

STATE OF THE U.S. AUTOMOTIVE INDUSTRY

2016

INVESTMENT, INNOVATION, JOBS, EXPORTS,
AND AMERICA'S ECONOMIC COMPETITIVENESS

AAPC
AMERICAN AUTOMOTIVE POLICY COUNCIL

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ACKNOWLEDGEMENTS

This report, the third of its kind from the American Automotive Policy Council, is meant to serve as a resource for policymakers, researchers, and media interested in the state of automotive manufacturing in America and what leadership in this industry means for our nation's economic competitiveness.

The bulk of figures presented here are derived from simple comparisons of each automaker's production, sales, employment, and parts purchases in the U.S. and abroad. These are obtained from each automaker's respective annual reports and corporate websites, as well as reports produced by several of the industry's trade groups. For more information about how automakers contribute to America's economy and our global competitiveness, visit our website at www.americanautocouncil.org or the website of the Alliance of Automotive Manufacturers at www.autoalliance.org. For information on America's automotive parts suppliers and their contribution to America's economy, we rely on analysis produced by the Motor & Equipment Manufacturers Association (www.mema.org).

Most of the critical analysis cited in the report has been produced by the Center for Automotive Research (CAR), a nonprofit organization focused on a wide variety of important trends related to the automobile industry and society at the international, federal, state, and local levels. CAR's Sustainability & Economic Development Strategies (SEDS) group focuses on the intersection of industry and the public sector. Its Automotive Communities Partnership helps state and local officials develop public policies that sustain auto communities. We rely heavily on CAR's "job multiplier" analysis; its sales, production, and employment forecasts; its estimates of automaker spending on research and development and capital investment; and its analysis of the reach and nature of a typical plant's supply chain. More information about CAR, SEDS, and the Automotive Communities Partnership is available at www.cargroup.org.

For data on corporate research and development, we rely on the European Commission's Joint Research Centre's 2015 EU Industrial R&D Investment Scoreboard, which contains economic and financial data for the world's top 2,500 companies ranked by their investments in research and development. The rankings also include data on employment, revenue, and capital investment. The data are drawn from the latest available companies' financial statements. The rankings and related materials are available at <http://iri.jrc.ec.europa.eu/scoreboard14.html>.

INTRODUCTION

This report examines the current state of the U.S. automotive sector and its share of America's manufacturing production, capital investment, innovation, and jobs.

We make five points:

1. Automakers contribute a great deal to America's economy, but some contribute more than others;
2. Automakers are doing their share to make America more competitive;
3. Every state is an "auto state";
4. Their investments are contributing to the revival of manufacturing in America; and
5. In an industry as capital intensive and competitive as autos, public policy matters.

In making these points, we explain how production, investment, and employment have rebounded since the financial crisis and are likely to grow through 2016. As part of this, we examine how highly efficient manufacturers, like those in the U.S., can benefit from the industry's shift toward centralized production and global model platforms.

We also compare the economic contributions of America's automakers – FCA US, Ford, and General Motors – with those of their competitors. While most car buyers appreciate just how many U.S. workers FCA US, Ford, and General Motors employ, this report explains why so much of their global workforce is based here.

Finally, we examine how the highly competitive nature of the industry – and the enormous fixed costs that go into producing cars and trucks – combine to give public policy decisions an enormous impact on which automakers grow and where auto jobs are created.

AAPC and its members are optimistic about the future of auto manufacturing in America and all of the research, design, finance, marketing, and other related jobs that this industry generates. However, the long-term success of any American research lab or assembly plant depends, in part, on how international public policies, including those in currency manipulation and automotive safety standards, affect an automaker's ability to compete internationally.

EXECUTIVE SUMMARY

Automakers drive the U.S. economy.

Automakers and their suppliers are America's largest manufacturing sector, responsible for 3% of America's GDP.ⁱ No other manufacturing sector generates as many American jobs.ⁱⁱ

They are also America's largest exporters. In fact, over the past six years, automakers have exported more than \$775 billion in vehicles and parts – approximately \$125 billion more than the next largest exporter (aerospace).ⁱⁱⁱ

Not only are they America's largest exporters, they also buy hundreds of billions of dollars worth of American steel, glass, rubber, iron, and semiconductors each year.^{iv} They are also among America's largest investors in R&D. The auto sector ranks second out of the forty largest industries, on a global basis, in R&D spending.

FCA US, Ford, and General Motors are in the driver's seat.

FCA US, Ford, and General Motors produce more of their vehicles, buy more of their parts, and conduct more of their R&D in the U.S. than their competitors. As a result, they employ two out of three of America's autoworkers and operate three out of five of America's auto assembly plants.

Perhaps the best way to appreciate the scale of FCA US, Ford, and General Motors's investment in the U.S. is to consider what would happen if foreign automakers matched their U.S. production and parts purchases rates. The answer? To match FCA US, Ford, and General Motors's U.S. production rate last year, their competitors would have had to assemble more than 2.3 million more cars and trucks here in the U.S. Lined up bumper-to-bumper, those cars would stretch more than 7,000 miles.^v To match FCA US, Ford, and General Motors's domestic content rate, they would have had to buy another 2.4 million more cars'-worth-of-parts here.^{vi}

Automakers are investing to make America more competitive.

Over the past six years alone, FCA US, Ford, and General Motors have invested more than \$30.8 billion in their U.S. assembly, engine, and transmission plants, R&D labs, headquarters, administrative offices, and other infrastructure that connects and supports them.^{vii}

Globally, FCA, Ford, and General Motors, together, invest more than \$18 billion in R&D every year. Each alone spends more on R&D than some of the world's most famous technology companies.^{viii}

Every state is an “auto state.”

Last year, FCA US, Ford, and General Motors produced 6.4 million vehicles in the U.S., with the help of more than 232,000 employees, working at more than 220 assembly plants, manufacturing facilities, research labs, distribution centers and other facilities, located in 32 states across 115 Congressional Districts. They work with more than 10,150 dealerships, which employ another 609,000 workers.

Nationwide, FCA US, Ford, and General Motors’s thousands of auto suppliers employ more than 734,000 U.S. workers.

Automaker investments are contributing to the revival of manufacturing in America.

U.S. auto sales have increased by more than 67% since the 2009 financial crisis (from 10.4 million to 17.4 million last year). CAR projects sales will reach or exceed 18 million vehicles per year through 2019. Meanwhile, U.S. auto production has more than doubled during that same period (from 5.8 million vehicles in 2009 to 11.8 million vehicles in 2015). U.S. auto production is expected to reach or exceed 12 million vehicles per year through 2018.^{ix}

CAR estimates automaker and auto supplier employment in the U.S. will increase by more than one-third from 2011 through 2016.^x

Automakers have responded to new domestic cost advantages by shifting production from other countries to the U.S. Ford’s Ohio Assembly now produces their medium duty truck, which was previously made in Mexico, and Cleveland Engine Plant produces EcoBoost engines that were previously made in Spain. General Motors has moved more of its pick-up production to the U.S. An industry-wide move toward global model platforms is contributing to this trend because automakers are centralizing production in high functioning markets, like the U.S., which can now export the same body frame or major component to assembly facilities around the world.^{xi}

In a globally competitive auto industry, public policy matters.

