



Impact of BAT and NAFTA Reforms on the U.S. Motor Vehicle Industry

Summary of analysis and key findings

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THE BOSTON CONSULTING GROUP

Study was commissioned by MEMA and conducted independently by BCG in the spring of 2017

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Key findings

The U.S. motor vehicle (MV) industry relies on a **complex global supply** chain built over the last several decades. Mexico and Canada are the largest trade partners.

Under current market conditions, the **economics of reshoring are not favorable** for most MV products

- Production in Mexico still more economical in the event of a BAT
- OEMs and suppliers have enough capacity in North America given stable markets

On average, the **cost of production would rise** across the MV industry due to a BAT or the introduction of tariffs

- A 15% BAT would result in **~\$1,000** in added production costs per vehicle for automotive OEMs
- Withdrawal from NAFTA with a 35% tariff would result in an increase of **~\$1,200** per vehicle
- The range of cost impact could result in the creation of winners and losers among both foreign and domestic OEMs
- Long term, currency fluctuations may compensate for part of the cost increase

Short-term **cost increases could impact up to 50,000 U.S. motor vehicle supplier jobs** as customers buy less contented vehicles to offset the cost increase

Access to NAFTA **low-cost production is critical** to compete in the global market

- Germany relies on low-cost production in nearby Eastern Europe to keep costs down

A border tax and NAFTA withdrawal continue to surface as potential elements in tax and trade reform discussions

Changes under consideration

Border Adjustment Tax (BAT)

- Introduction of a border adjustment tax
- Reduction of corporate tax rate to between 15% and 20%
- Changes to treatment of capital expenses and interest deductibility
- Repatriation holiday for foreign profits

North America Free Trade Agreement (NAFTA)

- Full withdrawal from NAFTA
- Updates to existing elements including rules of origin, intellectual property protection, environmental health and safety standards

