

Chicago Fed Letter

The impact of trade on the North American auto industry

by Thomas H. Klier, senior economist and research advisor

On September 4–5, 2019, the Chicago Fed held a conference at its Detroit Branch to discuss trade’s role in shaping the North American auto industry. This event brought together nearly 100 attendees, including industry leaders, academics, and policymakers.

To kick off the conference, Charles Evans, president and CEO, Federal Reserve Bank of Chicago, spoke about how international trade contributes to a country’s overall economic growth. Going back to the writings of Ricardo and Samuelson, macroeconomic analysis teaches us that trade is valuable because it can increase economic opportunities. Moreover, trade allows countries to exploit their comparative advantages more fully. Trade often fosters cross-border competition among businesses—and this in turn can lead to enhancements in productivity through innovation. Conversely, insulation from international market forces typically reduces businesses’ incentives to innovate, as they then face less competition.¹

Some materials presented at Forging a New Path for North American Trade—The Auto Sector are available online, <https://www.chicagofed.org/events/2019/north-american-trade-conference>.

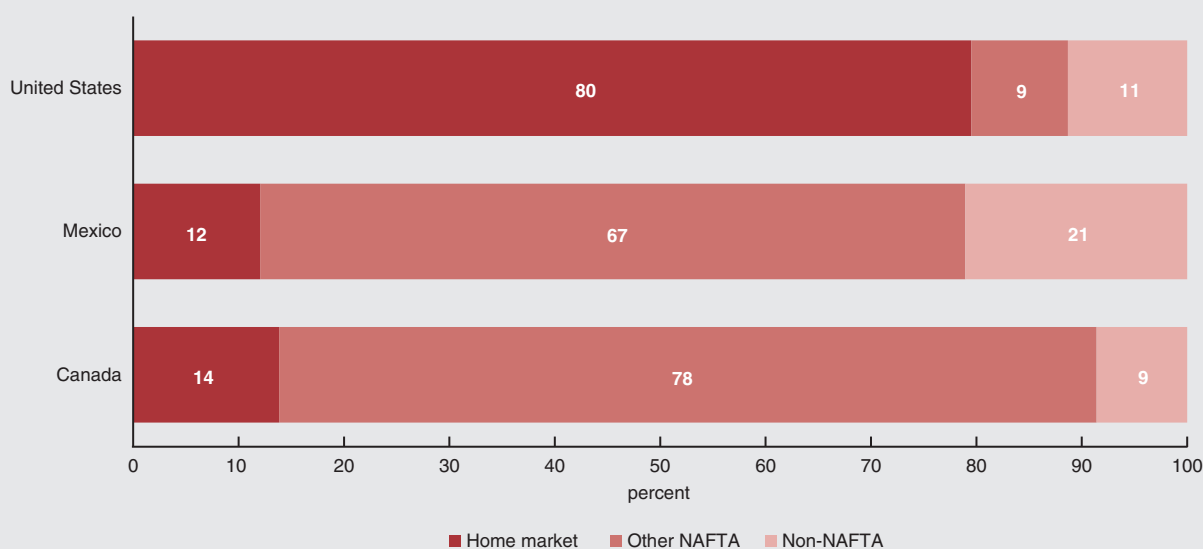
Next, Evans explained that since the North American Free Trade Agreement (NAFTA) went into effect in 1994, auto manufacturers have integrated their operations across North America (defined here as Canada, Mexico, and the U.S.). In 2018, 16.9 million light vehicles (cars and light trucks) were produced in North America. And the majority of them

were sold within the region. The integration of auto production across the region extends to automakers’ supply chains, he pointed out. Typically, parts and subassemblies cross international borders several times before they reach the vehicle assembly line. According to recent research by Alonso de Gortari, 38% of the value added in cars produced in Mexico and then sold in the U.S. originates from the U.S.²

Today 14 companies produce vehicles in North America—and all but two of them are headquartered overseas, said Evans. Five of these companies started producing vehicles in the U.S. after NAFTA entered into force in 1994. Nine of them operate production plants in more than one NAFTA country, taking advantage of the fact that North America is in effect a single integrated economic region.³

