

Strengthening Interconnections: The U.S.- Mexico-Canada Agreement and the Electronics Industry



USMCA

The logo features the letters 'USMCA' in a bold, sans-serif font. The 'U' is integrated with a large gear icon. To the right of the 'S', there are several small icons representing various industries: a wind turbine, a factory with smokestacks, an oil rig, a tractor, and a construction crane. The background is a dark blue with glowing circuit lines and gear patterns.

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IPC[®]



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About This Report

The purpose of this report is to provide an independent, informational, and analytical resource that describes the potential impacts of the proposed U.S.-Mexico-Canada Agreement (USMCA) on the U.S. and global electronics industry.

IPC — Association Connecting Electronics Industries® (www.IPC.org) commissioned this report to be written by Shawn DuBravac, PhD, CFA, president and founder of Avrio Institute (<https://avrioinstitute.org>), which provides consulting, research and advisory services to clients on topics including digital transformation, business model disruptions, and the pace of technological change. For more than a dozen years, Dr. DuBravac served as chief economist for the Consumer Technology Association (CTA), the U.S. trade association representing more than 2,000 consumer tech companies.

Readers interested in further information about the electronics industry and its views on the USMCA may contact Chris Mitchell, IPC Vice President of Global Government Relations, via the IPC website (www.ipc.org/advocacy).

IPC also thanks Casie Daugherty of Prime Policy, Dale Curtis of Dale Curtis Communications, and our IPC colleagues Sandy Gentry and Irina Gelman for their invaluable assistance.



Foreword

Over the 22 years I represented Tennessee's 8th Congressional District, party affiliation was a strong indicator of my colleagues' views on trade. Republicans largely backed free trade agreements, while Democrats mostly opposed them. As a founder of the conservative Democratic Blue Dog Caucus, I joined an informal coalition of about two dozen Democrats and most Republicans to support fast-track negotiating procedures and the trade agreements they produced.

Since I retired from Congress in 2011, the politics of trade have turned against those who support trade liberalization. The 2008 financial crisis, the ensuing recession, and a long, slow recovery amplified fears that the global economic order had advanced the interests of the few at the expense of the many.

In the 2016 presidential campaign, Republican Donald Trump voiced the pain of those millions who felt economically marginalized, and Democrat Hillary Clinton sided with them as well. The two candidates opposed the Trans-Pacific Partnership and the Transatlantic Trade and Investment Partnership that were both close to completion. As a strong advocate for U.S. leadership in the world, I regretted the U.S. withdrawal from these trade agreements.

Today, the politics of trade are scrambled as never before. A 2018 survey by the Brookings Institution found that 37% of Republicans believed trade destroys U.S. jobs, while only 22% of Democrats said the same.

I believe this moment is an opportunity to modernize our trade relationships and rebuild the national consensus on trade. Indeed, the argument has been mischaracterized as a political issue, when in fact it is about our plain economic interests. For over a century, the United States has been able to grow more food and manufacture more products than we can sell domestically. If the rules break down on how to sell U.S. goods abroad, someone is going to lose their job.

In the context of this report, any serious effort to revitalize American manufacturing must begin with the understanding that revitalizing U.S. manufacturing requires strengthening the manufacturing bases in Mexico and Canada as well. U.S. companies have developed sophisticated, integrated supply chains with their partners to the north and south, and these partnerships have allowed them to maintain their U.S. operations, to preserve and create new jobs, and to better compete in the global marketplace. This is especially true for small and medium-sized enterprises.

Given these facts, it is critical to maintain a trade agreement that facilitates the region's economic growth. The U.S.-Mexico-Canada Agreement achieves this goal, and that is why many U.S. industries, including IPC, support it. The 116th Congress must seize the opportunity to advance the agreement and with it the prospects of U.S. companies and workers.

John Tanner

U.S. Representative from Tennessee (1989-2011)

Former Chairman, House Ways and Means Subcommittee on Trade



Executive Summary

- IPC — Association Connecting Electronics Industries® (www.IPC.org) believes the USMCA is a positive step for the U.S. and North American electronics sector and should be approved by the U.S. Congress and implemented by the Executive Branch at the earliest opportunity.
- Bilateral trade between the United States and its North American counterparts is now six times larger than it was prior to NAFTA. Many electronics companies have leveraged economic integration across North America to maintain and grow their U.S. operations.
- The total value of U.S. electronics trade with Canada and Mexico was \$155.5 billion in 2017. Electronics exports are 31 percent of all U.S. exports of manufactured goods, natural resources and energy exports to Mexico, and 18 percent of all U.S. exports of manufactured goods, natural resources and energy exports to Canada.
- Congressional consideration of USMCA comes amidst worldwide turmoil in traditional trade relationships. These uncertainties underscore the importance of passing USMCA, reducing long-term uncertainties in North America, and creating a more conducive environment for physical and human capital investment in the United States, Mexico and Canada.
- The role of intra-firm trade is highly influential in North American cross-border flows. Approximately 78 percent of all electronics imported from Mexico and 47 percent of all electronics exported to Mexico are between parent companies and their affiliates.
- Mexico imports 34 percent of U.S. printed circuit board production, making it not only the largest market for U.S. PCBs, but also larger than the next four largest markets combined.
- Beyond the underlying economics, several specific provisions of USMCA are particularly significant for the electronics industry:
 - a. The overwhelming majority of U.S. electronics companies are small and medium-sized enterprises, which makes the inclusion of an SME chapter significant for the industry.
 - b. Given the growing relationship between the electronics sector and digital services, USMCA's digital trade chapter could pave the way to unprecedented innovation and investment.
 - c. Protecting intellectual property and trade secrets is fundamental to the success of the electronics industry; USMCA would strengthen IP protection and enforcement.
 - d. USMCA's sunset clause would create unnecessary uncertainties that could hinder investment.
 - e. Proposed changes in the regional value content requirements for automobiles are a mixed bag.

Introduction

More than 25 years have elapsed since ratification of the North American Free Trade Agreement (NAFTA) by the United States, Mexico and Canada. The agreement was contentious at the time and has remained a polarizing issue in American politics, but the evidence is clear that NAFTA, broadly speaking, has strengthened manufacturing across all three countries. The recently signed U.S.-Mexico-Canada Agreement (USMCA) promises to build on this success by positioning the region for even greater economic growth and integration in the years ahead.

NAFTA eliminated most tariffs on products traded between the three countries, lowered technical barriers to trade (TBT), established protections for intellectual property and foreign investment, and integrated side agreements on labor and environment. Since its implementation, U.S. trade with its NAFTA partners has more than tripled, outpacing the rate of increase in U.S. trade with the rest of the world. Canada and Mexico today are leading export markets for U.S. goods, including electronics.¹ The two countries alone purchase one-fifth of all U.S. manufacturing output, totaling more than the U.S.'s next ten trading partners combined.