Factors studied

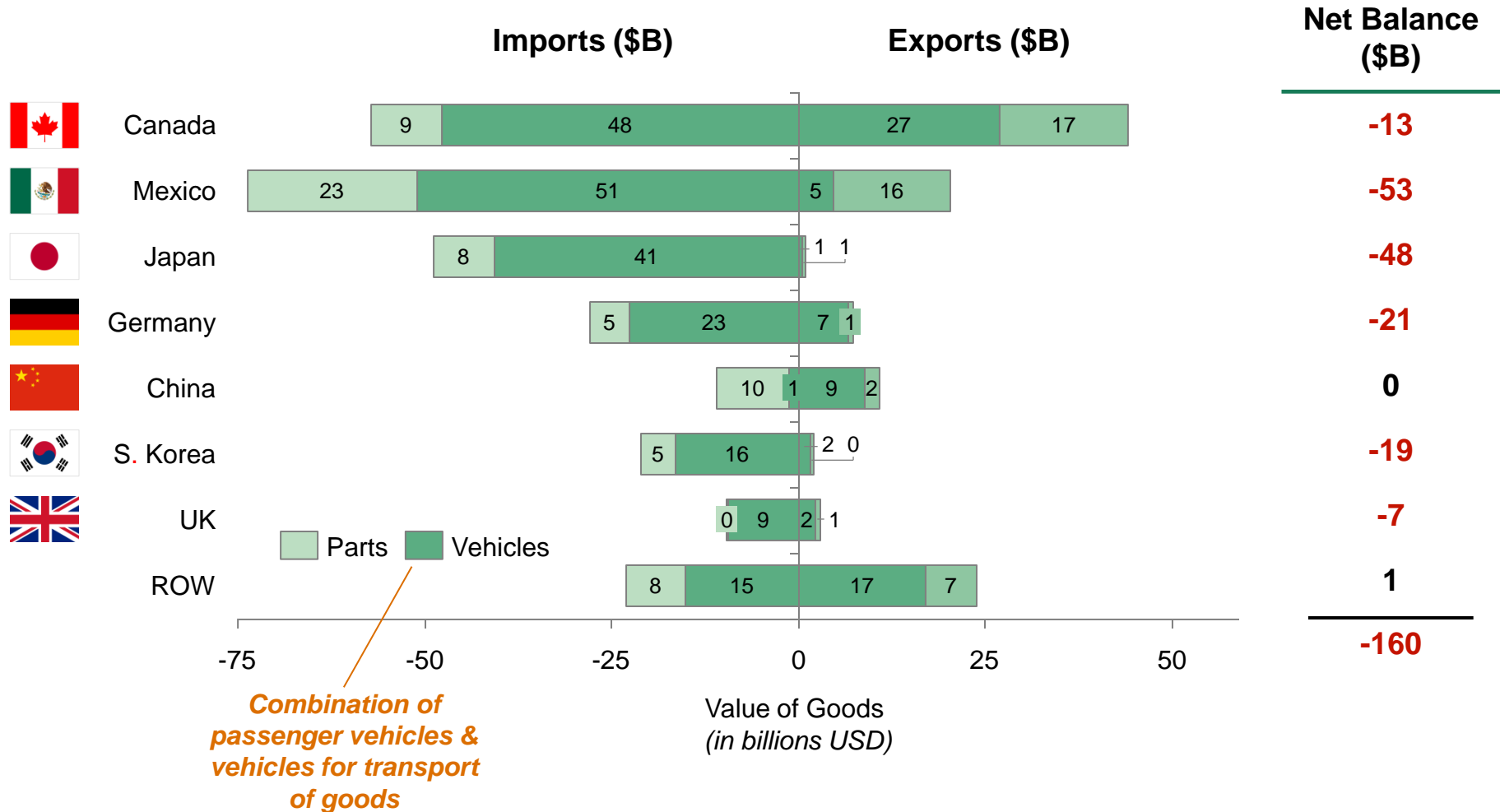
Trade flows

Motor vehicle industry baseline

Mechanics and monetary impacts of tax and trade reforms

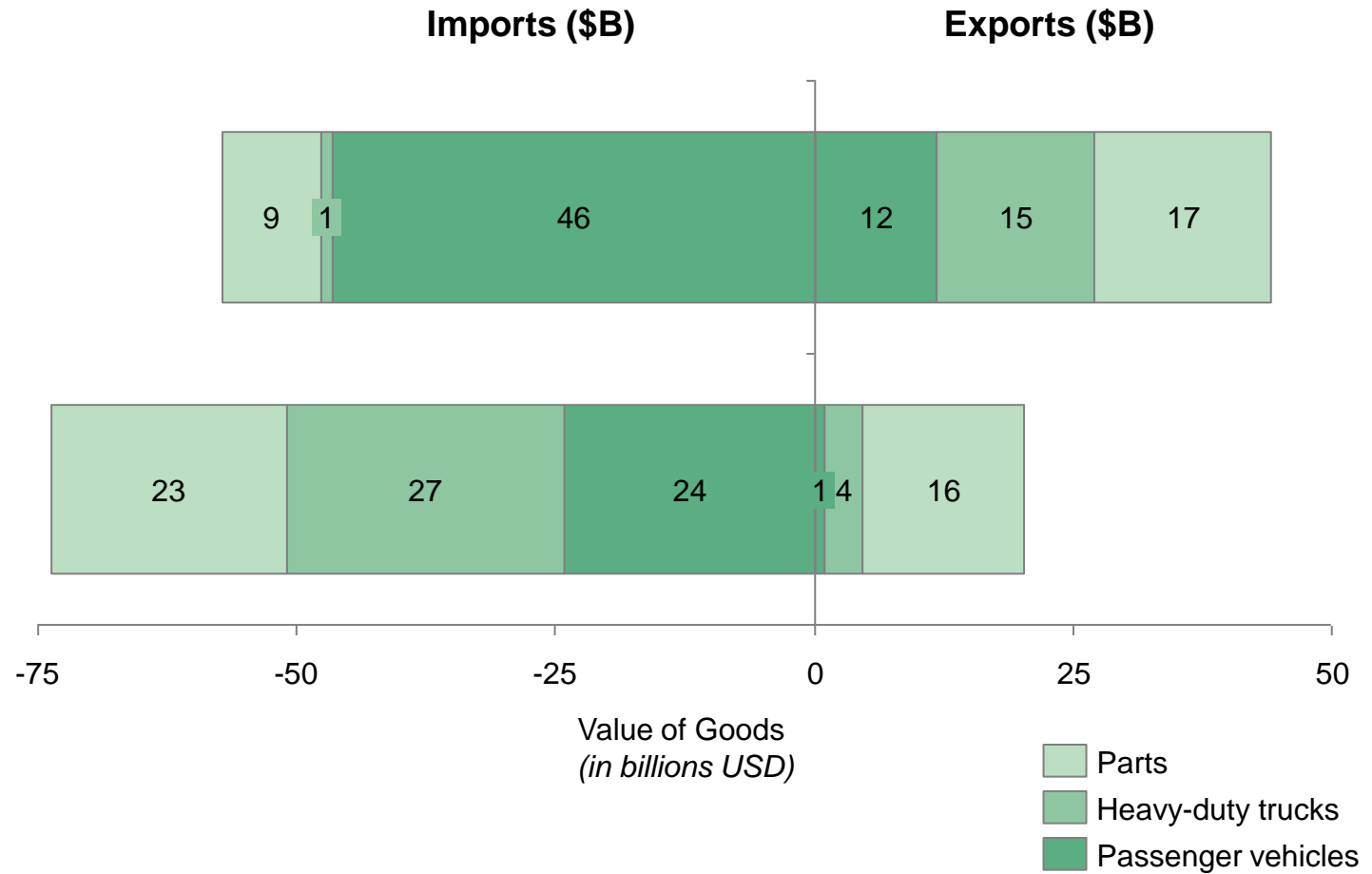
Potential actions for motor vehicle industry

Current trade flows in the motor vehicle industry



Note: Includes the following Harmonized System (HS) commodity codes – vehicles - 870120, 870210, 870290, 8703, 8704; parts – 8708, 870600, 870710, 870790.
Sources: Comtrade, BCG analysis.

Breakdown of NAFTA trade flows



Note: Includes the following HS commodity codes – passenger vehicles - 870210, 870290, 8703; heavy duty trucks: 870210, 8704; parts – 8708, 870600, 870710, 870790.
Sources: Comtrade, BCG analysis.

The economics of reshoring are not favorable for most motor vehicle products

BAT

Part Type

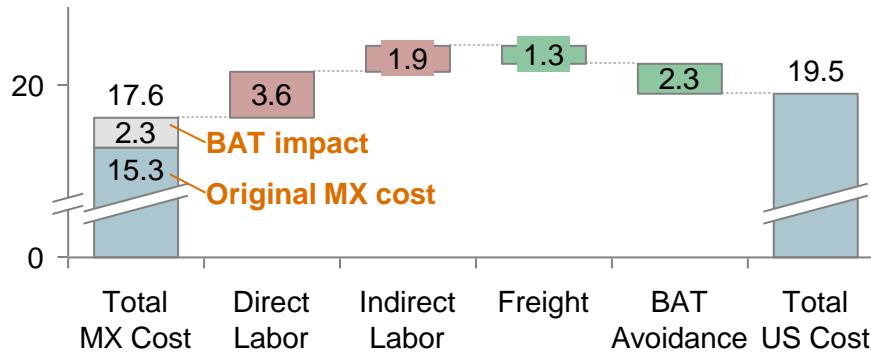
Change in cost of reshoring from MEX to US

Per unit impact

Payback on \$50M investment at 500K units / year volume

Vehicle Interior Part 1
(direct labor = 20% as % of MX TLC¹)

\$ / Part

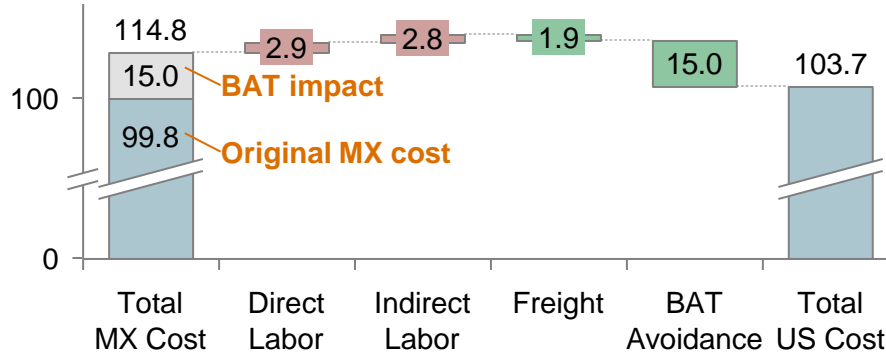


~+\$2/unit

n/a

Vehicle Interior Part 2
(direct labor = 3% as % of MX TLC¹)