Notably, the substance and tenor of trade policy discussions have been changing of late, observed Evans. U.S.–China trade relations have received the lion’s share of media attention, yet there have also been major developments in the U.S.’s trade relations with other nations, including its two NAFTA partners, Mexico and Canada. A new free trade agreement for North America—the United States–Mexico–Canada Agreement (USMCA)—was negotiated in 2018. Mexico ratified it in June of this year, but at the time of the conference, it was still awaiting ratification by the U.S. and Canada.⁴

1. Light vehicles produced in North America, 2018, by country of origin and destination



NOTES: Light vehicles are cars and light trucks. Each bar represents the light vehicle production of each North American Free Trade Agreement (NAFTA) country (listed on the left-hand side) and breaks down where all the light vehicles it produced were sold (see the legend). The percent share values in each bar may not total because of rounding.

SOURCE: Center for Automotive Research analysis of IHS Markit data.

With the recent shifts in U.S. trade policy, uncertainty within the business community has grown, said Evans. And more uncertainty tends to slow down businesses' decision-making about whether or not to make substantial investments.⁵ The auto industry has been particularly challenged by the uncertainty posed by actual and proposed changes in U.S. trade policy, given that its production operations are closely linked across Canada, Mexico, and the U.S.

Thomas Klier, senior economist and research advisor, Federal Reserve Bank of Chicago, provided some examples of how trade policies have shaped the structure of the auto industry across North America. For example, Ford, General Motors (GM), and Chrysler were producing vehicles in Mexico and Canada soon after starting their operations in the U.S. in the early 1900s. Yet at that time, the three North American countries represented separate markets. Notably, Canada was an important production location before World War II because of preferential trade policies among member states of the British Commonwealth. Back then, many of the vehicles produced in Canada were exported overseas. Much later the three countries allowed for more economic integration. In 1965, the Canada–United States Automotive Products Agreement removed all tariffs on vehicles and vehicle parts being shipped between the two countries. This made the integration of vehicle and parts production across the U.S. and Canada economically viable for automakers and parts manufacturers.⁶ Several decades later NAFTA brought Mexico into the fold. Today North America is essentially one integrated production region for the auto industry. And the vast majority of vehicles produced in North America are sold in North America. In 2018, over three-quarters of the vehicles originating from the three NAFTA nations were sold within North America (see figure 1).

Supply chain integration

James Rubenstein, professor emeritus of geography, Miami University, illustrated just how regionally integrated the North American auto industry has become. He presented detailed data on the sourcing of engines and transmissions for light vehicle production. His analysis showed that across the region, both engine and transmission plants are located near final assembly plants. Moreover, his research revealed that the overwhelming majority of engines and transmissions for light vehicles produced in North America are sourced from within the region (only 14% of engines and 24% of transmissions were sourced from outside the region in 2016). Indeed, in 2016, 70% of all light

vehicles produced in North America had both their engines and transmissions originate from here. Notably, only 31% of all light vehicles made in North America were assembled in the same country from which they received their engines and transmissions. So, the other 39% were assembled in one North American country, but received their engine or transmission from another. According to Rubenstein, today there is a high degree of integration in auto production across North America. That is reflected in the large number of cross-border shipments of both engines and transmissions.

A panel of industry practitioners discussed the importance of trade agreements to the auto sector and other industries with a global footprint. The panel was chaired by David Andrea, principal, Plante Moran, and featured Scott Paradise, vice president, marketing and new business development—the Americas, Magna International; Frank Ervin III, group vice president, government affairs, Piston Group; and Walter Maisel, president, international operations, Seraph. Ervin stated that trade agreements are necessary for the success of industries that are globally active. Moreover, according to Paradise, trade agreements provide certainty to such industries, which typically have planning horizons that extend over many years. Maisel also noted that political stability and regulatory transparency, in general, are crucial elements in making investment decisions for businesses. All the panelists agreed that business decisions are likely being affected by the uncertainty posed by ongoing debates over USMCA ratification in Congress; the possible implementation of further Section 232 tariffs (tariffs authorized under section 232 of the Trade Expansion Act of 1962 on the grounds that national security is being impaired or threatened); and the escalating levels of tariffs on goods traded with China.