These statistics tell only a small part of the story. A disproportionate share of the trade within North America results from the emergence of geographically integrated, vertical supply chains, serving the automotive, medical, electronics and machinery industries. The flow of intermediate inputs across the U.S.-Mexico border, in particular, has increased dramatically since NAFTA's implementation. According to some estimates, 40% of the content of U.S. imports from Mexico and 25% of the content of U.S. imports from Canada are of U.S. origin. These numbers far outpace other regions of the world. U.S. imports from China, for example, have approximately 4% U.S. content.²

Many electronics companies have leveraged economic integration across North America to maintain, if not grow, their U.S. operations. Today, the North American electronics supply chain is quite balanced: In 2016, the U.S. imported a value of \$64.9 billion in electronics from NAFTA countries and exported \$67.1 billion.³ The growth of the North American supply chain should be heralded as a success story and a critical factor in ongoing efforts to revitalize U.S. electronics manufacturing.

Congressional consideration of USMCA is coming amidst a multifaceted effort by the Trump Administration to restructure U.S. trade relationships globally; trade policy turmoil within the European Union (i.e. "Brexit"); and even wider geopolitical conflicts and tensions. These elevated uncertainties underscore the importance of passing USMCA this year and solidifying the United States' central role in the North American supply chain. Given the desire within industry for "some" certainty amid significant global uncertainties, USMCA would deliver a great deal of positive certainty, and that current analysis likely understates the positive impacts, given that U.S. electronics companies are shifting their supply chains in response to developments in Asia and Europe.

¹ M. Angeles Villarreal and Ian Fergusson, "The North American Free Trade Agreement," Congressional Research Service, May 24, 2017. <https://fas.org/sgp/crs/row/R42965.pdf>

² Robert Koopman, William Powers, Zhi Wang, and Shang-Jin Wei, "Give Credit Where Credit Is Due: Tracing Value Added in Global Production Chains," NBER Working Paper No. 16426, Cambridge, MA, September 2010, Revised September 2011.

³ Statista, "Statista Industry Report: USA: Manufacturing: Computer and Electronics: NAICS 334," June 2017.



Moreover, USMCA makes many important updates to NAFTA including a new digital trade chapter, new intellectual property protections, reductions in technical barriers to trade, and new commitments to small and medium-sized enterprises (SMEs). The electronics industry, however, harbors some concerns about the agreement. Most notably, the sunset clause will inject unnecessary long-term uncertainty into the North American marketplace, while the more restrictive rules-of-origin requirements may increase costs, force modifications of supply chains that have been built and optimized over the last 25 years, and incentivize firms to make alternative manufacturing choices because the associated costs of these changes outweigh benefits to the manufacturer. This in turn will hurt consumers with higher costs or limited choice and could make North American manufacturers less globally competitive.

Overall, IPC — Association Connecting Electronics Industries® (www.IPC.org) believes the USMCA is a positive step for the U.S. and North American electronics sector and should be approved by the U.S. Congress and implemented by the Executive Branch at the earliest opportunity.

IPC Endorses the U.S.-Mexico-Canada Agreement

IPC, a U.S.-based, global industry association representing more than 5,300 member facilities across the \$2 trillion electronics industry, has members with deep investments and thousands of employees in the United States, Mexico and Canada. As such, we are highly interested in the rules that govern trade and commerce among the three nations.

As the U.S. Congress takes up consideration of the U.S.-Mexico-Canada Agreement (USMCA), which would replace the 25-year-old North American Free Trade Agreement (NAFTA), it is important to recognize that building a stronger U.S. electronics industry depends in no small measure on building a stronger North American supply chain.

The USMCA promises to spur even greater integration among electronics companies and their customers across North America and strengthen the region's stature as a bastion of strength, stability, and jobs growth in an uncertain world.

We commissioned this study to better understand the potential impacts of the USMCA on the U.S. and global electronics industry. We have concluded that the USMCA is a positive step for the sector and should be approved by the U.S. Congress.

John Mitchell

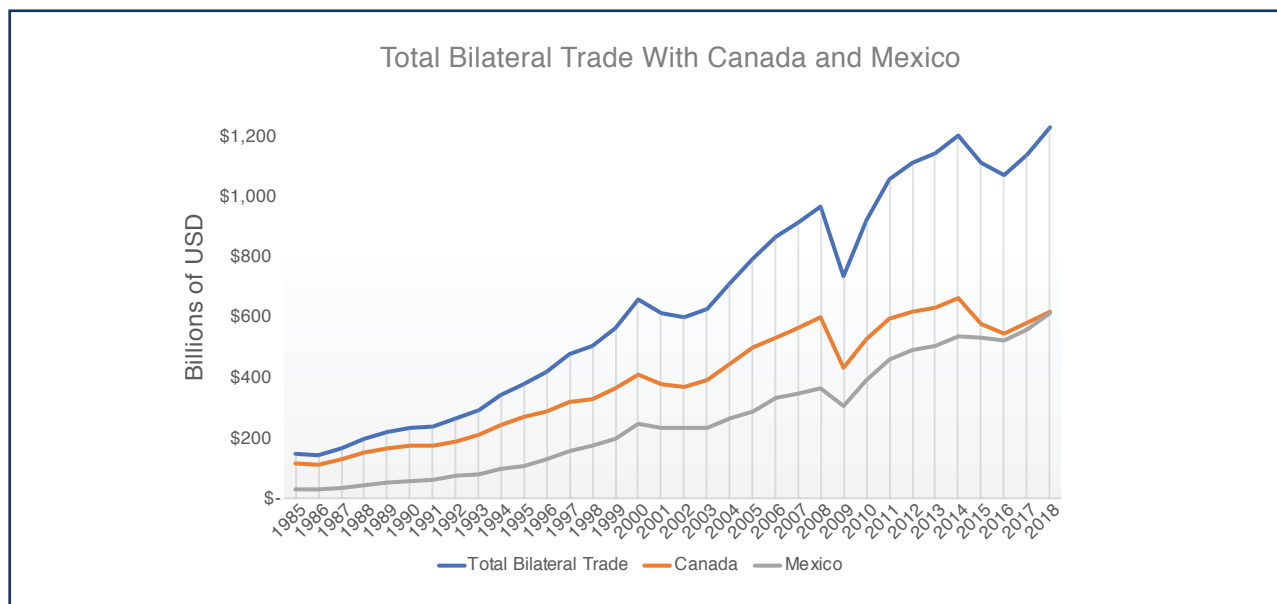
President and CEO

IPC — Association Connecting Electronics Industries® (www.IPC.org)



Economic Analysis: A Positive Overall Impact

Since the 1990s, trade between the United States and its trading partners Canada and Mexico has increased significantly. Bilateral trade in goods today is six times larger than it was prior to the passage of NAFTA. The United States is the largest export market for both Mexico and Canada; while Canada and Mexico are the #1 and #2 buyers of U.S. goods, respectively.⁴ Canada and Mexico collectively receive 34 percent of total U.S. exports.⁵