\$ / Part



~-\$11/unit

~9 years

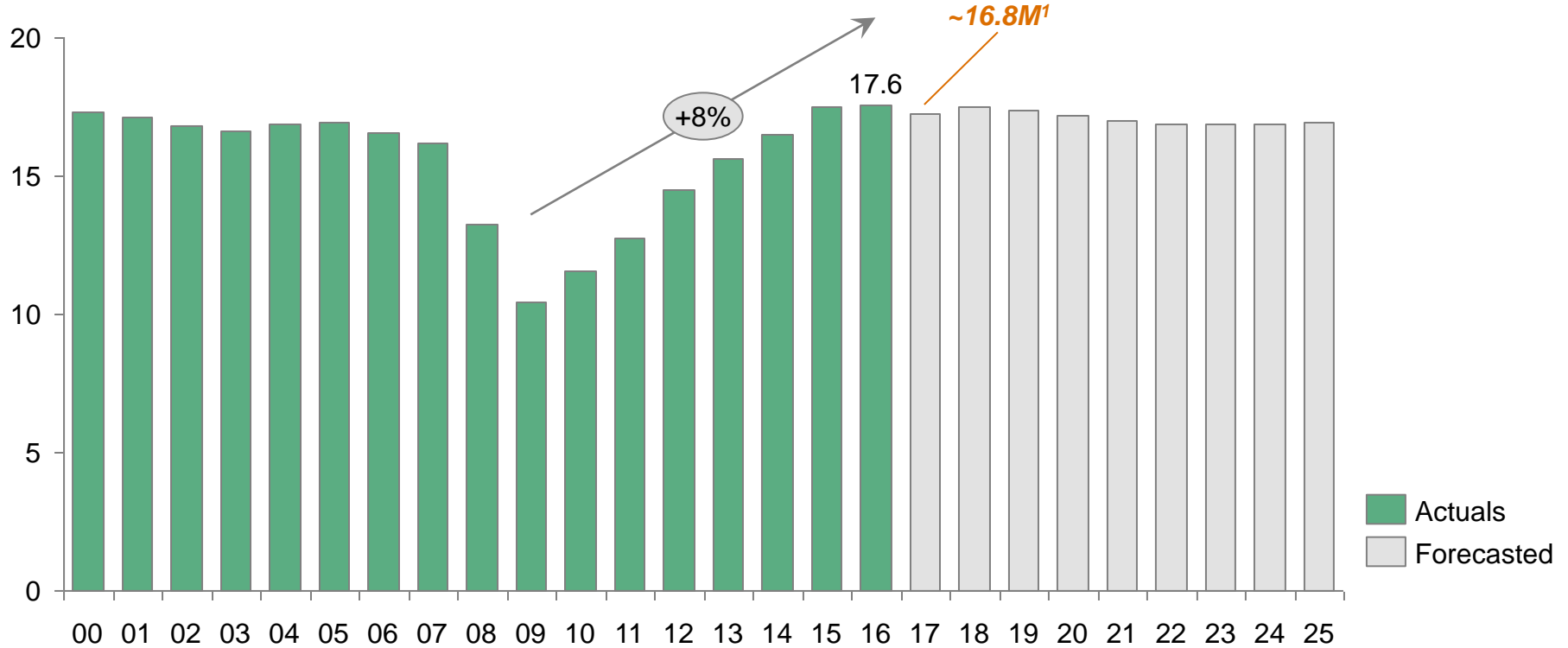
Compared to typical payback period of ~3 years

1. Percentage of Pre-BAT total landed cost (TLC) to make in Mexico. TLC is the sum of all costs associated with making and delivering products to the point where they produce revenue. Note: Calculated with 15% BAT.

Sources: BCG analysis, sanitized company data.

U.S. sales volume at its peak

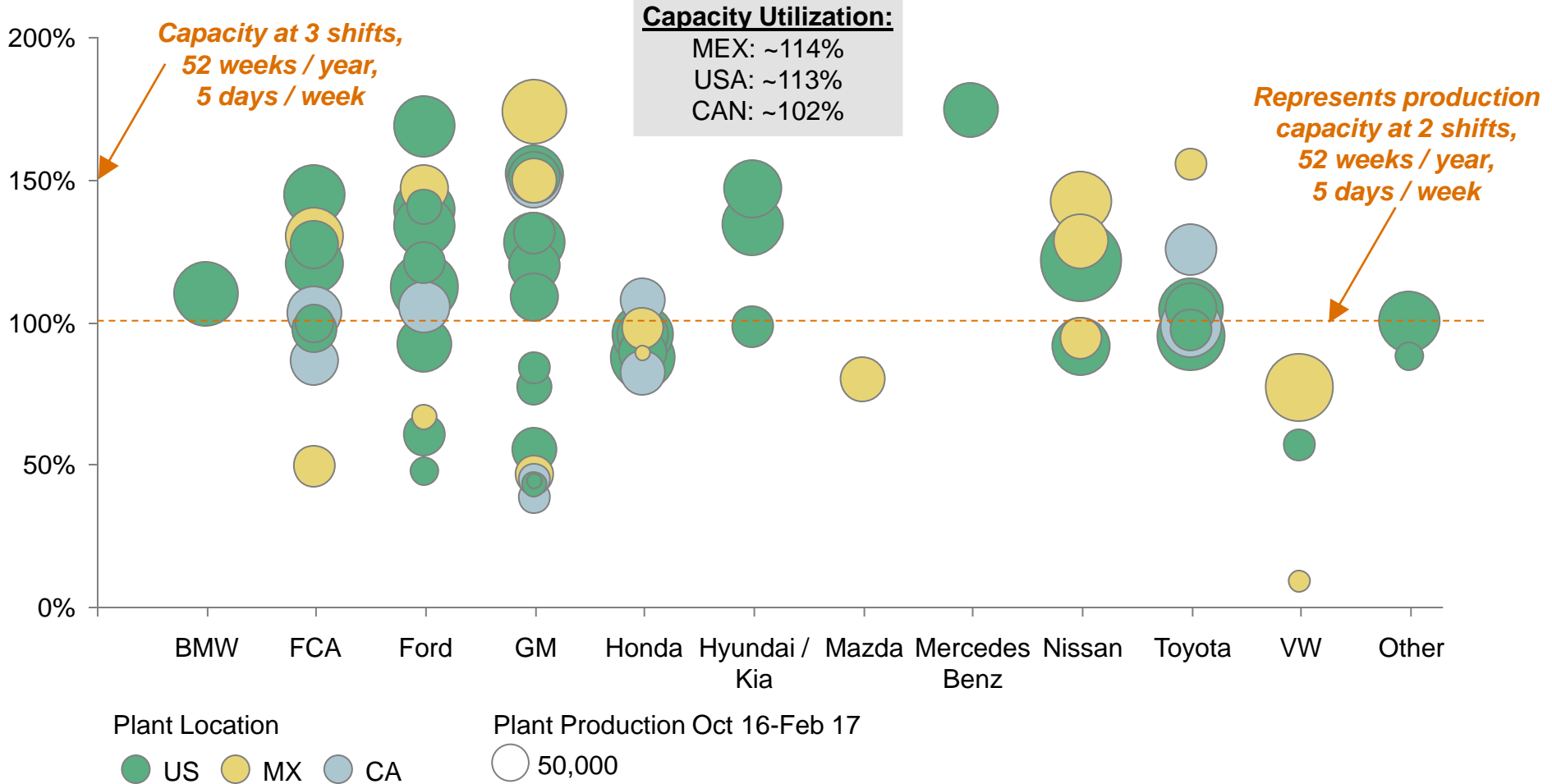
U.S. Light-Vehicle Sales
(in millions)