Because the auto industry is so competitive, the profit margin on each vehicle is comparatively small. Because producing cars and trucks is so capital-intensive, automakers must maintain scale to remain cost-competitive. For these reasons, international public policies, including those on currency manipulation and automotive safety standards and their effects on international trade, have an enormous impact on each automaker’s competitive status.

AUTOMAKERS CONTRIBUTE A GREAT DEAL TO AMERICA'S ECONOMY, BUT SOME CONTRIBUTE MORE THAN OTHERS.

Scale of the auto industry

Last year, Americans bought more than 17.4 million cars and trucks. Over 11.8 million of those cars and trucks were produced at one of America's 47 automotive assembly plants. Lined up end-to-end, the cars and trucks assembled in the U.S. would stretch 35,600 miles, enough to stretch from the Statue of Liberty to the Golden Gate Bridge twelve times.^{xii}

A typical auto plant requires between \$1 and \$2 billion in start-up capital investment and employs 2,000 to 3,000 workers. Each assembly plant job supports 9 to 12 others at suppliers and in the surrounding community. While plant output varies, a single plant producing 200,000 vehicles each year can contribute nearly \$6 billion to America's gross domestic product.^{xiv}

Each vehicle these plants assemble contains 8,000 to 12,000 different components (and as many as 15,000 individual parts).^{xvi} More than 5,600 suppliers produce auto parts in the U.S.^{xvii} Together, they employ more than 734,000 U.S. workers.^{xviii}

The components in a typical car or truck contain more than 3,000 pounds of iron, steel, rubber, and glass. Because of the size of each vehicle – and the number of these vehicles made each year – automakers are also among the largest buyers of those American raw materials.^{xix}

Designing each of those 15,000 parts and integrating them into a single vehicle is an enormous engineering challenge. Automakers and suppliers spent about \$20 billion on R&D in the U.S. last year – about \$1,150 per vehicle sold here.

Distributing, marketing, selling, and servicing those vehicles employs hundreds of thousands of other U.S. workers. FCA US, Ford, and General Motors alone rely on more than 10,150 dealerships, which employ approximately 609,000 U.S. workers.

Automakers as job multipliers

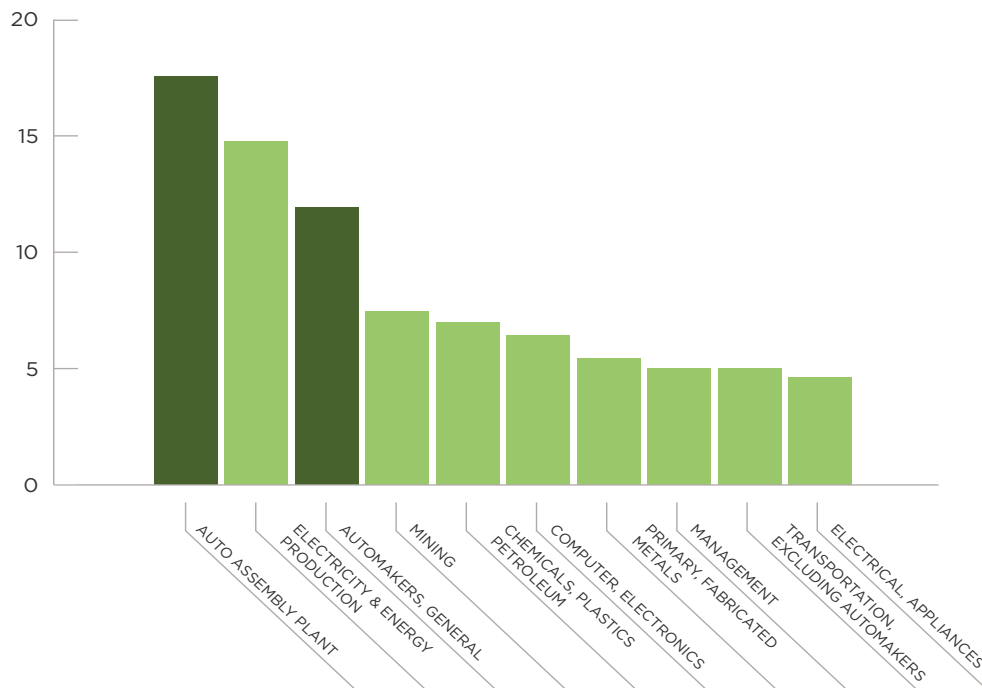
One way to measure an industry's economic contribution is to consider the number of workers it employs through its own operations, its suppliers, and the other local businesses it supports.

Economists refer to this as a sector's "job multiplier." Generally speaking, a sector's multiplier grows relative to its supply chain - the number and costs of the inputs that go into its products. Because the auto supply chain is so large, automaker jobs have the largest multiplier.

Among the leading sources of job multipliers in the U.S. is CAR, which examines how jobs at each step of the automotive value chain (from R&D to suppliers, assembly plants, and dealership lots) supports other jobs in the community.

CAR uses its own Regional Economic Impact Model (REMI), customized using proprietary company data on employment and compensation (by region), as well as publicly available data on capital investments. The model generates estimates of the economic contribution associated with the manufacturing operations it is testing. CAR's REMI model has been used by automakers, their trade groups, and policymakers for more than 20 years.

INDUSTRIES WITH THE TOP 10 HIGHEST JOB MULTIPLIERS (2014)



FCA US, Ford, and General Motors production rate

One way to measure an automaker’s investment in the U.S. is to compare its U.S. production to its U.S. sales. Last year, FCA US, Ford, and General Motors produced 6.4 million vehicles in the U.S.

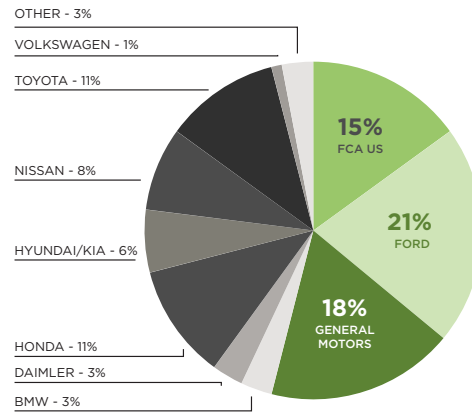
That same year, FCA US, Ford, and General Motors sold 7.9 million vehicles here. In other words, their 2015 U.S. production represented 82% of their 2015 U.S. sales.

