DEPARTMENT OF COMMERCE

Publication of a Report on the Effect of Imports of Automobiles and Automobile Parts on the National Security: An Investigation Conducted Under Section 232 of the Trade Expansion Act of 1962, as Amended

AGENCY: Department of Commerce.

ACTION: Publication of a report.

SUMMARY: The Department of Commerce in this notice is publishing the Report on the Effect of Imports of Automobiles and Automobile Parts on the National Security. The report documents the findings of the Department of Commerce's investigation to determine the effects on the national security of imports of automobiles, including cars, SUVs, vans and light trucks, and automotive parts. This investigation was carried out under Section 232 of the Trade Expansion Act of 1962, as amended. All classified and business confidential information in the report was redacted before the release. This report was completed on February 17, 2019 and posted on the Bureau of Industry and Security (BIS) website on July 6, 2021. The Department of Commerce has not published the appendices to the report in this notification of report findings, but they are available online at the BIS website, along with the rest of the report (see the **ADDRESSES** section).

DATES: The report was completed on February 17, 2019. The report was posted on the BIS website on July 6, 2021.

ADDRESSES: The full report, including the appendices to the report, are available online at *https://www.bis.doc.gov/index.php/other-areas/office-of-technology-evaluation-ote/section-232-investigations.*

FOR FURTHER INFORMATION CONTACT: Brittany Caplin, Office of Public Affairs, U.S. Department of Commerce at (202) 482–4883. For more information about the section 232 program, including the regulations and the text of previous investigations, see *www.bis.doc.gov/232.*

SUPPLEMENTARY INFORMATION:

The Effect of Imports of Automobiles and Automobile Parts on the National Security

An Investigation Conducted Under Section 232 of the Trade Expansion Act of 1962, as Amended

U.S. Department of Commerce

February 17, 2019

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I. Executive Summary

This report summarizes the findings of an investigation conducted by the U.S. Department of Commerce (''Department'') pursuant to Section 232 of the Trade Expansion Act of 1962, as amended (19 U.S.C. 1862) (''Section 232''), into the effects of imports of automobiles [1] and automobile parts on the national security of the United States. In conducting this investigation, the Secretary of Commerce (''Secretary'') noted the Department's prior investigations under Section 232.[2] Consistent with those investigations, the Secretary in this investigation again determined that ''national security'' for purposes of Section 232 includes the ''general security and welfare of certain industries, beyond those necessary to

[1] For purposes of this investigation, automobiles include: Passenger vehicles, including sedans, sport utility vehicles (''SUVs''), crossover utility vehicles (''CUVs''), vans (including minivans and cargo vans), and light trucks.

[2] *See, e.g.,* Department of Commerce, Bureau of Industry and Security, *The Effect of Imports of Steel on the National Security,* Jan. 2018 (''2018 Steel Report''); Department of Commerce, Bureau of Industry and Security, *The Effect of Imports of Aluminum on the National Security,* Jan. 2018 (''2018 Aluminum Report'').

satisfy national defense requirements, that are critical to the minimum operations of the economy and government.'' [3]

On the basis of the facts considered in this investigation, the Secretary finds that the impact of excessive imports on the domestic automobile and automobile parts industry and the serious effects resulting from the consequent displacement of production in the United States is causing a ''weakening of our internal economy [that] may impair the national security'' as set forth in section 232.[4] In making this determination, the Secretary examined the increase in volume of subject imports and their effects on domestic prices, domestic production, and research and development (''R&D'') relevant to technological advancements for defense capabilities. As required by section 232(d), the Secretary also considered the impact of foreign competition on the economic welfare of the automobile and automobile parts industry in the United States. He also considered other relevant factors bearing on the state of the industry. As also required by statute, the Secretary examined the effect of imports on national defense requirements, including: U.S. production needed for such requirements; existing and anticipated availabilities of the human resources, products, raw materials, and other supplies and services essential to the national defense; the requirements for growth of such industries and such supplies and services including the investment, exploration, and development necessary to assure such growth; and the importation of goods in terms of their quantities, availabilities, characters, and use as those affect such industries and the capacity of the United States to meet national security requirements.

As also required by section 232(d), the Secretary recognized the close relation of the economic welfare of the United States to its national security; the impact of foreign competition on the economic welfare of individual domestic industries; and any substantial unemployment, decrease in revenues of government, loss of skills, or any other serious effects resulting from the displacement of any domestic products by excessive imports, without excluding other factors, in determining whether a weakening of the U.S. economy by such imports may impair national security. In particular, this report assesses whether automobiles and certain automobile parts are being imported ''in such quantities or under such circumstances as to threaten to impair the national security.'' [5] This report summarizes the findings of the Secretary.

For purposes of this report, ''U.S. producers'' and ''domestic producers'' of automobiles and automobile parts refer to both American-owned and foreign-owned producers operating in the United States.[6] Otherwise, specific reference is made to American-owned or foreign-owned producers, as appropriate.

Findings

The automotive industry has traditionally been a great engine of economic growth throughout history and, for decades, the strength of the United States' automotive manufacturing sector has directly contributed to the industrial base that provides the economic strength and technological innovation that enables our armed forces to project military power and maintain our status as a world power. Many of the most important innovations and technological advancements over the past 100 years have come from the automotive sector, and the strength of this sector drives technological advancements in the defense sector. Today, the defense sector is heavily interconnected and reliant on the automotive industry for R&D to meet current and future military requirements such as vehicle electrification, autonomous driving, hydrogen fuel cell products, advanced semiconductor utilization, radar, laser and sonar ranging, global positioning system (''GPS'') navigation, anti-lock brakes, reduction in vehicle weight (''lightweighting''), and fuel efficiency efforts. Product development in partnership between U.S. automotive manufacturers and defense agencies results in technological advancements in military aircraft, space aircraft, unmanned aerial systems, missiles, and submarines.

However, the United States' automobile industry's technological leadership in innovation is quickly diminishing. In conducting this investigation, the Secretary has found that significant import penetration over the course of the past three decades has severely weakened the U.S. automotive industry, as American-owned production of automobiles and automobile parts has been reduced by imports and the domestic manufacturing base has weakened. Overall, the share of global R&D investments in the automotive sector attributable to the United States has significantly declined and, today, the share of R&D conducted by American-owned companies is a fraction of the share conducted by foreign competitors. If production volumes continue to decline domestically, the United States' contribution to automotive R&D will further weaken and will impede the automobile industry's ability to invest in the development of technologies that are imperative to maintaining a leading edge in U.S. military capabilities.

This is especially significant for American-owned manufacturers. The Secretary notes that, in the procurement of military equipment, including military vehicles, automobiles, and automobile parts, the United States' Department of Defense (''DOD'') relies predominantly on suppliers located in the United States, both American-owned and foreign-owned. However, because in a time of national emergency, foreign-owned suppliers operating in the United States may not be reliable sources of equipment, the DOD must be able to rely on a sufficient presence of American-owned manufacturers for its military needs. In addition, due to the high cost of technological innovation in the automotive sector (and the significant revenue potential from innovative developments), manufacturers fiercely protect their technology and trade secrets in order to stay competitive, which means that American-owned firms do not have access to technology and trade secrets developed by foreign-owned firms and that, in time of war, when foreign-owned firms may decline to share their R&D with the DOD, the United States Government will not have access to all the latest developments in the industry.[7] With respect to highly-advanced technologies that have significant, cutting-edge military applications, moreover, firms tend to conduct R&D in their home countries where the potential for intellectual property spillover and theft is reduced. Thus, the U.S. military cannot depend on foreign-owned firms in the United States to access to new technologies. For

[3] Department of Commerce, Bureau of Export Administration, *The Effect of Imports of Iron Ore and Semi-Finished Steel on the National Security,* Oct. 2001 (''2001 Report'') at 5.

[4] 19 U.S.C. 1862(d).

[5] 19 U.S.C. 1862(b)(3)(A).

[6] For the purposes of this report, American-owned producers are General Motors, Ford, and Tesla, as well as Chrysler for years prior to 1998 and American Motors for 1985–1987. ''Producers'' and ''manufacturers'' are used interchangeably in this report.

[7] As much as 30 percent of industry revenue potential is attributable to new services and emerging technologies in the automotive sector. Jeff Desjardins, *The Future of Automotive Innovation,* Feb. 15, 2018, *https://www.visualcapitalist.com/future-automobile-innovation/.*

these reasons, the Secretary determines that the United States cannot rely on the presence of foreign-owned manufacturers in the United States to help meet U.S. defense requirements.

As set forth in this report, imports of automobiles and certain automobile parts are impairing the strength of American-owned firms in the automotive sector—in terms of both production and revenue needed for R&D investments—and improving the conditions for such firms is necessary to enable the development of technologies needed for our national security requirements. In conducting this investigation, the Secretary has made the following findings:

1. A Healthy U.S. Automobile and Automobile Parts Manufacturing Industry Is Necessary for U.S. Defense and National Security

The rapid application of commercial breakthroughs in automobile and automobile parts technologies is key to gaining competitive military advantages and meeting defense requirements. From new engine and powertrain technology, to lightweighting and advanced connectivity, the DOD is actively working to incorporate technologies that have been the subject of years of effort and billions of dollars of R&D by the U.S. commercial automotive industry.[8]

While the U.S. defense industrial base is dependent on the American-owned automotive sector for the development of high-tech products and capabilities, the U.S. commercial automotive industry is unable to survive solely by supplying the DOD. To this point, in 2017, 17.1 million automobiles were sold in the United States versus [TEXT REDACTED] wheeled armored vehicles. According to the DOD, it is commercial sales that generate the production volumes needed for manufacturing efficiency, the revenues needed for R&D, and the profits needed to sustain domestic automotive businesses.[9] Armored vehicles require highly sophisticated automobile parts, and it is commercial scale that allows the DOD to benefit from reduced unit costs for production of armored vehicles and cost effective access to new technology. In other words, a strong presence of American-owned companies in the United States industry allows for the development and production of highly technologically-advanced products that are essential to modern military applications for U.S. national defense.

2. Imports of Automobiles and Automobile Parts Are Impairing the Ability of the Domestic Industry To Meet National Defense Requirements

Production of automobiles in the United States has significantly weakened over the past several decades as domestic production has been replaced by an influx of low-priced imports from countries where automotive markets are protected from foreign competition. These conditions enable foreign producers to expand production in their home markets, achieve significant economies of scale and reduce prices, produce in excess of the needs of their domestic demand, export that excess production to the United States, and capture a dominant and growing share of the U.S. market.

Further, the imports of the types of automobile parts that are critical to U.S. defense needs—namely engines and engine parts, transmissions and powertrain parts, and electrical components—have significantly displaced parts manufactured in the United States and have weakened the domestic manufacturing base, including American-owned automobile parts producers, such that the automotive industry in the United States has become increasingly reliant on imported parts.

The contraction of the American-owned automotive industry, if continued, will significantly impede the United States' ability to develop technologically advanced products that are essential to our ability to maintain technological superiority to meet defense requirements and cost effective global power projection, as well as provide the necessary R&D and manufacturing base in the event of a national emergency.

3. Decline in U.S. R&D for Important Automotive Technologies Threatens To Impair U.S. National Security

This report establishes that a strong and robust American-owned R&D and manufacturing base for automobiles and automobile parts is vital to national security. However, the increase in imports of automobiles and automobile parts over three decades has put American-owned producers at a competitive disadvantage vis-à-vis their foreign-owned competitors in R&D expenditures. In 2017, R&D by American-owned manufacturers amounted to only 20 percent of global R&D spending in automobile production and only 7 percent of global R&D spending in automobile parts, lagging behind European Union (''EU'') and Japanese competitors, which together controlled 70 percent of global R&D spending in vehicle production and nearly 90 percent in automobile parts R&D. Additionally, the Asia Pacific region is now emerging as a favored destination for R&D investments. Protected foreign markets, which discriminate heavily against imports, have precluded American-owned manufacturers from offsetting their decline in the U.S. market, and thereby building R&D revenue by expanding sales through exports abroad.

Because R&D expenditures are integral to promoting long-term technological advancements in automation, electrification, and connectivity that enable cost effective power projection and maintain technological superiority for U.S. national defense, the lag in R&D expenditures by American-owned manufacturers is weakening U.S. innovation and, accordingly, the capacity of the United States to meet national security requirements. Indeed, as the U.S. military relies heavily on and adopts innovations from the commercial automotive industry, a significant decline in American-owned automotive industry investment and development also jeopardizes U.S. military leadership and its ability to fulfill America's defense requirements. Domestic conditions of competition must be improved by reducing imports so that American-owned producers are able to increase R&D expenditures and investment to assure the growth necessary to meet national defense requirements, particularly in a time of national emergency.

Conclusion and Recommendations

Based on the findings in this report, the Secretary concludes that the present quantities and circumstances of imports of automobiles and certain automobile parts, specifically engines and engine parts, transmissions and powertrain parts, and electrical components as defined in Section VIII, are ''weakening our internal economy'' and threaten to impair national security as set forth in Section 232.

As discussed throughout this report, the negative impact of imports and the resulting displacement of production for the American-owned automobile and automobile parts manufacturers are significant, and are increasing given that the U.S. automobile market is experiencing a decline in demand and contracting due to excessive imports. Defense purchases alone are not sufficient to support a robust military vehicle supply chain and R&D in key

[8] Appendix A—Letter from Secretary of Defense James Mattis to Secretary of Commerce Wilbur Ross.

[9] Consultations between Department of Commerce and Department of Defense in August 2018.

automotive technologies (such as autonomous driving, vehicle lightweighting, electrification, and connectivity) vital to meeting the needs of national defense. Hence, American-owned automobile and automobile parts manufacturers must have a robust presence in the U.S. commercial market. Moreover, innovations generated by R&D investments are necessary for manufacturers to remain competitive in both the commercial automotive sector and the defense sector. It is that innovation capability which is now at serious risk as imports continue to displace American-owned production. An American-owned automotive industry that is not competitive in the latest technologies, nor has the ability to retain a large skilled workforce and attract the next-generation workforce, will be unable to remain globally competitive and ensure that the United States maintains the ability to produce cutting-edge technologies that are essential to America's national security.

The foregoing factors explain the basis for the Secretary's determination that the ''displacement of domestic products by excessive imports''—in particular the displacement of automobiles and certain automobile parts manufactured by American-owned firms—is causing a ''weakening of our internal economy'' that ''may impair the national security.'' *See* 19 U.S.C. 1862(d). Therefore, the Secretary recommends that the President take corrective action. *See* 19 U.S.C. § 1862(c).

The Secretary recommends the following actions the President could take as possible options to remove the threatened impairment of the national security:

1. Direct further discussions and negotiations to obtain agreements that address the threatened impairment of national security. Since this investigation was initiated, there have been productive discussions that could result in positive changes for the automotive industry in the United States, and the United States has signed the USMCA. If these discussions and the USMCA result in positive changes to the U.S. automotive industry, the President could determine whether those actions address the threatened impairment of the national security found in this report.

As provided in section 232(c)(3), if appropriate agreements have not been reached in a timely manner or if a negotiated agreement is not being carried out, the President could determine that further action under section 232 is necessary.

OR

2. Impose tariffs of up to 25 percent (in addition to any existing duties) on imports of automobiles and certain automobile parts (engines and parts, transmissions and powertrain parts, and electrical components) in order to increase U.S. production of automobiles and parts to a level sufficient to generate additional revenue to increase R&D investments by American-owned (as well as foreign-owned) manufacturers in the United States. Imports under USMCA Side Letters would not be subject to the tariffs.

OR

3. Impose tariffs of up to 35 percent (in addition to any existing duties) on imports of SUVs and CUVs, which will increase domestic production and generate additional revenue to increase R&D investments by American-owned (and foreign-owned) manufacturers in the United States. The Department of Commerce would work with the U.S. Customs and Border Protection on the most appropriate means to implement this option if selected. Imports under USMCA Side Letters would not be subject to the tariffs.

Exemptions

The President may wish to consider agreements that the United States has renegotiated recently in determining whether specific countries should be exempted from the proposed tariffs based on an overriding national security interest of the United States. For example, the President should consider the Republic of South Korea for an exemption based on the recently improved agreement and strong national security relationship. The Secretary recommends that any determination to exempt a specific country should be made at the outset and a corresponding adjustment be made to the final tariffs imposed on the remaining countries. Any country exempted should be placed under a quota to ensure that producers in that country do not increase exports to the United States and to prevent transshipment through that country of automobiles and automobile parts seeking to avoid tariffs. This would ensure that overall imports of automobiles and automobile parts to the United States remain at or below the level needed to enable American-owned producers to reach levels of production sufficient to increase R&D for technologies that are important to national defense.

II. Legal Framework

A. Section 232 Requirements

Section 232 provides the Secretary with the authority to conduct investigations to determine the effect of imports of any article on the national security of the United States. It authorizes the Secretary to conduct an investigation if requested by the head of any department or agency, upon application of an interested party, or upon his own motion. *See* 19 U.S.C. 1862(b)(1)(A).

Section 232 directs the Secretary to submit to the President a report with recommendations for ''action or inaction under this section'' and requires the Secretary to advise the President if an article that is the subject of the investigation ''is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security.'' *See* 19 U.S.C. 1862(b)(3)(A).

Section 232(d) directs the Secretary and the President to, ''in light of the requirements of national security and without excluding other relevant factors, give consideration to domestic production needed for projected national defense requirements; the capacity of domestic industries to meet such requirements; existing and anticipated availabilities of the human resources, products, raw materials, and other supplies and services essential to the national defense; the requirements of growth of such industries and such supplies and services including the investment, exploration, and development necessary to assure such growth; and the importation of goods in terms of their quantities, availabilities, character, and use as those affect such industries and the capacity of the United States to meet national security requirements.'' *See* 19 U.S.C. § 1862(d).

Section 232(d) also directs the Secretary and the President in the administration of this section to ''further recognize the close relation of the economic welfare of the Nation to our national security, and . . . take into consideration the impact of foreign competition on the economic welfare of individual domestic industries'' and ''any substantial unemployment, decrease in revenues of government, loss of skills or investment, or other serious effects resulting from the displacement of any domestic products by excessive imports . . . [or] other factors in determining whether such weakening of our internal economy may impair the national security.'' *See* 19 U.S.C. § 1862(d).

Once an investigation has been initiated, Section 232 mandates that the

Secretary provide notice to the Secretary of Defense that such an investigation has been initiated. Section 232 (b)(2)(A) also requires the Secretary to do the following:

(1) ''consult with the Secretary of Defense regarding the methodological and policy questions raised in [the] investigation'';

(2) ''seek information and advice from, and consult with, appropriate officers of the United States''; and

(3) ''if it is appropriate and after reasonable notice, hold public hearings or otherwise afford interested parties an opportunity to present information and advice relevant to such investigation.'' [10]

As detailed in Part III of this report, each of the legal requirements set forth above has been satisfied.

In conducting the investigation, Section 232 permits the Secretary to request that the Secretary of Defense provide an assessment of the defense requirements of the article that is the subject of the investigation. *See* 19 U.S.C. 1862(b)(2)(B).

Upon completion of a Section 232 investigation, the Secretary is required to submit a report to the President no later than 270 days after the date on which the investigation was initiated. *See* 19 U.S.C. 1862(b)(3)(A). The required report must:

(1) Set forth ''the findings of such investigation with respect to the effect of the importation of such article in such quantities or under such circumstances upon the national security'';

(2) set forth, ''based on such findings, the recommendations of the Secretary for action or inaction under this section''; and

(3) ''[i]f the Secretary finds that such article is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security . . . so advise the President . . .''

Id.

Department regulations require that an executive summary of the report, excluding any classified or proprietary information, be published in the **Federal Register**. Copies of the full report, excluding any classified or proprietary information, must be available for public inspection and copying. *See* 15 CFR 705.10.

Within 90 days after receiving a report in which the Secretary finds that an article is being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security, the President shall:

(1) ''determine whether the President concurs with the finding of the Secretary;'' and

(2) ''if the President concurs, determine the nature and duration of the action that, in the judgment of the President, must be taken to adjust the imports of the article and its derivatives so that such imports will not threaten to impair the national security.'' *See* 19 U.S.C. 1862(c)(1)(A).

B. Discussion

Section 232 does not contain a definition of ''national security.'' However, both Section 232 and its implementing regulations at 15 CFR part 705 contain non-exclusive lists of factors that the Secretary must consider in evaluating the effect of imports on the national security. Congress in Section 232 explicitly provides that ''national security'' includes, but is not limited to, ''national defense'' requirements. *See* 19 U.S.C. 1862(d). In the 2001 Report, the Department determined that ''national defense'' includes both defense of the United States directly and the ''ability to project military capabilities globally.'' [11]

The Department also concluded in the 2001 Report that ''in addition to the satisfaction of national defense requirements, the term 'national security' can be interpreted more broadly to include the general security and welfare of certain industries, beyond those necessary to satisfy national defense requirements that are critical to the minimum operations of the economy and government.'' [12] This report, like the 2018 Steel Report and 2018 Aluminum Report, uses these reasonable interpretations of ''national defense'' and ''national security.'' [13]

Section 232 directs the Secretary to determine whether imports of any article are being made ''in such quantities or under such circumstances'' that those imports ''threaten to impair the national security.'' *See* 19 U.S.C. 1862(b)(3)(A). The statutory construction makes clear that either the quantities or the circumstances, standing alone, may be sufficient to support an affirmative finding. They may also be considered together, particularly where the circumstances act to prolong or magnify the impact of the quantities being imported.

The statute does not define a threshold for when ''such quantities'' of imports are sufficient to threaten to impair the national security, nor does it define the ''circumstances'' that might qualify. Likewise, the statute does not require a finding that the quantities or circumstances are currently impairing the national security. Instead, the threshold question under Section 232 is whether the importation of such article in ''such quantities or under such circumstances'' ''*threaten* to impair the national security.'' *See* 19 U.S.C. 1862(b)(3)(A) (emphasis added). This formulation strongly suggests that Congress expected that an affirmative finding under Section 232 would occur before there is actual impairment of the national security.

Additionally, in Section 232 Congress explicitly directed the Secretary to consider the ''impact of foreign competition'' and ''the displacement of any domestic products by excessive imports'' in determining whether the ''weakening of our internal economy may impair the national security,'' but made no reference to an assessment of the sources of imports. Therefore, it appears likely that Congress recognized adverse impacts might be caused by imports from allies or other reliable sources. As a result, the fact that some or all of the imports causing the harm are from reliable sources does not compel a finding that those imports do not threaten to impair national security. Indeed, as this report finds, the imports that threaten to impair the national security largely come from allies of the United States. However, as discussed further in Section VI.C, the United States cannot be certain of its ability to access intellectual property needed to maintain technological superiority and assure the ability to cost-effectively project U.S. military power when that intellectual property is under foreign ownership and control.

Section 232(d) contains a considerable list of factors for the Secretary to consider in determining if imports ''threaten to impair the national security'' [14] of the United States, and this list is mirrored in the implementing regulations. *See* 19 U.S.C. 1862(d) and 15 CFR 705.4. Congress was careful to note twice in Section 232(d) that the list it provided, while mandatory, is not exclusive.[15]

Congress broke the list of factors into two parts using two separate sentences.

[10] *See* 19 U.S.C. 1862(b)(2)(A). Department regulations (i) set forth additional authority and specific procedures for such input from interested parties, *see* 15 CFR §§ 705.7–705.8, and (ii) provide that the Secretary may vary or dispense with those procedures ''[i]n emergency situations, or when in the judgment of the Department, national security interests require it.'' *Id.* at § 705.9.

[11] 2001 Report at 5 (*supra* n. 3). *See also* 2018 Steel Report at 13; 2018 Aluminum Report at 12–13.

[12] *Id.*

[13] *See* 2018 Steel Report at 13–14; 2018 Aluminum Report at 13.

[14] 19 U.S.C. 1862(b)(3)(A).

[15] *See* 19 U.S.C. 1862(d) (''The Secretary and the President shall, in light of the requirements of national security and *without excluding other relevant factors* . . .'' This section also provides that ''other serious effects resulting from the displacement of any domestic products by excessive imports shall be considered, *without excluding other factors*. . .'') (emphasis added).

The first sentence focuses directly on ''national defense'' requirements, thus making clear that ''national defense'' is a subset of the broader term ''national security.'' The second sentence focuses on the broader economy, and expressly directs that in the administration of this section the Secretary and the President ''shall further recognize the close relation of the economic welfare of the Nation to our national security.'' *See* 19 U.S.C. 1862(d).[16]

The first sentence directs the Secretary to ''give consideration to domestic production needed for projected national defense requirements, [and] the capacity of domestic industries to meet such requirements . . .'' *See* 19 U.S.C. 1862(d). The report explains that projected national defense requirements include a viable American-owned automobile and automobile parts manufacturing industry because military vehicles rely on commercial R&D for important innovations and on domestic manufacturers for parts and production facilities. The report takes into consideration the threat of American-owned producers exiting the U.S. economy and how a reduction in domestic production impacts the ability to meet national defense requirements.

The first sentence further directs the Secretary to consider ''existing and anticipated availabilities of . . . supplies and services essential to the national defense . . .'' *See* 19 U.S.C. 1862(d). The report discusses the declining market shares of American-owned automobile producers in the United States. The report considers that imports continue to displace automobiles produced by American-owned firms in the United States, as well as automobile parts produced in the United States, and the resulting impact on R&D spending in the United States. In a time of national emergency where the United States might be dependent solely on resources within its own borders—including manufacturing, a skilled workforce, and R&D—it is essential to strengthen such capabilities in the United States so that they are fully deployable when demanded for national security.[17]

Lastly, the first sentence directs the Secretary to consider, ''the requirements of growth of such industries and such supplies and services including the investment, exploration, and development necessary to assure such growth, and the importation of goods in terms of their quantities, availabilities, character, and use as those affect such industries and the capacity of the United States to meeting national security requirements.'' *See* 19 U.S.C. 1862(d). The report details the interdependence between R&D in the automotive sector and U.S. national security.

The factors listed in the second sentence of Section 232(d) are also relevant for this investigation. Under the second sentence, the Secretary and the President are required to ''recognize the close relation of the economic welfare of the Nation to our national security, and shall take into consideration the impact of foreign competition on the economic welfare of individual domestic industries, and any substantial unemployment, decrease in revenues of government, loss of skills or investment, or other serious effects resulting from the displacement of any domestic products by excessive imports.'' The report takes into consideration the impact of excessive imports of automobiles and certain automobile parts on the American-owned automotive industry by reducing employment, weakening R&D, and causing a loss of vital skills and technological know-how in the workforce, all factors that must be considered when assessing threats to the national security from excessive imports. *See* 19 U.S.C. 1862(d).

It is these factors that the report considers which have resulted in a decline in American-owned manufacturing needed to support the research and development of technologies that maintain America's ability to cost-effectively project military power worldwide. This decline threatens the national security. The Secretary finds that this ''weakening of our internal economy,'' by a continued decline of the American-owned automobile and automobile parts manufacturing base and related R&D, ''may impair the national security.'' *See* 19 U.S.C. 1862(d).

Thus, the Secretary determines that the products listed in Section VIII are being imported into the United States in such quantities or under such circumstances as to threaten to impair the national security. *See* 19 U.S.C. 1862(b)(3)(A).

III. Investigation Process

A. Initiation of Investigation

On May 23, 2018, Secretary of Commerce, Wilbur Ross initiated an investigation to determine the effect of imported automobiles and automobile parts on national security under Section 232 of the Trade Expansion Act of 1962, as amended (19 U.S.C. 1862).

Pursuant to Section 232(b)(1)(B), the Department notified the U.S. Department of Defense with a May 23, 2018 letter from Secretary Ross to the Secretary of Defense, James Mattis.[18]

On May 30, 2018, the Department published in the **Federal Register** a notice announcing the initiation of this investigation to determine the effect of imports of automobiles and automobile parts on the national security. The notice also announced the opening of the public comment period as well as a public hearing to be held on July 19 and July 20, 2018.[19]

B. Public Comments

On May 30, 2018, the Department invited interested parties to submit written comments, opinions, data, information, or advice relevant to the criteria listed in Section 705.4 of the National Security Industrial Base Regulations (15 CFR 705.4) as they affect the requirements of national security, including the following:

a. The quantity and nature of imports of automobiles, including cars, SUVs, vans and light trucks, and automotive parts and other circumstances related to the importation of automobiles and automotive parts;

b. Domestic production needed for projected national defense requirements;

c. Domestic production and productive capacity needed for automobiles and automotive parts to meet projected national defense requirements;

d. The existing and anticipated availability of human resources, products, raw materials,

[16] *See also* 50 U.S.C. 4502(a)(7), in which Congress explicitly recognized ''much of the industrial capacity that is relied upon by the United States Government for military production and other national defense purposes is deeply and directly influenced by (A) the overall competitiveness of the industrial economy of the United States; and (B) the ability of industries in the United States, in general, to produce internationally competitive products and operate profitably while maintaining adequate research and development to preserve competitiveness with respect to military and civilian production . . .''