1. Per Ward's Automotive. SAAR stands for seasonally adjusted annual rate.
Sources: IHS, BCG analysis.

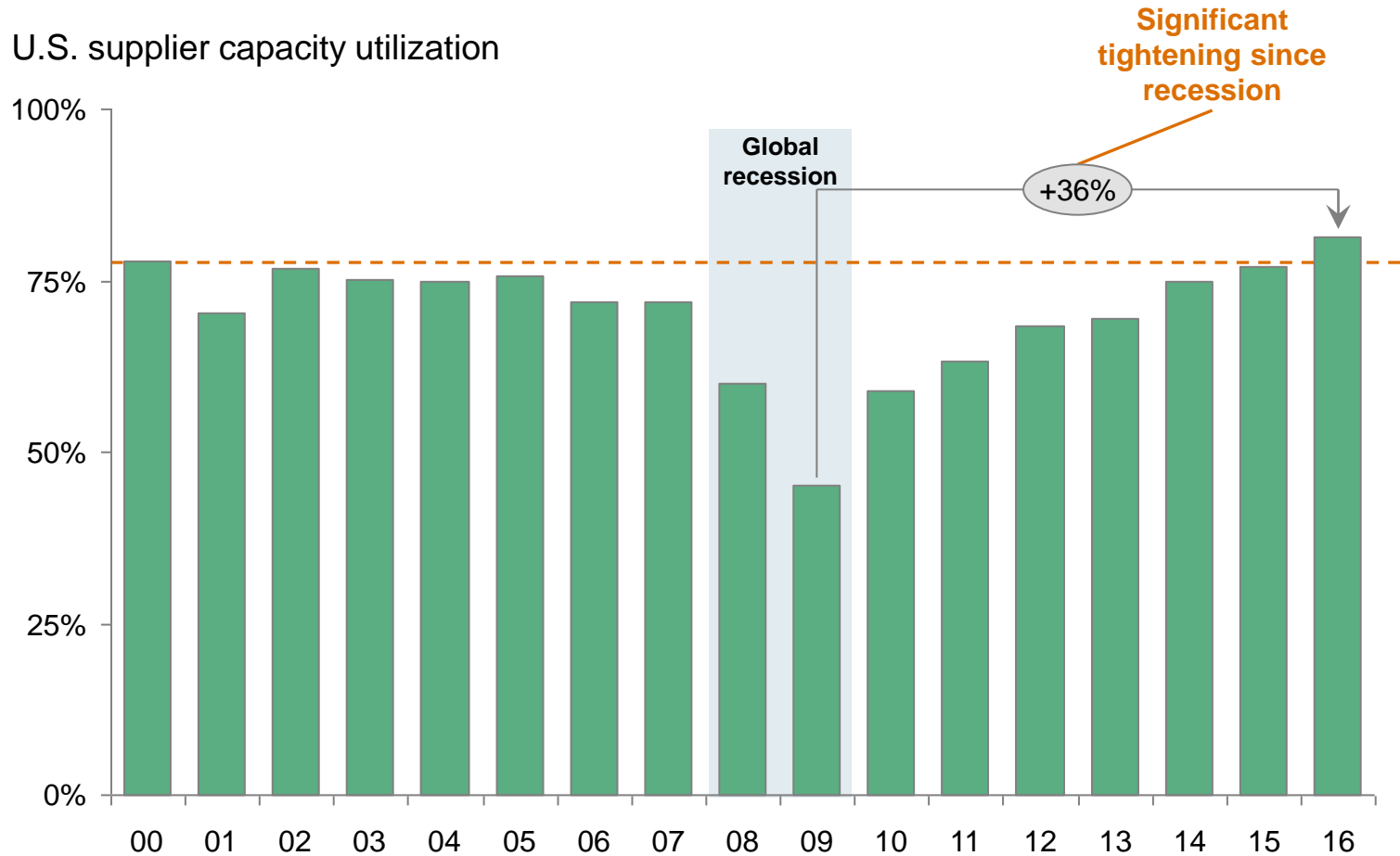
Reshoring manufacturing jobs would require capacity investment for OEMs

2016 N. America Capacity Utilization by Plant
(each circle represents a plant)



1. Capacity is straight-time capability over 52 work weeks, assuming two shifts of straight-time production for each plant.
 Sources: Ward's Automotive, BCG analysis.