By comparison, foreign automakers’ U.S. production represented only 60% of their sales here.^{xx}

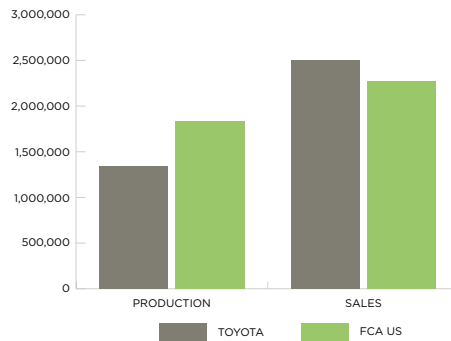
As a result, Ford produced over 1 million more cars and trucks in the U.S. last year than Toyota or Honda, over three times as many vehicles as Hyundai-Kia, over six times more than BMW, and nearly 30 times more than VW. Similarly, FCA US assembled 511,000 more vehicles in the U.S. in 2015 than Toyota, even though Toyota sold 241,600 more vehicles here.

To produce more vehicles, automakers need more plants. General Motors operates as many plants as Toyota, Honda, Nissan, and Subaru, combined. Similarly, FCA US operates as many assembly plants as BMW, Daimler, Hyundai-Kia, Subaru, and VW, combined.

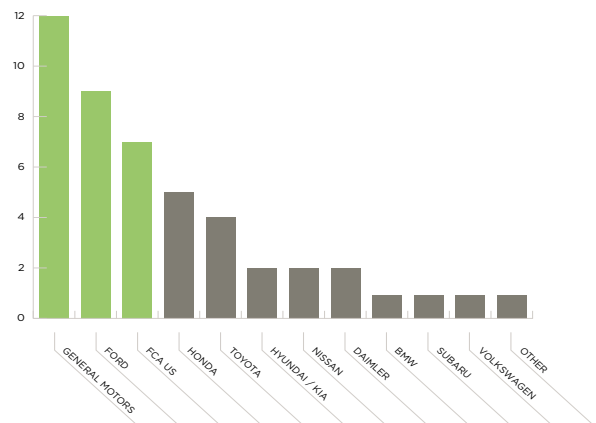
OEMs’ SHARE OF U.S. PRODUCTION (2015)



FCA US SELLS FEWER VEHICLES IN THE U.S. THAN TOYOTA, BUT PRODUCES MORE VEHICLES HERE (2015)



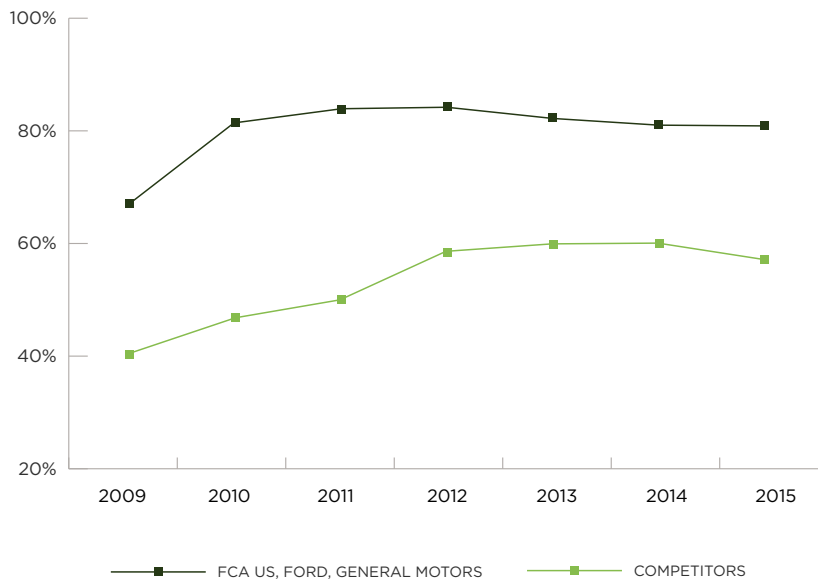
TOTAL U.S. ASSEMBLY PLANTS BY OEM



The difference: Eight new U.S. assembly plants, producing a line of new cars 7,000 miles long

Because the auto industry is so big, the difference between FCA US, Ford, and General Motors's 82% U.S. production rate and their competitors' 60% U.S. production rate represents hundreds of thousands of jobs and billions in capital investment. In order to match FCA US, Ford, and General Motors's U.S. production rate last year, foreign automakers would have needed to assemble more than 2.3 million more vehicles here last year.^{xxi}

U.S. PRODUCTION AS A PERCENTAGE OF U.S. SALES (2009-2015, SALES-WEIGHTED)



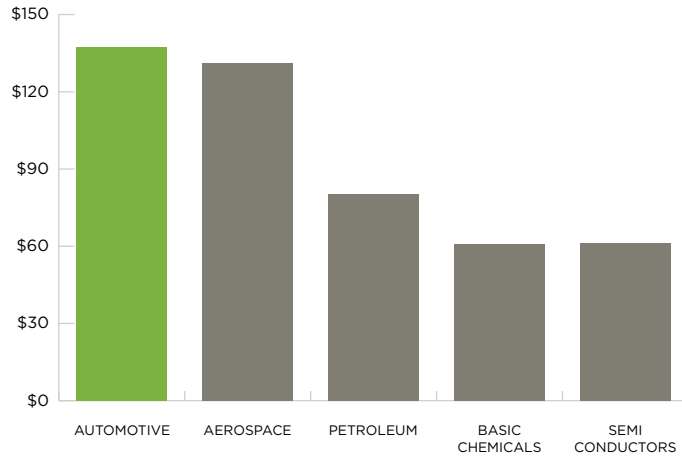
3 out of 5 auto assembly plants are FCA US/Ford/General Motors.

To build 2.3 million more vehicles, foreign automakers would have to build eight plants, each employing approximately 3,000 U.S. workers and supporting tens of thousands of other workers.^{xxii}

America's biggest exporters

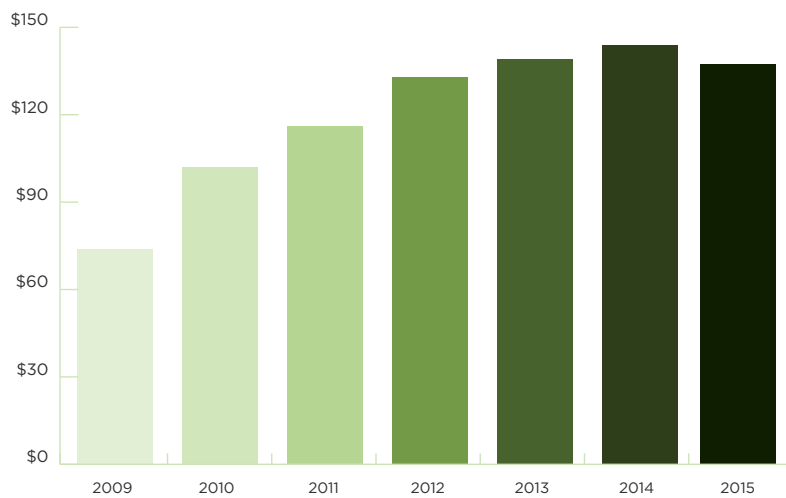
Automakers and their suppliers are America's largest exporters, beating the next best-performing industry by more than \$125 billion over the past six years.^{xxiii}

TOP 5 U.S. EXPORTERS (2015, IN BILLIONS)



In 2015, FCA US, Ford, and General Motors exported more than 1 million American-made vehicles to more than 100 different foreign markets.