[17] *See also* 50 U.S.C. 4502(a)(8) recognizing that ''the inability of industries in the United States, especially smaller subcontractors and suppliers, to provide vital parts and components and other materials would impair the ability to sustain the Armed Forces of the United States in combat for longer than a short period.''

[18] 19 U.S.C. 1862(b)(1)(B). *See* Appendix A: Section 232 Investigation Notification Letter to Secretary of Defense James Mattis, (May 23, 2018).

[19] *See* Appendix B for Department of Commerce, ''*Notice of Request for Public Comments and Public Hearing on Section 232 National Security Investigation of Imports of Automobiles, including Cars, SUVs, Vans and Light Trucks, and Automotive Parts,*'' 83 FR 24,736–24,737 (May 30, 2018). Also included in Appendix B is the subsequent Department of Commerce Notice, ''*Public Hearing on Section 232 National Security Investigation of Imports of Automobiles, Including Cars, SUVs, Vans and Light Trucks, and Automotive Parts; Change of Date for the Public Hearing,*'' 83 FR 32,833 (Jul. 16, 2018).

production equipment, and facilities to produce automobiles and automotive parts;

e. The growth requirements of the automobiles and automotive parts industry to meet national defense requirements and/or requirements to assure such growth, particularly with respect to investment and research and development;

f. The impact of foreign competition on the economic welfare of the U.S. automobiles and automotive parts industry;

g. The displacement of any domestic automobiles and automotive parts causing substantial unemployment, decrease in the revenues of government, loss of investment or specialized skills and productive capacity, or other serious effects;

h. Relevant factors that are causing or will cause a weakening of our national economy;

i. The extent to which innovation in new automotive technologies is necessary to meet projected national defense requirements;

j. Whether and, if so, how the analysis of the above factors changes when U.S. production by majority U.S.-owned firms is considered separately from U.S. production by majority foreign-owned firms; and

k. Any other relevant factors.[20]

The public comment period ended on June 29, 2018, and public rebuttal comment period ended on July 13, 2018. The Department received 2,356 written public comment submissions concerning this investigation. All public comments were carefully reviewed and factored into the investigation process. A listing of all public comments is available at the U.S. Government's *Regulations.gov* website specific to this investigation: *https://www.regulations.gov/docket?D=DOC-2018-0002.*

C. Public Hearing

The Department held a public hearing to collect additional information concerning this investigation in Washington, DC on July 19, 2018. The second day of the hearing, originally scheduled for July 20, was cancelled because all parties who wished to participate could be accommodated in one day. The Department heard testimony from 44 witnesses at the hearing. The complete hearing transcript is included in Appendix C.

D. Interagency Consultation

In addition to the required notification provided by the May 23, 2018 letter from Secretary Ross to Secretary Mattis,[21] the Department carried out the consultations required under Section 232(b)(2).[22] Department staff consulted with counterparts at the DOD and U.S. Customs and Border Protection regarding any methodological and policy questions that arose during the investigation.[23]

Secretary Mattis also communicated the views of the DOD in a November 15, 2018 letter to Secretary Ross.[24] In that letter, Secretary Mattis noted that the Department of Commerce had consulted with the DOD and stressed the importance of the automobile sector and related technologies to U.S. defense requirements and national security needs. Specifically, Secretary Mattis stated:

> A healthy U.S. automotive sector supports the manufacturing ecosystem vital to our national defense industrial base. As noted in the National Defense Strategy, ''new commercial technology will change society and, ultimately, the character of war.'' Therefore, U.S. automotive sector leadership in emerging technologies, like autonomous systems, is also critical for continued Department of Defense modernization.[25]

E. U.S. Producers' Survey Responses

On June 29, 2018 and on July 25, 2018, respectively, the Department issued industry surveys to U.S. automobile producers and U.S. armored vehicle producers pursuant to 50 U.S.C. 4555. Information sought included, *inter alia,* facilities and production data, joint venture data, trade flows, supply chain data, sales and demand data, employment information, conditions of competition, R&D information, and government and defense activities. The principal goal of the survey was to assist the Department in determining whether automobiles and automobile parts are being imported into the United States in such quantities or under such circumstances as to threaten to impair national security. The resulting aggregate data have given the Department detailed industry information that is otherwise not publicly available and was needed to effectively conduct its analysis for this investigation.

Response to the Department's survey is required by law (50 U.S.C. 4555). Information furnished in the survey responses has been deemed confidential and will not be published or disclosed except in accordance with Section 705 of the Defense Production Act of 1950, as amended (50 U.S.C. 4555). Section 705 prohibits the publication or disclosure of this information unless the President determines that the withholding of such information is contrary to the interest of the national defense. Information will not be shared with any non-government entity other than in aggregate form. The information is protected pursuant to the appropriate exemptions from disclosure under the Freedom of Information Act (''FOIA''), should it be the subject of a FOIA request.

From June 29, 2018 to September 7, 2018, the following [TEXT REDACTED] companies responded to the Department's questionnaires:

[TEXT REDACTED]

IV. Product Scope of the Investigation

The scope of this investigation includes passenger vehicles, including sedans, sport utility vehicles (''SUVs''), crossover utility vehicles (''CUVs''), and vans (including minivans and cargo vans); light trucks (collectively ''automobiles''); and wheeled armored and tactical vehicles used for U.S. military applications. The scope also includes all categories of automobile parts used in automobiles and armored vehicles, which are defined at multiple points throughout the U.S. Harmonized System (''HS''). A complete listing of automobile and automobile parts codes included in this investigation is provided in Appendix D. As detailed in this report, the Secretary finds that imports of automobiles and imports of engines, engine parts, transmissions, powertrain parts, and electrical components have displaced and threaten further displacement of domestic production and thereby threaten to impair the national security as set out in Section 232. For the purposes of this report, American-owned automobile producers are General Motors (''GM''), Ford, and Tesla. Prior to 1998, Chrysler was also American-owned. During 1985–1987, American Motors was American-owned.

V. Background on the Industry

A. Global Competitiveness of U.S. Automobile Producers

The U.S. automotive industry has been one of the most powerful forces driving the U.S. economy. Automobile manufacturing and associated services industries employed 4.2 million workers in 2017, amounting to 3 percent of total private sector employment. Of these jobs, 953,000 were in automobile, automotive body, and automobile parts manufacturing and an additional 3.3 million in service industries such as

[20] *Id.* In response to requests from interested parties, the Department issued a *Notice of Request for Public Comments and Public Hearing; Extension of Comment Period,* 83 FR 28801 (Jun. 21, 2018), extending the due date for comments to June 29, 2018 and rebuttal comments to July 13, 2018.

[21] *See* Appendix A.

[22] 19 U.S.C. 1862(b)(2).

[23] *Id.*

[24] *See* Appendix A: Letter from Secretary of Defense James Mattis to Secretary Ross conveying DOD views on Section 232 investigation on imports of automobiles and automobile parts, Nov. 15, 2018.

[25] *Id.*

dealerships, repair shops, and automobile parts stores.[26]

Global competition has greatly changed the industry over the years. In the 1960s and 1970s, U.S. automobile producers enjoyed a dominant position globally, as 48 percent of global automobile production occurred in the United States, and all of those producers were American-owned firms.[27] The United States' competitive position in the global marketplace did not last, however, as foreign competitors aggressively penetrated the global market and captured a significant portion of global market share. By 1985, automobile production in the United States as a percentage of global automobile production declined to 26 percent, then to 18 percent in 2005, and to 12 percent in 2017 as shown in Figure 1A.[28] In 2017, American-owned manufacturers within the United States and abroad held only 12 percent of the global market which, as shown in Figure 1B, represents a significant decline from the 36 percent of global market share held by American-owned manufacturers in 1995. The decline in global market share reflects the rise of foreign-owned producers and the weakening of the U.S. automotive manufacturing base.

The 2008–2009 worldwide economic downturn exacerbated the contraction of U.S. market share in the global automotive sector, and in 2009 U.S. automobile production in the aggregate (by American-owned and foreign-owned firms) declined to 5.7 million units, which is just nine percent of global production.[29] Although global production rebounded from 72.8 million units in 2007 to 96.2 million units in 2017,[30] the rise in production volume was largely attributed to China's dramatic rise, growing from less than 8.9 million units in 2007 to 29.0 million units in 2017.[31] China became the number one automobile producing country in 2009, and in 2017 produced over 25 percent of the world's supply of automobiles.[32] The EU, Japan, South Korea, Canada, and Mexico are also major producers of automobiles, and are the top sources of automobile imports into the United States. Manufacturers in the United States, Japan, and the EU moved some automobile production for the North and South American markets to Mexico, leading to an increase in production there. Despite significant automobile production in Canada and Mexico, there are no Canadian- or Mexican-owned automobile producers in those counties.

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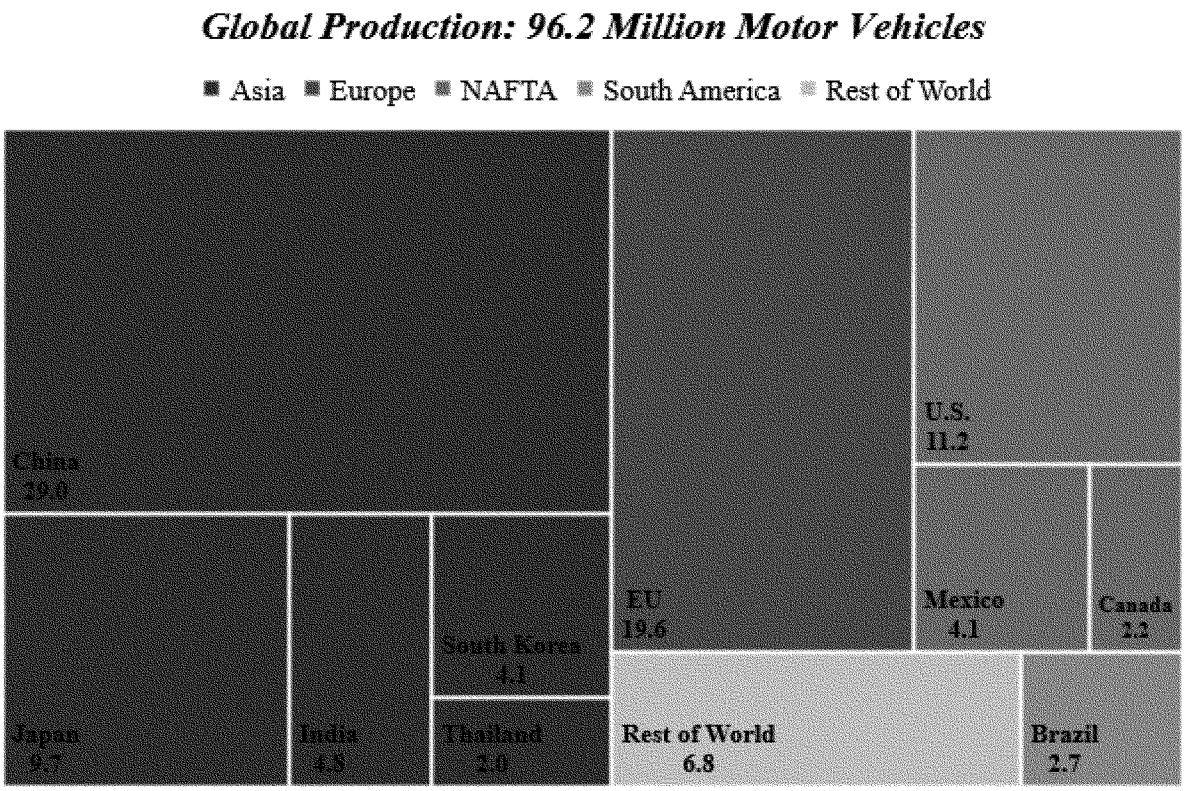
Figure 1A: 2017 Global Automobile Production by Country



Source: Wards Intelligence InfoBank. (Values shown in millions of units. Excludes small countries that do not report to Wards. Includes medium and heavy duty trucks.)

[26] Department of Labor, Bureau of Labor Statistics, *Automotive Industry: Employment, Earnings, and Hours, https://www.bls.gov/iag/tgs/iagauto.htm.*

[27] Wards Intelligence InfoBank.

[28] *Id.* (These figures include foreign-owned manufacturers in the United States.)

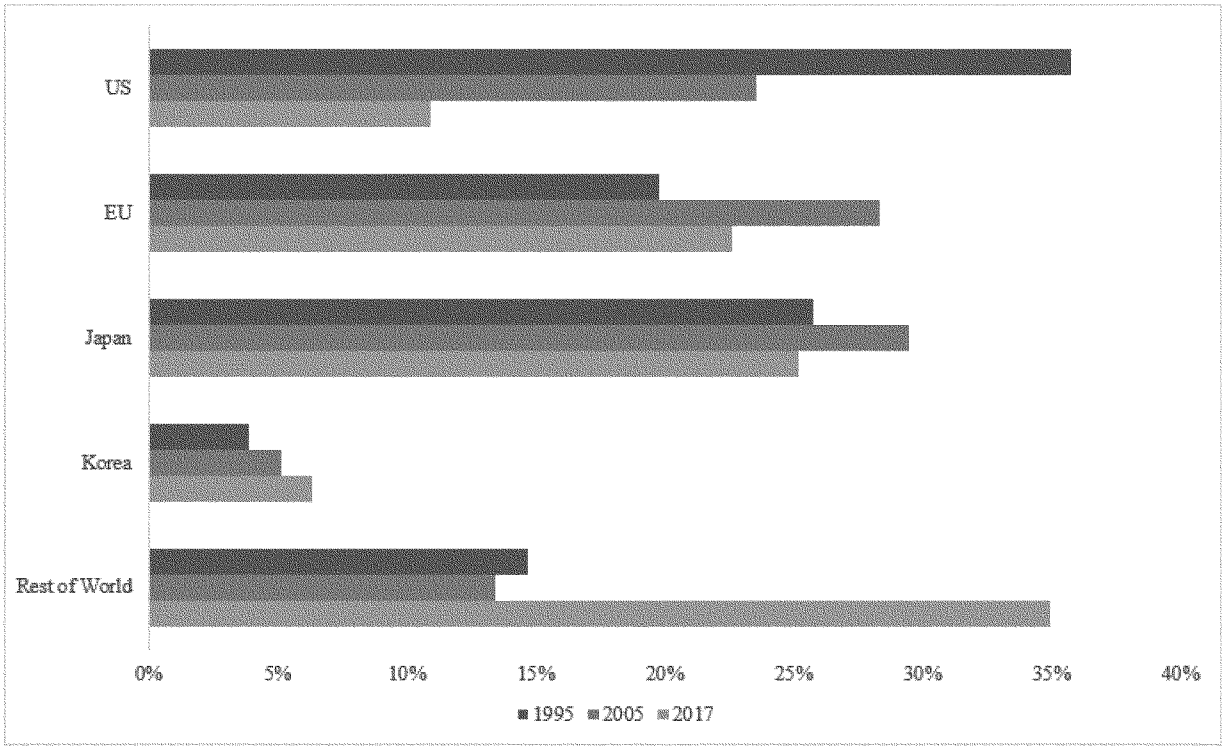
[29] *Id.*

[30] *Id.*

[31] *Id.*

[32] *Id.*

Figure 1B: Share of Global Production, by Ownership, Major Producers



Source: Wards Intelligence InfoBank. (1995 statistics represent the earliest-available data on global production by country in which the producer is headquartered; data include medium and heavy-duty vehicles. In the case of a joint venture, the ownership is attributed to the majority partner.)

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Globally, the four largest automobile producers in 2017 were GM, Toyota, Volkswagen, and Ford, and each manufacturer produces and sells a significant percentage of its automobiles in its home country. Further, because global automobile production is regionally focused, the world's leading manufacturers also produce automobiles in foreign markets to supply local customers. As summarized in Table 1 below, 23 percent and 39 percent of automobiles produced by American-owned manufacturers GM and Ford, respectively, in 2017 were made in the United States. Similarly, 35 percent of automobiles produced by Toyota and 18 percent produced by Volkswagen were made in their home markets.

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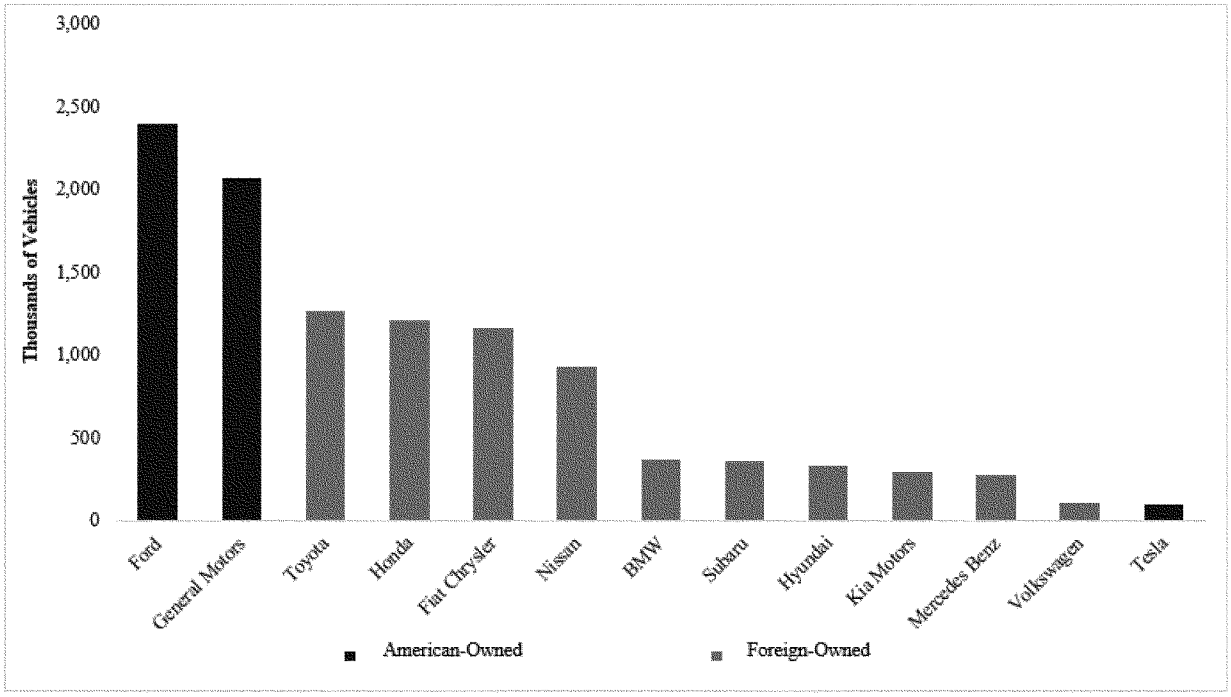
Table 1: 2017 Share of Automobiles Produced in Home Market

	GM	Toyota	Volkswagen	Ford
Number Produced Globally (millions)	8.90	8.89	8.46	6.11
Share Produced in Home Market	23%	35%	18%	39%

Source: Wards Intelligence InfoBank (excludes Africa). Volkswagen's home market is Germany, and Toyota's home market is Japan.

The automobile industry in the United States consists of 14 major manufacturers: American-owned GM, Ford, and Tesla, and 11 ''transplant'' manufacturers, *i.e.,* manufacturing facilities that are ultimately owned by corporations headquartered abroad.[33]

Figure 2: 2017 Automobile Production in the United States, by Manufacturer



Source: Wards Intelligence InfoBank. Data for Volvo, which began producing automobiles in the United States in 2018, is not yet available.

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Three major trends in automobile manufacturing are (1) continuing efforts to cut costs to remain globally competitive, (2) improving technological advancements in design and materials used to decrease vehicle weight (''lightweighting'') and enhance fuel efficiency, and (3) developing advanced technologies needed for increased vehicle connectivity, electrification and autonomous driving. Manufacturers are increasingly cutting costs through automation and by relocating production to less expensive regions. The tariff reductions achieved in 1994 through the North American Free Trade Agreement (''NAFTA'') incentivized offshoring of automobile and automobile parts production to Mexico where input costs, particularly labor, were significantly cheaper.[34]

B. U.S. Automobile Producers' Transition From Vertical Integration to Outsourcing Automobile Parts Production

The automotive industry responded to declining profits and structural and technological changes in the late 1980s by switching from a vertically-integrated supply structure to a model that increasingly sourced automobile parts from independent suppliers serving multiple customers. This global shift was especially dramatic in the United States, where automobile producers were under tremendous pressure to become more efficient and reduce costs to compete with imports. Producers opted to purchase large modules and subassembly systems ready for installation on their assembly lines, rather than assemble thousands of individual parts as before. In the United States, union wages were lower for component companies than for original equipment manufacturers (''OEMs''). Over time, U.S. automobile producers also shifted to negotiating large long-term contracts with a select group of tier-1 suppliers.[35] As parts suppliers became separate entities from the automobile producers, the parts suppliers were forced to assume more responsibility for R&D and the design of innovative modules and systems and they began to maintain large inventories of various automobile parts.[36] The percentage of parts that independent suppliers contribute to a vehicle has grown from 40–50 percent in the early 1990s to over 70 percent today.[37]

[33] Wards Intelligence InfoBank. Volvo began production at its Charleston, South Carolina plant in October 2018 and is therefore not included in Figure 2.

[34] *See* Section V, Part C.

[35] A tier-1 supplier provides components directly to the OEM.

[36] Thomas Klier and James Rubenstein, *Who Really Made Your Car,* The Federal Reserve Bank of Chicago, Chicago Fed Letter, No. 255a, Oct. 2008, *https://www.chicagofed.org/~/media/publications/chicago-fed-letter/2008/cfloctober2008-255a-pdf.pdf.*

[37] Patrick McGee, *Carmakers Face Threat from New Drivers of Profit,* Financial Times, Aug. 8, 2017, *https://www.ft.com/content/40065b50-715e-11e7-93ff-99f383b09ff9.*

The shift away from the vertical integration of automobile and automobile parts production is also essential to understanding the nature of automotive industry employment. The automotive supply chain has become the backbone of the automobile assembly industry, employing more people than the automobile producers. In 1990, 271,400 automobile manufacturing employees and 653,000 automobile parts employees produced 9.5 million vehicles in the United States. After a decade of record high automobile production, beginning in 2001 automobile manufacturing employment declined each year to a low of 146,400 workers in 2009. For automobile parts manufacturing, employees increased by 29 percent to a high of 839,500 in 2000 before falling to a low of 413,700 workers in 2009. While employment overall rebounded somewhat after 2009, in 2017 workers in both the automobile sector (212,000 employees) and automobile parts sector (586,300 employees) remain 29 percent below their 2000 levels, despite record demand.[38] Many of these jobs moved offshore as a result of import competition in the United States and lower labor costs available abroad.[39]

C. NAFTA and the Rise of Automobile and Automobile Parts Production in Mexico Instead of the United States

The contraction of the U.S. automotive industry has been ongoing for decades, but the contraction became more dramatic after NAFTA went into effect and caused a significant portion of the U.S. industry to shift production to Mexico. Prior to NAFTA, Mexico had in place a restrictive decree that limited automotive trade. NAFTA, however, expanded to Mexico the existing integration of the U.S. and Canadian automotive manufacturing supply chain created under the Canada-United States Automotive Products Agreement (signed in 1965) and the U.S./Canada Free Trade Agreement (signed in 1989). NAFTA's elimination of customs tariffs allowed automobile producers and automobile parts suppliers to optimize operational structures by relocating assembly operations and supply chain manufacturing to Mexico the most cost competitive location within North America. The results of the shift in supply chain are dramatic. Since NAFTA's entry into force, the value of U.S. imports of automobile parts from Mexico increased by 652 percent, and the value of automobile imports from Mexico increased by over 1,000 percent.[40]

1. The Rise of Automobile Assembly in Mexico and Offshoring of Automobile Plants

Mexico's ability to compete for new North American automotive investments under NAFTA stemmed primarily from the country's relatively lower labor costs. Automobile assembly compensation had been approximately 80 percent lower in Mexico than in the United States, and labor represented a sizeable share of the production cost for automobiles.[41] For example, from 2008 to 2013, the average hourly wage in Mexico was $5.89 ($US, nominal) for the automobile sector. These wages were slightly more than one-seventh of the comparable wage in the United States.[42] In 2016, the hourly wage for workers in the automobile sector was $4.65 in Mexico compared to $40.17 in the United States.[43] In Mexico, dollar equivalent wages decreased because the currency depreciated sharply in comparison to the U.S. dollar.[44] This large disparity in wages resulted in significant cost savings to manufacturers. One analysis estimated that assembling an automobile in Mexico resulted in an average cost savings of $1,200 for an automobile sold in the United States and $4,300 for an automobile sold in Europe.[45] Lower Mexican wages, coupled with labor productivity that is comparable to workers in the United States, influenced corporate decisions to increase automobile assembly in Mexico.

In fact, between 2011 and 2016, nine of the 11 announced new automobile assembly plants in North America were built in Mexico,[46] while the number of facilities in the United States declined. The large rise in Mexican assembly investment is relevant because 80 percent of Mexican vehicle production is exported to the United States.[47] As shown in Table 2, in 1985, there were 65 automobile assembly plants in the United States and 12 plants in Canada, but only nine in Mexico. As of 2017, the number of automobile assembly plants in the United States declined by 30 percent to 46 plants, while the number of Mexican automobile assembly plants doubled to 18. The number of Canadian automobile assembly plants declined only modestly from 12 assembly plants to 11 during the same period.[48]

Table 2: Automobile Assembly Plants in North America, 1985-2017

	1985	1990	1995	2000	2005	2010	2015	2017
Canada	12	17	14	14	11	11	10	11
Mexico	9	8	14	13	12	12	15	18
United States	65	62	63	62	66	48	47	46

Source: Wards Intelligence InfoBank (includes foreign-owned production in each country).

[38] Department of Labor, Bureau of Labor Statistics, Employees for Motor Vehicles (NAICS 3361) and Motor Vehicle Parts (3363) industries, *https://www.bls.gov/iag/tgs/iagauto.htm.*

[39] Thomas H. Klier and James M. Rubenstein, *Imports of Intermediate Parts in the Auto Industry—A Case Study,* November 6–7, 2009, *https://upjohn.org/measurement/klier-rubenstein-final.pdf* at 4.

[40] Department of Commerce, Census Bureau, International Trade Management Division. Retrieved from Trade Policy Information System (TPIS) Database: USHS IMPORTS, Revised Statistics for 1989–2017.

[41] Bernard Swiecki and Debbie Maranger Menk, *The Growing Role of Mexico in the North American Automotive Industry,* Center for Automotive Research, July 2016, *http://www.cargroup.org/wp-content/uploads/2017/02/The-Growing-Role-of-Mexico-in-the-North-American-Automotive-Industry-Trends-Drivers-and-Forecasts.pdf.*

[42] International Labor Comparisons, The Conference Board, *https://www.conference-board.org/ilcprogram.*

[43] *Id.* These data are calculated by the Conference Board's International Labor Comparisons (ILC) program using the same concepts and methodology as those developed by the Bureau of Labor and Statistics. Compensation costs relate to all employees in manufacturing and include (1) direct pay and (2) employer social insurance expenditures and labor-related taxes.

[44] Board of Governors of the Federal Reserve System, Foreign Exchange Rates—G.5A Annual

[45] Swiecki and Menk, *The Growing Role of Mexico in the North American Automotive Industry, supra.*

[46] *Id.*

[47] *Id.*

[48] Wards Intelligence InfoBank.

In addition to low production costs, low tariffs on Mexican automobile exports due to the broad reach of Mexico's numerous Free Trade Agreements (''FTAs'') made it possible for the country to emerge as a prime manufacturing and export base not only within North America, but globally as well. Exports from Mexico to 46 countries are exempt from automobile tariffs, including the 10 percent tariff the EU applies to imported passenger vehicles.[49] The domestic Mexican market for new automobiles is relatively small, less than 10 percent the size of the U.S. automobile market, and the growth of automobile production in Mexico correspondingly includes a large share of automobiles manufactured for export.[50] Between 1990 and 2017, the percentage of automobiles manufactured in Mexico for export increased from 34 percent to 84 percent.[51] Since 2010, moreover, automobile manufacturers announced more than $24 billion in investments in Mexico, including more than $6.5 billion in investments from Japanese firms, more than $5.7 billion in investments from German firms, and more than $1.1 billion from South Korean firms.[52]

The rise of Mexico as a major automobile producer has contributed to the gradual decline of U.S. automobile production, as the U.S.-made share of automobile production in North America, which was 78 percent in 1990, dropped to 64 percent in 2017, as shown in Table 3.[53] Some analysts expect the share of production in the United States to drop to below 60 percent by 2020 under the existing NAFTA rules.[54]

Although Canada's share of North American production remained relatively stable, going from 14 percent in 1985 to 13 percent in 2017,[55] Canada's production volume is expected to rise in the near-term as a result of Canada's 2016 Comprehensive Economic and Trade Agreement (''CETA'') with the EU, which immediately eliminated the EU's tariffs on Canada-made automobile parts (which had ranged up to 4.5 percent) and phases out tariffs on automobiles over seven years.[56]

Table 3: Share of North American Automobile Production

	1985	1990	1995	2000	2005	2010	2015	2017
Canada	13.95	15.55	15.87	16.99	16.65	17.32	13.01	12.80
Mexico	3.16	6.54	6.15	10.89	10.20	18.89	19.42	22.99
United States	82.89	77.91	77.98	72.13	73.15	63.79	67.58	64.20

Source: Wards Intelligence InfoBank (includes foreign-owned production).