Assessing regional trade agreements

How do economists assess the impact of regional trade agreements, such as NAFTA? Jeff Bergstrand, professor of finance, University of Notre Dame, explained that the standard approach in the profession is to formulate and estimate general equilibrium models of trade.⁷ Typically, such modeling finds that, on average, per capita incomes rise with increased trade. Yet, regional trade agreements also lead to adjustments in the production of goods, as the least productive firms lose market share or shut down altogether. These adjustments often affect workers the most; capital tends to be relatively more mobile and is therefore less affected. Bergstrand shared that in a recent paper, he and his co-authors used a general equilibrium model to estimate what would happen if NAFTA were to go away.⁸ According to their analysis, among the three North American trading partners, Canada would be hurt economically the most from the dissolution of NAFTA.

Kristin Dziczek, vice president, industry, labor & economics group, Center for Automotive Research, presented an overview of the major changes in trade rules that would affect the auto industry were USMCA to replace NAFTA. First, USMCA would introduce a requirement for the value of labor that goes into building a North American vehicle: A minimum of 40% (45%) of the content in a new car (light truck) would need to come from North American facilities paying their workers an average of \$16 per hour or higher for it to be considered from within the region. Furthermore, USMCA would not only move up NAFTA's threshold of a vehicle's content having to originate from the region for it to be counted as North American from 62.5% to 75%, but it would also establish specific thresholds (ranging from 65% to 75%) for different sets of parts. Finally, USMCA would also require that auto producers in North America procure at least 70% of their steel and aluminum from within the region. Dziczek said these changes might lead to more U.S. and Canadian auto production. On the flip side, higher trade barriers, such as stricter regional content requirements, are likely to raise prices and lower demand for vehicles.⁹

Policy priorities

Charlotte Yates, provost and vice president, University of Guelph, spoke about regional trade policy and the auto industry from a Canadian point of view. As Canada represents a relatively small market within North America and can't claim to host a major automaker's headquarters, the country has

less influence in shaping the public policy debate within the wider region, observed Yates. That said, to achieve better future results for the Canadian auto industry, she recommended the nation adopt an industrial policy based on the following four principles: 1) focus on the broader concept of mobility (not just on autos alone); 2) recognize that supply chains are integrated across borders; 3) make and maintain a distinction between policies that foster innovation and those that just boost production; and 4) acknowledge the industry's role in affecting climate change and make investments accordingly. She said that these principles could form an overarching, cohesive public policy framework that Canada currently lacks and argued that adopting them would help the nation's auto industry continue to thrive.

Today there is a high degree of integration in auto production across North America. That is reflected in the large number of cross-border shipments of both engines and transmissions.

Congresswoman Debbie Dingell, U.S. House of Representatives, Michigan, 12th District, gave her perspective on reaching a new regional trade deal. She said that the auto industry in Michigan had gone through about a decade of restructuring, culminating in the 2007–09 recession and the subsequent reorganizations of Chrysler and GM. Today,