Source: Author's calculation with data from the U.S. Census Bureau

Electronics are a key component of trade between the United States, Canada, and Mexico. The total value of U.S. electronics trade with Canada and Mexico was \$155.5 billion in 2017.⁶ This included U.S. exports of electronics to Mexico and Canada of \$45.5 billion and \$29.9 billion, respectively.⁷ Moreover, electronics exports are 31 percent of all U.S. exports of manufactured goods, natural resources and energy exports to Mexico, and 18 percent of all U.S. exports of manufactured goods, natural resources and energy exports to Canada.⁸

The total value of electronics flowing between the United States and its North American trading partners is likely much higher because electronics have become a key component of diverse goods. For example, the electronics cost of a new vehicle as a percent of the total cost of the vehicle was in the single digits until the 1980s. Today, industry estimates suggest electronics represent more than 35 percent of the total value of a new vehicle.⁹

⁴ Author's calculation with data from the U.S. Census Bureau

⁵ U.S. International Trade Commission (USITC). U.S.-Mexico-Canada Trade Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors. USITC Publication no. 4889. Washington, DC: USITC, 2019. <https://www.usitc.gov/publications/332/pub4889.pdf>.

⁶ Ibid.

⁷ Ibid.

⁸ Ibid.



The ITC analysis estimates that USMCA, when fully implemented and enforced, would raise U.S. real GDP by \$68.2 billion (0.35 percent) and create 176,000 U.S. jobs (+0.12 percent). Overall trade with Canada and Mexico would increase approximately \$65 billion (5 percent). U.S. exports to Canada would grow by 5.9 percent, while exports to Mexico would grow by 6.7 percent.¹⁰

Passage of the agreement would also bring indirect benefits that could support economic growth over a much longer horizon. NAFTA had already eliminated duties on most qualifying goods and services and reduced many nontariff barriers. As a result, USMCA's focus is on solidifying these earlier measures and further reducing nontariff barriers on trade. USMCA measures like harmonization of regulation across participating countries and establishing commitments to opens flows of data should foster a commitment to trade North American trade. Passage of USMCA would remove significant long-term uncertainty and promote investing in North America at a time when there is tremendous uncertainty regarding global growth and international trade.

Effects on Supply Chain Optimization

Tariffs and other trade barriers may cause firms to produce the same or very similar products in neighboring countries when it would be more efficient to manufacture them in a single location. NAFTA liberalized North American trade and integrated myriad industry sectors across all three countries. This enabled firms in these sectors to optimize supply chains, lower costs, and improve efficiency. Today supply chains are tightly connected across North American borders, and major firms in most sectors are working extensively in all three countries. It is not uncommon for goods to flow back and forth between the United States, Mexico and Canada as part of the production process. For example, in some instances auto components cross the borders between the United States, Canada, and Mexico as many as eight times as a vehicle is being produced.¹¹

Electronics manufacturers, like other manufacturers, optimize supply chains based on market dynamics and business environments. Because supply chains represent costs for companies with razor-thin profitability, firms are constantly seeking to improve supply chain efficiencies. Over the 25 years that NAFTA has been in place, companies have optimized supply chains in order to maximize production performance while minimizing costs. This has made both U.S. companies and consumers better off.

At present, the future of North American trade is in doubt, creating uncertainties which – if left unresolved – will delay North American supply-chain investment at best, and possibly spur companies to redirect investment to other markets. This would lead to suboptimal supply chain calibration, leaving both U.S. businesses and consumers worse off. Under this second-best alternative, U.S. companies could face higher costs and less efficient production, while U.S. consumers could also see higher costs together with fewer product choices.

⁹ Nelson, Steve (2010). Automotive Market and Industry Update [PowerPoint slides]. Retrieved from https://www.nxp.com/docs/en/supporting-information/WBNR_FTF10_AUT_F0747_PDF.pdf

¹⁰ U.S. International Trade Commission (USITC). U.S.-Mexico-Canada Trade Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors. USITC Publication no. 4889. Washington, DC: USITC, 2019. <https://www.usitc.gov/publications/332/pub4889.pdf>.

¹¹ Robert Pastor, "The Future of North America," *Foreign Affairs*, July-August, 2008, p. 89.



Because NAFTA eliminated duties on most qualified goods, USMCA's commitment to retain zero tariffs on qualified goods – together with an emphasis on reducing additional non-tariff barriers and other impediments to trade – will remove uncertainties that could otherwise hinder investment in North American electronics supply chains. Because manufacturing supply chains often involve long-lived assets, uncertainty causes U.S. manufacturers to delay or even forgo capital investment. Removing uncertainties is a win for U.S. consumers and businesses. USMCA passage would allow U.S. businesses to continue to leverage supply chains that have been developed and optimized over the last 25 years. The certainty afforded by USMCA passage also would allow U.S. companies to invest in mitigating current and future risks.

Mexico and Canada's geographic proximity to the United States, together with duty-free trade under NAFTA, has led to the emergence of manufacturing clusters within all three countries. Within these clusters, firms often employ similar technologies and share worker skill needs. As a result, as firms increase their investments in both physical and human capital in their respective geographic areas, the entire industry supply chain benefits. Moreover, because increasingly specialized skills can be employed across similar firms, workers maintain flexibility.

The North American electronics value chain is heavily integrated, and this integration is likely to grow over the next decade because of manufacturers' desire to reduce Time-to-Market. Reducing Time-to-Market benefits manufacturers in numerous ways but it is increasingly required in a market environment defined by customers who want to customize products at the time of order but still demand rapid delivery.

Effects on Intra-Firm Trade in Electronics

International trade can be classified into two broad categories: arm's-length trade and intra-firm trade. Arm's-length trade is between two unaffiliated entities that have no ownership or control in the other. Intra-firm trade is trade between firms linked by control or ownership, such as between a parent company and its affiliates abroad.¹² Multinational enterprises (MNEs) have played a central role in globalization over the last two decades by establishing foreign subsidiaries. Today a significant portion of international trade is the movement of goods between affiliated companies. MNEs transfer factors of production from one country to another as part of often-large networks of manufacturing facilities. U.S. companies today maximize value creation by optimizing globally dispersed production capacity and capabilities.

