14	4	8
EX, unknown	9	5	4

Source: Authors' calculations based on IHS Markit data



# Majority of Mexican sales are imported

## Mexican light vehicle sales by region of production, %



Source: Author's calculations based on Wards Autoinfobank

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# Mind the supply chain and its linkages



## Example: journey of a seatbelt

1. Produce nylon fibers



2. Dye and weave fibers



3. Cut and sew finished cloth



4. Fit finished seat belt into car



# Supply chains extend across borders



The average Mexican content in U.S.-produced vehicles is about 13.5%.

The average U.S. content in Mexico-produced vehicles is about 26%.

# Summary

- **Today the auto industry essentially knows no borders within North America**
  - 62.5% NAFTA content required to avoid tariffs
  - Mexico as the low labor cost production location
- **Mexico's strong growth in production is driven by exports**
- **Industry linkages between the U.S. and Mexico are extensive**

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