AUTOMAKER AND SUPPLIER EXPORTS (IN BILLIONS)



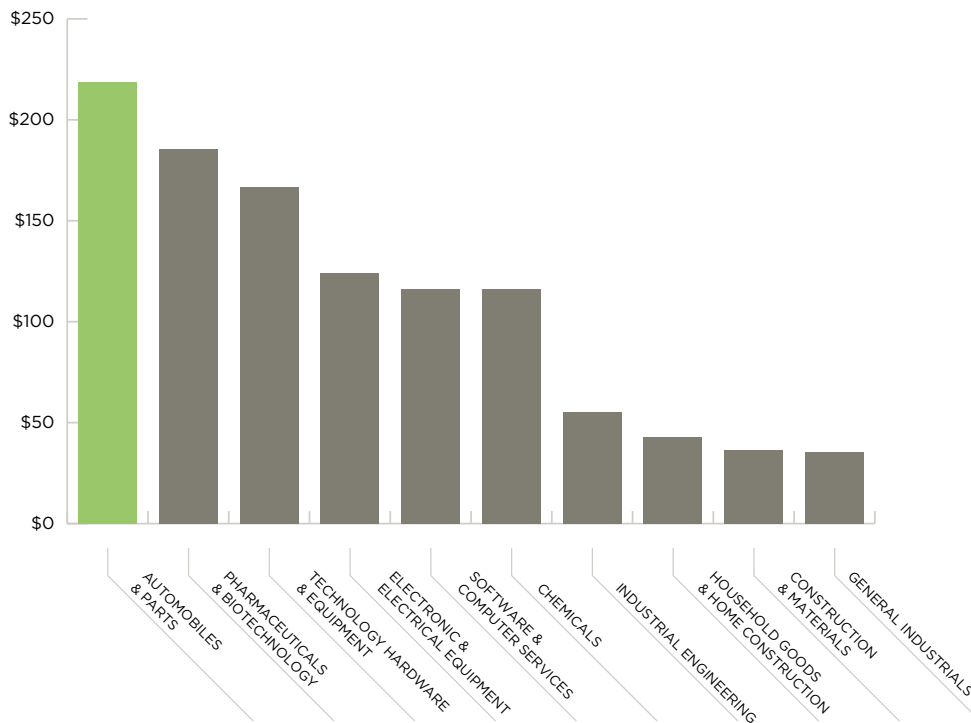
AUTOMAKERS ARE INVESTING TO MAKE AMERICA MORE COMPETITIVE

Capital investment, global

Automakers assemble approximately 85 million new cars and light trucks each year, worldwide. Building new plants and maintaining their existing ones requires hundreds of billions of dollars of investment each year.

A recent study by the European Commission examined the capital investment (plants and equipment) by 2,500 of the world's leading companies. The study found that automakers and their suppliers spent more on capital investment than pharmaceuticals and biotechnology, technology hardware producers, telecommunications companies, electrical utilities, chemical manufacturers, and mining companies.^{xxiv}

TOP 10 INDUSTRIES FOR CAPITAL INVESTMENT, IN BILLIONS (2014)

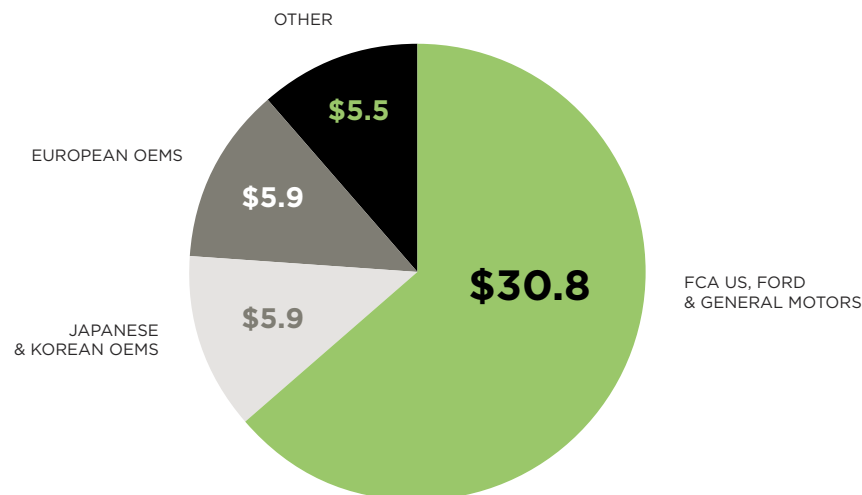


FCA US, Ford, and General Motors capital investments in the U.S.

Over the past six years alone, automakers have invested \$48.1 billion in their U.S. assembly, engine and transmission plants, R&D labs, headquarters, administrative offices, and other infrastructure that connects and supports them.^{xxv}

FCA US, Ford, and General Motors made more than \$30.8 billion of those \$48.1 billion (about 64%) in investments. Their investment in U.S. facilities is five times greater than all Japanese and Korean automakers combined. Together, Toyota, Honda, Nissan, Isuzu, Subaru, Suzuki, Mazda, Mitsubishi, and Hyundai-Kia invested only \$5.9 billion during this same six-year period. American automakers' investment is five times greater than the combined investments of the three major European automakers competing in the U.S. (BMW, Daimler, and VW). Together, they invested only \$5.9 billion over the past six years.

U.S. CAPITAL INVESTMENT, IN BILLIONS (2009-2014)



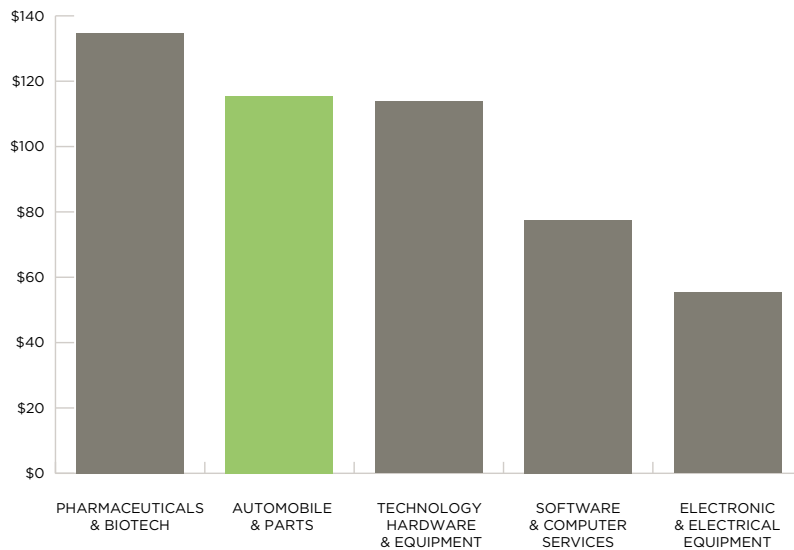
Building a new plant costs between \$1 and \$2 billion. Expanding a plant to allow for multiple platform production, or to take advantage of new process improvements, can cost several hundred million dollars. Both investments create jobs and help maintain America's competitive advantage, but the new plant will generate hundreds of headlines, while existing plant improvements tend to go unnoticed.