The role of intra-firm trade is highly influential in North American cross-border flows. Approximately 45 percent of all imports into the United States are intra-firm imports.¹³ Roughly 50 percent of imports from Canada are intra-firm imports, while 71 percent of all imports from Mexico are goods being moved intra-firm.¹⁴

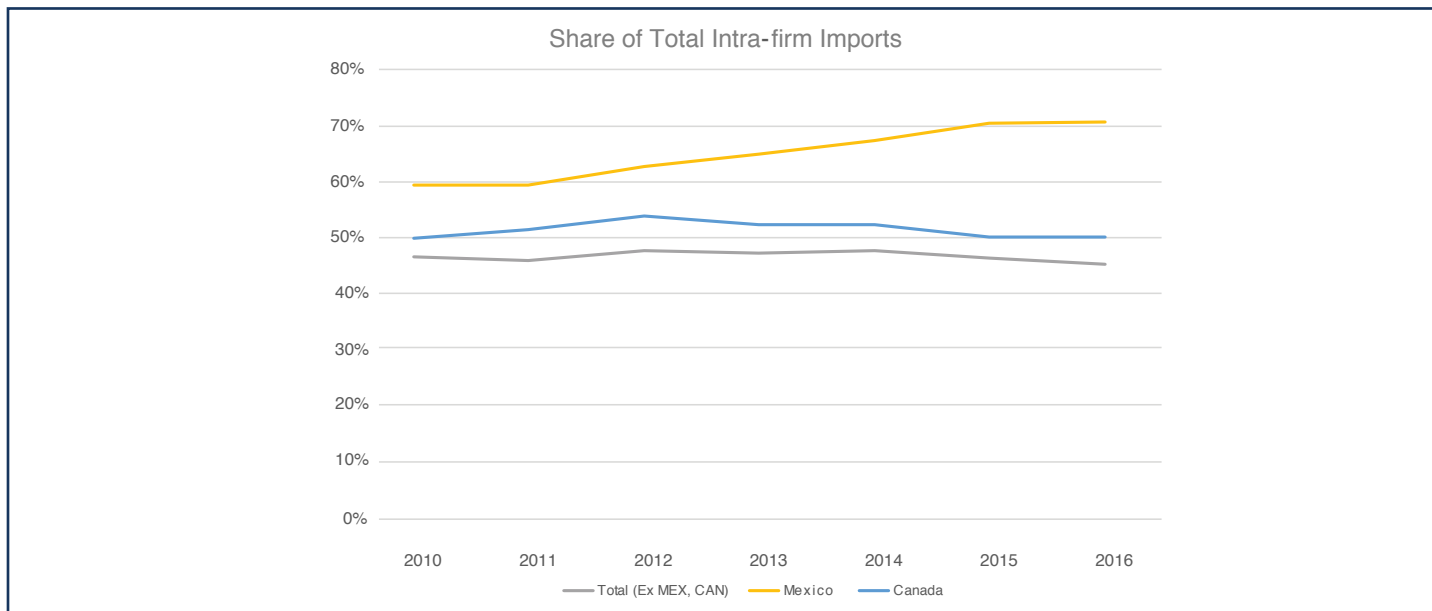
¹² The United States Census Bureau compiles intra-firm trade data from U.S. customs documentation. Companies are required to declare if cross border shipments are between related parties (intra-firm). While answering the question is required, importers and exporters do not always provide an answer. The U.S. Census Bureau does not estimate intra-firm trade for declarations that are missing a response. These data are recorded as "nonreported."

¹³ Author's calculation with data from the U.S. Census Bureau; excludes Mexico and Canada

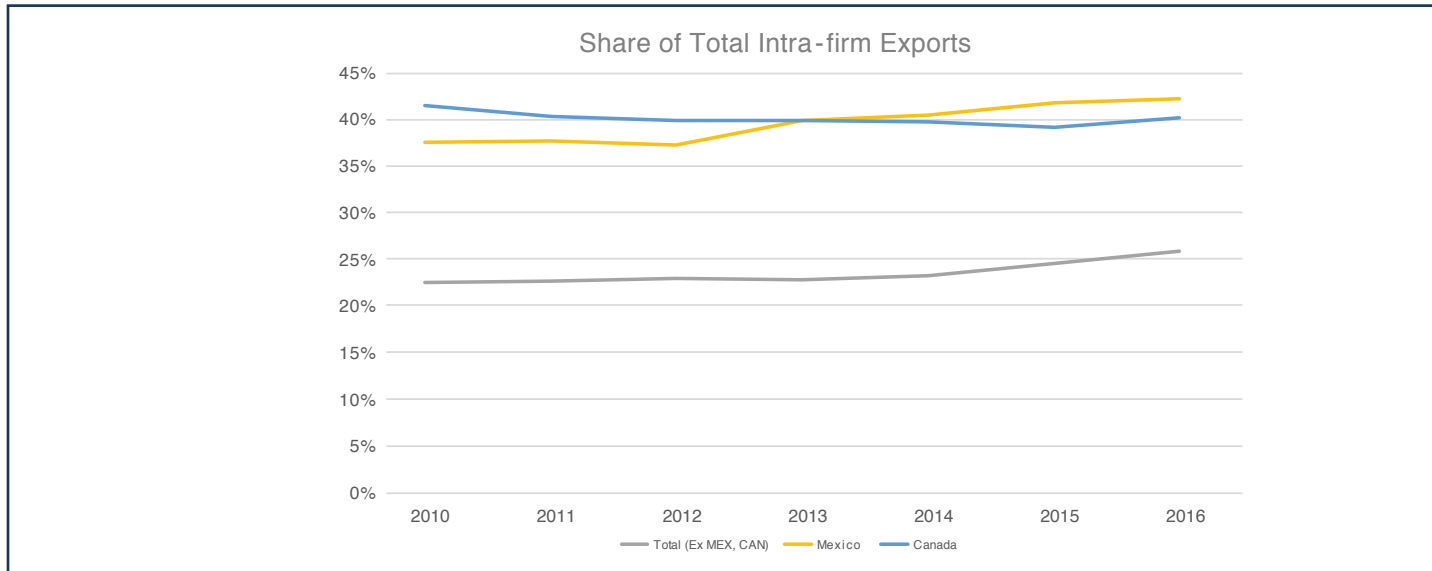
¹⁴ Author's calculation with data from the U.S. Census Bureau



Export data tells a similar story. Roughly 26 percent of U.S. exports to all countries outside of Mexico and Canada are intra-firm exports. Approximately 40 percent and 42 percent of exports to Canada and Mexico are intra-firm trade flows, respectively.¹⁵