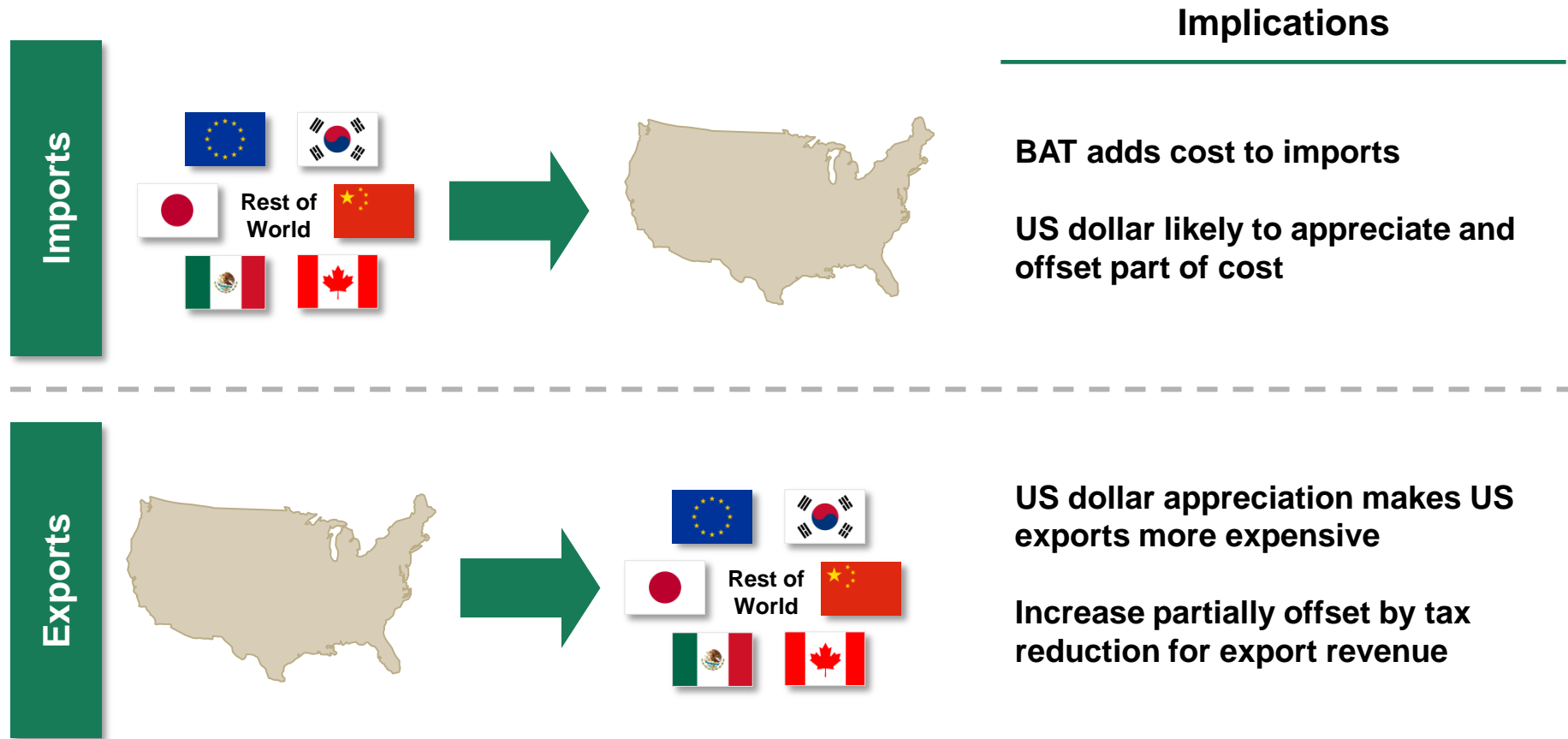
Automotive suppliers face similar capacity constraints



Note: In July 2015, the Federal Reserve published an annual revision to the CU index incorporating new benchmark data for 2012, 2013, and 2014. In addition, the base year for IP was changed from 2007 to 2012, moving IP from 96.1 in January 2015 to 100 in July 2015.

Sources: Original Equipment Suppliers Association Automotive Supplier Barometer, U.S. Federal Reserve Board, BCG analysis.

Potential for USD appreciation to offset effects of BAT, resulting in minimal impact on imports and exports overall

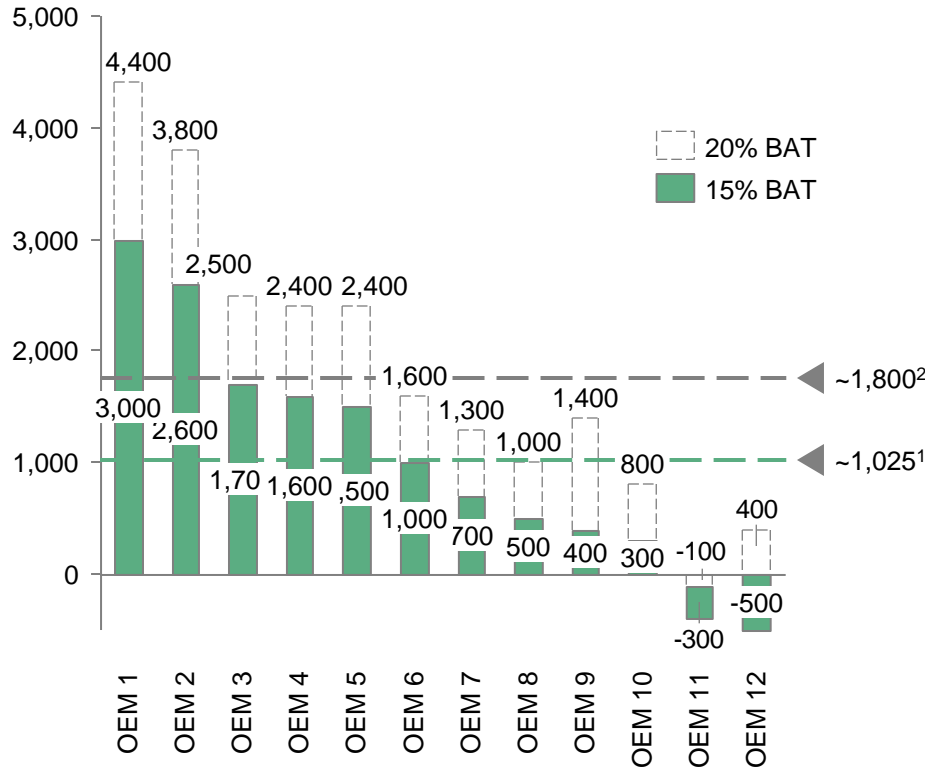


However, economists disagree on the timing and magnitude of the currency response, introducing uncertainty about the long-term impact

Impact of BAT on production costs varies by OEM

BAT adds ~\$1,000¹ - \$1,800² on average to vehicle production costs across OEMs

\$ / vehicle impact
(in USD)



Increased vehicle costs create two likely responses from consumers buying new vehicle

- A Make and model transfer:** Consumers may consider switching to makes and models less affected by BAT
- B "De-content" vehicle:** Reduced consumer spending power leads to removal of vehicle features, potentially including advanced safety and driver-assist technology