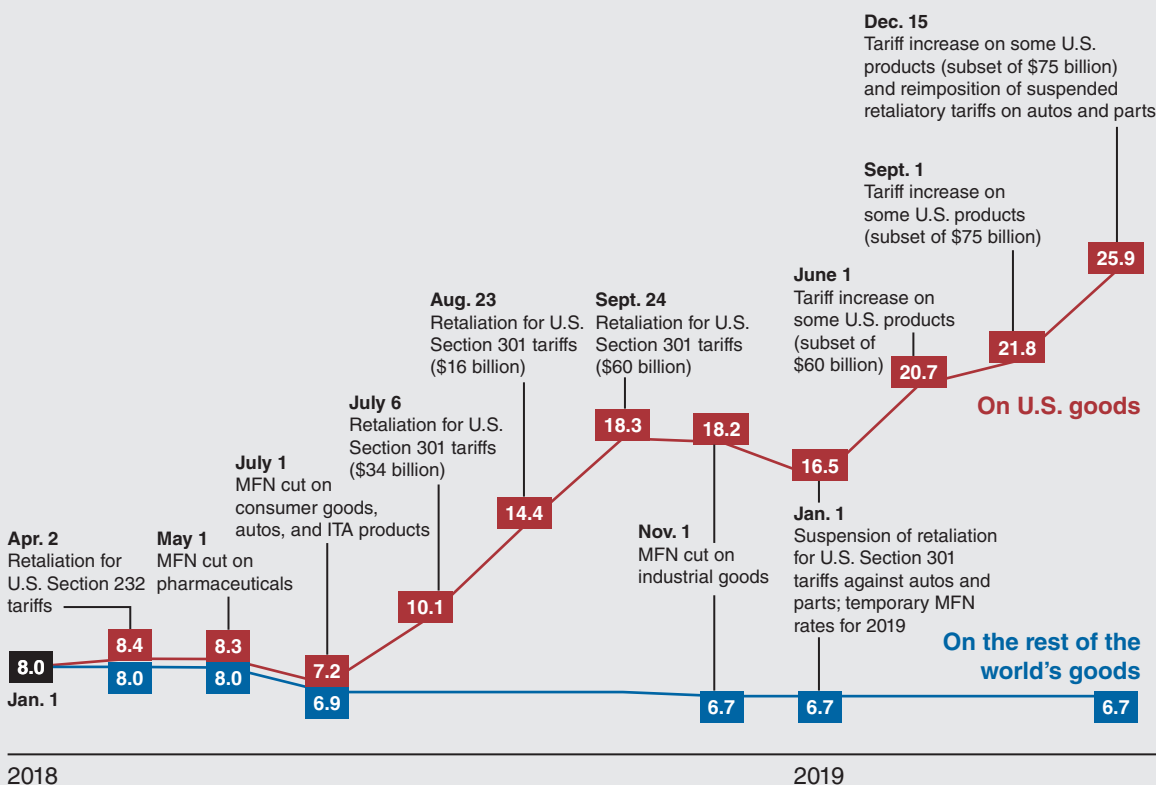
several innovations are profoundly transforming the industry: Those include growth in the electrification of vehicle powertrains and the increased automation of vehicles. So, the U.S. auto sector has undergone major changes since the late 1990s and now faces potentially even greater shifts. Yet, Mexico and Canada remain America's and Michigan's most important trading partners, partly because of the large volume of vehicles and vehicle parts that are built, transported, and sold across North America. Therefore, reaching a new equitable trade deal is vital. In early September, Dingell said that USMCA's prospects for ratification by Congress depend on making several changes, including requiring the consistent enforcement of fair labor practices in all three North American countries.

Robert Scott, senior economist and director of trade and manufacturing policy research, Economic Policy Institute, also highlighted labor concerns in his presentation on the effects of trade agreements like NAFTA. Scott pointed out that growth in trade has tended to coincide with slower wage growth in the U.S., especially for workers with less than a college education. He suggested that increasing trade and globalization account for a major share of the growth in the college wage premium observed in the U.S. since 1995. Moreover, he contended that NAFTA and similar trade deals have led to growing trade deficits for the U.S. with Mexico and other countries, as well as falling wages and rising job losses in the domestic manufacturing sector.

Arthur Wheaton, director, Western New York Labor and Environmental Programs, Worker Institute, Cornell University ILR School, echoed many of Scott's concerns about trade's and globalization's effects on manufacturing labor. He reminded the audience that while North America has become one economic space for the auto industry, there remain notable differences across the three NAFTA nations. For instance, Mexico's industry wages remain far below those of the U.S. and Canada 25 years after NAFTA went into effect.