Source: Author's calculation with data from the U.S. Census Bureau



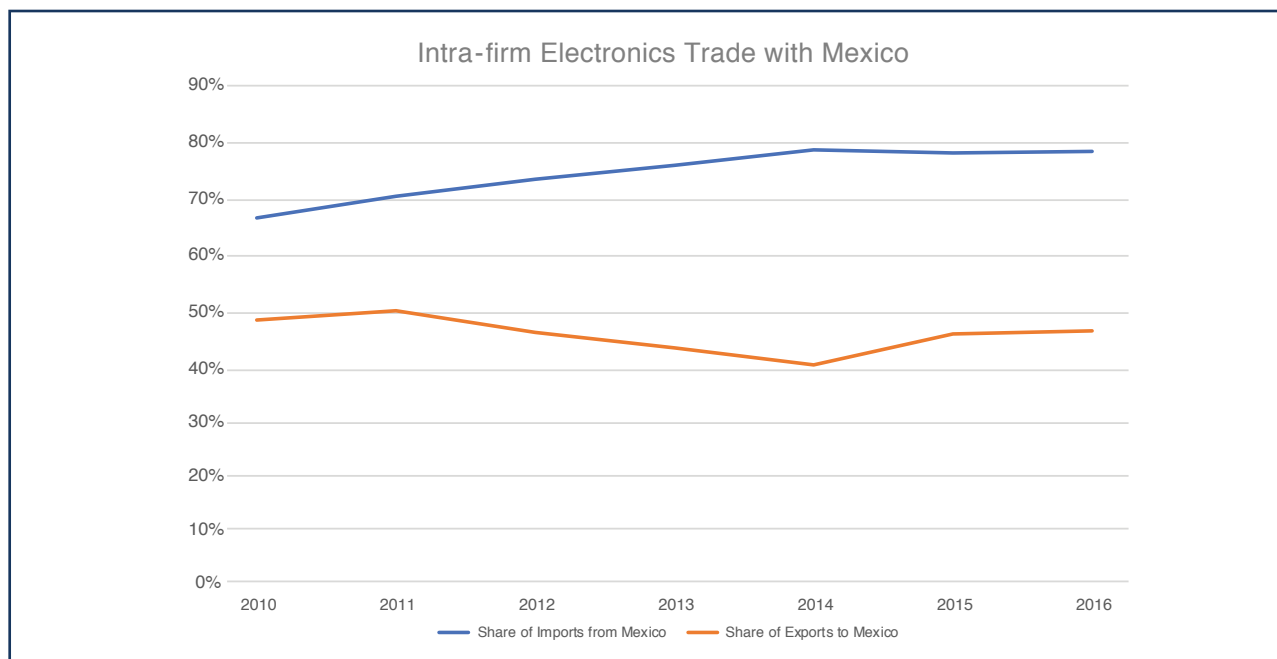
Source: Author's calculation with data from the U.S. Census Bureau

Within the computer and electronics product manufacturing sector (NAICS code 334), intra-firm trade between the U.S. and Mexico is significant. Approximately 78 percent of all electronics imported from Mexico and 47 percent of all electronics exported to Mexico are between parent companies and their affiliates.¹⁶

¹⁵ Ibid.

¹⁶ Ibid.





Source: Author's calculation with data from the U.S. Census Bureau

Intra-firm trade data makes clear the importance of maintaining free and robust trade across North America. North American trade is not simply characterized as exports and imports between producing and consuming countries. Trade flows between the United States, Mexico, and Canada are goods flowing as part of tightly integrated production chains. These transactions are taking place within firms and related affiliates where ownership and control are present. The goods produced in these economies are often co-produced regardless of where final production takes place. This is especially true for goods manufactured in Mexico that rely heavily on U.S. intermediate goods as well as final demand from U.S. businesses and consumers.

Measuring Value Added Content of Manufacturing

In global value chains, countries in the production chain add value prior to final consumption. While trade flows tell part of the story of value creation in the production cycle, they do not tell the entire story. A country's exports will consist of domestically-produced and -sourced intermediate goods, as well as goods with foreign inputs. Modern supply chain complexities have resulted in supply chains that span national borders, with each country contributing to the final value of a given good. What each country contributes to the final value is considered their valued added.

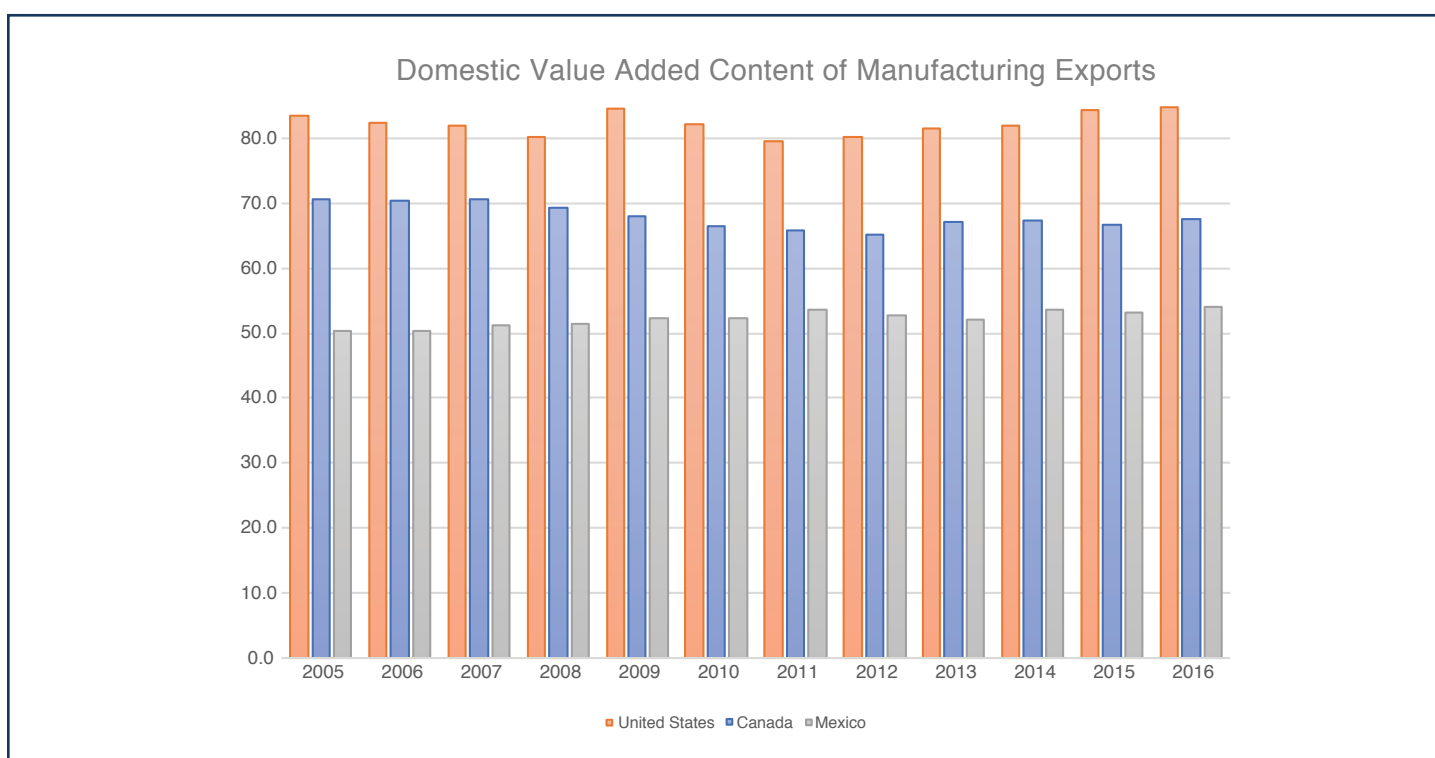
Domestic value added in gross exports is the value added by an economy in producing its exported goods and services. The final production value of a good or service in a country is the sum of the production taking place in that country together with any intermediate production taking place in other countries. Value added will reveal what percentage of the total value is attributable to production in a given country and what percentage is attributable to production outside of that country.