FCA US, Ford, and General Motors operate 28 assembly plants nationwide. They also operate more than 198 other manufacturing facilities, research labs, distribution centers, and other facilities, located in 32 states across 115 Congressional Districts.

Research & development

Designing and producing autos is a massive engineering challenge, which is why automakers and their suppliers invest approximately \$115 billion in R&D each year – more than technology hardware, software, electronics, chemicals, aerospace, defense, and oil and gas producers.^{xxvi}

TOP 5 INDUSTRIES FOR RESEARCH & DEVELOPMENT, IN BILLIONS (2014)



In the U.S., automakers and their suppliers invested approximately \$20 billion last year developing alternative fuels, advanced powertrains, new materials, and better sensors. That represents approximately \$1,150 of R&D for each car sold last year, on average.

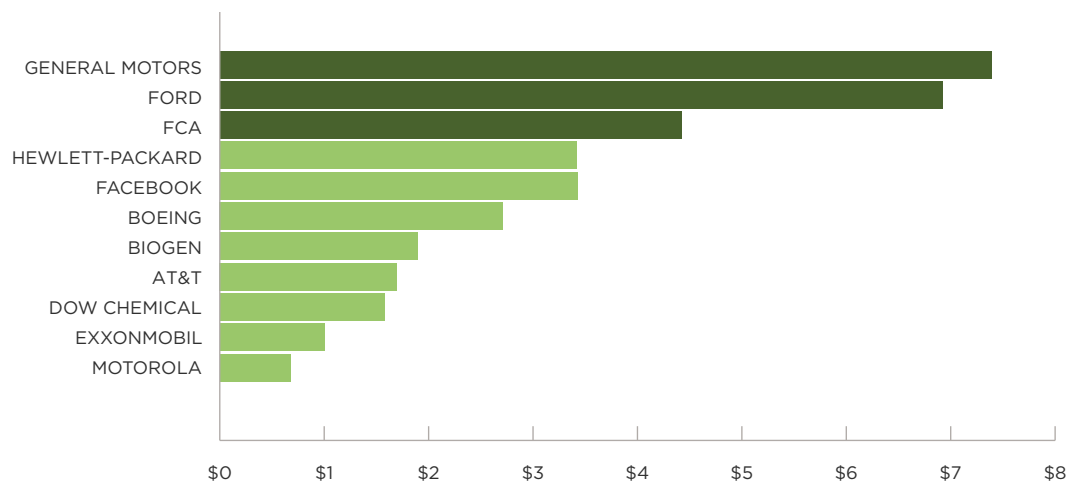
For this work, they are awarded approximately 5,000 U.S. patents each year.^{xxvii} Together, FCA, Ford, and General Motors have applied for more than 15,000 patents over the past 5 years alone.^{xxviii} In fact, Ford has earned or applied for more than 100 new patents for a single one of its new models: the 2015 F-150 pick-up truck.

Much of auto R&D is focused on in-vehicle electronics, which can represent as much as half of the cost of a new vehicle. To appreciate the scale and significance of auto R&D, consider several findings from CAR’s recent report, “Just How High-Tech is the Automotive Industry?” For example: a new smart phone contains one microprocessor, while a new car or truck contains about 60. These microprocessors manage 100 or more sensors located throughout the vehicle, connected by as much as a mile of wiring. Just as important, a microprocessor in a smart phone is expected to last about three years, while autos are expected to last 12 years or more.^{xxix}

Over the past decade, automaker R&D has driven braking technology from anti-lock brakes (which help a driver brake faster) to electronic stability control (which keeps a vehicle moving safely when the driver has lost control), to experimental automated emergency steering systems (which control braking, steering, and throttle functions).^{xxx}

Meanwhile, research into the use of new materials, better joining (welding, fasteners, adhesives), and fabrication could reduce the vehicle body weight by 10% to 20% by 2020.^{xxxi}

GENERAL MOTORS, FORD, AND FCA’S ANNUAL R&D VS. OTHER LEADING INNOVATORS (2014, IN BILLIONS)



Automaker jobs

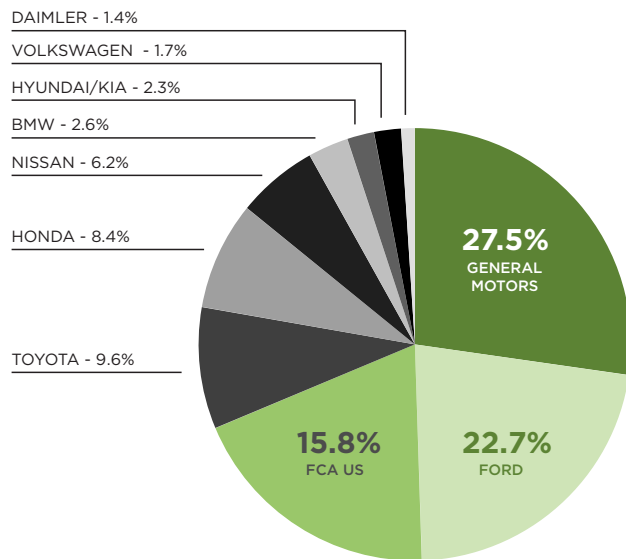
Automakers, their suppliers, their dealerships, and the local businesses that support them are responsible for more than 7.25 million U.S. jobs. No manufacturing sector employs more U.S. workers.^{xxxii}

FCA US, Ford, and General Motors employment

Together, the 16 major automakers competing in the U.S. employ about 353,000 U.S. workers. FCA US, Ford, and General Motors employ more than 232,000 of these U.S. workers.^{xxxiii}

The fact that FCA US, Ford, and General Motors account for 67% of U.S. auto jobs is remarkable, because they account for only 45% of U.S. market share.

U.S. EMPLOYMENT (YE 2015)



JOBS

**FCA US/Ford/
General Motors employ
2 out of 3 of America's
autoworkers, translating
to 232,000 jobs.**

The reason for this disparity is simple. FCA US, Ford, and General Motors produce more of their vehicles here, conduct more of their research here, and buy more of their parts here. As a result, they have based six times more of their global workforce in the U.S. than their competitors.

To appreciate just how much having an automaker's global headquarters in your country matters, consider VW. VW employs about 6,000 U.S. workers (1% of its total workforce). By comparison, 45% of VW's employees are based in Germany, the company's home market. At Ford, 41% of its workforce is based here, and that includes tens of thousands of engineering, finance, marketing, and other management jobs.

EVERY STATE IS AN “AUTO STATE”

The auto supply chain

More than 5,600 auto parts suppliers operate in the U.S.^{xxxiv} Together, they employ more than 734,000 U.S. workers.^{xxxv}

Approximately two-thirds of every vehicle’s parts content is produced by suppliers. For every worker employed by an automaker, two and a half other workers are employed by parts suppliers.