2. Offshoring of Automobile Parts

With the transition away from vertical integration in the global automotive industry, automobile parts manufacturers have been under systematic pressure from automobile producers to lower prices. In response, suppliers explored different ways to cut costs and, soon after NAFTA's implementation, they began supplementing and eventually replacing significant domestic production with ''near shore'' production in Mexico. Consequently, U.S. imports of automobile parts from Mexico increased rapidly. In 1990, U.S. imports of automobile parts from Mexico were valued at $4.5 billion, accounting for 14 percent of total U.S. automobile parts imports. By 2004 (a decade into NAFTA) U.S. imports of automobile parts from Mexico rose to $23.4 billion, accounting for almost 30 percent of total automobile parts imports.[57] And in 2017, U.S. imports of automobile parts from Mexico reached $55.3 billion in total, accounting for 37 percent of overall U.S. imports of automobile parts. Eleven percent of U.S. automobile parts imports in 2017 came from Canada, and imports from Canada and Mexico together accounted for 48 percent of total U.S. imports in 2017. Of the remaining 52 percent of U.S. automobile parts imports in 2017, 13 percent originated from the EU and 36 percent were imported from Asia, including Japan, South Korea, and China.[58]

According to ProMexico, an export promotion division of the Government of Mexico, close to 90 of the global 100 tier-1 parts suppliers have operations in Mexico.[59] Although some of the investments are for low value, labor-intensive goods like wire harnesses, Mexico has also attracted automotive supplier investments for higher value goods. For example, Mexico has expanded its powertrain production numbers over the past several years and, from 2012 through 2015 alone, engine production in Mexico has increased by over 31 percent, from 2.8 million to 3.7 million engines, and is estimated to have grown to 4.2 million units in 2018.[60]

Furthermore, automotive producers have increasingly chosen Mexico as a place to locate R&D centers.[61] GM, Ford, Toyota, Volkswagen, Nissan, and numerous automobile parts companies already conduct significant R&D activity in Mexico. U.S. industry considers university graduates in Mexico to be just as skilled for R&D work as graduates in the United States.[62] With the tendency of automobile producers to locate R&D facilities near assembly plants, Mexico is expected to become a growing market for engineering jobs and an alternative market to the United States. As R&D and its related skilled workforce shifts from the United States to Mexico, the loss of specialized skills and production know-how within the United States impedes the ability of American-owned manufacturers to access a skilled workforce and advance technologies that are critical for maintaining America's ability to project power globally and respond in a national emergency.

[49] World Trade Organization, *Tariff Download Facility, http://tariffdata.wto.org/.*

[50] Department of Commerce, Census Bureau; Wards Intelligence InfoBank.

[51] Swiecki and Menk, *The Growing Role of Mexico in the North American Automotive Industry, supra.*

[52] *Id.*

[53] Wards Intelligence InfoBank.

[54] Swiecki and Menk, *The Growing Role of Mexico in the North American Automotive Industry, supra.*

[55] Wards Intelligence InfoBank.

[56] Sara Lewis, *Canadian, EU Auto Industries Welcome Trade Pact,* WardsAuto, Feb. 24, 2017, *https://www.wardsauto.com/industry/canadian-eu-auto-industries-welcome-trade-pact.*

[57] Department of Commerce, Census Bureau.

[58] *Id.*

[59] Swiecki and Menk, *The Growing Role of Mexico in the North American Automotive Industry, supra.*

[60] *Id.*

[61] *Id.*

[62] *Id.*

VI. Analysis

A. Present Import Quantities of Automobiles Have Weakened the American-Owned Automotive Industry

In the U.S. automobile sector, there is substantial evidence that imports have weakened the domestic industry and are causing the American-owned segment of the industry to contract. Foreign-owned automobile producers in the United States are able to offset the economic effects of a contraction in the U.S. market by maintaining significant sales volumes in their protected home markets. However, as explained in Appendix F, under the present trade regime, American-owned manufacturers are unable to meaningfully penetrate those same protected foreign markets to offset their shrinking sales in the United States. In fact, as shown in Figure 1B above, from 1995 to 2017 American-owned automobile producers' share of the global automotive market contracted by 24 percentage points, from 36 percent to 12 percent, while EU automobile producers' share grew from 20 percent to 23 percent and Japanese automobile producers' share stayed relatively steady at 26 percent and 24 percent during the same period. Clearly, American-owned manufacturers are trailing behind their foreign-owned competitors in the global market, which impacts their sales revenue and, hence, R&D investments in technologies that are integral to maintaining America's technological advantage in military applications. Consequently, America's ability to cost-effectively project power globally is also trailing behind. As set forth in Section VI.C, the U.S. military depends heavily on innovation in the commercial automotive sector, and in particular will depend on American-owned manufacturers' innovation capabilities in time of war. The following sections analyze the impact of imports on the U.S. automotive market, the weakened competitive position of American-owned producers, and the consequent threat to the impairment of national security.[63]

1. U.S. Automobile Production Volume Has Eroded Over Three Decades Due to Imports

The strength of the U.S. automotive industry has weakened since 1985. Evidence establishes that purchasers have increasingly shifted away from domestically-produced automobiles to imported vehicles, and data provided in Figure 3 show that from 1985 to 2017 demand for automobiles in the U.S. market grew by 11 percent, but total domestic production by both American- and foreign-owned firms declined by 4 percent. More specifically, U.S. demand for automobiles grew from 15.4 million units in 1985 to 17.1 million units in 2017, while production by domestic automobile producers declined from 11.4 million units in 1985 to 10.9 million units in 2017.[64] Over the same period, U.S. imports of automobiles nearly doubled from 4.6 million units to 8.3 million units.[65] Expressed as a percentage of market share (an indicator of competitive strength), domestic producers' share of the U.S. market declined over this 32-year period from 70 percent of overall U.S. demand in 1985 to 52 percent in 2017.[66] Production by domestic manufacturers of automobiles held steady in 2018.[67]

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[63] *See* 19 U.S.C. 1862(b) and (d).

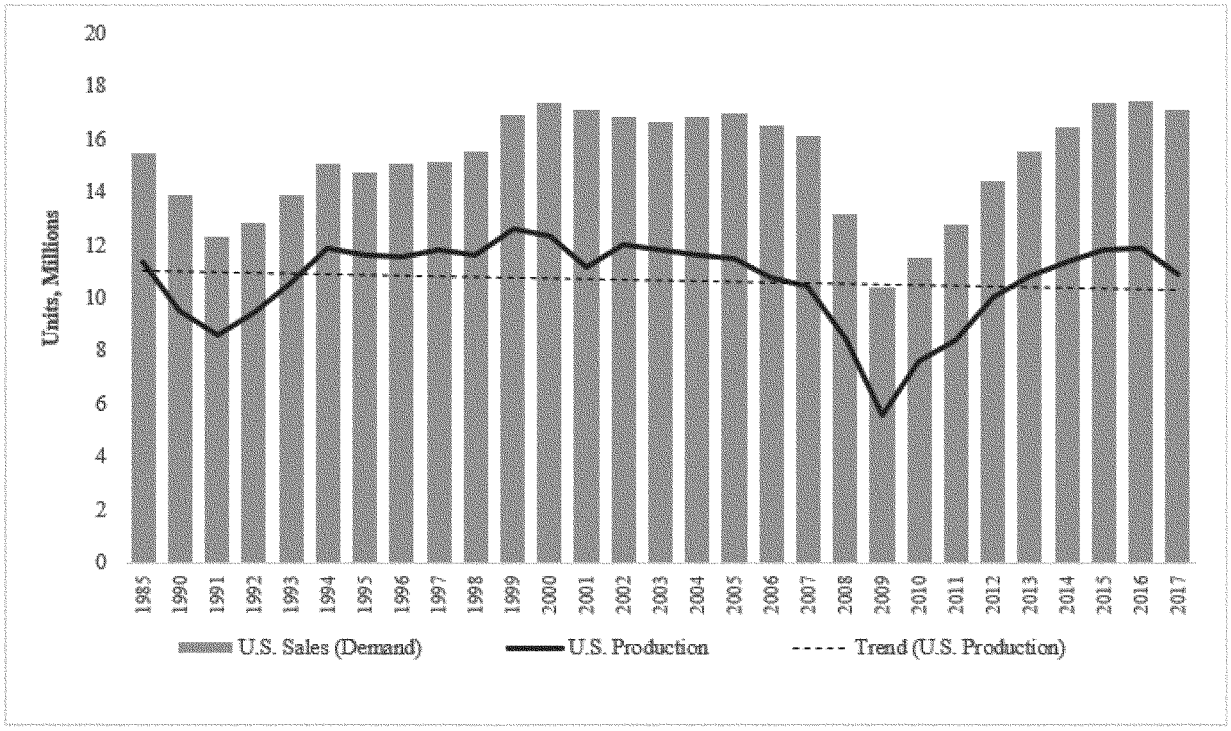
[64] According to Wards Intelligence InfoBank, U.S. automobile production peaked at 12.6 million units in 1999, but subsequently plummeted to 5.6 million units in 2009 as a result of the economic recession. Although production ultimately recovered to 11.9 million units in 2016, by 2017 production again slipped to 10.9 million units.

[65] Department of Commerce, Census Bureau.

[66] Wards Intelligence InfoBank and Department of Commerce, Census Bureau. Domestic producers' market share is calculated as (domestic sales *minus* imports) *divided by* domestic sales.

[67] Wards Intelligence InfoBank.

Figure 3: U.S. Automobile Production Relative to Demand



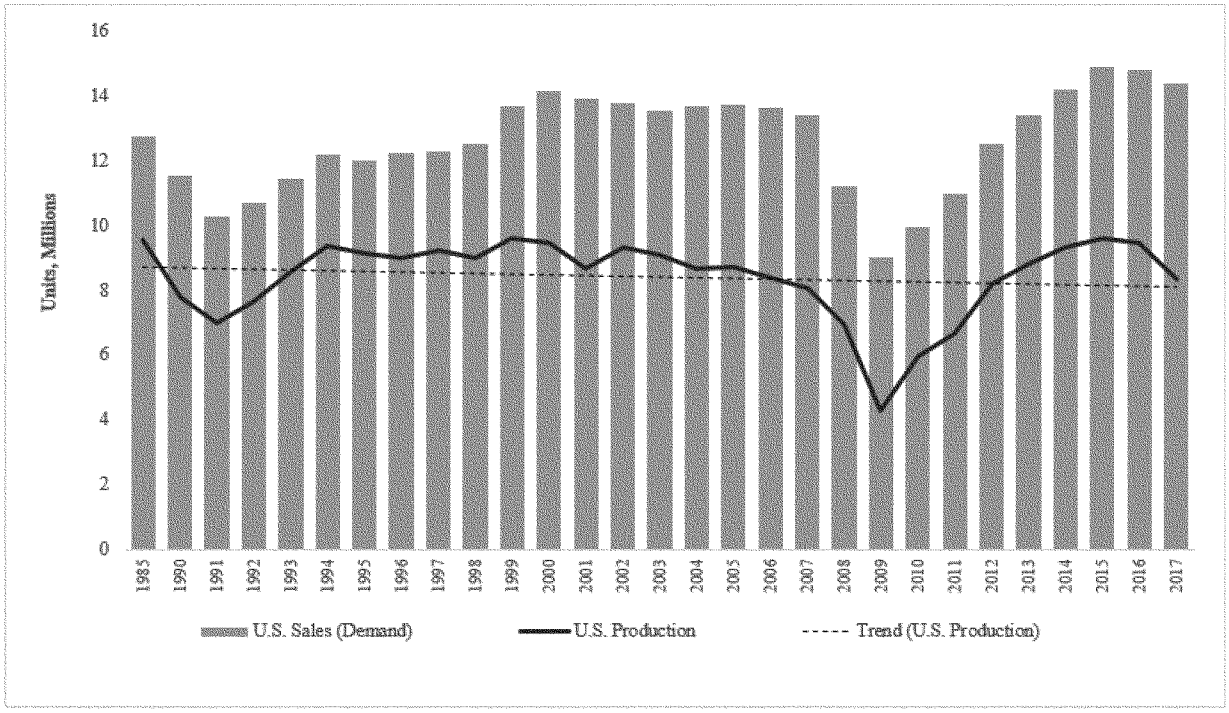
Source: Wards Intelligence InfoBank.

When disaggregated into passenger vehicles (sedans, SUVs, CUVs, and vans) and light trucks, it becomes clear that the decline in U.S. production has been concentrated in the passenger vehicle segment. Figure 4 demonstrates that, for passenger vehicles overall, U.S. demand increased by 13 percent, from 12.8 million passenger vehicles in 1985 to 14.4 million passenger vehicles in 2017, while U.S. production decreased by 12.9 percent over the same period, from 9.6 million passenger vehicles to 8.4 million passenger vehicles. Of the 8.4 million passenger vehicles produced in the United States in 2017, approximately 6.8 million were sold in the United States in 2017.[68] Expressed as a percentage of market share, domestic producers' share of U.S. passenger vehicle sales declined from 72 percent in 1985 to 48 percent in 2017.[69] Section VI.A.3 explains that this contraction is due, in large part, to displacement by passenger vehicle imports.

[68] Wards Intelligence InfoBank and Department of Commerce, Census Bureau.

[69] Wards Intelligence InfoBank.

Figure 4: U.S. Passenger Vehicle Production Relative to Demand



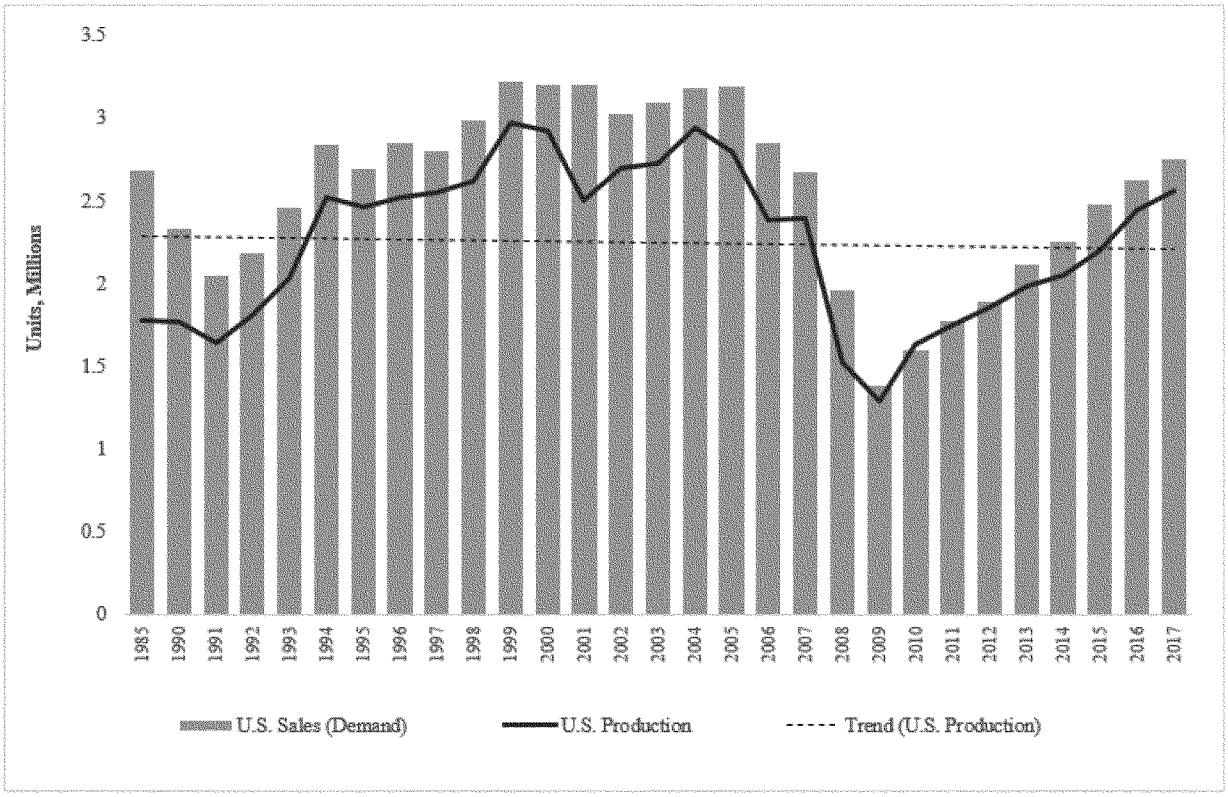
Source: Wards Intelligence InfoBank.

For light trucks, Figure 5 illustrates that U.S. demand held constant at 2.7 million light trucks in both 1985 and 2017, while U.S. production increased from 1.8 million light trucks to 2.6 million light trucks during the same period. Of this 2.6 million, approximately 2.0 million trucks were sold in the United States in 2017.[70] During the same period, imports of light trucks decreased by 24 percent, from 1.1 million to 833,000.[71]

[70] Wards Intelligence InfoBank and Department of Commerce, Census Bureau.

[71] Department of Commerce, Census Bureau. The United States has imposed a 25 percent tariff on imports of light trucks since 1964 pursuant to Presidential Proclamation 3564 in 1964. U.S. Presidential Proclamation No. 3564, *Proclamation Increasing Rates of Duty on Specified Articles,* December 4, 1963, 77 Stat. 1035–1036, *https://www.govinfo.gov/content/pkg/STATUTE-77/pdf/STATUTE-77-Pg1035.pdf.*

Figure 5: U.S. Light Truck Production Relative to Demand

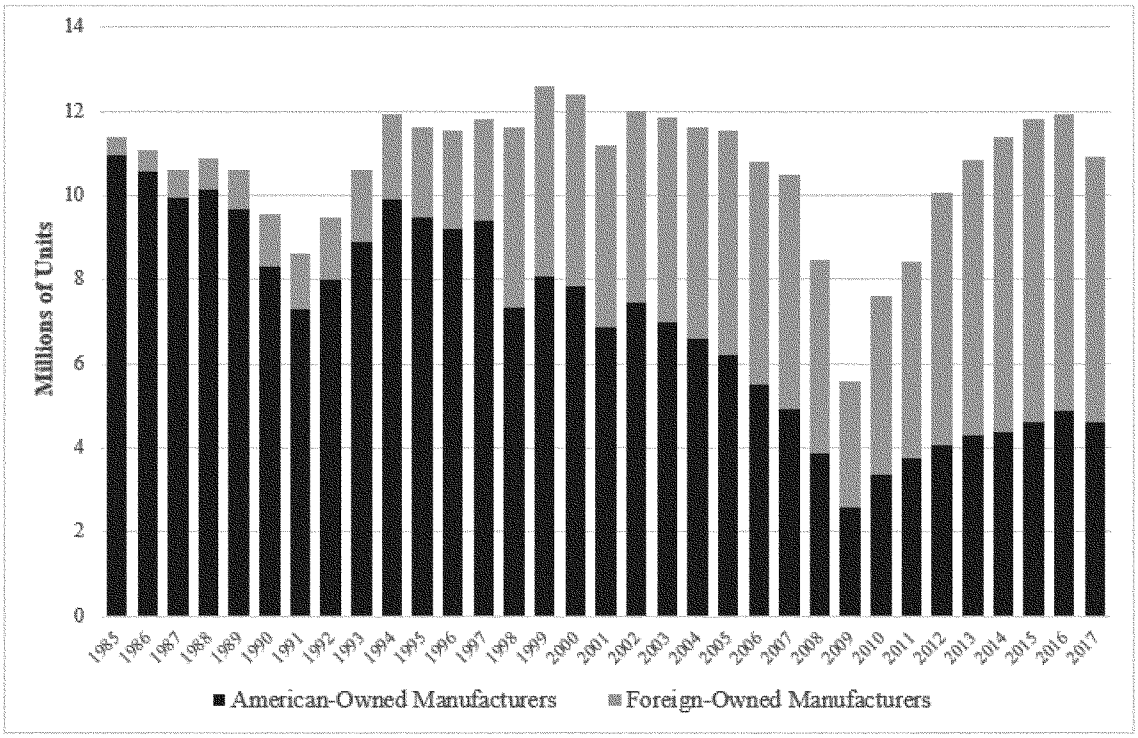


Source: Wards Intelligence InfoBank.

Notably, the domestic performance of American-owned automobile manufacturers (GM, Ford and Tesla) underpins the dramatic contraction of production volumes in the United States. As shown in Figure 6, in 1985, American-owned automobile facilities in the United States manufactured 11.0 million automobiles, representing 97 percent of overall domestic (American- and foreign-owned) production of automobiles. By 2017, American-owned production fell to 4.6 million automobiles, amounting to 42 percent of domestic automobile production (*i.e.,* a decline of 6.3 million units), and production by American-owned firms accounted for only 22 percent of total U.S. sales.[72]

[72] Figure 6 accounts for the fact that Chrysler became foreign-owned in 1998. *See supra* note 6.

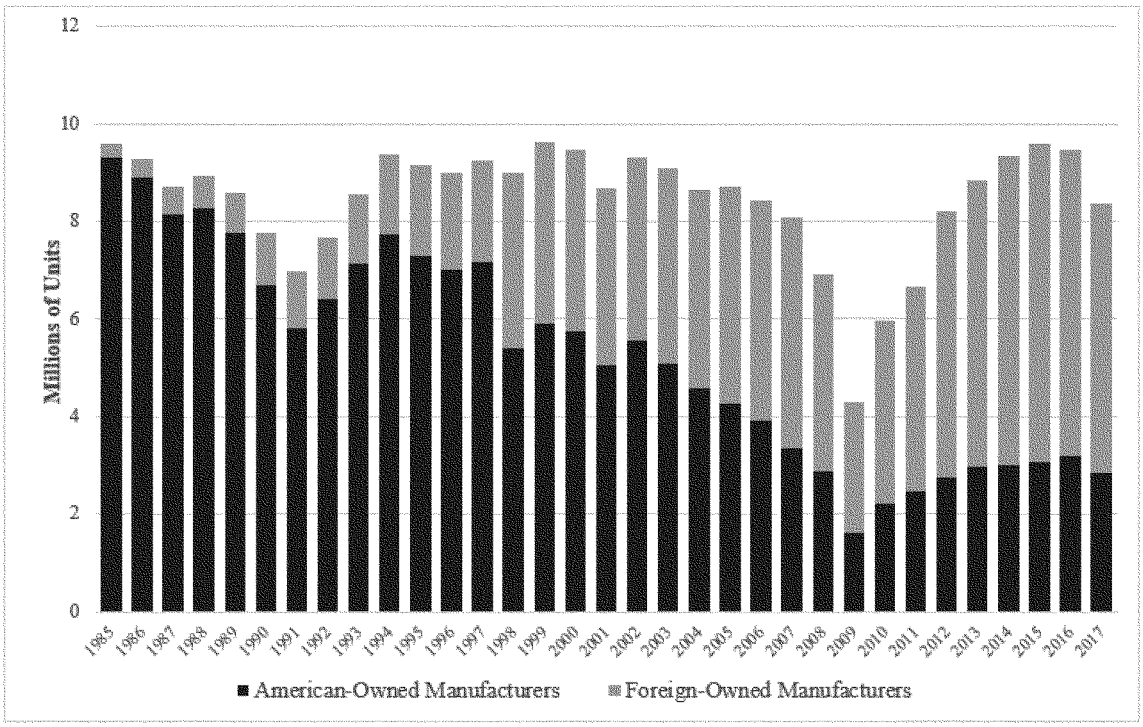
Figure 6: Automobile Production in the United States by American-Owned and Foreign-Owned Manufacturers



Source: Wards Intelligence InfoBank. (From 1998 forward Chrysler is foreign-owned.)

Figure 7 illustrates a similar trend for American-owned producers in the passenger vehicle segment over the course of the past 32 years. In 1985, American-owned U.S. manufacturers produced 9.3 million passenger vehicles (sedans, SUVs, CUVs, and vans), representing 97 percent of domestic (American- and foreign-owned) production. By 2017, American-owned production fell to 2.8 million passenger vehicles, representing just 34 percent of domestic production and 17 percent of domestic sales. As set forth in Section VI.C, this decline in production depicts the loss of American-owned producers' competitive position in the U.S. market (and globally, as described above), with the consequence that declining sales revenue has weakened the United States' ability to maintain a leadership position in R&D investments needed to develop technologies that are critical to national defense.

Figure 7: Passenger Vehicle Production in the United States by American-Owned and Foreign-Owned Manufacturers

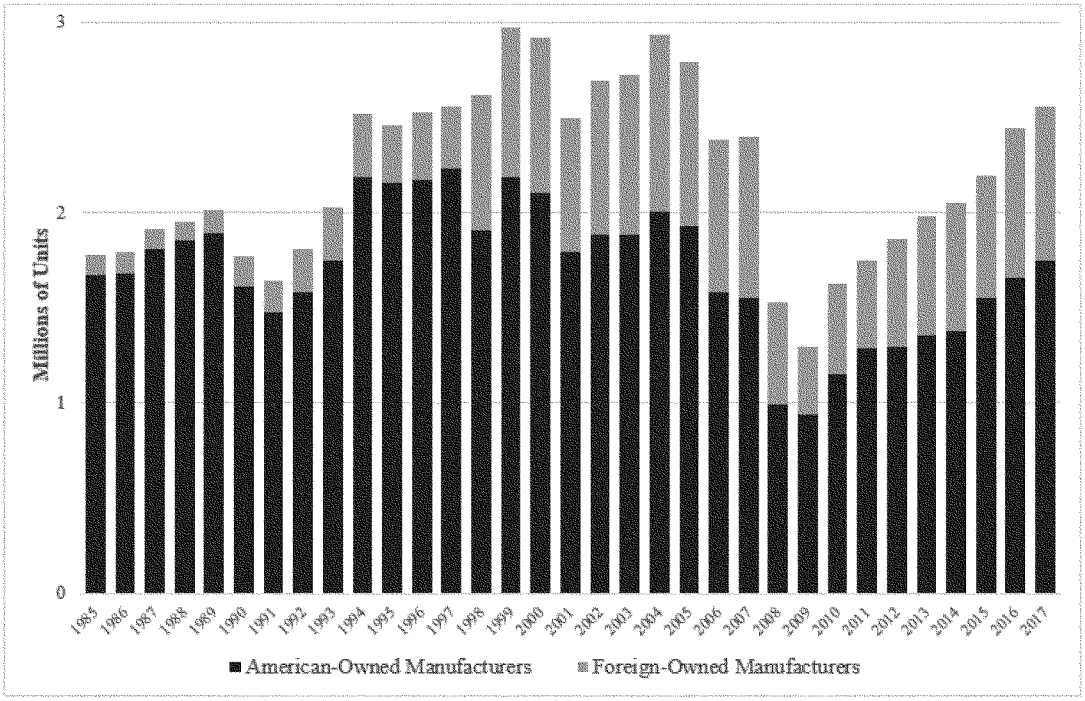


Source: Wards Intelligence InfoBank. (From 1998 forward Chrysler is foreign-owned.)

For light trucks, American-owned U.S. manufacturers have also experienced a declining share of U.S. production over the past three decades. They accounted for 94 percent of domestic production in 1985 (1.67 million units), a share that decreased to 68 percent (1.75 million units) in 2017.[73] This relatively narrower decline is attributed to U.S. consumers' preferences for American-made brands and models of light trucks, and the 25 percent tariff imposed by the United States on imports of light trucks since 1964.

[73] Wards Intelligence InfoBank.

Figure 8: Light Truck Production in the United States by American-Owned and Foreign-Owned Manufacturers



Source: Wards Intelligence InfoBank. (From 1998 forward Chrysler is foreign-owned.)