Flavio Volpe, president, Automotive Parts Manufacturers' Association (APMA), provided an insider's account of the USMCA negotiations. Volpe represented the interests of the Canadian parts makers association in the trade policy discussions. He presented a number of anecdotes about the actual negotiations leading toward the new trade agreement. He also pointed to the arrival of China on the world trade stage as perhaps the biggest change since NAFTA's implementation in 1994, and suggested that it was driving the current reorientation of U.S. trade policy. According to Volpe, the motor vehicle parts sector in the U.S. and Canada is set to benefit from the higher regional content requirements for vehicles produced within North America as spelled out in USMCA.

2. China's average tariff rates on U.S. goods versus the rest of the world's goods



NOTES: The trade-weighted average tariffs are computed from product-level tariff and trade data, weighted by U.S. exports to the world in 2017. All numerical values in boxes along the timeline are tariff rates in percent. ITA refers to the Information Technology Agreement. MFN refers to most favored nation status (an economic position where a country enjoys the best trade terms given by its trading partner). Section 232 tariffs are tariffs authorized under section 232 of the Trade Expansion Act of 1962 on the grounds that national security is being impaired or threatened. Section 301 tariffs are tariffs authorized under sections 301–310 of the Trade Act of 1974 in response to unfair trade practices.

SOURCE: Chad P. Bown, 2019, “US–China trade war: The guns of August,” *Trade and Investment Policy Watch*, Peterson Institute for International Economics, blog, updated on September 20, available online, <https://www.piie.com/blogs/trade-and-investment-policy-watch/us-china-trade-war-guns-august>.

Chad Bown, Reginald Jones Senior Fellow, Peterson Institute for International Economics, provided a big picture perspective for assessing ongoing changes to U.S. trade policy. Bown pointed out that U.S. trade policy currently has two different (and possibly conflicting) goals: to bring manufacturing back to our shores and, at the same time, to make it easier for U.S. companies to produce in China. He said that USMCA is but one piece of a broader strategy aimed at transforming the nation’s trade policy. That strategy—which so far has led to stricter rules enforced by the Committee on Foreign Investment in the United States (CFIUS), as well as tighter controls on technology exports from the U.S.—is perhaps best understood in the context of the trade war with China. He illustrated that one of China’s responses to the trade war has been to increase tariffs on imports from the U.S. while reducing them on imports from elsewhere (see figure 2).

Summary

At this conference, several speakers explained the extent to which trade has shaped the North American auto industry over the past few decades. Changes in trade policy since the mid-1960s have resulted in the industry treating the region as one integrated economic space. Some conference presenters provided economic assessments of regional trade under established versus proposed trade agreements. Discussions surrounding the new trade policy being pursued in Washington were prominent throughout the entire event. A primary concern regarding trade was the uncertainty surrounding the new tariffs and rules. As many conference participants observed, business sentiment has become more negative as the outlook on trade has become increasingly cloudy. As of this writing, USMCA has been scheduled for a vote in Congress, and ratification appears likely.

This conference also highlighted trade-related economic challenges facing our neighbors to the north and south.¹⁰ The focus on the auto industry allowed for wide-ranging discussions on the role of trade within North America's economies.