Many supplier jobs are in R&D. In fact, suppliers account for approximately 40% of the auto R&D conducted in the U.S. each year.^{xxxvi}

Auto suppliers are the biggest reason why every state is an “auto state.” For example, 220 U.S. auto suppliers manufacture parts for hybrid, plug-in hybrid and electric battery vehicle components. They operate across 23 different states.^{xxxvii}

A state that hosts one or more assembly plants can support more than 100 different suppliers. For example, Texas and California host 106 and 160, respectively.

FCA US, Ford, and General Motors’s national footprint

For their part, FCA US, Ford, and General Motors operate over 200 assembly plants, manufacturing facilities, research labs, distribution centers, and other facilities, directly employing more than 232,000 U.S. workers. These facilities are located in 32 states across 115 Congressional Districts. FCA US’s, Ford’s, and General Motors’s 10,150 auto dealerships employ more than 609,000 other U.S. workers.

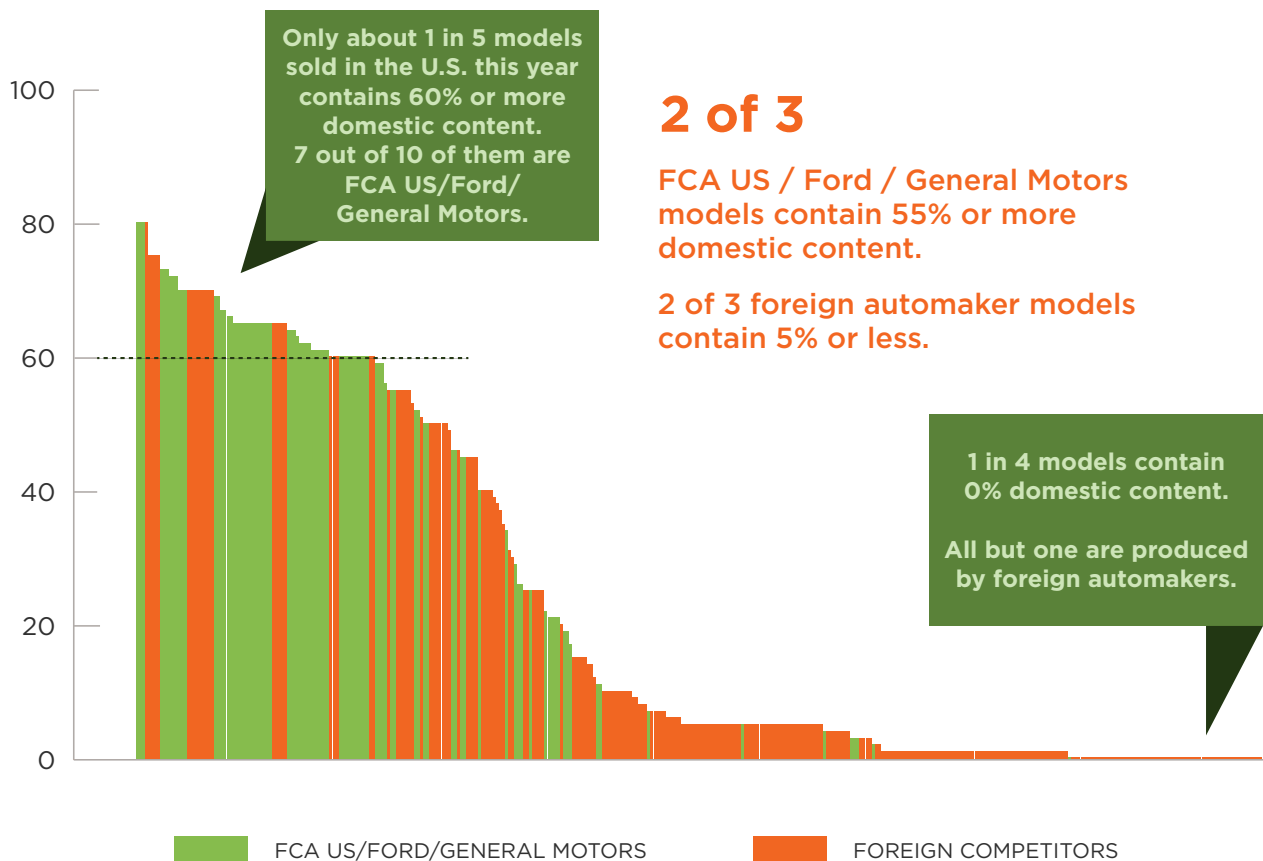
A steep curve on “domestic content”

Automakers sell more than 350 different models in the U.S. Those models contain anywhere from 80% to 0% “domestic content” (American- or Canadian-made parts, as defined by the American Automotive Labeling Act (AALA)).

While American auto suppliers produce hundreds of billions of dollars worth of parts each year, they are used in a comparatively small portion of American vehicles. Only one in five models contains 60% or more domestic content. More than half of them contain less than 10% domestic content.

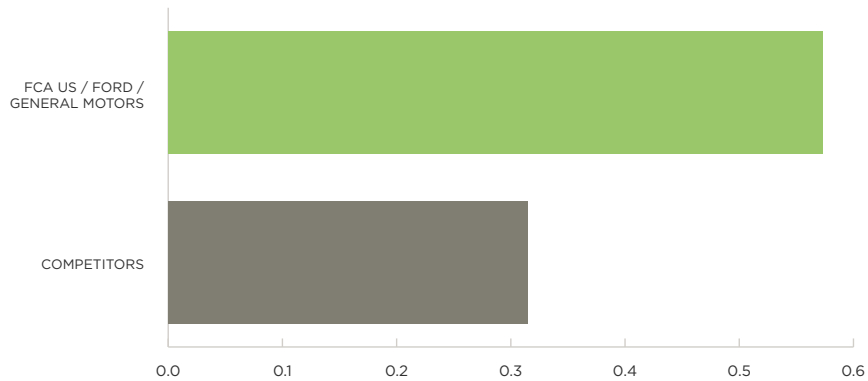
From a domestic content perspective, cars and trucks offer a steep curve. FCA US, Ford, and General Motors dominate the top. Two out of three of their models contain 55% or more domestic content. By comparison, two out of three of their competitors’ models contain 5% or less domestic content. Some foreign manufacturers score better than others. For example, Honda’s domestic content matches its domestic competitors, while even the U.S. assembled models from BMW contain 25% or less domestic content.