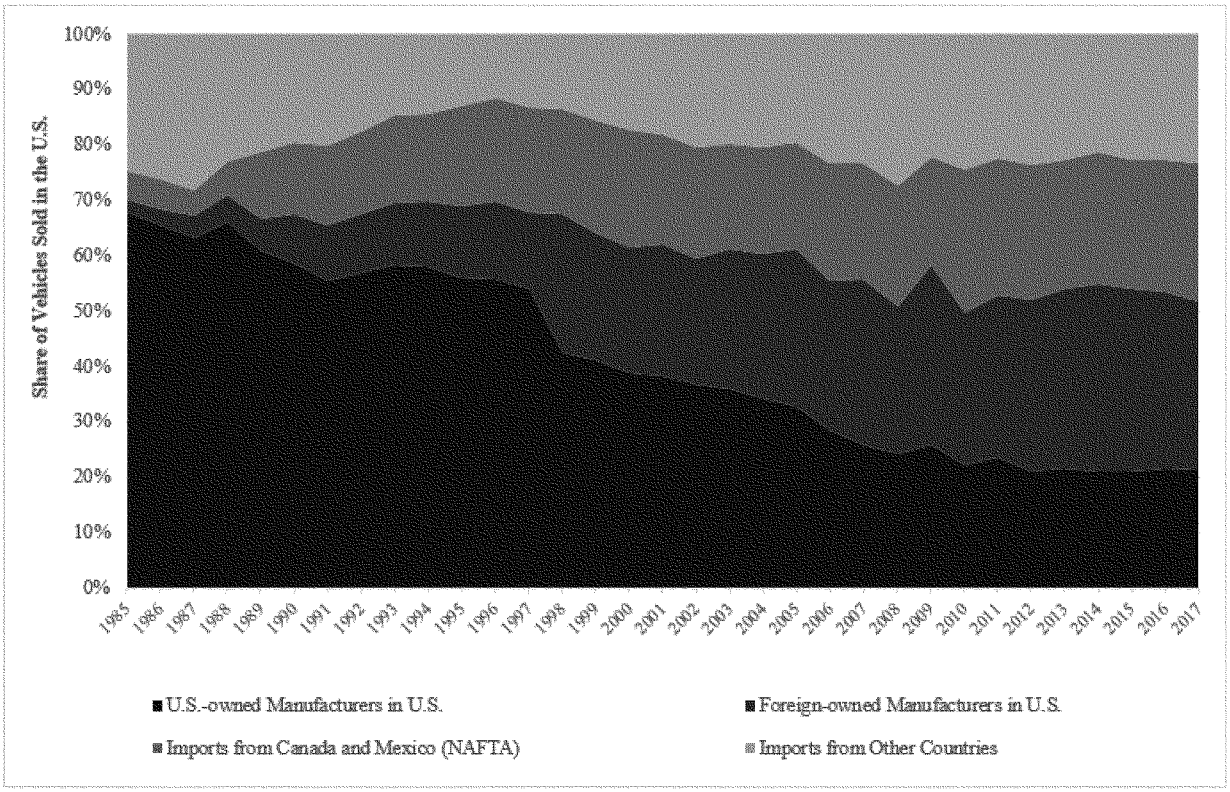
Even accounting for the strong presence of American-owned producers in the light truck segment, the overall competitive position of American-owned automobile producers has been weakening over time, as American-owned production volumes overall have steadily declined. Expressed as a percentage of overall U.S. demand for automobiles, the market share held by American-owned automobile manufacturers has contracted sharply from 67 percent in 1985 (10.5 million units produced and sold in the United States) to 22 percent in 2017 (3.7 million units produced and sold in the United States) as illustrated in Figure 9, with increases in demand and lost American-owned market share captured by both imports and foreign-owned manufacturers in the United States.[74] [TEXT REDACTED].[75] In other words, the share of the U.S. market captured by imports *plus* vehicles produced in the United States by foreign-owned firms increased from 33 percent in 1985 to 78 percent in 2017.[76]

[74] Wards Intelligence InfoBank; Department of Commerce, Census Bureau.

[75] U.S. Producers' Survey Responses, Question 2b. In 2017, American-owned firms produced and sold in the U.S. market [TEXT REDACTED].

[76] Wards Intelligence InfoBank; Department of Commerce, Census Bureau.

Figure 9: U.S. Production and Imports of Automobiles, Share of U.S. Sales

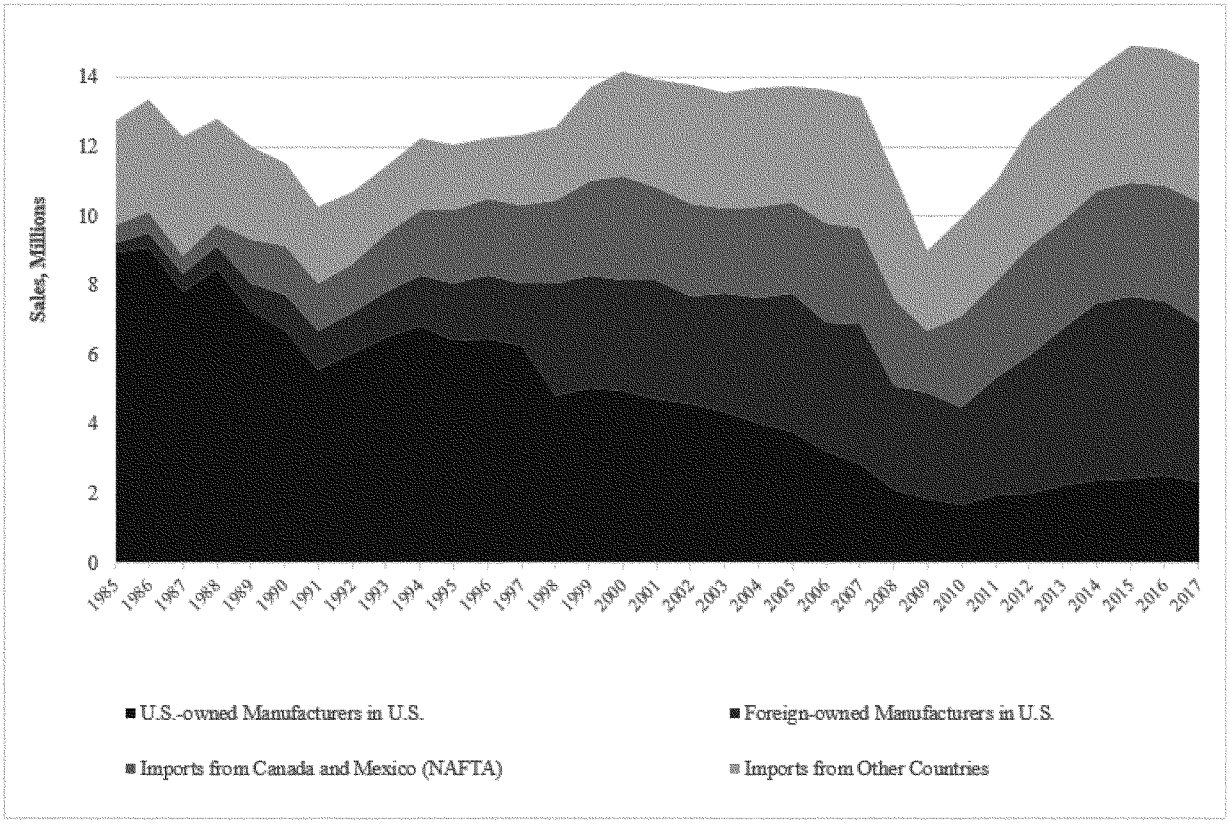


Source: Wards Intelligence InfoBank; Department of Commerce, Census Bureau. (From 1998 forward Chrysler is foreign-owned.)

For passenger vehicle sales where head-to-head competition with foreign producers is greatest, Figure 10 shows that from 1985 to 2017 the market share held by American-owned firms' domestic production declined from 70 percent to 16 percent.[77] Also significant is the fact that the market share claimed by light trucks produced in the United States by American-owned manufacturers declined by eight percent over the same period, as shown in Figure 11. American-owned manufacturers now hold less than half (*i.e.,* 47.7 percent) of the U.S. market for light trucks. Section VI.A.3 below explains that imports of both passenger vehicles and light trucks have displaced American-owned U.S. production and threaten the ability of American-owned producers to invest in the R&D that is critical to maintaining technological innovation that enables America to maintain global military superiority.

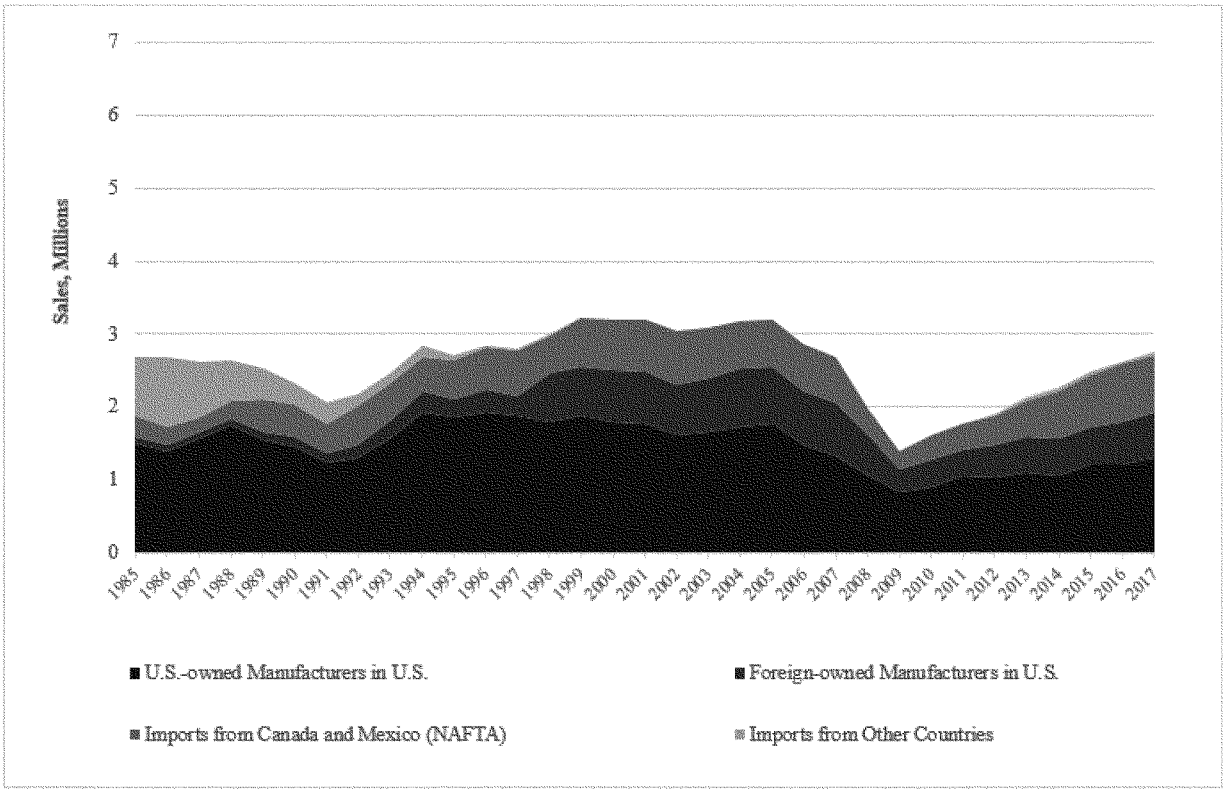
[77] Wards Intelligence InfoBank.

Figure 10: U.S. Production and Imports of Passenger Vehicles, Share of U.S. Sales



Source: Wards Intelligence InfoBank; Department of Commerce, Census Bureau. (From 1998 forward Chrysler is foreign-owned.)

Figure 11: U.S. Production and Imports of Light Trucks, Share of U.S. Sales



Source: Wards Intelligence InfoBank; Department of Commerce, Census Bureau. (From 1998 forward Chrysler is foreign-owned.)

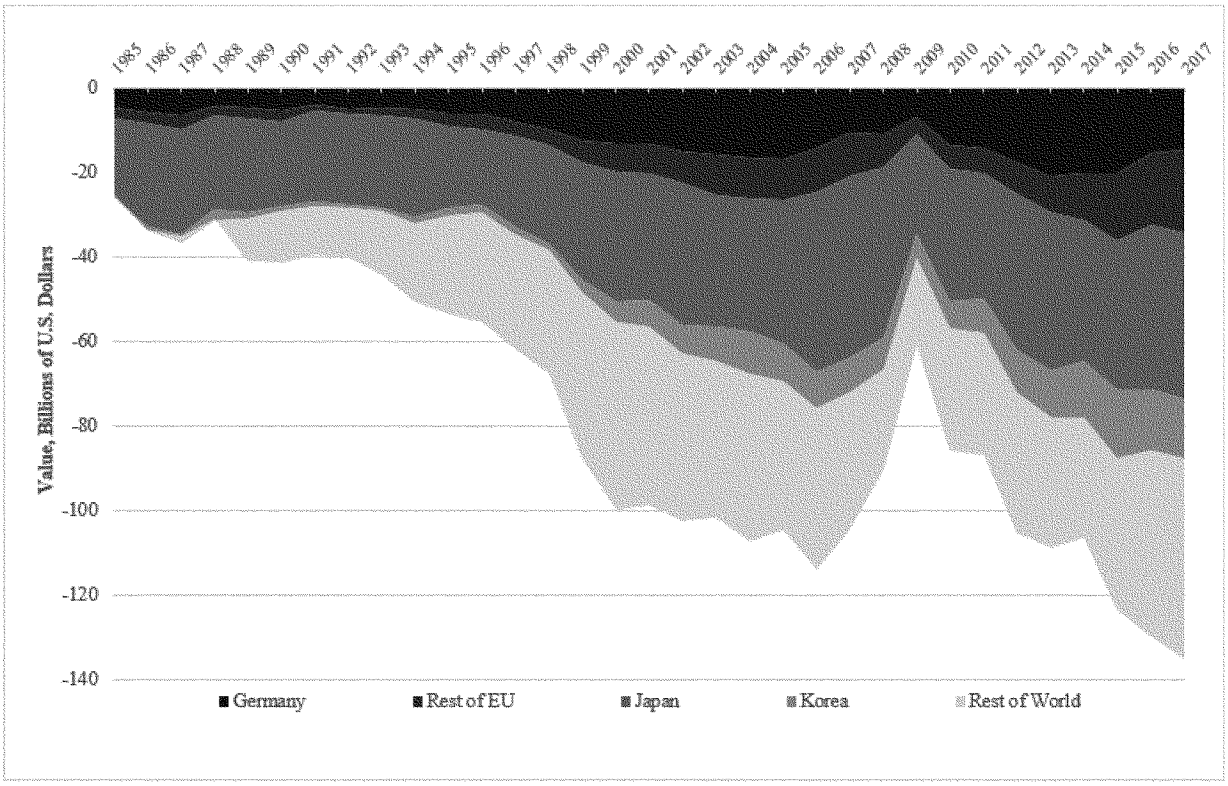
2. Market Penetration by Automobile Imports Is Significant

Automobile producers continuously strive to increase production scale to maximize profits. Indeed, scale is important because the enormous startup costs associated with the launch of a new production line must be amortized over substantial production and sales volumes in order to maximize revenue and minimize unit costs. As set forth in Appendix F, because automobile producers headquartered in the EU, Japan, South Korea, and China are protected from import competition in their respective home markets, these foreign producers are able to utilize significant sales profits in those home markets to heighten production to levels in excess of volumes needed to supply their respective domestic markets. Those firms consequently become increasingly export focused. Because the United States has the second largest automobile demand market in the world,[78] imposes a low 2.5 percent tariff on imports of passenger vehicles, and has a strong economy that allows manufacturers to maximize profits, foreign automobile producers take advantage of the open U.S. market to unload excess production at significant financial gain. Figure 12 illustrates this point using the United States' trade deficit in automobiles with Germany, Japan, and the rest of the world.[79]

[78] According to Wards Intelligence InfoBank, China is the largest consumer market for automobiles.

[79] This represents nominal figures, which do not take into account inflationary and foreign exchange changes over time.

Figure 12: U.S. Deficit in Automobiles with Trading Partners



Source: Department of Commerce, Census Bureau.

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This trade deficit underscores the significant disadvantage that U.S. automobile producers have internationally as a result of protected markets abroad. In 2017, manufacturers in the United States exported 2.0 million units ($56.9 billion U.S. dollars) compared to imports of automobiles from abroad of 8.3 million units ($191.7 billion U.S. dollars).[80]

From 1985 to 2017, overall imports of automobiles from all countries almost doubled from 4.6 million units to 8.3 million units, representing an increase from 30 percent of U.S. market share in 1985 to 48 percent in 2017 as shown in Figure 13.[81] As noted above, of the remaining 52 percent of U.S. market share, foreign-owned U.S. manufacturing operations account for 30 percent and American-owned U.S. manufacturing operations account for the remaining 22 percent. The fact that imports and foreign-owned production of automobiles in the United States accounted for 32 percent of the U.S. market share in 1985 but now hold 78 percent of the U.S. market, and the fact that American-owned automobile production in the United States declined by 6.3 million units over the same period (from 11.0 million units to 4.6 million units), underscores the displacement of American-owned production in the United States by imports and by foreign-owned manufacturers' U.S. production.[82]

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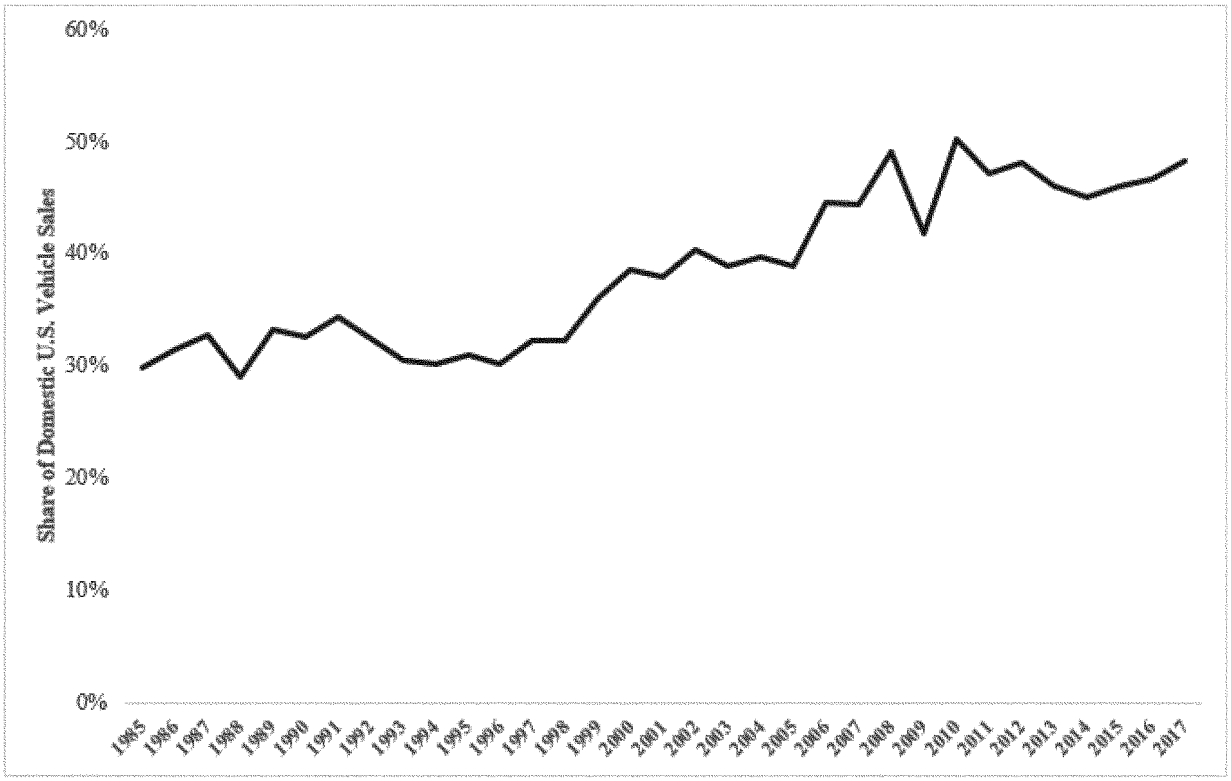
[80] Department of Commerce, Census Bureau.

[81] Wards Intelligence InfoBank; Department of Commerce, Census Bureau.

[82] *Id.*

Figure 13: Rise in Imports of Automobiles into the United States



Source: Wards Intelligence InfoBank; Department of Commerce, Census Bureau. Calculated by Department of Commerce.

By both volume and value, Mexico, Canada, Japan, South Korea and the EU account for nearly 98 percent of automobiles imported into the United States, although China is planning to rapidly grow exports to the United States as well.[83] Table 4 below lists the top sources of automobile imports into the United States.

Table 4: Top Sources of Automobile Imports into the United States in 2017

PARTNER	Import (Customs) Value, US$	Share of Total
WORLD	191,748,525,445	-
NAFTA	89,443,769,290	46.65%
EU	42,814,095,422	22.33%
Japan	39,781,128,900	20.75%
Korea	15,731,937,656	8.20%
China	1,455,678,215	0.76%
Rest of World	2,521,915,962	1.32%

PARTNER	Number of Vehicles	Share of Total
WORLD	8,271,840	-
NAFTA	4,271,298	51.64%
Japan	1,725,757	20.86%
EU	1,159,947	14.02%
Korea	929,419	11.24%
China	58,515	0.71%
Rest of World	126,904	1.53%

Source: Department of Commerce, Census Bureau.

U.S. imports of light trucks are subject to a 25 percent tariff rate, except where the tariff is removed by an FTA such as NAFTA.[84] Consequently, there is a notable lack of import competition from non-FTA regions but significant import

[83] China's intentions to dominate production of advanced technologies such as electric vehicles is detailed in the Section 301 Report on China prepared by the United States Trade Representative. A 2009 Chinese Central Government ''Opinion'' targets a 10 percent share of global automobile parts exports for Chinese automobile producers by 2020. Several provinces including Anhui, Chongqing, and Zhejiang have issued 5-year plans (their 13th) seeking increased automotive exports in response to these directives. *See Findings of the Investigation Into China's Acts, Policies, and Practices Related to Technology Transfer, Intellectual Property, and Innovation Under Section 301 of the Trade Act of 1974,* Office of the United States Trade Representative, Executive Office of the President, March 22, 2018, *https://ustr.gov/sites/default/files/Section%20301%20FINAL.PDF* at 139. *See also* Shai Oster, *Excess auto capacity in China could leave dents in car makers,* Wall Street Journal, November 17, 2005, *https://www.wsj.com/articles/SB113218114486399413.*

[84] International Trade Commission, *Official Harmonized Tariff Schedule, https://www.usitc.gov/tata/hts/index.htm.*

penetration from Mexico where light trucks are largely produced for the U.S. market. In 2017, imports from Mexico represented over 96 percent of the overall volume and value of light truck imports into the United States.

Table 5: Top Sources of Light Truck Imports into the United States in 2017

PARTNER	Import (Customs) Value, US$	Share of Total
WORLD	18,346,921,785	-
NAFTA	17,903,922,414	97.59%
EU	423,727,370	2.31%
Japan	13,294,493	0.07%
Australia	2,482,036	0.01%
China	1,431,528	0.01%
Rest of World	2,063,944	0.01%

PARTNER	Number of Vehicles	Share of Total
WORLD	832,755	-
NAFTA	801,486	96.25%
EU	30,029	3.61%
Japan	771	0.09%
China	174	0.02%
Australia	141	0.02%
Rest of World	154	0.02%

Source: Department of Commerce, Census Bureau.

In contrast, because U.S. imports of passenger vehicles are subject to a low 2.5 percent tariff, or zero tariff from FTA countries,[85] there is significant import penetration in this segment. By both volume and value, Mexico, Canada, Japan, South Korea and the EU account for over 97 percent of the overall U.S. import volume of passenger vehicles.

Table 6: Top Sources of Passenger Vehicle Imports into the United States in 2017

PARTNER	Import (Customs) Value, US$	Share of Total
WORLD	173,401,603,660	-
NAFTA	71,539,846,876	41.26%
EU	42,390,368,052	24.45%
Japan	39,767,834,407	22.93%
Korea	15,731,917,446	9.07%
China	1,454,246,687	0.84%
Rest of World	2,517,390,192	1.45%

PARTNER	Number of Vehicles	Share of Total
WORLD	7,439,085	-
NAFTA	3,469,812	46.64%
Japan	1,724,986	23.19%
EU	1,129,918	15.19%
Korea	929,418	12.49%
China	58,341	0.78%
Rest of World	126,610	1.70%

Source: Department of Commerce, Census Bureau.

For every automobile market segment, moreover, the U.S. market has witnessed an acceleration in imports over the past five years. [TEXT REDACTED].[86] In 2017, imports of automobiles by foreign-owned manufacturers in the United States accounted for [TEXT REDACTED] of total import volume, whereas imports by American-owned manufacturers accounted for [TEXT REDACTED] of the import volume.[87]

Table 7: Volume of U.S. Imports of Automobiles by Vehicle Segment

Imports from Top 10 Sources by Type (Units)					
Item	2013	2014	2015	2016	2017
[TEXT REDACTED					]
[TEXT REDACTED					]
[TEXT REDACTED					]
[TEXT REDACTED					]
[TEXT REDACTED					]
[TEXT REDACTED					]
[TEXT REDACTED					]
[TEXT REDACTED					]
[TEXT REDACTED					]

Source: U.S. Producers' Survey Responses, Question 4b.
([TEXT REDACTED]).

[85] *Id.*

[86] U.S. Producers' Survey Responses, Question 4b.

[87] *Id.*

Table 8A further shows that, by market segment, imports were largely sourced from producers in [TEXT REDACTED]. [TEXT REDACTED]. Whereas American-owned producers' imports in 2017 from North America totaled [TEXT REDACTED] of their overall imports, foreign-owned automobile producers' imports from regions outside North America accounted for [TEXT REDACTED] of their overall imports. In other words, while American-owned automobile producers expanded operations to [TEXT REDACTED] to remain competitive in the U.S. market, foreign-owned producers not only took advantage of the [TEXT REDACTED] integrated North American supply chain to reap competitive gains in the U.S. market, [TEXT REDACTED] to displace U.S. production by American-owned firms. In fact, [TEXT REDACTED] of foreign-owned producers' [TEXT REDACTED]. More specifically, EU automobile producers in the United States [TEXT REDACTED] of their automobile [TEXT REDACTED], Japanese producers in the United States [TEXT REDACTED] of their automobile [TEXT REDACTED], and South Korean producers in the United States [TEXT REDACTED] of their automobile [TEXT REDACTED].[88]

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Table 8A: Sources of U.S. Imports of Automobiles for All Market Segments

2017 Imports by Source and Type (Units), Top 10 by Total			
Country	Sedans/SUVs/CUVs	Light Trucks	Vans
[TEXT REDACTED			
			]

Source: U.S. Producers' Survey Responses, Question 4b.

Table 8B: Sources of American-Owned U.S. Manufacturers' Imports of Automobiles for All Market Segments

2017 Imports by Source and Type (Units), Top 10 by Total			
Country	Sedans/SUVs/CUVs	Light Trucks	Vans
[TEXT REDACTED			
			]

Source: U.S. Producers' Survey Responses, Question 4b.

[88] *Id.*

Table 8C: Sources of Foreign-Owned U.S. Manufacturers' Imports of Automobiles for All Market Segments

2017 Imports by Source and Type (Units), Top 10 by Total			
Country	Sedans/SUVs/CUVs	Light Trucks	Vans
[TEXT REDACTED			
			]

Source: U.S. Producers' Survey Responses, Question 4b.

Significantly, imports now exceed American-owned production in the United States. As Table 9 demonstrates, in 2017 the United States imported passenger vehicles and light trucks equal to 263 percent of American-owned passenger vehicle production and 48 percent of domestic light truck production, respectively. American-owned producers were not operating at full capacity in 2017 and, thus, had the ability to produce more vehicles.[89]

Table 9: American-Owned Production in the United States Compared to Imports

Vehicle Type	Production Volume in 2013 (units)	Production Volume in 2017 (units)	Import Volume in 2013 (units)	Import Volume in 2017 (units)
Passenger Vehicles	2,952,994	2,832,439	6,633,574	7,439,085
Light Trucks	1,351,645	1,750,198	517,241	832,755
Total	4,304,639	4,582,637	7,150,815	8,271,840

Source: Wards Intelligence InfoBank; Department of Commerce, Census Bureau.

3. Low Priced Foreign-Owned Automobile Production and Imports Have Caused Significant Market Penetration in the United States and Have Suppressed U.S. Producers' Prices

Imported and domestically-produced automobiles compete head-to-head in the same geographic markets based primarily on price, brand, and quality, with price being a significant factor driving consumers' purchasing decisions.[90] From 2005 to 2017, the average unit value (''AUV'') on retail sales of automobiles in the United States increased by 13.0 percent,[91] which is well below the 28.3 percent increase in consumer prices over this period. [92] Further, for both passenger vehicles and light trucks each year during the 2013 to 2017 period, Tables 10A, 10B, and 10C show that [TEXT REDACTED] and hence contributed to the suppression of automobile prices in the United States market.