Rear-view Camera



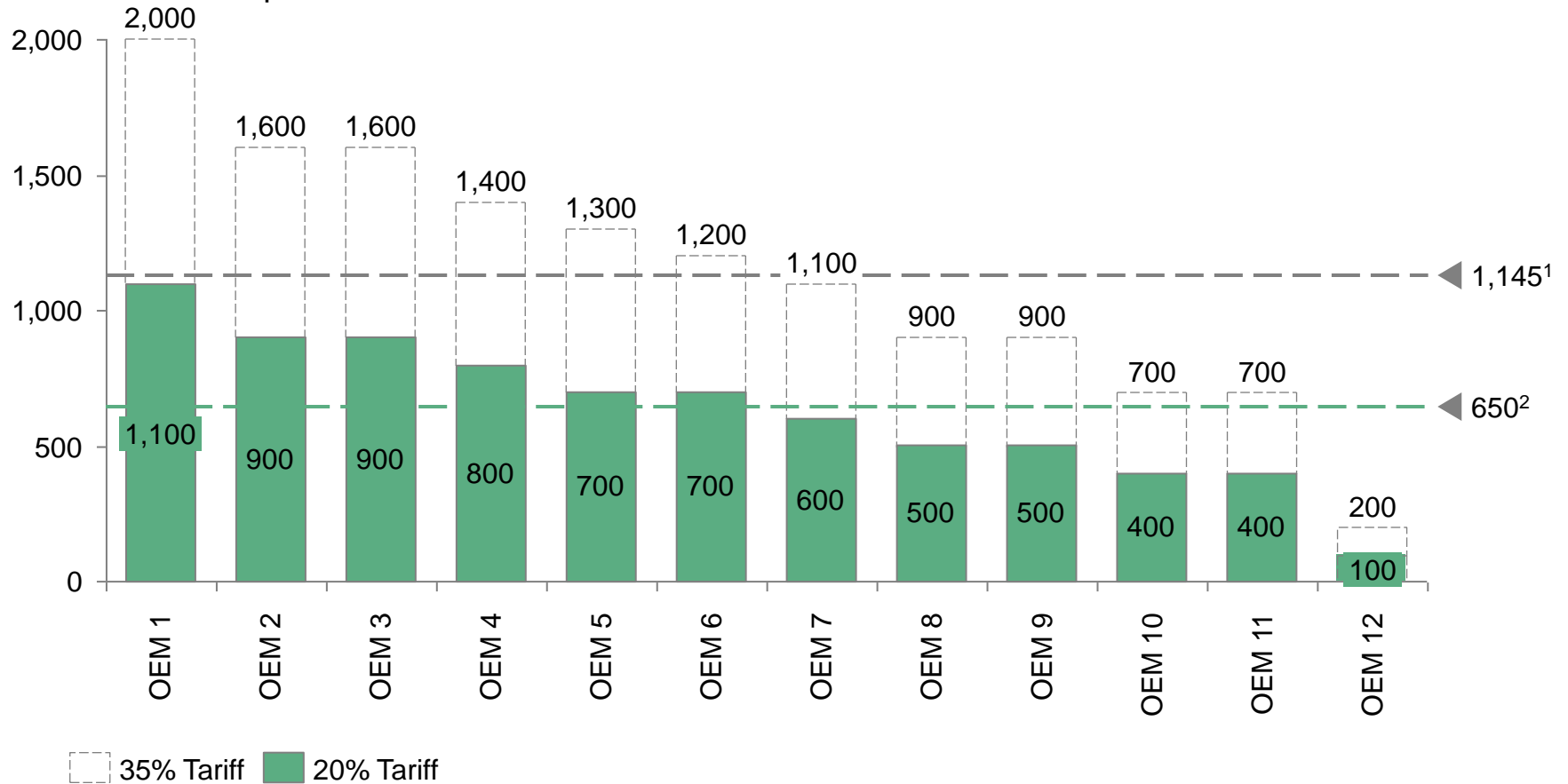
Parking Assist

Illustrative examples

1. 15% BAT average. 2. 20% BAT average.
Sources: BCG analysis, JD Power, IHS, UBS, Baum & Associates, Barclays.

Tariff within NAFTA would result in increased production costs across all OEMs

Incremental cost per vehicle for OEMs







1. 35% tariff. 2. 20% tariff.

Note: Analysis reflects implementation of tariff on Mexican goods.

Source: BCG analysis.

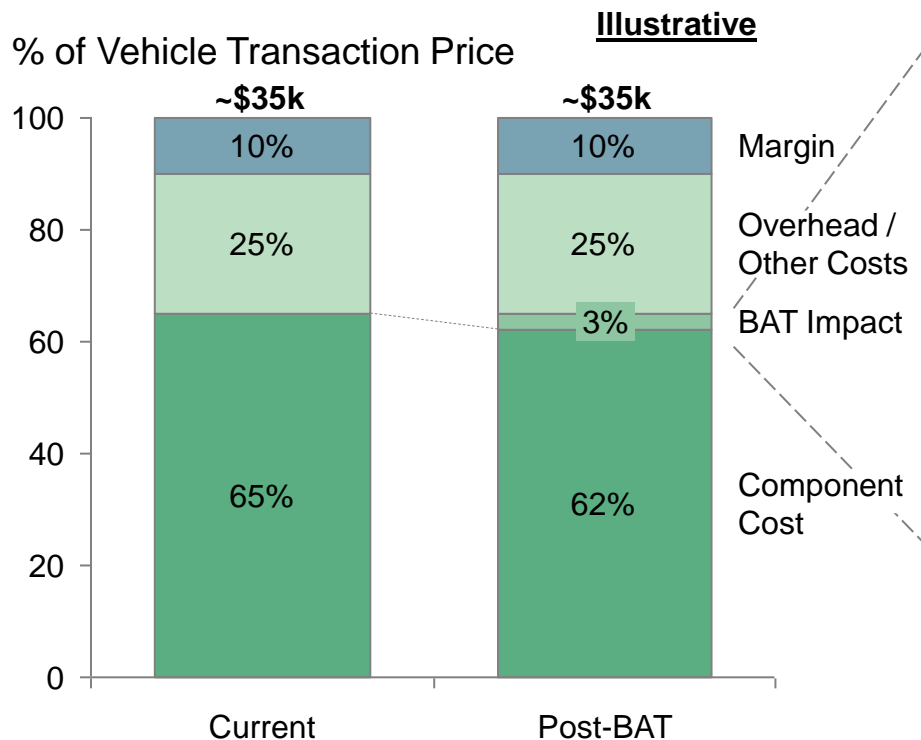
BAT-induced shift to less affected make and model could create winners and losers among OEMs and suppliers

	Vehicle 1 <i>Domestic OEM</i>	Vehicle 2 <i>Foreign OEM</i>	Vehicle 3 <i>Foreign OEM</i>	Vehicle 4 <i>Domestic OEM</i>
Production Location				
Financial Impact of BAT				
Current MSRP	\$29,693	\$22,640	\$23,640	\$31,640
BAT Impact	~\$450	~\$1,500	~\$2,700	~\$4,000
New Price	\$30,140	\$24,140	\$26,340	\$35,640

Note: Calculated with 15% BAT.
Sources: BCG analysis, OEM websites, JD Power.