2016 AALA SCORES BY MAKE AND MODEL



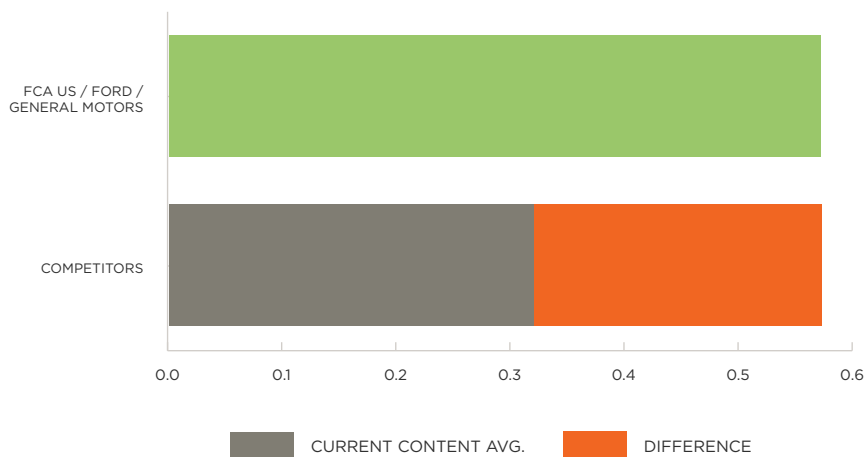
The difference: Dozens of new U.S. supplier plants, producing 2.4 Million cars'-worth-of-parts

SALES-WEIGHTED AALA AVERAGE (2016 MODEL YEAR)



To appreciate the scale of this difference, consider what would happen if foreign automakers matched FCA US, Ford, and General Motors's record. FCA US, Ford, and General Motors's fleets contain 58% domestic content (on a sales-weighted basis). Foreign automaker fleets contain only 32% domestic content. Had foreign automakers increased their use of domestic content to match FCA US, Ford, and General Motors's content rate (from 32 to 58%), they would have insourced the equivalent of more than 2.4 million cars'-worth-of-parts last year.

TO MATCH FCA US/FORD/GM PARTS PURCHASES LAST YEAR, COMPETITORS WOULD HAVE HAD TO PURCHASE 2.4 MILLION VEHICLES'-WORTH-OF-DOMESTIC-PARTS



OUR INVESTMENTS ARE CONTRIBUTING TO THE REVIVAL OF MANUFACTURING ACROSS AMERICA

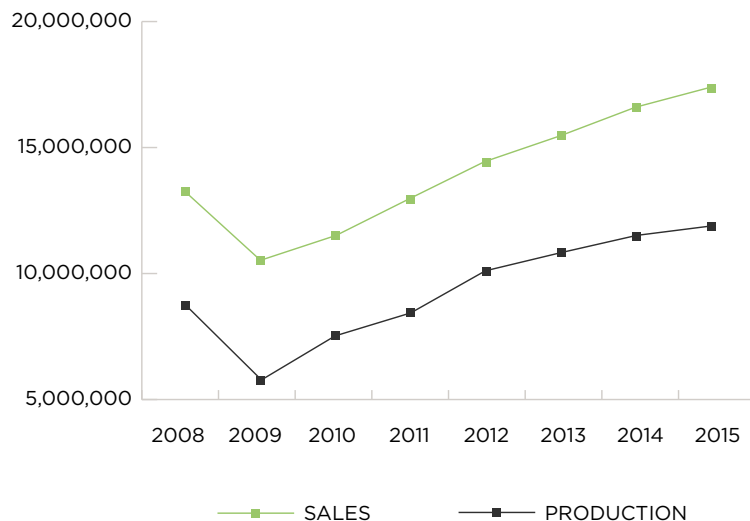
Auto sales, production, and employment rebound

The auto sector was hit hard by the recession and the resulting credit crunch. As auto sales rebounded, they contributed greatly to the ongoing recovery. Approximately 10% of economic growth from the second quarter of 2009 to 2013 was produced by the auto sector.

U.S. auto sales have increased by more than 67% since the financial crisis (from 10.4 million in 2009 to 17.4 million last year). CAR projects sales will reach or exceed 18 million vehicles per year through 2019.^{xxxviii}

During that same period, U.S. auto production has more than doubled (from 5.8 million vehicles produced in 2009 to 11.8 million vehicles last year). U.S. auto production is expected to reach or exceed 12 million vehicles per year through 2018.^{xxxix}

REBOUND IN U.S. SALES AND PRODUCTION (2009-2015)



Automakers are operating second shifts at most of their plants, and some have added third shifts. As a result, CAR predicts that automotive employment will increase by more than one-third from 2011 through 2016, a compound growth rate of 6.1 percent.^{xl}

Surprisingly, U.S. auto sales increased by double digits from 2010 through 2015, even though GDP has grown by less than 3% each year. Historically, only a GDP growth rate of 4% or more would support sales increases of this kind.^{xli}

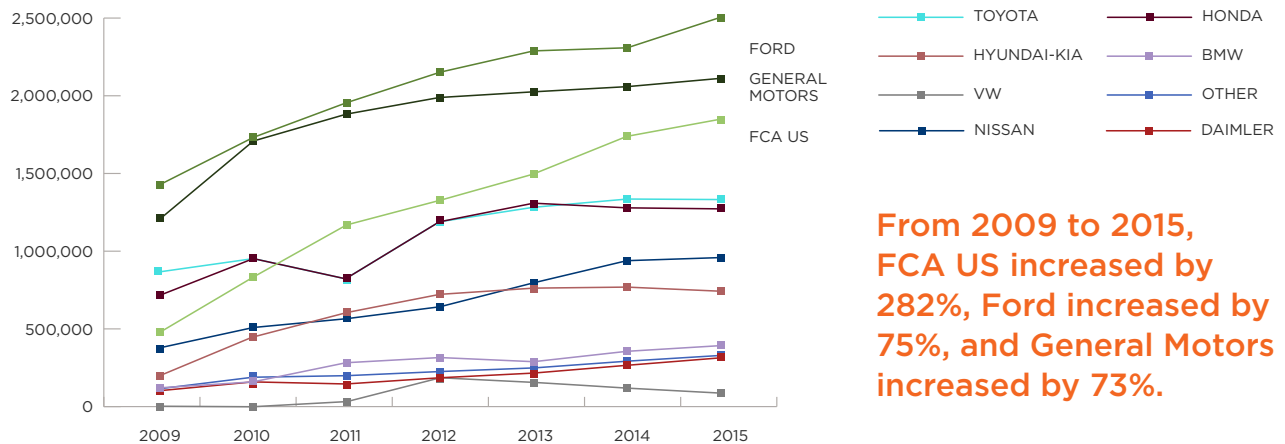
Production shifting to U.S.

Recently, many automakers have responded to new domestic cost advantages by shifting production from other countries to the U.S. Ford's Ohio Assembly now produces their medium duty truck, which was previously made in Mexico, and Cleveland Engine Plant produces EcoBoost engines that were previously made in Spain. General Motors shifted more of its pick-up production to the U.S.

Part of this change relates to reductions in the U.S.'s labor and energy costs, but an industry-wide move toward global model platforms is also a factor. Throughout the automotive industry, automakers are reducing their research, development, and production costs by building their models from a smaller number of body platforms. They are also centralizing production of those platforms. In such cases, more efficient and innovative markets, like the U.S., can gain volume, by exporting the same body frame or major component to assembly facilities around the world.^{XLII}

Moreover, as new platform hubs grow, foreign auto suppliers may build new plants in the U.S. to serve them. Nine out of 10 of the world's largest automakers and 46 of the world's top 50 global automotive suppliers have opened R&D facilities in Michigan alone.^{XLIII}

TOTAL U.S. PRODUCTION (2009-2015)



IN AN INDUSTRY AS COMPETITIVE AND CAPITAL-INTENSIVE AS AUTOS, PUBLIC POLICY MATTERS

The long-term success of any American research lab or assembly plant depends, in part, on how international public policies, including those on currency manipulation and automotive safety standards, affect an automaker's ability to compete internationally.