[89] Board of Governors of the Federal Reserve System (US), *G.17. Capacity Utilization: Durable Manufacturing: Automobiles and parts, https://www.federalreserve.gov/releases/g17/current/.*

[90] Christian Wardlaw, *10 Top Reasons Why People Buy Specific Cars,* New York Daily News, Mar. 4, 2016, *https://www.nydailynews.com/autos/buyers-guide/10-top-reasons-people-buy-specific-cars-article-1.2552707.*

[91] Wards Intelligence InfoBank.

[92] Department of Labor, Bureau of Labor Statistics, Consumer Price Index, *https://www.bls.gov/cpi/* (accessed January 24, 2019).

Table 10A: Average Unit Value of Automobiles Produced in the U.S.

	2013	2014	2015	2016	2017
Passenger Vehicles	[TEXT	REDACTED			]
Light Trucks	[TEXT	REDACTED			]
Overall Average for All Automobiles	[TEXT	REDACTED			]

Source: U.S. Producers' Survey Responses, Question 2b.

Table 10B: Average Unit Value of Automobiles Produced in the U.S., American-Owned Manufacturers

	2013	2014	2015	2016	2017
Passenger Vehicles	[TEXT	REDACTED			]
Light Trucks	[TEXT	REDACTED			]
Overall Average for All Automobiles	[TEXT	REDACTED			]

Source: U.S. Producers' Survey Responses, Question 2b.

Table 10C: Average Unit Value of Automobiles Produced in the U.S., Foreign-Owned Manufacturers

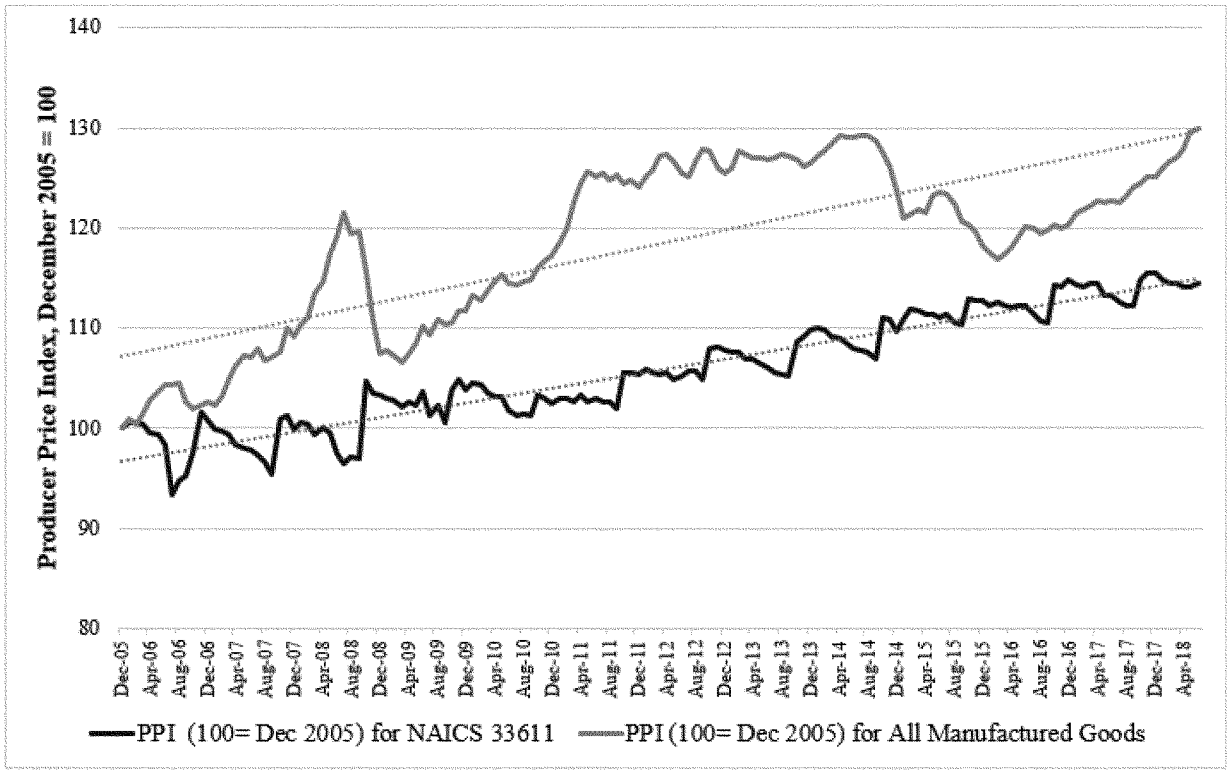
	2013	2014	2015	2016	2017
Passenger Vehicles	[TEXT	REDACTED			]
Light Trucks	[TEXT	REDACTED			]
Overall Average for All Automobiles	[TEXT	REDACTED			]

Source: U.S. Producers' Survey Responses, Question 2b.

Figure 14 moreover shows that, between 2005 and 2017, the producer price index for automobiles increased by 15 percent while the producer price index for all manufactured goods increased by 27 percent.[93]

[93] Department of Labor, Bureau of Labor Statistics, Producer Price Index (PPI) for Automobiles.

Figure 14: Increase of U.S. Producer Price Index for Automobiles Compared to All Manufactured Goods



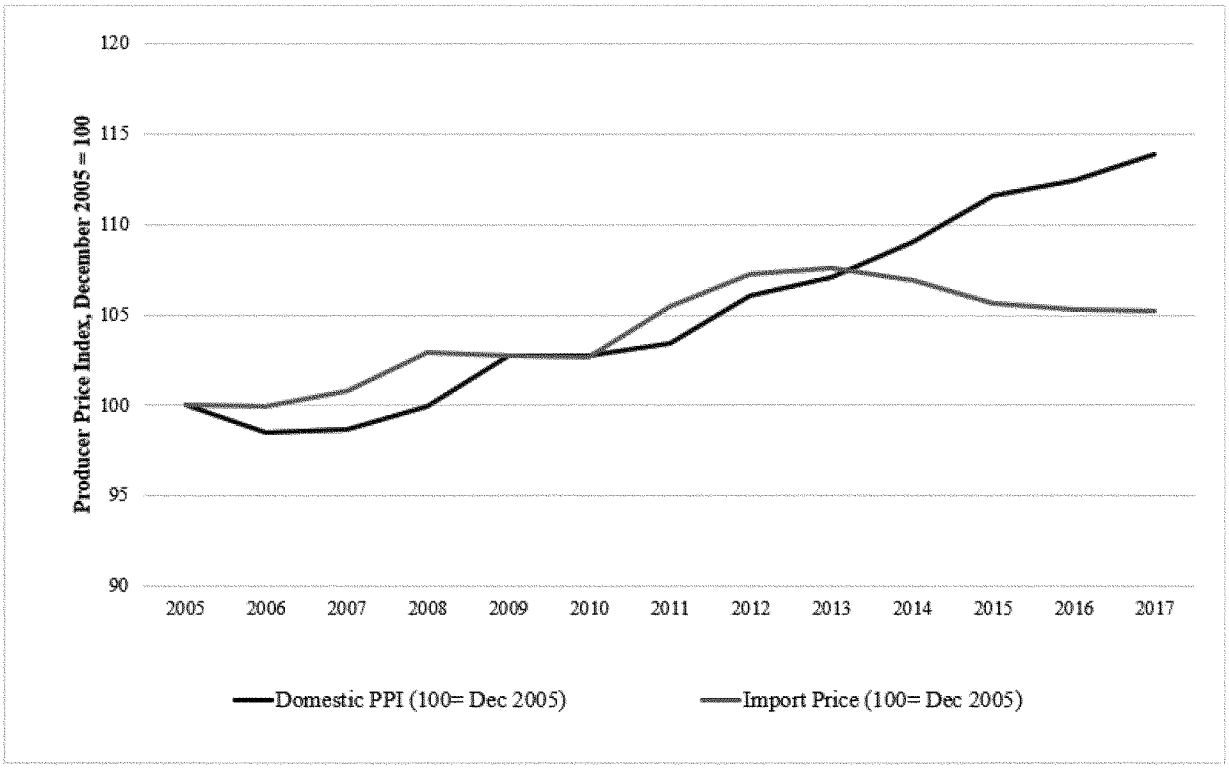
Source: Bureau of Labor Statistics, PPI Database, adjusted by U.S. Department of Commerce.

(Data adjusted to rebase the index period to December 2005.)

The slow growth of U.S. prices for automobiles is also attributable to the low prices of foreign imports. As shown in Figure 15, since 2005, the average price of a domestically produced automobile in the United States increased by 14 percent compared to a 5 percent increase in the average price of imported automobiles.[94] These data demonstrate that low vehicle import prices permitted imports to capture significant market share from U.S. producers.

[94] *Id.*

Figure 15: Increase of U.S. Producer Price of Automobiles Compared to the Price of Imported Automobiles (NAICS 33611)



Source: Bureau of Labor Statistics, PPI Database, adjusted by Department of Commerce. (Data adjusted to rebase the index period to December 2005.)

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When this analysis is disaggregated by passenger vehicles and light trucks for a more recent comparison period, [TEXT REDACTED], as shown in Figures 16 and 17 below. With respect to passenger vehicles, [TEXT REDACTED]. For light trucks, [TEXT REDACTED].[95]

Figure 16: AUVs of Passenger Vehicles: Domestic Production vs. Imports

[TEXT REDACTED]

Figure 17: AUVs of Light Trucks: Domestic Production vs. Imports

[TEXT REDACTED]

A more detailed examination of import prices reveals that differences in prices have been most significant with respect to imports from [TEXT REDACTED]. [TEXT REDACTED].[96]

Figure 18: AUVs of Passenger Vehicles: Domestic Production vs. Imports

[TEXT REDACTED]

Figure 19: AUVs of Light Trucks: Domestic Production vs. Imports

[TEXT REDACTED]

Low-priced imports have placed significant competitive pressure on U.S. producers throughout the market by preventing the price increases that would otherwise have occurred. As explained below, from 2013 to 2017, [TEXT REDACTED], while during this period, the industry's total cost of goods sold (''COGS'') [TEXT REDACTED] (from [TEXT REDACTED].[97] Accordingly, the [TEXT REDACTED].[98]

In short, imported automobiles have prevented American-owned automobile producers from increasing sales prices [TEXT REDACTED] in producers' costs for producing vehicles in the United States. As explained in Section VI.B and VI.C, this has negatively impacted American-owned producers' ability to invest in technological advancements that are critical to U.S. national security needs.

B. Imports of Automobile Parts in Such Quantities as Are Presently Found Threaten the Viability of the U.S. Automobile Parts Industry

The automobile parts industry is experiencing a significant revolution in technological advancements. In the area of intelligent mobility technology, over the past decade, the electrical components industry has made significant strides in advanced sensor systems, vehicle automation, and vehicle connectivity. All major international automobile producers are heavily investing in technology, and advancements in electronic components are expected to accelerate over the course of the next decade as automobiles transition to full automation capabilities. In the area of light duty vehicle propulsion, automobile engine and transmission technologies have rapidly progressed because manufacturers, in response to

[95] U.S. Producers' Survey Responses, Questions 2b; Department of Commerce, Census Bureau.

[96] U.S. Producers' Survey Responses, Question 2b; *see also* Mike Monticello, *Are Pickup Trucks Becoming the New Family Cars?,* Consumer Reports, Feb. 22, 2013, *https://www.consumerreports.org/pickup-trucks/are-pickup-trucks-becoming-the-new-family-car/.*

[97] U.S. Producers' Survey Responses, Questions 2b and 3.

[98] U.S. Producers' Survey Responses, Question 3.

increasingly stringent emission and fuel economy regulations, have invested in a broad portfolio of different lightweighting propulsion technologies, including internal combustion engines, plug-in hybrid vehicles, and fuel cell technologies. As set forth in Section VI.C., these innovations are integral to advancements in military vehicle capabilities and, hence, U.S. defense requirements.

1. Imports of Automobile Parts Have Displaced U.S. Production, and the United States Has Become Dependent on Imported Automobile Parts That Are Critical to Defense Applications and National Security

In consultation with the DOD, the Secretary has specifically determined that automobile engines and parts, transmissions and powertrain parts, and electrical components are essential to national security, and [TEXT REDACTED].[99] [TEXT REDACTED].[100] Further, U.S. automobile producers are now more than ever relying on imports of such automobile parts to satisfy their production needs.

In fact, every U.S. producer of passenger vehicles—whether American-owned or foreign-owned—imports a significant volume of automobile parts for its vehicle production operations in the United States. [TEXT REDACTED].[101] As shown in Table 11A, American-owned automobile producers have, on average, [TEXT REDACTED] [102] Further, both American-owned and foreign-owned producers reported [TEXT REDACTED] [TEXT REDACTED].[103] Table 11B below lists the major countries from which U.S. automobile producers (whether American- or foreign-owned) sourced automobile parts in 2017.

Table 11A: 2017 U.S. Domestic Content by Vehicle Type, American-Owned vs. Foreign-Owned Manufacturers

	American-Owned Manufacturers	Foreign-Owned Manufacturers
Sedans/SUVs/CUVs	[TEXT REDACTED	]
Light Trucks	[TEXT REDACTED	]
Vans	[TEXT REDACTED	]

Source: U.S. Producers' Survey Responses, Question 2b.

Table 11B: Top Sources of Imports for Specific Automobile Parts, American-Owned vs. Foreign-Owned Manufacturers

Automobile Part	Import Source, American-Owned Manufacturers	Import Source, Foreign-Owned Manufacturers
[TEXT REDACTED		]
[TEXT REDACTED		]
[TEXT REDACTED		]
[TEXT REDACTED		]

Source: U.S. Producers' Survey Responses, Questions 5a and 5c.

Substantial evidence demonstrates the extent to which import penetration has significantly weakened U.S. production. With respect to automobile engines, the United States has been a significant importer of completed engines since 1989 when it imported 3.0 million engines, or 29 percent of U.S. demand, for domestic automobile production.[104] Between 1989 and 2017, production of automobiles in the United States increased by 3 percent (from 10.6 million units to 10.9 million units), while imports of automobile engines increased by 32 percent (from 3.0 million units to 4.0 million units).[105] The 4.0 million units imported in 2017 represents 37 percent of U.S. demand. Over this period, imports of automobile engines from Mexico expanded by 1.1 million units (to 1.8 million units in 2017) and imports from Germany grew by 190,000 units (to 450,000 units in 2017).[106] By engine type, American-owned producers sourced [TEXT REDACTED] of engines domestically in the United States and foreign-owned producers sourced [TEXT REDACTED] of engines in the United States in 2015.[107]

Furthermore, U.S. automobile producers have become increasingly reliant on foreign suppliers for engine parts. In particular, from 1989 to 1999, the United States imported an average of $346 in parts per engine produced, which grew from 2010 to 2017 to an import average of $1,178 in parts per engine produced.[108] As illustrated by

[99] U.S. Producers' Survey Responses, Questions 10a and 10b.

[100] U.S. Producers' Survey Responses, Question 10b.

[101] U.S. Producers' Survey Responses, Question 2b. [Although average imported content was 35 percent, individual producers reported imported content shares as high as 70 percent for some market segments].

[102] *Id.*

[103] *Id.*

[104] Department of Commerce, Census Bureau; Wards Intelligence InfoBank. (Data prior to 1989 would not be directly comparable with data for 1989 forward due to classification changes.

[105] Department of Commerce, Census Bureau; Wards Intelligence InfoBank.

[106] Department of Commerce, Census Bureau.

[107] U.S. Producers' Survey Responses, Question 6. (2015 is the most recent year for which data were available.)

[108] Department of Commerce, Census Bureau; Wards Intelligence InfoBank. (This represents nominal figures, which do not take into account inflationary and foreign exchange changes over time. Appropriate ''real'' figures are not publicly available.)

Figure 20, U.S. engine manufacturers have, in large part, transitioned to assembly operations and away from manufacturing and innovation.[109]

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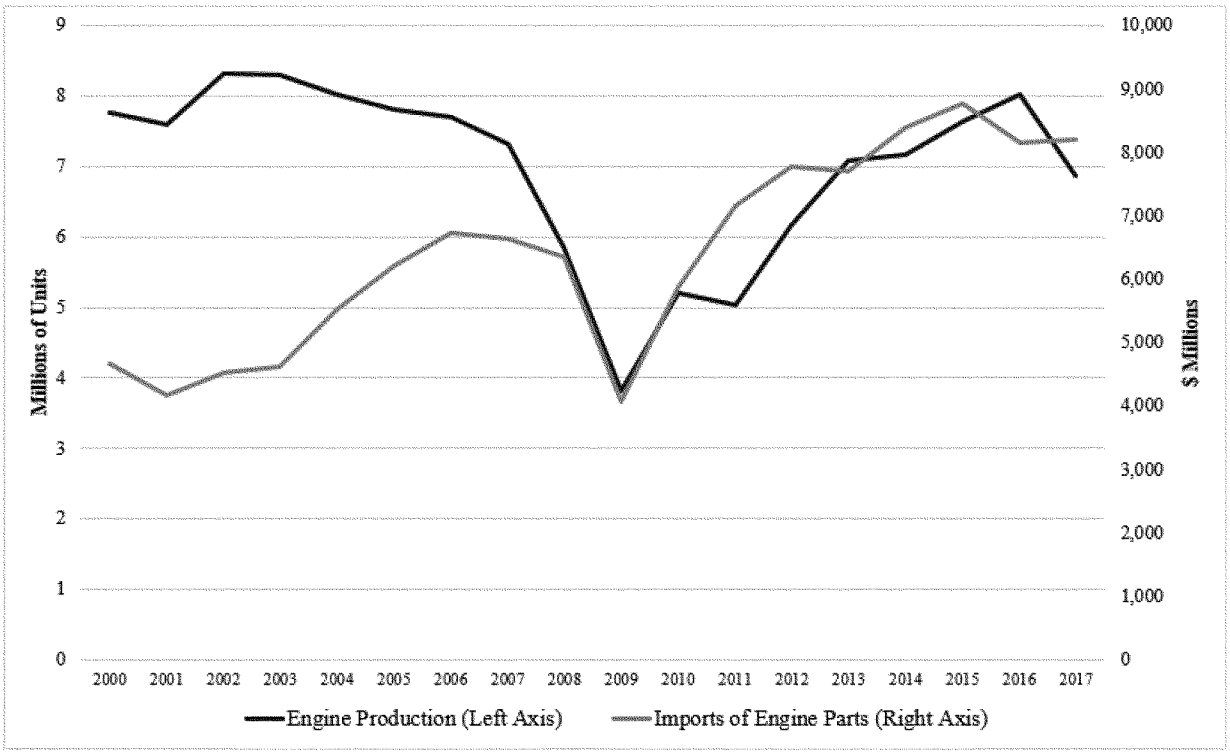
Figure 20: U.S. Engine Production for Domestic Use vs. Imports of Engine Parts



Source: Wards Intelligence InfoBank; Department of Commerce, Census Bureau. ('Domestic use' refers to use in automobiles produced and sold in the United States.)

With respect to automobile transmissions, the United States has long been a significant importer of completed transmissions. From 1989 to 2017, the United States imported, on average, 50 percent of transmissions used in domestic automobile manufacturing.[110] In 2017, automobile manufacturers in the United States imported 5.1 million completed transmissions representing 47 percent of domestic demand while domestic production captured the remaining 53 percent.[111] As with engines, American-owned producers sourced [TEXT REDACTED] of transmissions domestically in the United States whereas foreign-owned producers sourced [TEXT REDACTED] of their transmissions in the United States in 2015.[112]

In addition to import penetration by transmissions displacing domestic production, transmission producers in the United States have increasingly shifted to foreign suppliers for the parts needed to build transmissions. As shown in Figure 21, in 2000 the United States imported $457 in parts per transmission produced domestically. By 2017 imports had increased to $1,226 in parts per transmission produced domestically.[113] U.S. transmission producers are increasingly becoming assemblers; they are not developing emerging technologies associated with next-generation transmissions, and thereby are reducing the availability of the skills, equipment, and R&D needed to maintain global leadership in this important component of automotive production and defense mobility.

[109] *Id.* Although the value and complexity of automobile engines has increased over this period, the relative rate of growth of the average unit value of imported engines (up 179 percent from 1989 to 2017) and imported parts per domestically-produced engine (370 percent from 1989 to 2017) indicates that there is an increased reliance on imported parts by U.S. engine manufacturers.

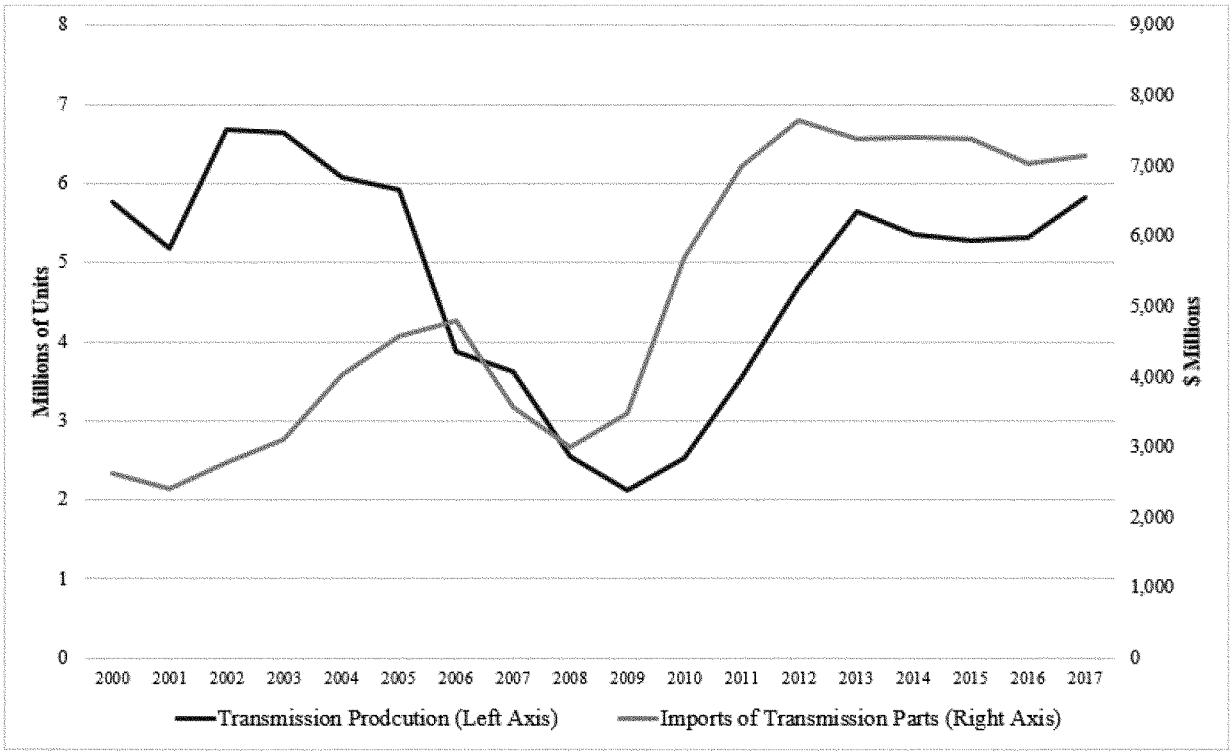
[110] Department of Commerce, Census Bureau; Wards Intelligence InfoBank. Department of Commerce calculations.

[111] *Id.*

[112] U.S. Producers' Survey Responses, Question 6. (2015 is the most recent year for which data were available.)

[113] Department of Commerce, Census Bureau; Wards Intelligence InfoBank. This represents nominal figures, which do not take into account inflationary and foreign exchange changes over time. Appropriate ''real'' figures are not publicly available. Includes HS–10 codes 8708996700, 8708996790, and 8708996890 in addition to the transmission parts listed in Section VIII to create a more consistent time series.

Figure 21: U.S. Transmission Production for Domestic Use vs. Imports of Transmission Parts



Source: Wards Intelligence InfoBank; Department of Commerce, Census Bureau. ('Domestic use' refers to use in vehicles produced and sold in the United States.) (Includes HS-10 codes 8708996700, 8708996790, and 8708996890 in addition to the transmission parts listed in Section VIII to create a more consistent time series.)

Finally, with respect to U.S. producers of electrical components, domestic production has also been displaced by imports, as shown in Figure 22. From 1999 to 2016 (latest available data), U.S. production of electrical components declined by 4 percent while U.S. demand grew steadily, with the result that imports captured all of the growth in overall U.S. demand.[114] In 1999, imports of electrical components represented 29 percent of U.S. demand by value, [115] and by 2016, imports grew to 56 percent of U.S. demand by value. [116] Further, American-owned producers sourced [TEXT REDACTED] of electrical components in the United States and foreign-owned producers sourced [TEXT REDACTED] of electrical components in the United States in 2015 (latest available data).[117]

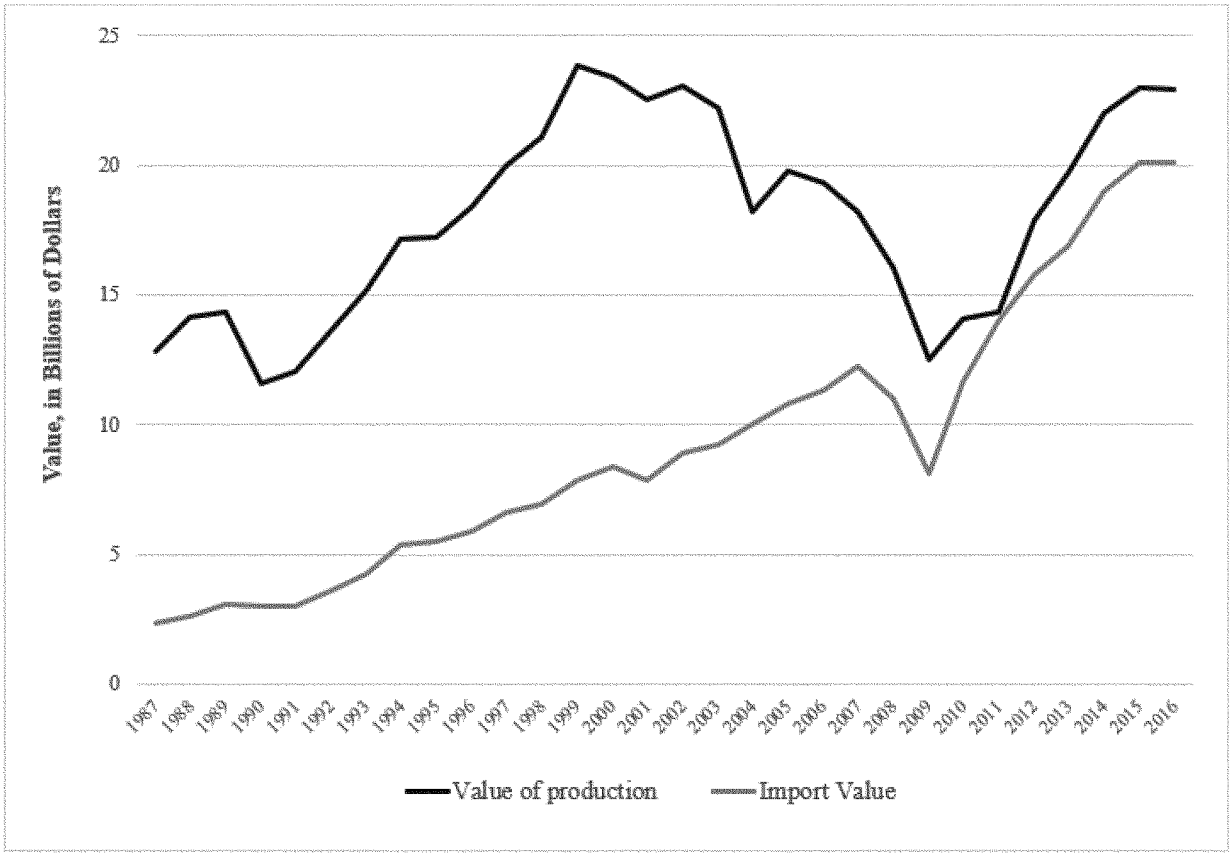
[114] Bureau of Labor Statistics, Industry Productivity & Costs Database, *https://www.bls.gov/lpc/;* Department of Commerce, Census Bureau.

[115] Demand is approximated to be U.S. production plus net imports (imports less exports).

[116] This refers to nominal value figures. However, over the same period, an output index estimating the change in real production shows a similar trend; U.S. output in the automobile electrical and electronic equipment sector in 2016 was 5 percent lower than output in 1999. Source: Bureau of Labor Statistics, Industry Productivity & Costs Database, *https://www.bls.gov/lpc/.*

[117] U.S. Producers' Survey Responses, Question 6.

Figure 22: Growth of Imports and U.S. Production of Automobile Electrical and Electronic Equipment



Source: Bureau of Labor Statistics, Industry Productivity & Costs Database and Department of Commerce, Census Bureau. (Automobile Electrical and Electronic Equipment defined as NAICS 33632.)