¹⁷ Author's calculations with data from OECD's Inter-Country Input-Output (ICIO) Database.



The domestic value added content of United States manufacturing exports in 2016 was 84.7 percent.¹⁷ This means roughly 85 percent of the value of goods manufactured in and exported from the United States was attributed to value created in the United States. The U.S. has one of the highest shares of domestic value added content of manufacturing exports in the world. This reflects the United States' large industrial capacity and its ability to source intermediate inputs from domestic providers.

The lower the share of domestic value added content, the higher the share of foreign value added content and in turn the greater the dependence on foreign trading partners and the import of their intermediate goods to produce exports. Both Canada and Mexico are highly reliant on foreign intermediate goods in order to produce exports. Given the geographic proximity of the United States to both of these markets, the United States should continue to benefit from their respective needs to import intermediate inputs in order to produce final goods.

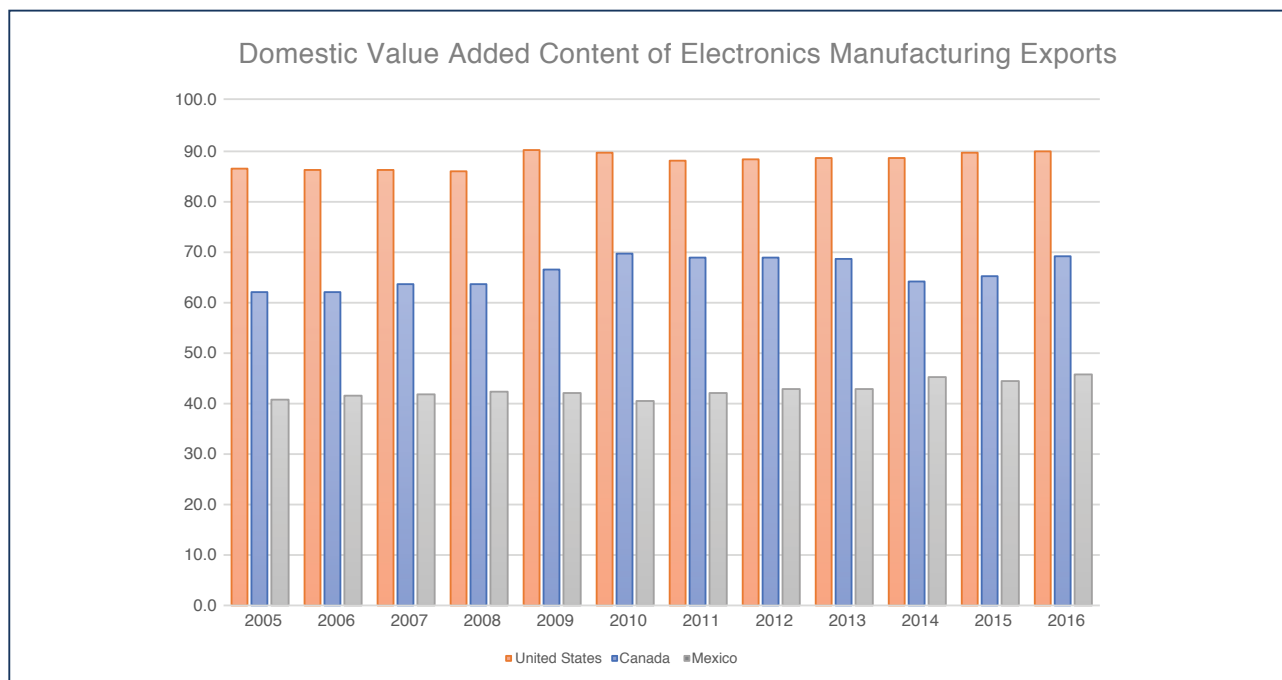


Source: Author's calculation with data from the U.S. Census Bureau

As shown in the chart, the share of domestic value added content for computers, electronics and electrical equipment manufactured in the United States is even higher than overall manufactured goods. In 2016, approximately 90 percent of value added content in electronics manufacturing in the United States came from domestic sources. In Canada it was 69.3 percent, and in Mexico it was 46 percent.¹⁸

¹⁸ Ibid





Source: Author's calculations with data from OECD's Inter-Country Input-Output (ICIO) Database

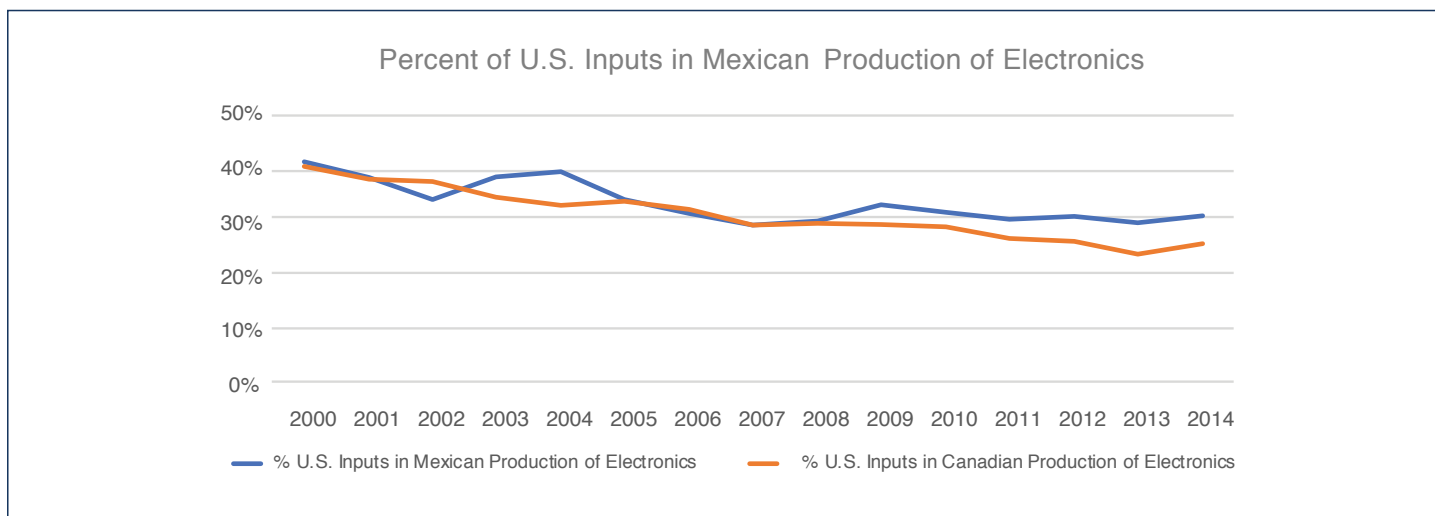
Thus, while almost all electronics manufactured in the United States today rely on domestic intermediate inputs, the same is not true for Canada and even less so for Mexico. Both rely on intermediate inputs from their respective trading partners. And in the case of Mexico, over half of the total value of the electronics products manufactured is derived from sources outside of Mexico.