CURRENCY MANIPULATION

Currency exchange rates can be as important a determinant of trade outcomes as the quality of a particular good or service traded. Some governments manipulate their currency's value in order to provide an unfair competitive trade advantage to their industries. In fact, currency manipulation can and often does have a much larger impact on trade than any of the tariff or non-tariff barriers that are the usual focus of U.S. free trade agreement negotiations.

The U.S. and the international economic system have been ineffective at addressing the use of currency manipulation by its trade partners. The International Monetary Fund (IMF) has clear rules against competitive devaluations, but it has no enforcement mechanism, and its decision-making process is politicized and easy for the manipulators to block. The World Trade Organization (WTO) agreements include provisions on currency exchange rates; however, these rules are untested. Inaction to address this distortion has led to the U.S. suffering much larger trade deficits and job losses than it otherwise would have. Some have estimated that this inaction has led to the loss of up to 5 million American jobs.

At the end of 2015, the United States completed the Trans-Pacific Partnership (TPP) agreement negotiations. In parallel, a macroeconomic policy authority forum (Macroeconomic Forum) was established among the 12 TPP countries. The Macroeconomic Forum, coupled with the commitments made in the Trade Facilitation and Trade Enforcement Act of 2015 (Customs Act), was designed to deter exchange rate manipulation through transparency and reporting, as well as consultations among TPP countries.

The Macroeconomic Forum falls short of the enforceable rules prohibiting currency manipulation that AAPC and others sought to include in the TPP; however, the forum could represent an opportunity and could be an additional venue to address currency exchange rates that are not aligned with market forces. We strongly recommend that the U.S. forcefully address currency manipulation and use whatever means available to address this highly disruptive distortion of the global economy.

INTERNATIONAL SAFETY STANDARDS

Motor vehicles built to U.S. Federal Motor Vehicle Safety Standards (FMVSS) and the equivalent European regulations, known as Economic Commission for Europe (ECE) standards, both lead to the highest levels of safety performance and outcomes. If a manufacturer builds to applicable FMVSS or ECE standards it should be able to sell that product worldwide.

When other countries accept both of these equally robust sets of standards, they encourage a more efficient and competitive automotive industry by:

- Reducing numbers of prototypes needed for testing;
- Eliminating redundant testing and calibration that have no added safety benefit;
- Reducing record keeping, data process and oversight resources;
- Reducing administration/retrofitting costs for consumers relocating between countries; and
- Moving transportation of automobiles and auto parts across international borders more efficiently.

The European Commission is already actively promoting the use of ECE automotive safety standards around the world, including through its free trade agreements. To help ensure that FMVSS are also accepted internationally we have proposed that the United States:

- Proactively seek acceptance of FMVSS regulations worldwide;
- Strongly and swiftly address regulations that emerge in individual countries/regions that act as technical barriers to U.S. auto exports;
- Explicitly include acceptance of U.S. and other globally-recognized regulations in all U.S. free trade agreements; and
- Maximize the opportunity to advance regulatory convergence between the U.S. and the European Union as part of the Transatlantic Trade and Investment Partnership (TTIP) negotiations.

This is intended to match the vigor with which the EU has been pursuing its standards globally on behalf of its vehicle industries, and is not in any way intended to supplant the acceptance of ECE safety standards. In fact, as noted above, we recommend countries accept vehicles certified to both FMVSS and ECE regulations.

By ensuring that vehicles certified to FMVSS are also accepted worldwide, our nation will reinforce the globally competitive export platform, boosting the U.S. economy and the new jobs it can create through growing exports.

SOURCES

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- ⁱⁱ CAR, *Economic Contribution of the Ford Motor Company Michigan Assembly Plant to Michigan Economy* (March 2013). Hill, Kim, Bernard Swiecki, Deb Menk, Joshua Cregger, and Michael Schultz. Page 25.
- ⁱⁱⁱ United States Department of Commerce, International Trade Administration (2015).
- ^{iv} Motor & Equipment Manufacturers Association, *Moving America Forward* (2013).
- ^v Result calculated by multiplying foreign automakers' 2015 U.S. sales by American automakers' 2015 U.S. production as a percent of sales rate.
- ^{vi} Result calculated by multiplying foreign automakers' 2015 U.S. sales by American automakers' sales-weighted domestic content average for the 2015 model year.
- ^{vii} CAR analysis (2014).
- ^{viii} European Commission Joint Research Centre, *2015 EU Industrial R&D Scoreboard*.
- ^{ix} CAR, *U.S. Vehicle Sales, Production, & Employment Outlook*. McAlinden, Sean, Dr., and Yen Chen (January 2014 – May 2015).
- ^x CAR, *U.S. Vehicle Sales, Production, & Employment Outlook*. McAlinden, Sean, Dr., and Yen Chen (January 2014 – May 2015).
- ^{xi} For a more complete examination of this trend, see CAR's *Economic Contribution of the Ford Motor Company Michigan Assembly Plant to Michigan Economy*.
- ^{xii} Assumes autos are 190 inches each (approximate size of popular mid-sized sedans).
- ^{xiii} For a more complete analysis of "job multipliers" see reports from CAR's Sustainability & Economic Development Strategies group.
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- ^{xvi} CAR, *Economic Contribution of the Ford Motor Company Michigan Assembly Plant to the Michigan Economy*. Hill, Kim, Bernard Swiecki, Deb Menk, Joshua Cregger, and Michael Schultz (March 2013).
- ^{xvii} CAR, *The Effect on the U.S. Economy of the Successful Restructuring of General Motors*. McAlinden, Sean P., and Debra M. Menk (2013). Page 4.
- ^{xviii} Motor & Equipment Manufacturers Association, *Moving America Forward* (2013).
- ^{xix} National Science Board, *2016 Science and Engineering Indicators* (February 2016).
- ^{xx} In 2014, foreign automakers sold 9,006,312 cars and trucks in the U.S. and produced 5,347,648 cars and trucks here, for a U.S. production rate of 59%.
- ^{xxi} To match FCA US, Ford, and General Motors's 81% U.S. production rate, foreign automakers would have had to produce 1,951,067 more cars and trucks here (moving from 5,347,648 out of 9,006,312 sold, to 7,298,715 out of 9,006,312 sold).
- ^{xxii} Assuming each plant produced 300,000 vehicles, it would require 7.85 plants to produce 2,356,441 vehicles. Plants capable of producing 300,000 vehicles per year employ 3,000 to 4,000 workers. New plants require \$1 to \$2 billion

in capital investment.

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- xxxv Motor & Equipment Manufacturers Association, *Moving America Forward* (2013).
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- xxxix CAR, *U.S. Vehicle Sales, Production, & Employment Outlook*. Sean McAlinden, Yen Chen (January 2014 – May 2015). Page 4.
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