Tables 12A and 12B below illustrate the sourcing patterns of American-owned and foreign-owned automobile producers in the United States, [TEXT REDACTED].[118] Excessive imports have weakened the U.S. automobile parts manufacturing base, as these imported parts could have been produced domestically.

[118] U.S. Producers' Survey Responses, Question 6.

Table 12A: Domestic & Foreign Sourcing of Automobile Parts for U.S. Production, 2015

Component Type	Estimated Share of Components Manufactured In: United States	Other Countries
Engines - 4 Cylinder	[TEXT	REDACTED]
Engines - 6 Cylinder	[TEXT	REDACTED]
Engines - 8 or More Cylinder	[TEXT	REDACTED]
Transmissions - 7 or Fewer Gears	[TEXT	REDACTED]
Transmissions - 8 or More Gears	[TEXT	REDACTED]
Electronics and Controls	[TEXT	REDACTED]
Electrical Systems	[TEXT	REDACTED]

Source: U.S. Producers' Survey Responses, Question 6.

Table 12B: Domestic & Foreign Sourcing of Automobile Parts for U.S. Production, 2015, American-Owned vs. Foreign-Owned Manufacturers

	American-Owned Manufacturers		Foreign-Owned Manufacturers	
	Estimated Share of Components Manufactured In:		Estimated Share of Components Manufactured In:	
Component Type	United States	Other Countries	United States	Other Countries
Engines - 4 Cylinder	[TEXT	REDACTED		]
Engines - 6 Cylinder	[TEXT	REDACTED		]
Engines - 8 or More Cylinder	[TEXT	REDACTED		]
Transmissions - 7 or Fewer Gears	[TEXT	REDACTED		]
Transmissions - 8 or More Gears	[TEXT	REDACTED		]
Electronics and Controls	[TEXT	REDACTED		]
Electrical Systems	[TEXT	REDACTED		]

Source: U.S. Producers' Survey Responses, Question 6.

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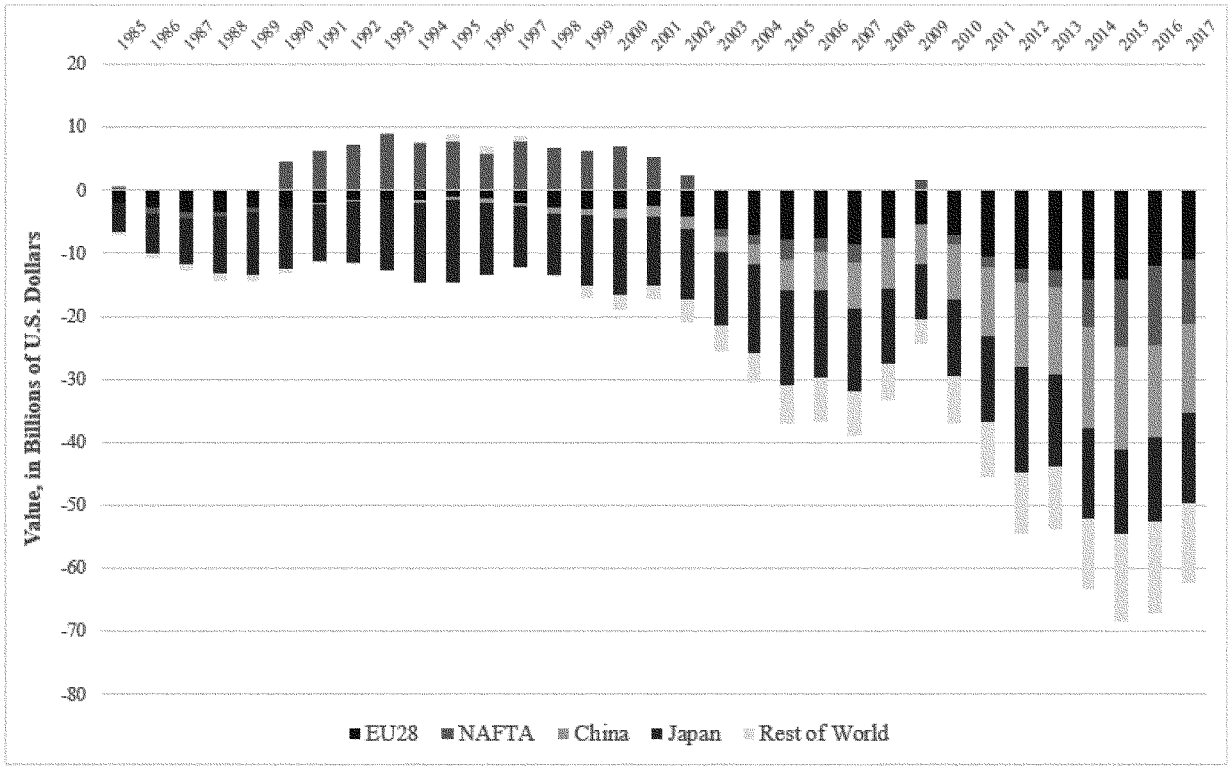
U.S. trade deficit data in Figures 23 and 24 further illustrate the dramatic extent to which domestic production of automobiles has become dependent on foreign-sourced parts. Although the United States has consistently incurred a trade deficit in automobile parts over the past 30 years, this deficit has increased to record levels within the past three years, reaching over $60 billion in 2017.[119]

[119] Department of Commerce, Census Bureau. This represents nominal figures, which do not take into account inflationary and foreign exchange changes over time. Appropriate ''real'' figures are not publicly available.

Figure 23: U.S. Trade Deficit in Overall Automobile Parts

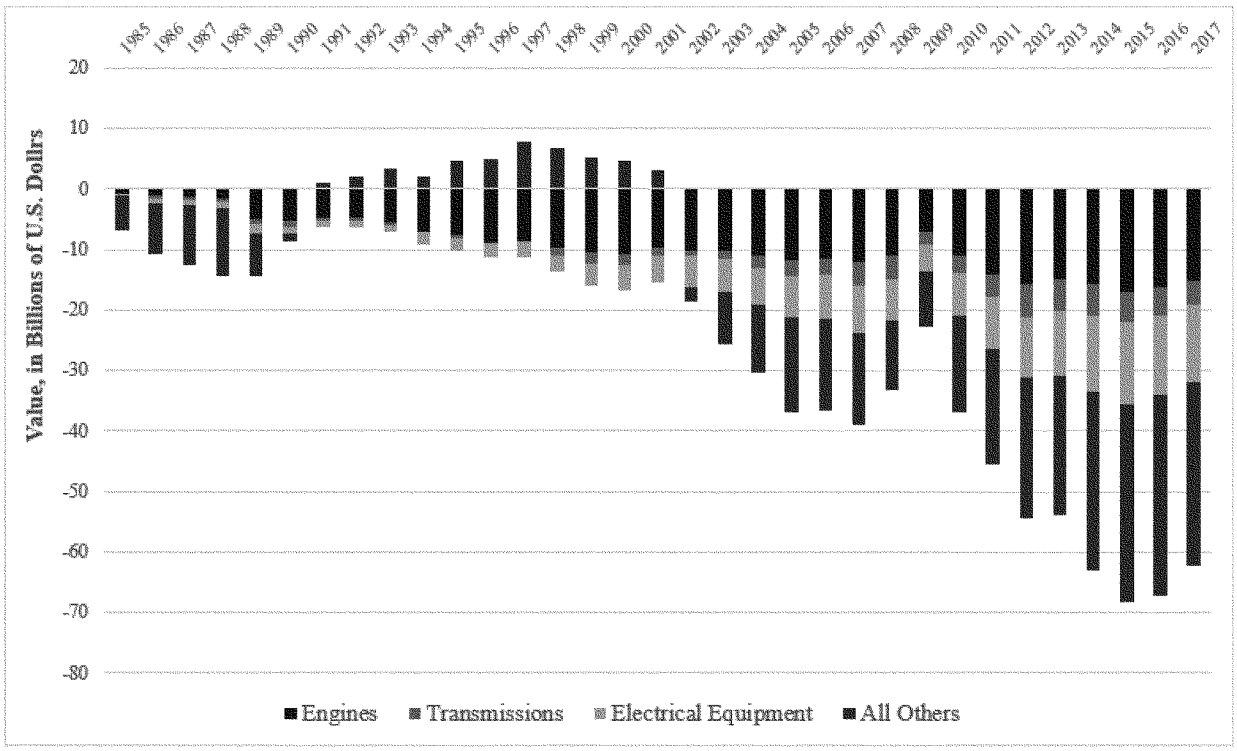


Source: Department of Commerce, Census Bureau.

Disaggregated by component type, the trade deficit in automobile engines and parts, transmissions and powertrain parts, and electrical components is equally as significant. Figure 24 shows that the trade deficit in engines and engine parts grew from a deficit of $0.7 billion in 1985 to a deficit of $15.2 billion in 2017, the deficit in electrical components grew from a deficit of $211 million in 1985 to a deficit of $12.7 billion in 2017, and the deficit in transmission and powertrain parts grew from a deficit of $60 million in 1985 to a deficit of $3.9 billion in 2017.[120]

[120] *Ibid.*

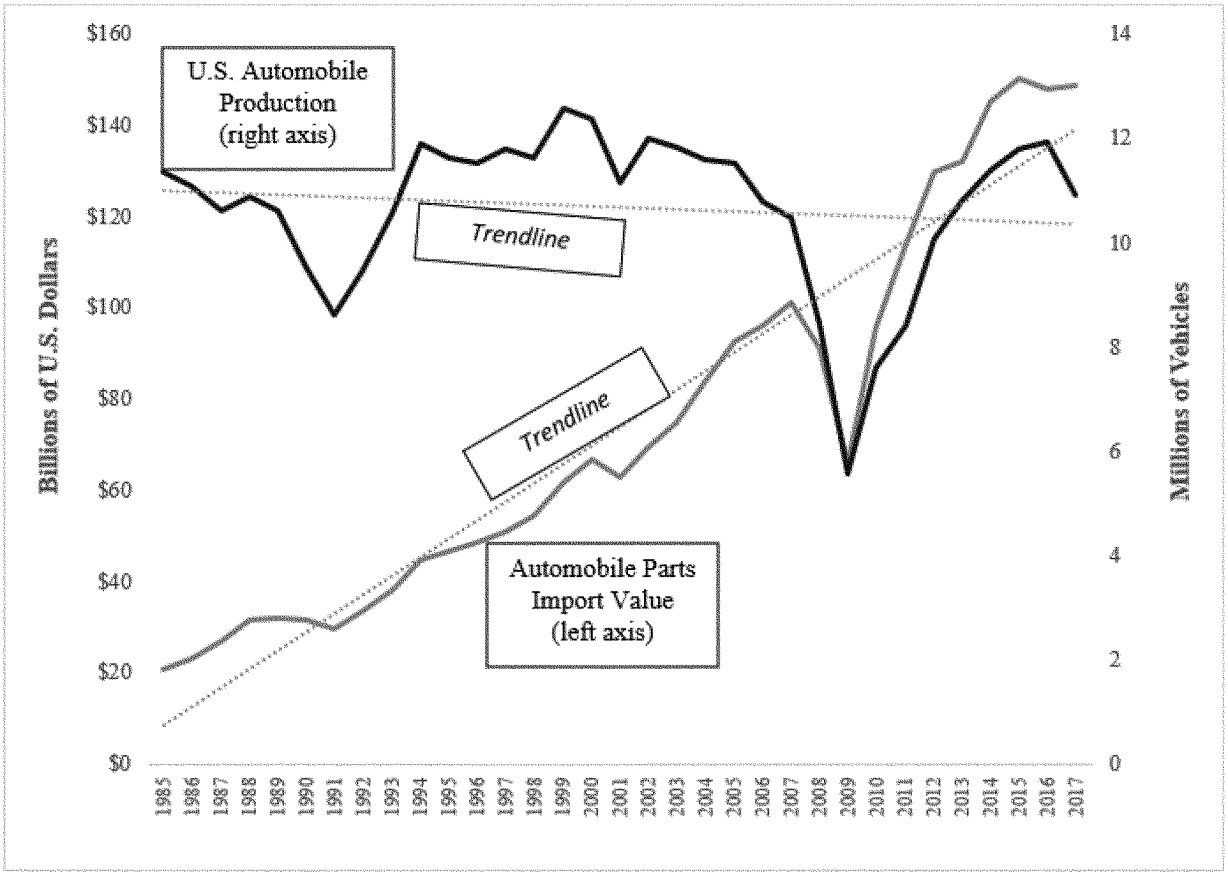
Figure 24: U.S. Trade Deficit in Automobile Parts by Type



Source: Department of Commerce, Census Bureau.

Further, a comparison of the increase in U.S. imports of overall automobile parts to the decline in U.S. automobile production, as shown in Figure 25, confirms that U.S. automobile producers have become increasingly reliant on foreign-produced parts. As technological innovations in engines, transmissions and electrical components are critical for U.S. defense capabilities as set forth in Section VI.C, the United States' increasing dependence on imports—and thereby loss of the manufacturing base and related worker skills and technological know-how for cutting-edge innovations with significant military applications—poses a significant threat to national security.

Figure 25: Comparison of U.S. Automobile Parts Imports to U.S. Automobile Production



Source: Wards Intelligence InfoBank; Department of Commerce, Census Bureau.

2. U.S. Producers of Automobile Parts Are Facing Downward Pressure on Prices Due to Low U.S. Automobile Prices

As U.S. production of engines and parts, transmissions and powertrain parts, and electrical components has been negatively impacted by imports, producers—especially American-owned producers—in the U.S. market are finding it difficult to stay competitive due to escalating costs associated with technological advancements. Cost increases have been driven, in large part, by advancements in vehicle electronics, connectivity systems, safety features, advanced driver-assistance systems, and autonomous vehicle technologies.[121] To illustrate, a McKinsey study of North American automobile parts suppliers found that the aggregate average real cost of automobile parts (indexed to 2010 dollars and adjusted to compensate for inflation, productivity changes, and other macroeconomic forces) for passenger vehicles was approximately $13,400 in 2010, and is expected to rise to $15,900 by 2020, an increase of almost 20 percent. These estimates also indicate that parts costs increased to approximately $14,100 in 2013 and $15,100 in 2017 (with an overall 13 percent increase from 2010).[122] This presents a significant problem to automobile parts suppliers, as they have been unable to increase prices to help compensate for higher costs. Indeed, during the same 2010 to 2017 period, the average sales price of a new automobile in the United States increased from $24,063 in 2010, to $24,454 in 2013, and to $25,366 in 2017 (a five percent increase).[123] That is to say, over the same seven-year period, the average price of a vehicle increased far less than the price increase associated with components. As acknowledged by the McKinsey study, ''OEMs were unable to raise prices for mass-market cars. In turn, [they] used their purchasing power to limit suppliers' abilities to increase prices, even in the face of higher input costs,'' thereby eroding automobile parts producers' profitability.[124]

Further, for automobile producers' U.S. operations, [TEXT REDACTED] from 2013 to 2017, while the average revenue earned per vehicle [TEXT REDACTED].[125] For American-owned automobile producers in particular, [TEXT REDACTED].[126] During the 2013 to 2017 period, American-owned

[121] Jim Irwin, *EV, AV Spending in Slowing Market Points to 'Pile Up,'* WardsAuto, July 30, 2018, *https://www.wardsauto.com/alternative-propulsion/ev-av-spending-slowing-market-points-pile?NL=WAW-04&Issue=WAW-04_20180730_WAW-04_297&sfvc4enews=42&cl=article_1_b&utm_rid=CPENT000004033195&utm_campaign=19649&utm_medium=email&elq2=017d7eb1c3c741dba293777515e91e6a.*

[122] McKinsey & Company, *The Future of the North American Automotive Supply Industry,* March 2012, *https://www.mckinsey.com/~/media/mckinsey/dotcom/client_service/automotive%20and%20assembly/pdfs/the_future_of_the_north_american_automotive_supplier.ashx;* Department of Commerce calculations.

[123] Wards Intelligence InfoBank.

[124] McKinsey & Company, *The Future of the North American Automotive Supplier Industry, supra.*

[125] U.S. Producers' Survey Responses, Question 2a and Question 3.

[126] *Id.*

producer's [TEXT REDACTED]. As a result, the COGS-to-revenue ratio per vehicle [TEXT REDACTED].[127] That the average unit COGS for automobile producers in the United States [TEXT REDACTED] makes clear that American-owned producers of automobiles [TEXT REDACTED] in costs to their U.S. customers, [TEXT REDACTED].

Foreign-owned automobile producers operating in the U.S. market, where a significant volume of automobile parts are sourced abroad [TEXT REDACTED], have not experienced [TEXT REDACTED].[128] From 2013 to 2017, foreign-owned producers' average per-vehicle COGS [TEXT REDACTED], while their [TEXT REDACTED].[129] This led to an overall average COGS-to-revenue ratio [TEXT REDACTED], which means that foreign-owned producers [TEXT REDACTED].[130] Further, during the 2013 to 2017 period, foreign-owned automobile producers' [TEXT REDACTED].[131] Import prices, moreover, were [TEXT REDACTED], as noted above.

In short, [TEXT REDACTED] given that low-priced imports have prevented U.S. producers from increasing their automobile prices by a sufficient margin to offset increases in costs. Additionally, as noted, U.S. automobile producers often used their purchasing power to limit price increases (or compel price decreases) by their parts suppliers.[132]

Consequently, automobile parts are now being increasingly produced in foreign countries. As previously shown in Figures 20 through 25, automobile producers have become increasingly reliant on automobile parts imported from foreign suppliers. Furthermore, the number of automobile parts manufacturing establishments in the United States have fallen, decreasing from 5,624 in 2005 to 4,948 in 2016.[133] [TEXT REDACTED].[134] Domestic demand for automobile parts clearly exists, but the contraction of the automotive parts manufacturing base in the United States has impeded the growth of related R&D investments by American-owned firms in technological advancements that are essential for U.S. defense capabilities.[135]

C. Domestic Manufacturing and Domestic R&D in Technologies for Engines, Transmissions, and Electrical Components Are Necessary for National Security

As previously noted, the automotive industry is a key driver of innovation for the U.S. military and develops state-of-the-art technologies, from autonomous vehicles equipped with navigation systems that enable them to maneuver over dangerous terrain to lighter and more powerful fuel-efficient vehicles. Given that many of the technological advancements in military vehicle connectivity, electrification, lightweighting, and autonomous driving are first developed through R&D in the commercial automotive sector in the United States, it is imperative that related R&D remain within the United States, be conducted by American-owned firms, and that the United States Government take measures to secure the long-term viability of domestic R&D in the automotive sector.

As a general matter, it is well understood that globalization of the automobile sector has decentralized production such that decoupling R&D from manufacturing has become possible, allowing producers to seek manufacturing investments in areas where production costs are lowest and to focus R&D investments in locations where specific technological progress is being made.[136] To the extent R&D is removed from manufacturing, it occurs in areas where technology has matured, the value of integrating product design with manufacturing is low, and the product has little bearing on national security. On the other hand, manufacturers tend to locate R&D in close proximity to manufacturing facilities when the technology is emerging or product-specific.[137]

Further, where technology is important to product innovation and R&D directly impacts national security capabilities, it is essential that R&D remain in each producer's home country, so as to minimize knowledge and innovation outflows that could undermine a nation's competitive advantage.[138] In the automotive sector, co-locating the manufacture of automobiles and automobile parts with related R&D increases the rate of efficiency in the adoption of technological gains. Advancements in vehicle lightweighting, connectivity, electrification and autonomous driving require highly specialized and innovative manufacturing processes, such that R&D is optimized when located in close proximity to manufacturing facilities.[139] As complexities in product design increase and the market demands faster innovation, R&D proximity facilitates the rapid development of product life cycles and gives manufacturers sufficient flexibility to capture R&D breakthroughs.[140] For technologically advanced products, ''even minor changes in the [manufacturing] process can have a huge impact on the product, the value of closely integrating manufacturing and R&D is high, and the

[127] *Id.*

[128] *Id.*

[129] *Id.*

[130] *Id.*

[131] *Id.*.

[132] *See* McKinsey & Company, *The Future of the North American Automotive Supplier Industry, supra.*

[133] U.S. Census Bureau, Business Patterns, NAICS code 3363.

[134] U.S. Producers' Survey Responses, Questions 4–6.

[135] John Moavenzadeh, *Offshoring Automotive Engineering: Globalization and Footprint Strategy in the Motor Vehicle Industry,* Dec. 1, 2006, *https://www.nae.edu/File.aspx?id=10284&v=79e01bce.* The erosion of the U.S. automobile parts supplier base has been a decades-long trend. In 1998 the New York Times reported that from 1978–1998 GM's Delphi division had built over 50 manufacturing plants in Mexico. A major factor listed for the shift of parts assembly was lower costs (derived from lower labor costs), with some U.S. workers earning $22 an hour in 1998 being replaced by Mexican workers earning $1 to $2 an hour. Sam Dillon, *A 20-Year G.M. Parts Migration To Mexico,* New York Times, Jun. 24, 1998, *https://www.nytimes.com/1998/06/24/business/international-business-a-20-year-gm-parts-migration-to-mexico.html.* In 2006, Delphi announced the closing or sale of 21 out of 29 of its U.S. automobile parts plants, with new operations being announced in Mexico and China. Kate Lithicum, *A tale of two cities: What happened when factory jobs moved from Warren, Ohio, to Juarez, Mexico,* Los Angeles Times, Feb. 17, 2017, *http://www.latimes.com/world/mexico-americas/la-fg-mexico-us-factories-20170217-htmlstory.html.* In 2007, TRW's Chief Operations Officer discussed in an interview the firm's ongoing plans to shift production to low-cost countries. At that time 37–38 percent of the firm's operations were in low cost countries, but TRW had a five-year plan to move to 50 percent sourcing from those countries. Douglas Bolduc, *TRW Plan: Buy More Parts from Low-Cost Countries,* Automotive News, May 21, 2007, *http://www.autonews.com/article/20070521/SUB/70516021/trw-plan%3A-buy-more-parts-from-low-cost-countries.* By 2013, Automotive News reported seven of the largest North American automobile parts suppliers were expanding their operations in Mexico. China was also listed by the large supplier companies as a key destination for new operations. David Sedgewick, *Global Industry Craves Megasuppliers,* Automotive News, Jun. 17, 2013, *https://www.autonews.com/assets/PDF/CA89220617.PDF.*

[136] *Global Location Strategy for Automotive Suppliers,* KPMG International, Feb. 21, 2009, *https://www.kpmg.de/docs/Global_Location.pdf.*

[137] *See* Gary P. Pisano and Willy C. Shih, *Does America Really Need Manufacturing,* Harvard Business Review, March 2012, *https://hbr.org/2012/03/does-america-really-need-manufacturing; The Proximity of Manufacturing Increases the Rate of R&D Efficiencies,* Aalto University, Mar. 15, 2017, *https://phys.org/news/2017-03-proximity-efficiencies.html.*

[138] *Id.;* Juan Alcacer and Minyuan Zhao, *Local R&D Strategies and Multi-Location Firms: The Role of Internal Linkages,* Harvard Business School Working Paper, 2010, *https://www.hbs.edu/faculty/Publication%20Files/10-064.pdf.*

[139] *Supra* n. 137.

[140] European Commission, *Study on the Relationship Between the Localisation of production, R&D and Innovation Activities,* Final Report ENTR/90/PP/2011/FC, Sep. 2014, *http://ec.europa.eu/DocsRoom/documents/6958/attachments/1/translations/en/renditions/native* at 30, 50.

risks of separating them are enormous.'' [141]

Moreover, it is important that R&D be conducted by American-owned firms in the United States, given the national security implications of advanced vehicle technologies with military applications. Indeed, all major automobile-producing countries utilize export control laws to restrict the transfer of military technologies to foreign entities, whether within or outside their domestic borders, which means that the United States may not be able to rely on technologies developed in allied countries to give its military a competitive edge. Even for R&D conducted in the United States, it is important that the R&D be conducted by American-owned firms to reduce reliance on foreign-owned companies' domestic R&D investments and ensure access in time of national emergency to the necessary intellectual property (''IP''). Although the DOD utilizes R&D conducted by U.S. operations of foreign-owned firms, this R&D may not be available in a time of national crisis. Indeed, foreign-owned manufacturers are unlikely to share cutting-edge IP with their American competitors, especially technologies in which they have invested billions of dollars for commercial reasons. Further, in a time of war (or other crisis) their home governments may also prevent them from providing DOD with access to innovative technologies.

The interdependence between domestic manufacturing and American-owned R&D explains precisely why imports of automobile parts pose a threat to U.S. national security. Dependence on imports over time leads to the loss of domestic manufacturing competence and related R&D, and therefore the deterioration of the ability to lead advancements in innovation that are important for military needs.

1. The U.S. Military Relies on the Domestic Automotive Sector for Technological Advancements

According to the DOD, technological advancements in U.S. military automotive programs are driven by domestic innovations in engine, transmission and electrical component technologies, and the U.S. military relies on rapid application of U.S. commercial breakthroughs to gain competitive military advantages.[142] For example, the National Advanced Mobility Consortium (NAMC) recently awarded a $47 million contract to Cummins and Achates Power to develop a supercharged turbo diesel engine for the Bradley and Next Generation Combat Vehicle under the Advanced Combat Engine (''ACE'') program.[143] This program builds on the 60 years of experience that Cummins Diesel has manufacturing commercial turbo diesel engines.[144] It also provides an opportunity for the commercial supplier to incorporate technologies that focus on military specifications such as engine thermal management, power density, and fuel efficiency into commercial automobiles.

Likewise, the U.S. military is exploring power options such as hybrid electric engines and hydrogen fuel cells, finding that quiet new engine designs promise additional military benefits beyond breakthroughs in fuel consumption, range and reliability. The U.S. military has long sought to reduce its dependence on fossil fuels to lower costs and the risks associated with producing and transporting combustible fuels through war zones.[145] Accordingly, the U.S. military has been exploring hybrid electric drive systems that combine an electric drive with a combustion engine for greater efficiency. These technologies have been the subject of years of effort and billions of dollars of research by the passenger vehicle industry. Engines, both gas and electric, and the drivetrain parts required to integrate them into an efficient combination, are all critical automobile parts technologies that must be retained for both R&D and production in the United States.

In fuel cells, General Motors Global Fuel Cells Activities Division is working with the U.S. Army Tank Automotive Research, Development and Engineering Center (''TARDEC'') [146] to develop a hydrogen fuel cell-powered light-duty utility truck (''ZH2''). This vehicle, based on a Chevy Colorado light truck design, is powered by a fuel cell and a battery that has near silent operation, gives off less heat, and provides water as a by-product for use in the field. This work builds on GM's fuel cell experience via their Project Driveway, a 119-vehicle fleet driven by more than 5,000 people in a multi-year fuel cell experience program accumulating 3.1 million miles of hydrogen fuel cell testing. The Army is in the process of evaluating the truck for potential use in military operations.[147]

Along with engines, transmission technology is also critical to military vehicles. For example, the Advanced Vehicle Power and Technology Alliance (''AVPT''), which aligns experts from the U.S. Department of Energy and the Department of the Army, has specifically identified advanced combustion engines and transmissions as products of special interest for collaboration.[148] The U.S. military has found it challenging to source transmissions with sufficient performance capabilities for the extreme demands and conditions under which military vehicles must operate.[149] Transmissions for modern military vehicles must be engineered to adapt and operate efficiently, offering peak performance in wheeled military applications. Military transmissions must reliably deliver precise propulsion control, high productivity and efficiency, and reliable operation. The U.S. commercial automotive industry has made significant progress in these performance capabilities, and adaptation of advancements in automotive transmission technology for military applications is common. Indeed, the U.S. automotive industry's move away from manual to automatic transmissions has been closely followed by the military, with automatic transmissions now routinely incorporated in military tactical vehicles.

Similarly, the DOD's TARDEC has evaluated various suppliers including

[141] *Supra* n. 137.

[142] The Department of Commerce's consultations with Department of Defense.

[143] Kylie Veleta, *Cummins to Design Combat Engines That Elude the Enemy,* Inside Indiana Business with Gerry Dick, Feb. 15, 2018, *http://www.insideindianabusiness.com/story/37513588/cummins-to-design-combat-engines-that-elude-the-enemy.*

[144] Cummins, ''*Holset Turbo Technologies, Innovative Engineering, Absolute Reliability,*'' *https://www.cummins.com/components/holset-turbo-technologies.*

[145] The Department of Commerce's consultations with Department of Defense.