Both Mexico and Canada rely heavily on U.S. intermediate goods to produce computers and other electronics. U.S. inputs make up roughly 30 percent of all Mexican electronics production and roughly 24 percent of all Canadian electronics production.¹⁹ Moreover, a significant portion of the total value of the electronics products manufactured in both Mexico and Canada is coming from the United States. As the chart illustrates, roughly 23 percent of the total value added content of electronics produced in Canada is attributable to U.S. inputs. For Mexico, roughly 18 percent of the total value added content of electronics manufactured there is attributable to the U.S.²⁰

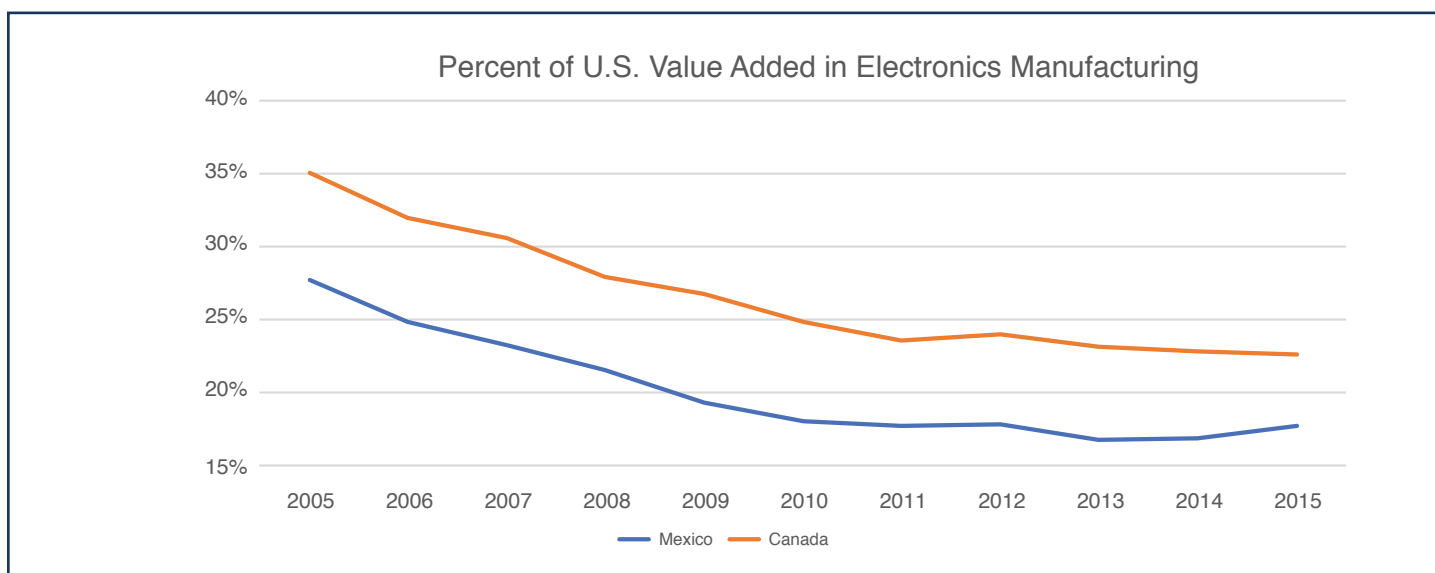
As value chains have become more global in nature, and as China together with other countries have strengthened their manufacturing and exporting bases, the U.S. share of inputs as well as the share of value added in both Mexican and Canadian electronics manufacturing has trended downward. Even with this decline over the last decade, these data suggest that U.S. inputs account for a significant share of the total value of electronics produced in both Mexico and Canada. Moreover, it is also clear that trade statistics only tell part of the story. A significant portion of the electronics that are imported into the United States from both Mexico and Canada are in fact U.S. value added. In other words, the trade statistics mask that the U.S. is essentially reimporting value that was exported as an input to a finished good that was manufactured elsewhere.

¹⁹ Author's calculations with data from the World Input-Output Database

²⁰ Author's calculations with data from OECD's Inter-Country Input-Output (ICIO) Database



Source: Author's calculations with data from the World Input-Output Database



Source: Author's calculations with data from OECD's Inter-Country Input-Output (ICIO) Database

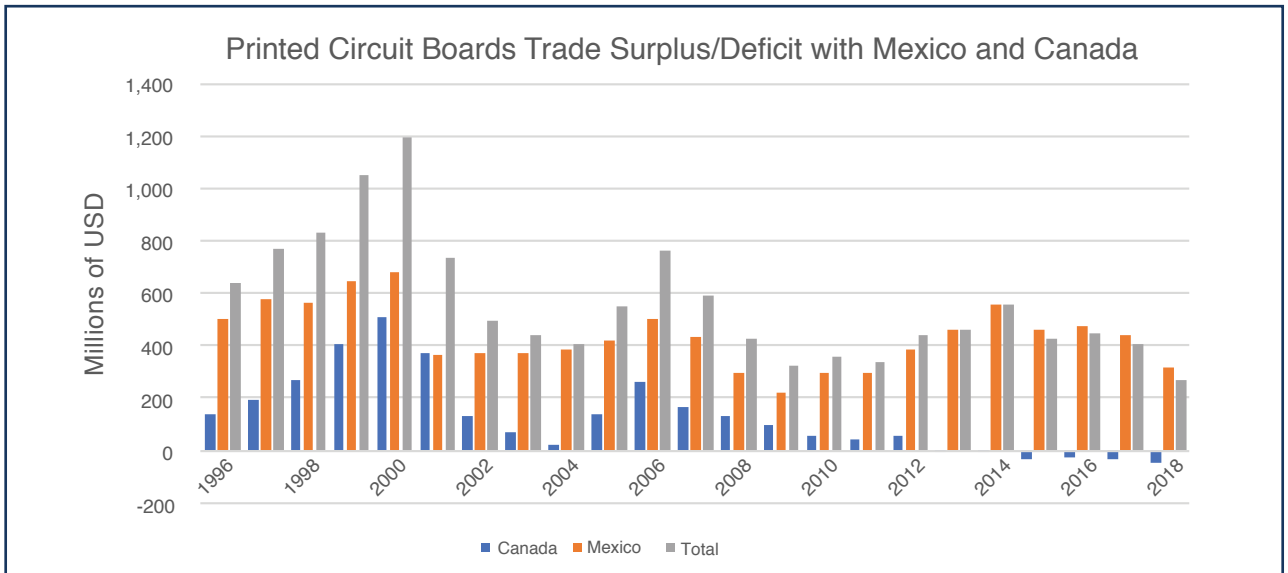
Various aspects of USMCA should remove uncertainties and lower technical barriers to trade, which in turn will increase exports to both Mexico and Canada and could help strengthen the U.S. value added contributions to their respective electronics manufacturing.