Notes

- ¹ Evans's full remarks at the event are available online, <https://www.chicagofed.org/publications/speeches/2019/north-american-trade-and-auto-sector>. David Ricardo (1772–1823) was a British economist, and Paul Samuelson (1915–2009) was an American economist. Both made major contributions in developing tools to illustrate the benefits of trade.
- ² Alonso de Gortari, 2017, "Disentangling global value chains," Harvard University, job market paper, October 20, available online, <https://www.semanticscholar.org/paper/Disentangling-Global-Value-Chains-%E2%88%97-JOB-MARKET-Gortari/8821b60a1d6c6f9a15e3e22f48649c5415bda985>.
- ³ Hyundai and Kia are treated as one firm in the company counts (Hyundai owns a part of Kia).
- ⁴ Agreement on an amended version of USMCA by the three countries was announced on December 10, 2019; details are available online, <https://www.reuters.com/article/us-usa-trade-mexico/theres-a-deal-mexico-says-usmca-trade-pact-to-be-signed-tuesday-idUSKBN1YE1RO>.
- ⁵ See, e.g., Kyle Handley and Nuno Limão, 2017, "Policy uncertainty, trade, and welfare: Theory and evidence for China and the United States," *American Economic Review*, Vol. 107, No. 9, September, pp. 2731–2783. Crossref, <https://doi.org/10.1257/aer.20141419>
- ⁶ Pradeep Kumar and John Holmes, 1998, "The impact of NAFTA on the auto industry in Canada," in *The North American Auto Industry under NAFTA*, Sidney Weintraub and Christopher Sands (eds.), Washington, DC: CSIS Press, pp. 92–183.
- ⁷ In economics, general equilibrium theory is concerned with how the interaction of supply and demand in an economy with multiple markets will tend toward reaching an equilibrium of prices over the long run in all markets. A general equilibrium model of trade captures how an event (such as an increased tariff) for one market within an economy can have ripple effects on the other markets, which may then feed back to the original market. Such a model also captures the impact of the event on production and firm behavior (including the reallocation of capital and labor to more productive sectors) and household consumption behavior, among other facets of the economy.
- ⁸ Scott L. Baier, Jeffrey H. Bergstrand, and John P. Bruno, 2019, "Putting Canada in the penalty box: Trade and welfare effects of eliminating NAFTA," CESifo, working paper, No. 7678, May, available online, https://www.ifo.de/DocDL/cesifo1_wp7678.pdf.
- ⁹ Note that the United States International Trade Commission (USITC) concluded in its official assessment of USMCA that the new agreement would have a moderately positive effect on the U.S. economy. In that report, the commission explained that its conclusion is sensitive to the weight given to the impact of reducing trade policy uncertainty within its economy-wide model; this impact is based on an estimate of future trade and cross-border investment barriers that would be deterred by USMCA. For details, see United States International Trade Commission, 2019, *U.S.-Mexico-Canada Trade Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors*, report, Publication No. 4889 (Investigation No. TPA 105-003), Washington, DC, April, pp. 15–16, 37–68, available online, <https://www.usitc.gov/publications/332/pub4889.pdf>.
- ¹⁰This Chicago Fed conference on North American trade and the auto industry was focused more on U.S. trade relations with Canada. A complementary conference, with its focus more on U.S. trade relations with Mexico, was held by the Dallas Fed; details for that event are available online, <https://www.dallasfed.org/research/events/2019/19usmca.aspx>.

Charles L. Evans, *President*; Anna L. Paulson, *Executive Vice President and Director of Research*; Daniel G. Sullivan, *Executive Vice President, outreach programs*; Spencer Krane, *Senior Vice President and Senior Research Advisor*; Sam Schulhofer-Wohl, *Senior Vice President, financial policy*; Gene Amromin, *Vice President, finance team*; Alessandro Cocco, *Vice President, markets team*; Jonas D. M. Fisher, *Vice President, macroeconomic policy research*; Leslie McGranahan, *Vice President, regional research*; Daniel Aaronson, *Vice President, microeconomic policy research, and Economics Editor*; Helen Koshy and Han Y. Choi, *Editors*; Julia Baker, *Production Editor*; Sheila A. Mangler, *Editorial Assistant*.

Chicago Fed Letter is published by the Economic Research Department of the Federal Reserve Bank of Chicago. The views expressed are the authors' and do not

necessarily reflect the views of the Federal Reserve Bank of Chicago or the Federal Reserve System.

© 2019 Federal Reserve Bank of Chicago
Chicago Fed Letter articles may be reproduced in whole or in part, provided the articles are not reproduced or distributed for commercial gain and provided the source is appropriately credited. Prior written permission must be obtained for any other reproduction, distribution, republication, or creation of derivative works of *Chicago Fed Letter* articles. To request permission, please contact Helen Koshy, senior editor, at 312-322-5830 or email Helen.Koshy@chi.frb.org. *Chicago Fed Letter* and other Bank publications are available at <https://www.chicagofed.org>.

ISSN 0895-0164