[146] The U.S. Army Tank Automotive Research, Development and Engineering Center's (TARDEC) mission is to ''develop, integrate and sustain the right technology solutions for all manned and unmanned Department of Defense (DoD) ground systems and combat support systems to improve Current Force effectiveness and provide superior capabilities for the Future Force,'' *https://tardec.army.mil/#content/4.*

[147] *Mission-Ready Chevrolet Colorado ZH2 Fuel Cell Vehicle Breaks Cover at U.S. Army Show, Modified Midsize Pickup Goes into Extreme Military Field Testing in 2017,* GM Corporate Newsroom, Oct. 3, 2016, *https://media.gm.com/media/us/en/gm/news.detail.html/content/Pages/news/us/en/2016/oct/1003-zh2.html.*

[148] Chris Williams, *DoE, Army Alliance Underlines Achieving Energy Security,* Tank Automotive Research, Development and Engineering Center, Aug. 1, 2011, *https://www.army.mil/article/62727/doe_army_alliance_underlines_achieving_energy_security.*

[149] John Tasdemir, *Ground Vehicle Systems Engineering and Technology Symposium, GVPM Powertrain Overview,* Aug. 11, 2011, *http://www.dtic.mil/dtic/tr/fulltext/u2/a547261.pdf.*

Allison, L3, and SAPA [150] to provide steering transmissions to support the next generation Bradley Fighting Vehicle.[151] The goal of the Advanced Powertrain Initiative is to test the performance of a 32-speed transmission. Although defense is the dominant market for these steering transmissions, the next generation transmission depends on innovation developed in standard transmissions and steering transmissions used in the commercial sector. Many suppliers supporting defense applications in this segment participate in commercial activity, including:

- *First tier suppliers:* Allison, L3, Twin Disc, General Engine Products
- *Sub-tier commercial suppliers for transmissions and transmission components:* ZF Friedrichshafen AG*, Valeo SA*, BorgWarner, Inc., GKN Driveline*, JATCO*, Linamar Corp.*, Schaeffler Group USA Inc.*, Brose North America, Inc.*, Powertech America, Inc.*, NSK Americas*, Johnson Electrics*

* The supplier is a U.S. affiliate of a foreign-owned parent.

Similarly, electrical equipment is critical for military vehicles. There is a large overlap in the commercial automobile control/electronics systems and the connectivity systems that are being incorporated into military vehicles. Network technology is now embedded in every new civilian vehicle, and military vehicles are increasingly becoming more network intensive. Military vehicles now routinely utilize the Controller Area Network (''CAN'') technology developed for the commercial vehicle world, which allows remote monitoring of the vehicle's performance and need for maintenance. Military vehicles are also connected to operational or mission networks that link vehicle computers, data links, radios, vision, and navigation systems directly involved in missions. These networks are similar in nature to advanced connected networks that are now routinely available in new passenger cars and trucks.[152]

Further, semiconductors are vital to U.S. national security as they power many of the high-tech systems used by the U.S. military,[153] including field communications, transportation systems, and various weapon systems and platforms.[154] Specific and unique U.S. military semiconductor requirements include radiation-hardened semiconductors for satellites and space operations, high performance converters for radio frequency communication systems, special processors for radar systems, and advanced imagers.[155] As with the transmission sector, there are many suppliers that overlap with the commercial sector, including:

- *First tier suppliers:* Harris, Telephonics Corporation, DRS*, Rockwell Collins.
- *General suppliers of semiconductors:* Intel, Micron, Qualcomm, AMD, Applied Materials, Cadence, Synopsys.[156]
- *Sub-tier commercial suppliers for communication systems/components to North America:* Denso International America Inc.*
- *Sub-tier commercial suppliers for navigation system/components to North America:* Panasonic Automotive Systems Co. of America*, Mitsubishi Electric Automotive America Inc.*, Alpine Electronics of America Inc.*, Pioneer Automotive Technologies Inc.*
- *Sub-tier commercial suppliers for sensors to North America:* Panasonic Automotive Systems Co. of America*, Valeo Inc.*, Flex Ltd.*, Infineon Technologies North America Corp.*, Stoneridge Inc.
- *Sub-tier commercial suppliers for electronics to North America:* Continental Automotive Systems U.S. Inc. (safety and powertrain)*, Robert Bosch (electrical devices, electronics & steering systems)*, Aisin World Corp. of America (electronics)*, Hyundai Mobis (electronics)*, Autoliv North America (safety electronics)*, Sumitomo Electric Wiring Systems Inc. (electronics systems)*, Yanfeng Automotive Interiors (electronics)*, Brose North America Inc. (electronics)*, Magneti Marelli Holding USA (electronics)*, Eberspaecher North America Inc. (electronics)*.

* The supplier is a U.S. affiliate of a foreign-owned parent.

In addition to providing unique product development and performance enhancements for key products such as engines, transmissions and electrical components, the U.S. defense sector relies on the automotive industry more broadly. The automotive sector provides unique innovation to the defense sector in various areas, including manufacturing processes, R&D, and use of new materials.

Importantly, the defense industrial base is also dependent on the commercial scale of the automotive sector for critical commodities and capabilities.[157] Yet, the continued offshoring of key automotive manufacturing and resulting loss of scale to support U.S. operations leaves the military at risk of not having supply chains in the United States for critical equipment. Additionally, the military relies not only on technology and innovations from the U.S. automobile industry, but also on the technical skills and know-how of its workforce as the commercial sector is a key recruiting ground for defense industry manufacturers.[158]

The broad-scale overlap between commercial and defense R&D activities underscores the interdependence between the commercial automobile industry and the military sector:

[150] Allison, L3, and SAPA are leading global suppliers of transmissions, other automobile parts and defense technologies.

[151] Ashley Tressel, *Race to replace Bradley transmissions stirs up defense industrial base issues,* Inside Defense, June 22, 2018, *https://insidedefense.com/share/196943.* A foreign-owned supplier won this competition, indicating the needs to better support the competitiveness of American-owned manufacturers.

[152] Richard Wilson, *Military Vehicles in High Speed Data Connection,'' ElectronicsWeekly.com,* May 21, 2013, *https://www.electronicsweekly.com/market-sectors/military-aerospace-electronics/military-vehicles-in-high-speed-data-connection-2013-05/.*

[153] Michaela D. Platzer and John F. Sargent Jr., *U.S. Semiconductor Manufacturing: Industry Trends, Global Competition, Federal Policy,* Congressional research Service, Jun. 27, 2016, *https://fas.org/sgp/crs/misc/R44544.pdf* at 21; Brig. Gen. John Adams, *America's Semiconductors Supply Chain Faces Big Cybersecurity Risks,* Alliance for American Manufacturing Blog, Mar. 23, 2017, *http://www.americanmanufacturing.org/blog/entry/americas-semiconductors-supply-chain-faces-big-cybersecurity-risks. See also* Falan Yinug, *How U.S. Semiconductor Technology Strengthens Our Military on the Battlefield,* Semiconductor Industry Association Blog, Jan. 26, 2016, *http://blog.semiconductors.org/blog/how-us-semiconductor-technology-strengthens-our-military-on-the-battlefield.*

[154] Dave Chesebrough, *Trusted Microelectronics: A Critical Defense Need,* National Defense, Oct. 31, 2017, *http://www.nationaldefensemagazine.org/articles/2017/10/31/trusted-microelectronics-a-critical-defense-need.*

[155] For example, semiconductors are key to the land-based weapons system that the United States uses to defend airspace against aircraft, cruise missiles, drones, and ballistic missiles. Joe Pappalardo, *How Patriot Missiles Will Stay a Step Ahead of the Enemy,* Popular Mechanics, Aug. 27, 2015, *https://www.popularmechanics.com/military/research/a17100/patriot-missiles-radar-gallium-nitride/;* NDIA Trusted Microelectronics Joint Working Group, *Future Needs & System Impact of Microelectronics Technologies,* Jul. 2017, *https://www.intrinsix.com/hubfs/Premium_Content/trusted-asic-design/Future_Needs_and_System_Impact_of_Microelectronics_Technologies.pdf.*

[156] Electronic systems for automotive purposes account for 9 percent of total global electronic system production (2017 estimate), after communications, computer, industrial/medical/other, and consumer purposes. This is significant for semiconductor suppliers, as their products are required for many of these automotive systems. *Automotive Electronic Systems Growth Strongest Through 2021,* IC Insights, Nov. 8, 2017, *http://www.icinsights.com/news/bulletins/Automotive-Electronic-Systems-Growth-Strongest-Through-2021/.*

[157] The Department of Commerce's consultations with Department of Defense.

[158] *Id.*

• The DOD partners with the commercial automotive sector to conduct pre-competitive research in areas that ultimately prove to have commercial and defense applications. For example, the DOD is a partner in LIFT (Lightweight Innovations for Tomorrow, an industry-led, government-funded consortium), along with General Dynamics and the Original Equipment Supplier Association, which represents commercial automobile parts suppliers. LIFT is ''part of a national network of research institutions and industrial companies geared toward advancing America's leadership in manufacturing technology.'' [159]

• University Centers of Excellence (''COEs'') seek to expand the frontiers of knowledge in research areas where the Army has enduring needs. COEs couple state-of-the-art research programs at academic institutions with broad-based graduate education programs to help increase the supply of scientists and engineers in automotive and rotary wing technology.[160]

• DOD's TARDEC [161] and GM have enjoyed a successful fuel cell-focused collaborative research relationship for years, beginning with a Cooperative Research and Development Agreement to test fuel cell stacks. This relationship grew through the development of the Chevrolet Colorado ZH2 light truck, which debuted in 2016 and was tested and demonstrated by the U.S. Army over the next year. GM presented SURUS (a hydrogen fuel cell vehicle) in 2017 at the annual meeting of the Association of the United States Army.[162]

• The Automotive Research Center, a U.S. Army Center of Excellence for Modeling and Simulation of Ground Vehicles led by the University of Michigan, partners with the following government and private sector entities for R&D advancements:[163]

Ansys, Inc	*AVL North America, Inc	BAE Systems.
*Ballard Power Systems, Inc	*BETA CAE Systems USA	Boeing Research and Technology.
*Robert Bosch	Caterpillar	*Daimler.
Detroit Diesel Corporation	*FEV Group	*Fiat Chrysler.
Ford Motor Company	General Dynamics Land Systems	GE Global Research.
General Motors Corporation	*HBM nCode	*Henkel North America.
Quantum Signal LLC	RAMDO Solutions	*Rolls-Royce North America.
Soar Technology	*Ultra AMI	*Yokohama Rubber, Inc.
Argonne National Lab	Army Research Lab	Cold Regions Test Center.
Environmental Protection Agency (EPA)	National Aeronautics and Space Administration (NASA) Jet Propulsion Lab.	National Institute of Standards and Technology, U.S. Department of Commerce.
National Renewable Energy Lab	Oak Ridge National Lab.	

*The supplier is a U.S. affiliate of a foreign-owned parent.

These examples illustrate the intense level of cooperation between the commercial and military vehicle sectors and the importance of commercial R&D spending in the United States that supports U.S. military leadership.

Finally, while the U.S. military presently benefits from R&D investments by both American-owned and foreign-owned companies in the United States, it is important to underscore that, in the time of national emergency, foreign-owned subsidiaries may not be willing or able to continue their R&D collaboration with the U.S. Government. Nor would it be logical to expect foreign R&D enterprises in the United States to share their research and patented technology with American-owned competitors. It is for this reason that innovation by American-owned firms is essential to U.S. national security and, as explained in the following section, the overall weakening of the United States' automotive industry adversely impacts American-owned firm's ability to invest in R&D in order to maintain leadership in technologies that have important military applications.

2. Growth of American-Owned R&D for Critical Automobile Parts Is Essential To Strengthen U.S. National Security

The 2018 U.S. National Defense Strategy explicitly states that ''[n]ew commercial technology will change . . . the character of war'' and that ''many technological developments will come from the commercial sector.'' [164] In describing necessary tactics to solidify the U.S. military's competitive advantage, the National Defense Strategy emphasizes that the DOD must invest broadly in the ''rapid application'' of commercial breakthroughs.[165] Comparing the [TEXT REDACTED] establishes the importance of maintaining a robust automotive R&D presence in the United States. In 2017, foreign- and American-owned automobile producers spent [TEXT REDACTED] on R&D in the United States, with American-owned producers accounting for [TEXT REDACTED] of that total, compared to [TEXT REDACTED] spent on R&D by armored vehicle producers.[166] [TEXT REDACTED].[167] Therefore, U.S. armored vehicle producers, and by extension the U.S. military, depend on the continued U.S. leadership and innovation of the commercial automotive sector.

Given the importance of automobile engines, transmissions and electrical systems to technological advancements in military transportation vehicles, and given the importance of co-locating R&D and manufacturing for these technologies, it is imperative that the United States maintain and grow a robust commercial automobile and automobile parts industry. Designing and producing automobile parts is a massive engineering challenge, which is why automobile producers globally continue to increase spending on R&D. An automobile purchased today is the product of years of R&D investments. Typically, it takes five years or more for

[159] LIFT, *Manufacturing USA, https://lift.technology/manufacturingusa/.*

[160] John F. Sargent Jr., *Defense Science and Technology Funding,* Library of Congress, Congressional Research Service, R45110, Feb. 21, 2018, *https://crsreports.congress.gov/product/pdf/R/R45110.*

[161] TARDEC, *https://tardec.army.mil/.*

[162] Douglas Halleaux, *TARDEC, GM bring SURUS to Smithsonian and SOFIC,* Defense Visual Information Distribution Service, U.S. Army Tank Automotive Research Development & Engineering Center, *https://www.dvidshub.net/news/277762/tardec-gm-bring-surus-smithsonian-and-sofic.*

[163] Automotive Research Center, Industry Partners, *http://arc.engin.umich.edu/about/industry-partners.html.*

[164] Department of Defense, *Summary of the 2018 National Defense Strategy of the United States of America,* Jan. 2018, *https://dod.defense.gov/Portals/1/Documents/pubs/2018-National-Defense-Strategy-Summary.pdf* at 3.

[165] *Id.* at 7.

[166] U.S. Producers' Survey Responses, Question 10a.

[167] *Id.*

a technology or a new vehicle model to go from design to testing to production and sale. Today's high-tech vehicle is comprised of as many as 15,000 parts all performing specialized functions in carefully designed ways.[168] The stakes for keeping pace on the development of technologically advanced and efficient engines, advanced powertrains, and better sensors are intense, and the advent of new technologies is forcing companies to augment R&D spending to remain competitive. The long lead-times for bringing technology to market and a reliance on imported automobile parts increases the vulnerability of the United States.

As most automotive R&D is focused on new vehicle design and testing, significant money is spent on the development of engines, transmissions, and electrical equipment technologies that have national security applications. Yet American-owned automobile producers have lagged behind their foreign counterparts in automotive R&D spending. Table 13 shows that, in 2017, American-owned producers represented 20 percent of global R&D spending in automobile production and seven percent of global R&D spending in automobile parts, trailing behind the EU and Japanese producers, which together controlled approximately 70 percent of global R&D spending in automobile production and nearly 90 percent in automobile parts R&D.[169] For American-owned firms, approximately [TEXT REDACTED].[170] For EU- and Japanese-owned firms, most R&D investments are made in their home countries.[171]

Table 13: 2017 Global R&D Spending by Company Nationality

R&D for Automobile Production			R&D for Automobile Parts Production		
	$ Billions	(% of Global Total)		$ Billions	(% of Global Total)
U.S.	16.2	20%	U.S.	1.4	7%
EU	32.2	40%	EU	8.6	43%
Japan	24.5	30%	Japan	9.0	45%
Korea	2.4	3%	Korea	0.6	3%
China	4.8	6%	China	0.3	2%

Source: PwC, *2017 Global Innovation 1000 Study*.

Table 14 below shows that, when global R&D is measured in relation to automobiles produced, American-owned manufacturers outspent their EU and Japanese counterparts ($1,543 by American-owned firms compared to $1,480 by EU firms, and $1,009 by Japanese firms).[172] However, this increased R&D spending per-unit highlights the impact of market share lost to automotive imports, namely that American-owned firms need to have higher per-unit R&D expenditures relative to their foreign-owned competitors in order to offset the economic impacts of lost market share. The reduced market share leads to a vicious cycle, with smaller production volumes reducing profits, which reduces funds to support overall R&D, which reduces innovation and leads to further losses of market share. China, which has the lowest per-unit R&D expenditure, often conducts R&D through joint ventures with foreign companies, lowering the amount of R&D that needs to be performed by Chinese companies. Additionally, Chinese companies are able to amortize their R&D costs over a large production base.

[168] American Automotive Policy Council, *State of the U.S. Automotive Industry 2018,* Aug. 2018, *http://www.americanautocouncil.org/sites/aapc2016/files/2018%20Economic%20Contribution%20Report.pdf* at 7.

[169] PwC, *2017 Global Innovation 1000 Study,* 2018, *https://www.strategyand.pwc.com/innovation1000#VisualTabs3.*

[170] U.S. Producers' Survey Responses, Question 10a.

[171] Stefan Di Bitonto, *The Automotive Industry in Germany,* Germany Trade & Invest, 2018, *https://www.gtai.de/GTAI/Content/EN/Invest/_SharedDocs/Downloads/GTAI/Industry-overviews/industry-overview-automotive-industry-en.pdf; see* Toyota Motor Company annual report, March 31, 2018, *https://www.toyota-global.com/pages/contents/investors/ir_library/annual/pdf/2018/annual_report_2018_fie.pdf* at 46.

[172] PwC, *2017 Global Innovation 1000 Study, supra.*

Table 14: 2017 R&D Expenditure and Production by Company Nationality

Country of Ownership	Global R&D Expenditure (Billions of $)	Global Production (Millions of vehicles)	R&D Expenditure Per Automobile Produced
United States	$16.2	10.5	$1,543
EU	$32.2	21.7	$1,480
Japan	$24.5	24.2	$1,009
South Korea	$2.4	6.1	$403
China	$4.8	17.6	$270

Source: PwC, *2017 Global Innovation 1000 Study* and Wards Intelligence InfoBank. Automobile production only includes production by those companies identified in the PwC study and includes medium and heavy duty trucks. In the case of a joint venture, the ownership is attributed to the majority partner.

The smaller production volume of American-owned manufacturers relative to global competitors hinders American manufacturers' ability to invest in R&D to the same extent as their competitors. Production must increase in order to encourage additional R&D investments, as [TEXT REDACTED].[173]

It is necessary and appropriate to focus on increased American-owned production because, with respect to the specific automotive technologies that are important for national security, American-owned producers invest R&D dollars domestically, whereas foreign-owned producers tend to invest abroad. To illustrate, in 2017 with respect to spending in the United States, [TEXT REDACTED].[174] [TEXT REDACTED].[175] [TEXT REDACTED].[176] As shown in Table 15 [TEXT REDACTED] are the most common non-U.S. locations for foreign-owned producers' R&D investments related to vehicle autonomy, connectivity, electrification, and lightweighting.[177]

Table 15: Foreign-Owned U.S. Producers' R&D Activities in Non-U.S. Locations

Type of R&D Activity	Countries of R&D Activity
Autonomy	[TEXT REDACTED]
Connectivity	[TEXT REDACTED]
Electrification	[TEXT REDACTED]
Lightweighting	[TEXT REDACTED]

Source: U.S. Producers' Survey Responses, Question 10b.

Increasing the United States' overall share of global R&D investments is essential to national security. Industry analysts expect that by 2023 about $255 billion in R&D and capital expenditures will have been spent globally on electric vehicles.[178] An additional $61 billion will be spent on autonomous vehicle technologies by the same year.[179] As advanced automotive technologies become a battleground for the industry, R&D budgets will determine how effectively automobile producers can compete and which nations will control cutting-edge technologies for both commercial and military applications.[180]

The pressure for R&D spending is so great that unprecedented sums of money are being poured into electric and autonomous vehicles years before those technologies are fully cost-competitive in the market.[181] For American-owned and foreign-owned producers in the United States, U.S. R&D activities are [TEXT REDACTED].[182]

PwC's *2015 Global Innovation 1000 Automotive Industry Findings* examined in detail the regional locations where automotive companies are conducting R&D and concluded that the automotive industry's fastest-growing and most competitive markets are now in the Asia Pacific region, dominated by China as the world's largest automobile market.[183] Even more noteworthy, the study, which examined R&D spending by location rather than by where companies were headquartered, concluded that the Asia Pacific region is increasingly where automotive innovation is concentrated.[184] From 2007 to 2015, expenditures on automotive R&D conducted in Asia increased by 70 percent, surpassing North America and Europe to become the largest regional hub of such expenditures.[185] During the same period, North American automotive R&D expenditures only increased by 23 percent.[186]

The PwC study also found that China's share of total automotive R&D

[173] U.S. Producers' Survey Responses, Questions 2b and 10.

[174] U.S. Producers' Survey Responses, Question 10a.

[175] *Id.*

[176] *Id.*

[177] U.S. Producers' Survey Responses, Question 10b.

[178] Irwin, *EV, AV Spending in Slowing Market Points to 'Pile Up,' supra.*

[179] *Id.*

[180] For example, Toyota recently announced that it will invest a record 1.08 trillion Yen in 2018 to expedite the development of autonomous driving technology, connected cars and electric vehicles, representing a 30% increase from five years earlier. *Toyota pours $22bn into R&D as Apple and Google Close in,* Nikkei Asian Review, May 10, 2018, *https://asia.nikkei.com/Business/Companies/Toyota-pours-22bn-into-R-D-as-Apple-and-Google-close-in.* Ford also recently announced that it will significantly increase its planned investments in electric vehicles to $11 billion by 2022 and have 40 hybrid and fully electric vehicles in its model lineup. The investment figure is sharply higher than Ford's previously announced target of $4.5 billion by 2020 and is mostly derived from the costs of developing dedicated electric vehicle architectures. *Ford Plans to Invest $11 Billion to Electrify Its 'Most Iconic' Vehicles,* Fortune, Jan. 15, 2018, *http://fortune.com/2018/01/14/ford-11-billion-electric-car-investment/.* And, according to BMW's 2017–18 annual report, the company planned to allocate between 6.5 and 7 percent of its 2018 gross revenue to R&D, above its usual range of 5 to 5.5 percent. *BMW to Spend Record Amount on R&D to Prepare for Electric Cars, Self-Driving Cars,* Assembly Magazine, Mar. 23, 2018, *https://www.assemblymag.com/articles/94194-bmw-to-spend-record-amount-on-rd-to-prepare-for-electric-cars-self-driving-cars.*

[181] Irwin, *EV, AV Spending in Slowing Market Points to 'Pile Up,' supra.*

[182] U.S. Producers' Survey Responses, Question 10.

[183] PwC, *2015 Global Innovation 1000 Automotive Industry Findings,* 2016, *https://www.strategyand.pwc.com/media/file/Innnovation-1000-2015-Auto-industry-findings-infographic.pdf.*

[184] *Id.*

[185] *Id.*

[186] *Id.*

had jumped dramatically from 4 percent in 2007 to 11 percent in 2015. During that same period, the U.S. share of total automotive R&D spending dropped from 29 percent to 27 percent.[187] China also replaced Germany as the second-largest importer of automotive R&D during this period.[188] According to PwC, this data reflects the shift happening in the automotive industry's center of gravity.[189] PwC's *2017 Global Innovation 1000 Study* highlights the impact of this trend, showing that of the top 20 automobile producers ranked in terms of R&D expenditures, 11 are headquartered in Asia and six are headquartered in Europe, while only 3 are headquartered in the United States (GM, Ford, and Tesla).[190]

Further, none of the top 10 automobile parts suppliers in terms of overall R&D expenditures is headquartered in the United States, while four are headquartered in Asia and the remaining six are headquartered in Europe.[191] This is problematic for the national security of the United States because the automotive industry is highly dependent on suppliers for components as well as leading-edge technological development. While U.S. automobile companies direct billions of dollars in R&D activities, this research is increasingly conducted by partner supplier companies. In fact, automobile parts manufacturers conduct about one-third of the annual $18 billion investment by the automotive industry in R&D in the United States.[192] Most automobile producers [TEXT REDACTED].[193]

[TEXT REDACTED] [194] [TEXT REDACTED].[195] As noted, automobile parts suppliers play a critical role in developing the innovations [196] that make the automotive industry high-tech,[197] and within the industry, automobile parts suppliers employ approximately 40 percent of all R&D scientists and engineers, while automobile manufacturers employ the remaining 60 percent.[198]

While American-owned producers lag behind their EU and Japanese competitors in automobile R&D, South Korean and Chinese companies are ramping up R&D expenditures and activities. Of course, there is a direct correlation between innovation and manufacturing. Japanese and EU firms are leaders in automobile production, and so their significant levels of R&D expenditures should come as no surprise. Yet, it is also important to emphasize the correlation between R&D expenditures and the low level of import penetration in each foreign country's automobile industry.[199] As discussed in Appendix F, Japanese-owned automobile producers enjoy a dominant position in their home market, as they account for nearly 100 percent of domestic vehicle production in Japan.[200] [TEXT REDACTED].[201]

Similarly, German-owned automobile producers account for 85 percent of domestic vehicle production in Germany,[202] and also rank [TEXT REDACTED].[203] The Volkswagen Group's research is based in Wolfsburg, Germany, and the company describes this development center as ''the innovation hub'' and the ''nerve centre of a global development network'' for all Volkswagen Group brands.[204]

Additionally, South Korean automobile producers account for 77 percent of domestic vehicle production in Korea,[205] and Korea ranks [TEXT REDACTED].[206]

The R&D spending by the largest foreign-owned automobile producers is a direct reflection of the advantages the firms enjoy in their protected home markets, as described in Appendix F. Volkswagen and Toyota have been among the top 20 overall R&D spenders every year since 2005,[207] and in 2017 these companies ranked first and second respectively in terms of global R&D expenditures by vehicle producers, a tremendous advantage in the highly competitive and always evolving automotive industry.[208] China is also increasing its investments in automotive R&D, reaching $12 billion in 2015.[209] Eighty-four automotive research and design centers have opened in China in the past 12 years, with the key focus of activity in cutting-edge technologies including connected vehicles and electric drivetrains.[210]

The internationalization of automotive R&D has focused primarily on local product development, and core research remains concentrated near the home bases of lead firms.[211] Offshoring of automotive R&D is, in large part, driven by the offshoring of manufacturing capabilities. As manufacturers seek to reduce manufacturing costs, production optimization compels the offshoring of R&D that follows. Data show that a country's attractiveness to R&D centers is also driven by the number of available science and engineering experts in that country.[212] For automotive R&D specifically, a 2008 PwC study and a 2012 study from the European Commission on the automotive sector both list access to talent pools and physical proximity to customers as the main factors driving R&D location

[187] *Id.*

[188] *Id.* Imported R&D refers to R&D conducted in China by companies headquartered abroad.

[189] *Id.*

[190] PwC, *The 2017 Global Innovation 1000 Study,* supra.

[191] *Id.*

[192] *MEMA Responds to Trump Administration Announcement of Additional 301 Tariffs on China,* Motor & Equipment Manufacturers Association, Jul. 11, 2018, *https://www.mema.org/mema-responds-trump-administration-announcement-additional-301-tariffs-china.*

[193] U.S. Producers' Survey Response, Question 12c.

[194] *Id.;* Department of Commerce, Bureau of Economic Analysis, 2012 Benchmark Input-Output tables. As calculated by Department of Commerce. 2012 data are the latest available.

[195] U.S. Producers' Survey Responses, Question 10a.

[196] The importance of automotive suppliers in the automotive R&D landscape is also demonstrated in future automotive technologies, and none more so than autonomous vehicle technology. For example, the Navigant Research Leaderboard, a respected and often-cited ranking system, evaluates companies developing automated driving systems. Several of the identified leaders are suppliers, including Bosch, Aptiv (formerly Delphi), Autoliv, Magna, Valeo, and ZF Friedrichshafen AG. *Navigant Research Leaderboard: Automated Driving Vehicles, https://www.navigantresearch.com/reports/navigant-research-leaderboard-automated-driving-vehicles.*

[197] Kim Hill, Bernard Swiecki, Debra Maranger Menk, and Joshua Cregger, *Just How High-Tech is the Automotive Industry?,* Center for Automotive Research, Jan. 2014, *https://autoalliance.org/wp-content/uploads/2017/01/CARReport_Just_How_High_Tech_is_the_Automotive_Industry.pdf*

[198] *Id.*

[199] David Autor, David Dorn, Gordon H. Hanson, Gary Pisano, and Pian Shu, *Foreign Competition and Domestic Innovation: Evidence from U.S. Patents,* American Economic Review: Insights, forthcoming, December 2017, *https://www.nber.org/papers/w22879.*

[200] Wards Intelligence InfoBank.

[201] U.S. Producers' Survey Responses, Question 10.

[202] Wards Intelligence InfoBank.

[203] U.S. Producers' Survey Responses, Question 10.

[204] *Research and Development,* Volkswagen, *https://www.volkswagen-karriere.de/en/unsere-bereiche/forschung-entwicklung.html.*

[205] Wards Intelligence InfoBank.

[206] U.S. Producers' Survey Responses, Question 10.

[207] PwC, *The 2017 Global Innovation 1000 Study,* supra.