Decrease in content per vehicle due to introduction of BAT could impact around 20,000-45,000 jobs at suppliers

Costs due to BAT could decrease supplier content from 65% to 62%^{1,2}...



...potentially impacting supplier volume and thus manufacturing jobs

Currently ~870k supplier employees producing components in US

~5% loss in component content → ~3-5% loss in employees

~20-45k US manufacturing employees at risk

Employees working for suppliers with content that is most likely to be removed are most at risk

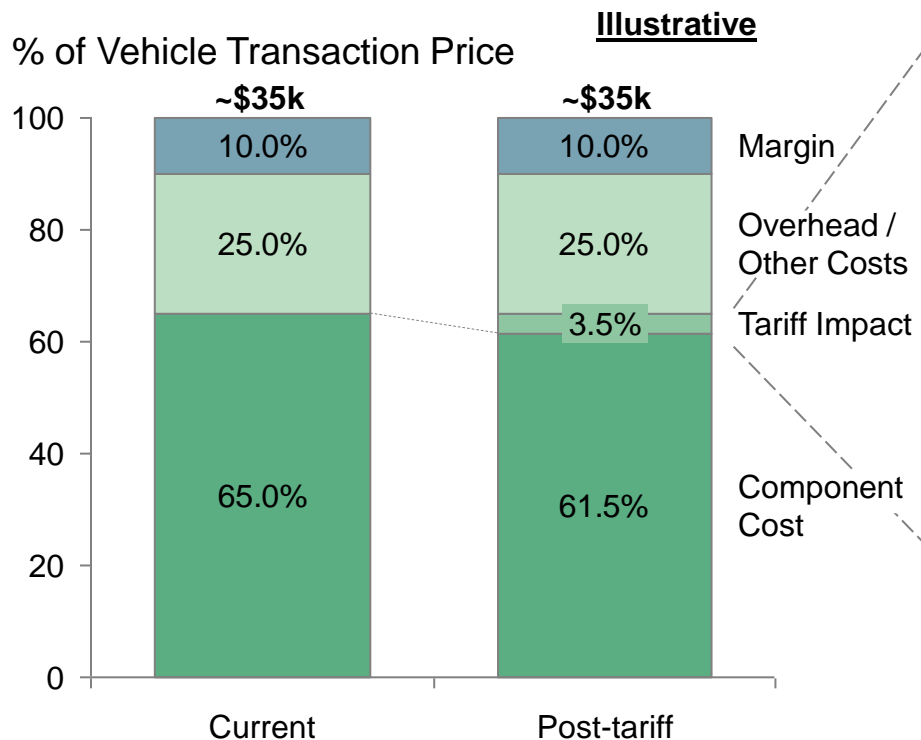
1. As a percentage of total cost of vehicle. 2. At 15% BAT.

Note: Example illustrates unweighted average impact for OEMs (~\$1,025 BAT impact / \$35,000 vehicle price → ~3% content \$ reduction required for customers to maintain paying same price), does not include corporate tax rate reduction.

Sources: BCG analysis, expert interviews.

Similarly, tariff from leaving NAFTA could impact around 25-50,000 suppliers' jobs as a result of content decrease

Costs due to a 35% tariff could decrease supplier content from 65% to ~61.5%¹...



...potentially impacting supplier volume and thus manufacturing jobs

Currently ~870k supplier employees producing components in US

~6% loss in component content → ~3-6% loss in employees

~25-50k US manufacturing employees at risk

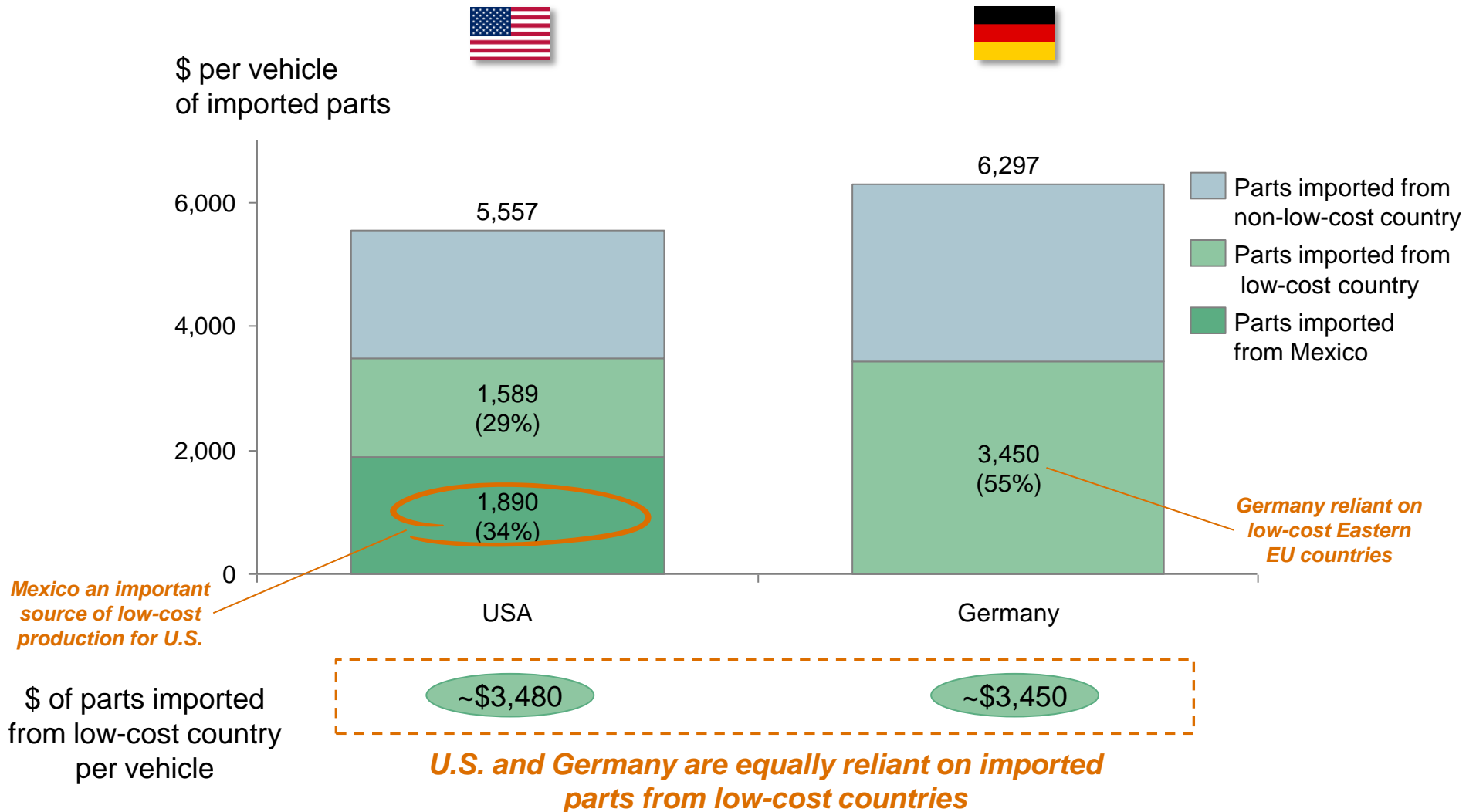
Employees working for suppliers with content that is most likely to be removed are most at risk