[208] *Id.*

[209] Rishabh Saraswat, *Automotive R&D Ecosystem in China: The Road Ahead,* DRAUP, Dec. 14 2017, *https://draup.com/blog/automotive-rd-ecosystem-in-china-the-road-ahead/.*

[210] *Id.*

[211] Petr Pavlínek, *The Internationalization of Corporate R&D and the Automotive Industry R&D of East-Central Europe,* Economic Geography, Apr. 25, 2012, *https://www.researchgate.net/publication/260186659_The_Internationalization_of_Corporate_RD_and_the_Automotive_Industry_RD_of_East-Central_Europe* at 4.

[212] Rajesh K. Chandy, Andreas B. Eisingerich, Jaideep C. Prabhu, and Gerard J. Tellis, *Patterns in the Global Location of R&D Centres by the World's Largest Firms: The Role of India and China,* January 2010, *https://www.researchgate.net/publication/265870303_Patterns_in_the_global_location_of_RD_centres_by_the_world's_Largest_firms_The_role_of_India_and_China* at 5.

decisions.[213] Other factors included the size of the country's economy and economic growth potential.

R&D decisions are also increasingly driven by government-based initiatives to attract investment away from other automobile-producing nations. For example, the Chinese Government has increased automotive R&D in the domestic market through various incentives and restrictive investment requirements. In 2006, the Government set aside $184 million for automotive R&D support under its National High Tech R&D Program, a program designed to accelerate R&D across a range of sectors.[214] Under China's 13th Five-Year Plan (2016–2020), 20 New Energy Vehicle (''NEV'') projects were allotted around $111 million pursuant to the National Key Research and Development Program of China, a program focused on rapidly developing new energy technologies.[215]

Other traditionally low-cost countries with growing domestic markets, or within close proximity to growing markets, have also invested heavily in attracting automotive R&D. Hungary cut its corporate tax rate to 9 percent—the lowest in the EU—and introduced special tax incentives for companies with R&D investments.[216] Hungary recently invested $15 million in a test track for traditional and autonomous vehicles that it intends will become a magnet for future investment in automobile development and testing. Brazil is implementing a 14-year incentive program that will offer up to BR1.5 billion ($467.4 million) in annual tax credits for automobile producers and automobile parts manufacturers that reach certain R&D investment targets.[217]

Heavy investment in attracting R&D in new automotive technologies is also a strategy for mature automobile producing countries. In order to target new technologies and manufacturing, the South Korean Government recently agreed to invest about 2 billion Euros into hydrogen mobility (including fuel cells) over the next five years. Facilities manufacturing fuel cell vehicles and those performing related R&D will receive funding in order to reach the Government's ambitious production target of 15,000 fuel cell vehicles by 2022.[218] Additionally, fearing that the EU automobile industry could be left behind in the race to build mass market electric vehicles because of their reliance on batteries from Asia, the EU recently announced that it will offer billions of Euros of funding to companies willing to build giant battery factories in the region.[219] Individual EU countries will fund 100 percent of research.[220]

Government efforts worldwide to divert automotive R&D and related manufacturing abroad is particularly dangerous for the American-owned automotive industry. Data show that, across all industries, the United States heavily outsources R&D to other nations and that the automotive industry is a large driver of this R&D offshoring trend.[221] The offshoring of R&D activities (coupled with manufacturing) jeopardizes the ability of the U.S. automotive industry, and specifically American-owned manufacturers, to develop innovative products and deliver high-tech products and skilled workers to the industrial base, threatening technological advancements necessary for defense capabilities. Further, the offshoring of R&D and manufacturing will increasingly render the United States reliant on imported products. Conditions of competition must be improved so that American-owned automobile producers and automobile parts manufacturers are able to increase production in the United States, and thereby augment R&D levels to develop and capitalize on the latest technologies domestically.

D. Decline in Employment in the U.S. Automotive Industry

The deterioration in the competitive position of the U.S. automobile and automobile parts manufacturing industry outlined above is further evidenced by the decline in U.S. automotive industry employment, and in particular employment by American-owned firms. The U.S. automobile and automobile parts industry (American-owned and foreign-owned firms) employs approximately 798,300 workers, or approximately 6 percent of the nation's manufacturing workforce.[222] This is a significant drop from the recent peak in 2000, when the industry accounted for 291,400 automobile assembly jobs and 839,500 automobile parts manufacturing jobs.[223] The decline amounts to a loss of 332,600 manufacturing jobs, which is equivalent to approximately 7 percent of the loss in all manufacturing jobs between 2000 and 2017.[224] American-owned automobile manufacturing plants account for [TEXT REDACTED] of the overall workforce across all U.S. based-automobile plants.[225]

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[225] U.S. Producers' Survey Responses, Question 8.

[226] Bureau of Labor Statistics, Total Employment for Motor Vehicles and Motor Vehicle Parts, *supra.;* Department of Commerce, Census Bureau.

[227] Bureau of Economic Analysis, Foreign Direct Investment in the United States, Data on Activities of Multinational Enterprises; Bureau of Labor Statistics, Current Employment Statistics.

[228] U.S. automotive employment—and consequently job losses—has been spread across the United States. While Michigan continues to have the largest share at 172,000 workers, many other states are significant employers as well. Indiana currently employs 111,500 automotive workers, Ohio employs 95,300 workers, Kentucky employs

2018, *https://www.wardsauto.com/industry/brazilian-auto-industry-awaits-word-incentives.*

[218] *South Korea to Invest €2BN into Fuel Cell Vehicles, electrive.com,* Jun. 25, 2018, *https://www.electrive.com/2018/06/25/south-korea-to-invest-e2bn-into-fuel-cell-vehicles/.*

[219] Rochelle Toplensky, *EU to Offer Billions of Funding for Electric Vehicle Plants,* Financial Times, Oct. 14, 2018, *https://www.ft.com/content/097ff758-cec3-11e8-a9f2-7574db66bcd5?desktop=true.*

[220] *Id.* ''The EU's Horizon 2020 research fund has set aside €200m for battery projects; €800m is available to finance building demonstration facilities; regions looking to promote the industry can apply for the €22bn regional funds available; and the European Fund for Strategic Investment is available from the European Investment Bank to co-fund the billions of euros needed to build an EU equivalent of Tesla's 'gigafactory' in the Nevada desert.''

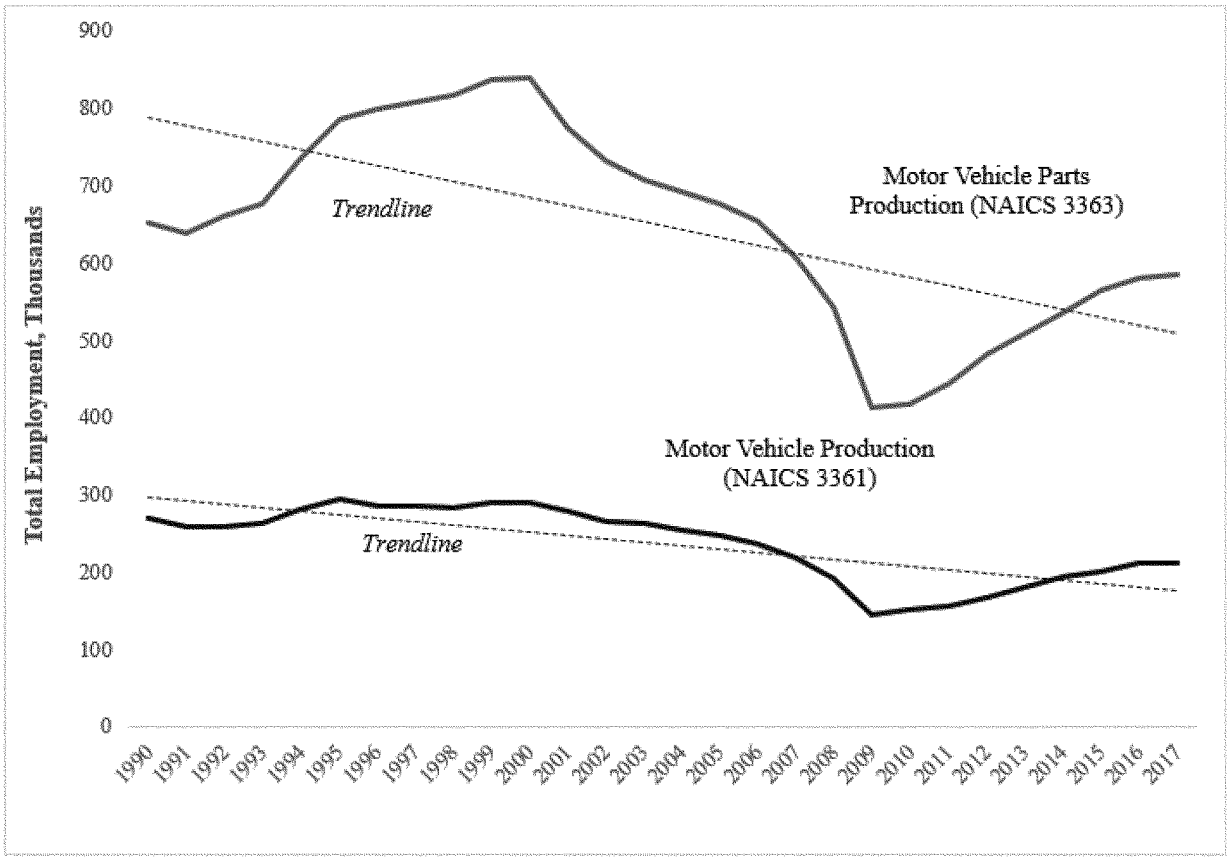
[221] J. John Wu, *Why U.S. Business R&D Is Not as Strong as It Appears,* Information Technology & Innovation Foundation, June 2018. *http://www2.itif.org/2018-us-business-rd.pdf* at 10, 13, 14.

[222] Bureau of Labor Statistics, Total Employment for Motor Vehicles and Motor Vehicle Parts, *supra.*

[223] *Id.*

[224] *Id.*

Figure 26: U.S. Employment in Automobile and Automobile Parts Production



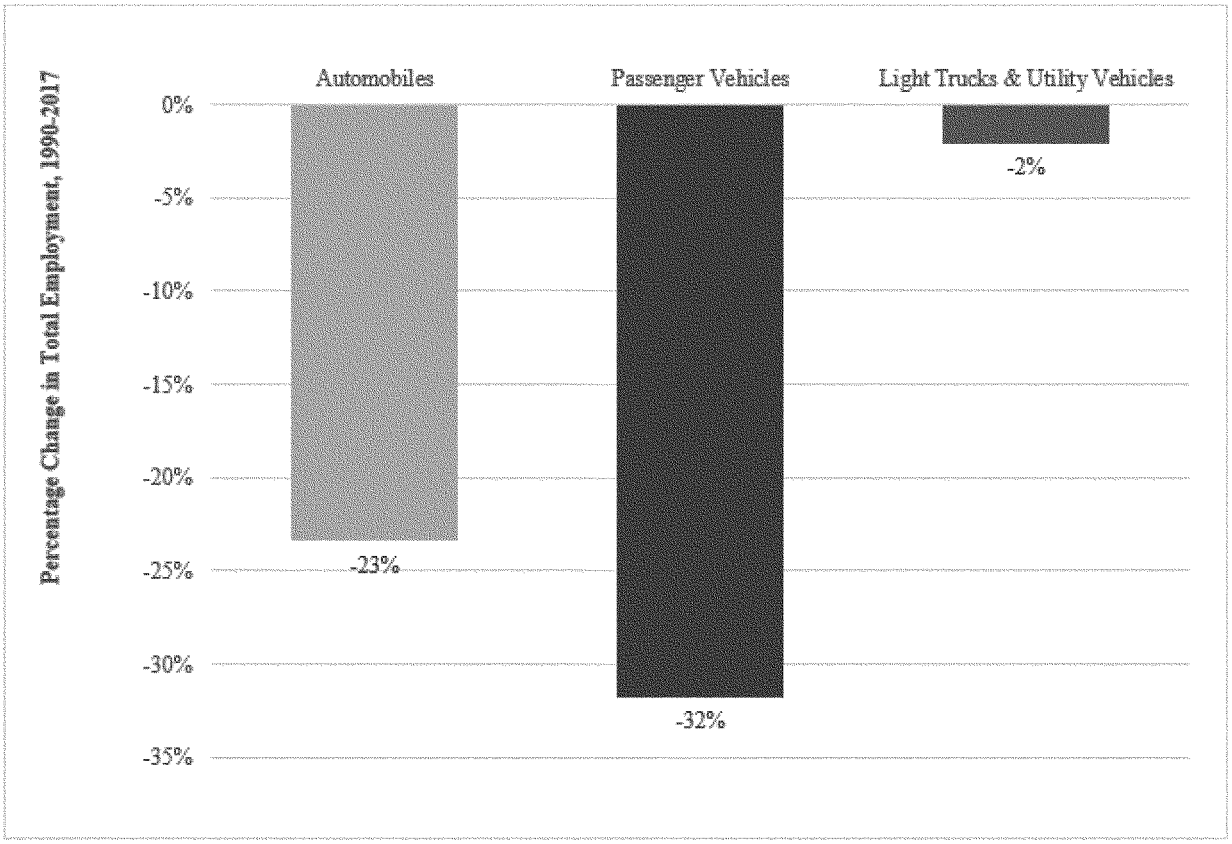
Source: Bureau of Labor Statistics

Further, as shown in Figure 27, the sharp decline in passenger vehicle manufacturing employment (sedans, SUVs, CUVs, and vans) accounts for the majority of the overall decline in automobile manufacturing jobs. This steep 32 percent decline (equivalent to 54,400 jobs) coincided with the 282 percent increase in passenger vehicle imports during this same period. Light truck imports rose more than 150 percent over the same period, contributing to job losses of two percent overall in the United States (equivalent to 1,400 jobs).[226]

[225] U.S. Producers' Survey Responses, Question 8.

[226] Bureau of Labor Statistics, Total Employment for Motor Vehicles and Motor Vehicle Parts, *supra.;* Department of Commerce, Census Bureau.

Figure 27: Change in U.S. Automobile Manufacturing Employment, 1990-2017



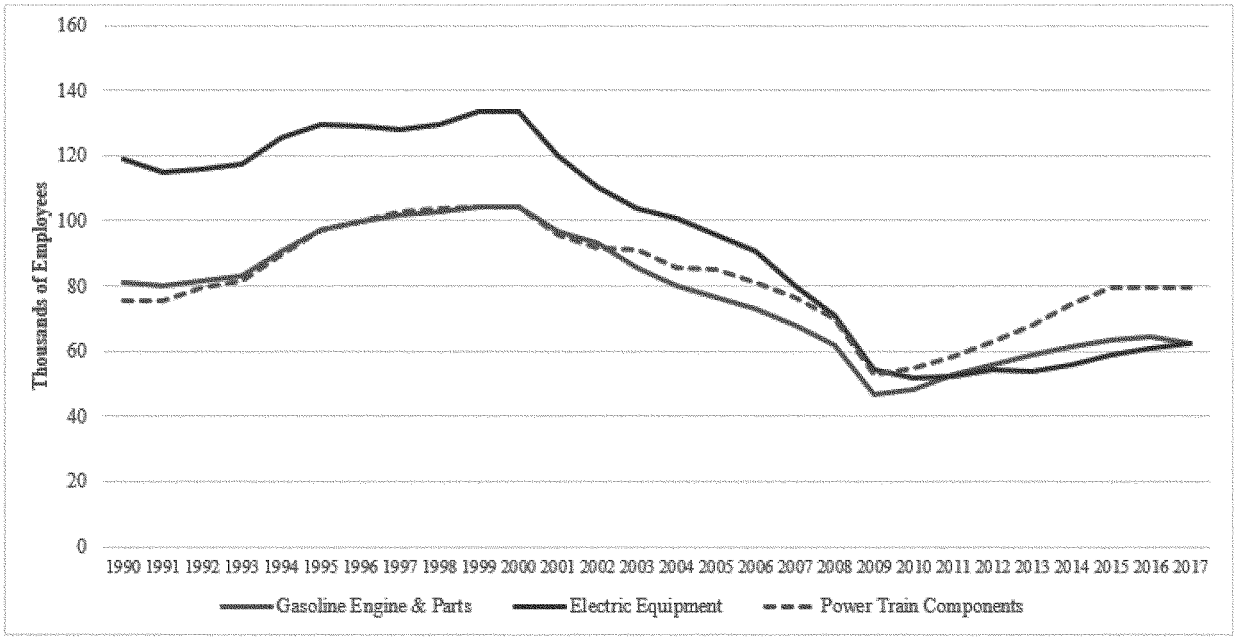
Automobiles (NAICS 33611) includes Passenger Vehicles (NAICS 336111) and Light Trucks & Utility Vehicles (NAICS 336112).

Source: Bureau of Labor Statistics. Calculated by Department of Commerce.

Figure 28 disaggregates job losses in automobile parts manufacturing by segment. Most of the decrease in automobile parts manufacturing employment is due to a 48 percent reduction in the workforce for electrical component manufacturing and a 23 percent reduction in engine and engine parts manufacturing. Although jobs in powertrain component manufacturing have increased since 2009, the number of lost jobs in that sector amount to 25,000 since 2000. Further, the skill level involved in this sector is rapidly eroding as imports of powertrain parts have caused the U.S. transmission industry to shift to assembly rather than product development and manufacturing. Overall, for parts manufacture, American-owned producers account for approximately 50 percent of the U.S.-based workforce.[227]

[227] Bureau of Economic Analysis, Foreign Direct Investment in the United States, Data on Activities of Multinational Enterprises; Bureau of Labor Statistics, Current Employment Statistics.

Figure 28: Change in U.S. Automobile Parts Manufacturing Employment



Source: Bureau of Labor Statistics.

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The loss of manufacturing jobs parallels the rate of closure of U.S. automobile manufacturing plants, in particular American-owned manufacturing plants.[228] In 1985, American-owned producers operated 62 assembly plants in the United States and produced 97 percent of the 11.4 million passenger vehicles and light trucks produced in the United States.[229] By 2000, American-owned producers were operating only 44 plants and their share of U.S. production had dropped from 97 percent to 67 percent.[230] Finally, by 2017, American-owned producers were operating only 24 assembly plants in the United States and producing only 42 percent of total U.S. production, notwithstanding the fact that overall demand for automobiles in the United States increased by 11 percent during the 1985 to 2017 period.[231] Moreover, GM recently announced its intent to close five additional plants and lay off approximately 15,000 workers in 2019.[232] In January 2019, Tesla announced a planned seven percent contraction of its workforce.[233] By contrast, foreign-owned automobile manufacturers in the United States (EU, Japanese and South Korean manufacturers), have expanded operations over the past three decades and increased the number of facilities operating in the United States from 3 facilities in 1985 to 22 in 2017.[234] As noted above, their expansion in the U.S. market has come at the expense of American-owned producers, who (as detailed in Appendix F) do not have the same market access in the EU, Japan and South Korea as their foreign counterparts do in the United States.

With the ongoing contraction of automobile and automobile parts production in the United States and resulting plant closures by American-owned firms, employment in the U.S. automotive manufacturing industry will shrink further. As noted, today's production of automobiles and automobile parts is a complex and technical process that demands a trained, skilled workforce that in many cases requires a decade or more of experience. Given that the United States needs to rely on American-owned facilities to develop cutting-edge technologies with national defense capabilities, it is imperative that a robust and skilled workforce is available to manufacture and operate those technologies. For this reason, the loss of skilled workers at American-owned plants is detrimental to America's manufacturing and innovation capabilities, and consequently America's ability to develop new and emerging technologies for military applications.

VII. Conclusion

Based on the findings in this report, the Secretary concludes that the present quantities and circumstances of imports of automobiles and certain automobile parts, specifically engines and engine parts, transmissions and powertrain parts, and electrical components as defined in Section VIII, are ''weakening our internal economy'' and threaten to impair national security as set forth in Section 232.

As discussed throughout this report, the negative impact of imports and the resulting displacement of production by American-owned automobile and automobile parts manufacturers are significant, and are increasing given that the U.S. automobile market is experiencing a decline in demand. A decline in demand is expected in the next several years due to a number of factors that impact the normal sales cycle, and many indicators point to market saturation. For example, the ratio of automobiles to households is

[228] U.S. automotive employment—and consequently job losses—has been spread across the United States. While Michigan continues to have the largest share at 172,000 workers, many other states are significant employers as well. Indiana currently employs 111,500 automotive workers, Ohio employs 95,300 workers, Kentucky employs 60,500 workers, and Alabama employs 38,300 workers, along with smaller employment in California, Missouri, Texas, New York, and Mississippi. Bureau of Labor Statistics, Total Employment for Motor Vehicles and Motor Vehicle Parts, *supra.*

[229] Wards Intelligence InfoBank.

[230] *Id.*

[231] *Id.*

[232] Eric Morath, *GM Closings a Fresh Sign of Worry for Economy,* Wall Street Journal, Nov. 26, 2018, *https://www.wsj.com/articles/gm-closings-a-fresh-sign-of-worry-for-economy-1543271097.*

[233] Tesla, *Company Update,* January 18, 2019, *https://www.tesla.com/blog/tesla-company-update.*

[234] Wards Intelligence InfoBank.

now 2:1, a record high. In addition, while approximately one quarter of the automobiles on the road are less than four years old, the average age of automobiles in the United States increased from 8.4 years in 1995 to 11.6 years in 2016,[235] and the tendency of consumers to keep automobiles longer has negatively impacted demand. (This has caused the gap between new and used automobile prices to reach record highs.) Sales peaked in 2016 at 17.5 million units, but declined to 17.1 million units in 2017, and remained at roughly the same level in 2018. A further decline in demand is expected in 2019, with interest rates projected to rise and recent reports indicating that $56.8 billion in auto loans are delinquent.[236] Equally as important, exports to foreign markets are unlikely to provide avenues for additional sales and revenue as tariff and non-tariff barriers to entry discourage U.S. automotive exports and the U.S. dollar remains strong relative to Europe, Japan, and China. Finally, employment in the automotive sector remains significantly below the industry's employment peak in 2000, impacting the ability to maintain a highly skilled workforce that is essential for national security needs.

Defense purchases alone are not sufficient to support a robust military vehicle supply chain and R&D in key automotive technologies (such as autonomous driving, vehicle lightweighting, electrification, and connectivity) that are vital to meeting the needs of national defense. To be available to meet national defense needs, American-owned automobile and automobile parts manufacturers must have a robust presence in the U.S. commercial market. Moreover, innovations generated by R&D investments are necessary for manufacturers to remain competitive in both the commercial automotive sector and the defense sector. It is that innovation capability which is now at serious risk as imports continue to displace American-owned production. An American-owned automotive industry that is not competitive in the latest technologies, nor has the ability to retain a large skilled workforce and attract the next-generation workforce, will be unable to ensure that the United States maintains the ability to produce cutting-edge technologies that are essential to America's national security.

The many factors listed in this report form the basis for the Secretary's determination that the ''displacement of domestic products by excessive imports''—in particular the displacement of automobiles and certain automobile parts manufactured by American-owned firms—is causing a ''weakening of our internal economy'' that ''may impair the national security.'' *See* 19 U.S.C. 1862(d). Therefore, the Secretary recommends that the President take corrective action. *See* 19 U.S.C. 1862(c).

VIII. Recommendation

The Secretary recommends the following actions the President could take as possible options to remove the threatened impairment of the national security:

1. Direct further discussions and negotiations to obtain agreements that address the threatened impairment of national security. Since this investigation was initiated, there have been productive discussions that could result in positive changes for the automotive industry in the United States, and the United States has signed the USMCA. If these discussions and the USMCA result in positive changes to the U.S. automotive industry, the President could determine whether those actions address the threatened impairment of the national security found in this report.

As provided in section 232(c)(3), if appropriate agreements have not been reached in a timely manner or if a negotiated agreement is not being carried out, the President could determine that further action under section 232 is necessary.

Or

2. Impose tariffs of up to 25 percent (in addition to any existing duties) on imports of automobiles and certain automobile parts (engines and parts, transmissions and powertrain parts, and electrical components) in order to increase U.S. production of automobiles and parts to a level sufficient to generate additional revenue to increase R&D investments by American-owned (as well as foreign-owned) manufacturers in the United States. Imports under USMCA Side Letters would not be subject to the tariffs.

Or

3. Impose tariffs of up to 35 percent (in addition to any existing duties) on imports of SUVs and CUVs, which will increase domestic production and generate additional revenue to increase R&D investments by American-owned (and foreign-owned) manufacturers in the United States. The Department of Commerce would work with the U.S. Customs and Border Protection on the most appropriate means to implement this option if selected. Imports under USMCA Side Letters would not be subject to the tariffs.

Exemptions

The President may wish to consider agreements that the United States has renegotiated recently in determining whether specific countries should be exempted from the proposed tariffs based on an overriding national security interest of the United States. For example, the President should consider the Republic of South Korea for an exemption based on the recently improved agreement and strong national security relationship. The Secretary recommends that any determination to exempt a specific country should be made at the outset and a corresponding adjustment be made to the final tariffs imposed on the remaining countries. Any country exempted should be placed under a quota to ensure that producers in that country do not increase exports to the United States and to prevent transshipment through that country of automobiles and automobile parts seeking to avoid tariffs. This would ensure that overall imports of automobiles and automobile parts to the United States remain at or below the level needed to enable American-owned producers to reach levels of production sufficient to increase R&D for technologies that are important to national defense.

Automobiles and Automobile Parts Subject to Tariffs Described Above

Electrical Components & Parts:
8414308030; 8414596040; 8414596540; 8414598040; 8415830040; 8507100060; 8507304000; 8507404000; 8507600010; 8507904000; 8511200000; 8511300040; 8511300080; 8511400000; 8511500000; 8511802000; 8512202040; 8512204000; 8512204040; 8512300020; 8512300030; 8512404000; 8525201500; 8525206020; 8525209020; 8525601010; 8527211015; 8527211020; 8527211025; 8527211030; 8527211500; 8527212510; 8527212525; 8527214000; 8527214040; 8527214080; 8527214800; 8527290020; 8527290040; 8527290060; 8527294000; 8527298000; 8527298020; 8527298060;

[235] U.S. Department of Transportation, Bureau of Transportation Statistics, *https://www.bts.gov/content/average-age-automobiles-and-trucks-operation-united-states.*

[236] David Harrison, *Auto Borrowing Rises as New Mortgage Loans Sag, New York Fed Says,* Wall Street Journal, Feb. 12, 2019, *https://www.wsj.com/articles/auto-borrowing-rises-as-new-mortgage-loans-sag-new-york-fed-says-11549988807?mod=searchresults&page=1&pos=7.*

8531800038; 8531808038; 8531809031; 8531809038; 8536410005; 8539100040; 9029108000; 9104004510; 8536906000; 8539100010; 8539100020; 8539100050; 8539212040; 8544300000; 9029104000; 9029204080; 9029902000; 9029908040; 9029908080; 9104002510; 9104004000

Engines & Parts: 4010101020; 4016931010; 4016931020; 4016931050; 4016931090; 8407341400; 8407341540; 8407341580; 8407341800; 8407342040; 8407342080; 8407344400; 8407344540; 8407344580; 8407344800; 8408202000; 8409913000; 8409915080; 8409915081; 8409155085; 8409919110; 8409919190; 8409919910; 8409991040; 8409999110; 8409999190; 8413301000; 8413309060; 8414593000; 8414800500

Transmission, Powertrain & Parts: 8708401000; 8708401110; 8708401150; 8708402000; 8708405000; 8708407550; 8708407000; 8708407570; 8708407580; 8708935000; 8708936000; 8708937500

Passenger Vehicles & Light Trucks 8703220000; 8703230015; 8703230022; 8703230024; 8703230026; 8703230028; 8703230030; 8703230032; 8703230034; 8703230036; 8703230038; 8703230042; 8703230044; 8703230045; 8703230046; 8703230048; 8703230052; 8703230060; 8703230062; 8703230064; 8703230066; 8703230068; 8703230072; 8703230074; 8703230075; 8703230076; 8703230078; 8703240032; 8703240034; 8703240036; 8703240038; 8703240042; 8703240050; 8703240052; 8703240054; 8703240056; 8703240058; 8703240060; 8703240062; 8703240064; 8703240066; 8703240068; 8703240075; 8703310000; 8703320010; 8703330045; 8703330060; 8703900000; 8703220100; 8703230120; 8703230130; 8703230140; 8703230160; 8703230170; 8703240140; 8703240150; 8703240160; 8703310100; 8703320110; 8703330145; 8703330185; 8703400010; 8703400020; 8703400030; 8703400040; 8703400070; 8703600020; 8703600030; 8703600080; 8703700030; 8703700070; 8703800000; 8703900100; 8704210000; 8704310020; 8704310040

Dated: November 1, 2021.

Anne Driscoll,

Acting Assistant Secretary for Industry and Analysis.

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