1. As a % of total cost of vehicle.

Note: Example illustrates unweighted average impact for OEMs (~\$1,150 tariff impact / \$35,000 vehicle price → ~3.5% content \$ reduction required for customers to maintain paying same price

Sources: BCG analysis, expert interviews.

Both the U.S. and Germany rely heavily on imported parts from low-cost countries



Sources: Comtrade, BCG analysis.

Other policy actions that could be pursued to enhance U.S. competitiveness in the motor vehicle industry

Infrastructure: Invest to overhaul and modernize the nation's highways, bridges, and ports

Trade: Provide tougher enforcement of "fair trade" policies and enhanced protection of US intellectual property abroad

Tax Policy: Increase the attractiveness of repatriation accumulated foreign earnings

Workforce Development: Invest in building a workforce equipped with the skills needed for the manufacturing jobs of tomorrow

Corporate Average Fuel Economy (CAFE)/Greenhouse Gas Emissions: Harmonize standards across agencies and retain and grow off-cycle technology credits

Safety Standards: Update the New Car Assessment Program (NCAP) to include information about crash avoidance and pedestrian protection as part of its 5-star ratings

MEMA's organization



The impact of motor vehicle parts suppliers on the U.S. economy



The impact of motor vehicle parts suppliers on the U.S. economy



871,000
AMERICANS
EMPLOYED
IN **2015**




734,000
AMERICANS
EMPLOYED
IN **2012**

**MOTOR VEHICLE
MANUFACTURING**
JOBS GREW MORE THAN

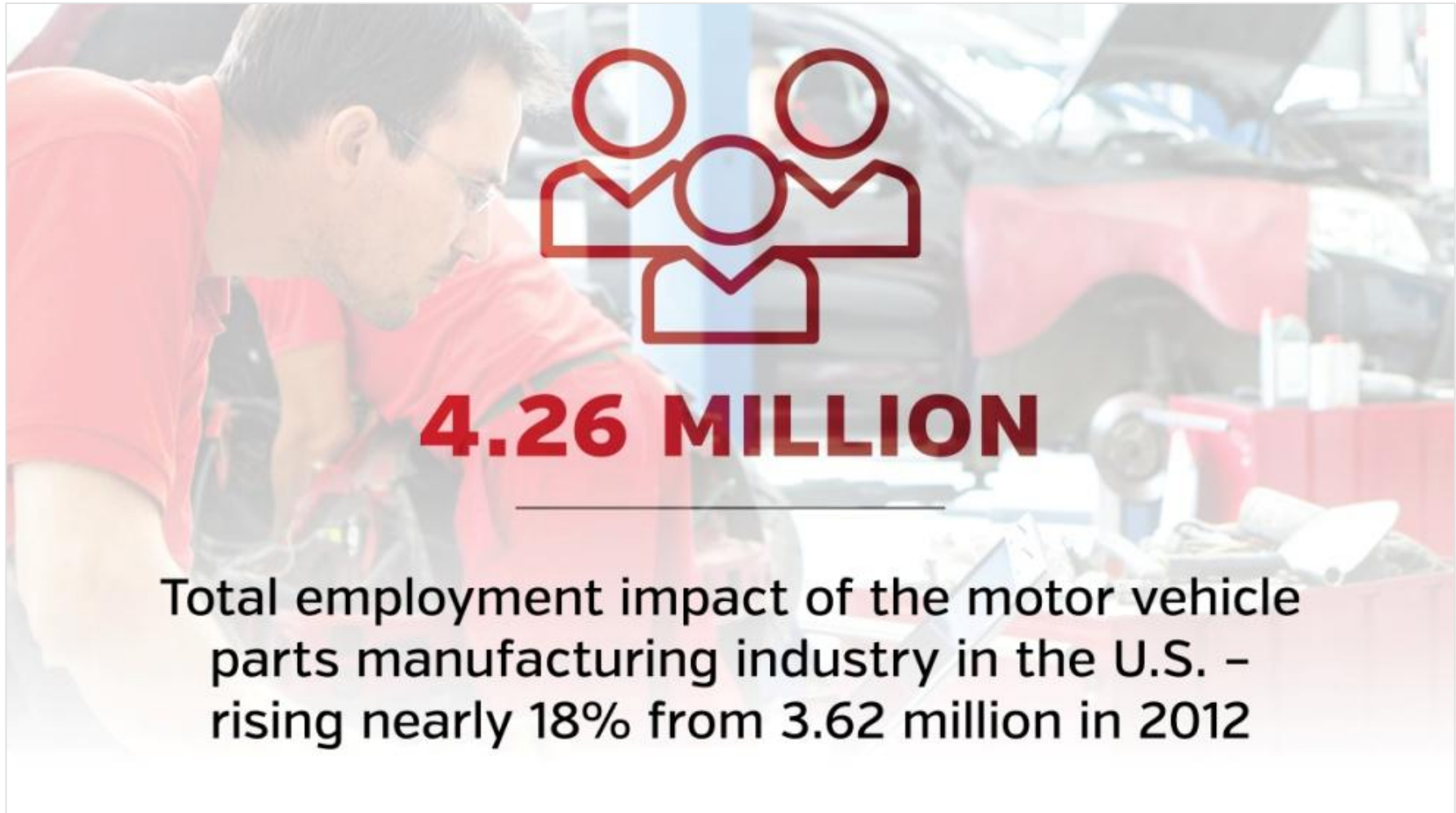
19%
SINCE
2012

The impact of motor vehicle parts suppliers on the U.S. economy



2.4% OF THE U.S.
GDP GENERATED BY THE
MOTOR VEHICLE PARTS
MANUFACTURING INDUSTRY

The impact of motor vehicle parts suppliers on the U.S. economy



Contacts for further information

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