Effects on Printed Circuit Board Manufacturers

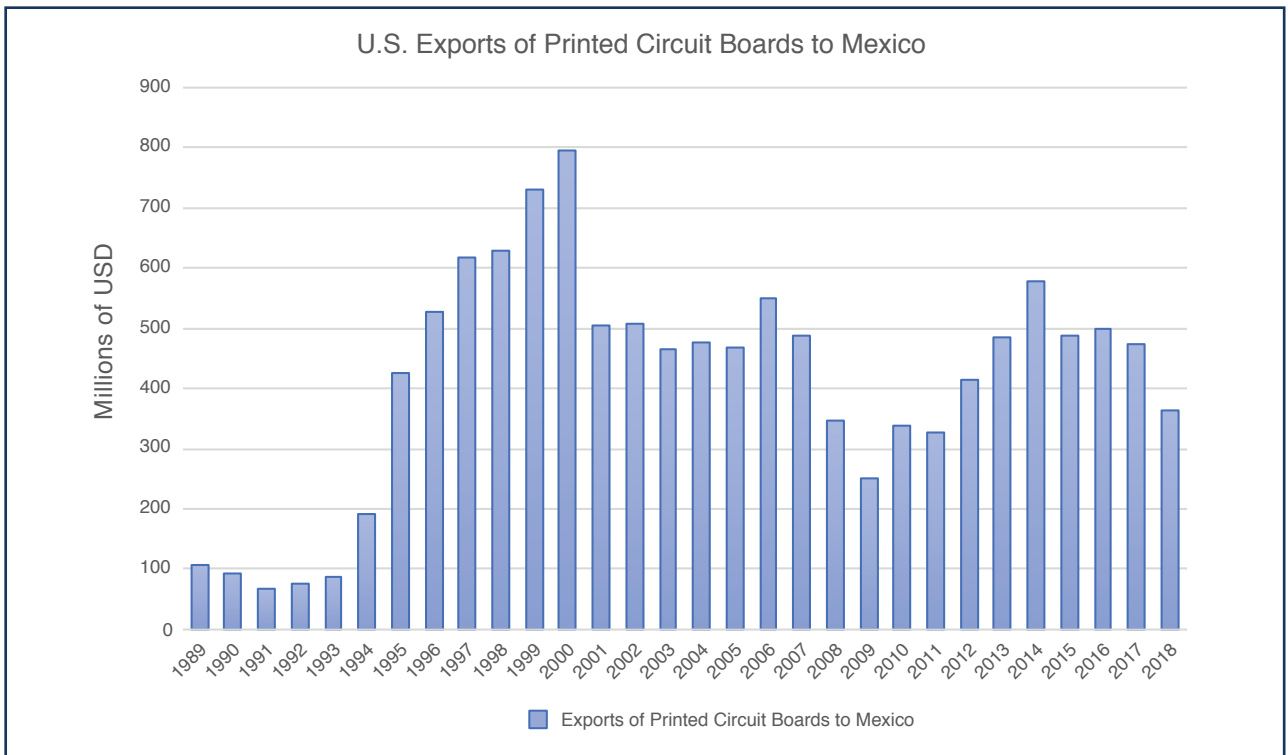
One of the Trump administration's stated trade policy objectives is to reduce the U.S. trade deficit with NAFTA partners. In the late 1990s, the U.S. ran a global trade surplus in printed circuit boards (PCBs). The rise of manufacturing hubs in Asia has reversed this trend; however, the U.S. still maintains a trade surplus with Mexico.²¹



This is especially true with respect to PCBs, which are core components in a wide variety of electronics products. In fact, Mexico imports 34 percent of U.S. PCB production, making it not only the largest market for U.S. PCBs, but also larger than the next four largest markets combined.²²



Source: Author's calculations using data from USITC DataWeb/USDOC (accessed May 15, 2019)



Source: Author's calculations using data from USITC DataWeb/USDOC (accessed May 15, 2019)

²¹ The decline in U.S. PCB exports to Canada in recent years coincides with a decline in overall imports of PCBs into Canada as well as an increase in PCB imports from China and Taiwan over the last decade.

²² Author's calculations using data from USITC DataWeb/USDOC (accessed May 15, 2019).





PCBs are used in all but the simplest of electronics products. Given the growing importance of electronics in a wide array of products being produced today, the global market for PCBs continues to grow. The passage of USMCA could buoy U.S. PCB manufacturers. The tight integration of supply chains across North America and continued efforts to reduce Time-to-Market coupled with the fact that the U.S. continues to run a trade surplus in PCBs within North America could collectively support U.S. PCB growth. Passage of USMCA lifts uncertainty and strengthens an environment in support of capital expenditures and human capital investment within the U.S. PCB market.

Effects on Electronics Manufacturing Service Providers

The electronics manufacturing services (EMS) market in North America is growing in conjunction with manufacturers' desire to reduce time-to-market. Related to this, original equipment manufacturers (OEMs) are working to provide differentiated products in the market. In the past, manufacturers might have offered a smaller variety of products, but increasingly, they are offering hundreds of choices that can be customized by the consumer at the point of purchase. Delivering on this requires not only a flexible and efficient manufacturing base but also manufacturing facilities that are geographically close to the point of sale. Passage of USMCA reaffirms a commitment to North American trade and deeply integrated supply chains.



Key Elements of USMCA and their Relevance to the Electronics Sector

Beyond the underlying economics, several specific provisions of USMCA are particularly significant for the electronics industry, with both positive and negative potential impacts.

USMCA Creates New Opportunities for Small and Medium Enterprises

Building on the progress of recent trade agreements, USMCA extends new opportunities for SMEs to participate in the global market. For the first time in the history of U.S. trade agreements, USMCA includes a separate chapter providing specific support for SMEs. This chapter is modeled on SME provisions included in the now-abandoned Trans-Pacific Partnership and previously implemented trade agreements, including the U.S.-Korea FTA.

Under the USMCA, each party is obligated to pursue increased trade and investment opportunities for SMEs by promoting cooperation between the three countries' small business support infrastructure. The goal is to create an international network of SME centers, incubators and accelerators, export assistance centers, and other public and non-public trade organizations to share best practices, exchange market research, and connect businesses to capital, government procurement opportunities, and international suppliers, buyers and partners.

Greater U.S. focus on SMEs in trade agreements is long overdue. SMEs play a much larger role in international trade than many appreciate. Approximately 98 percent of all U.S. exporters are SMEs,²³ and contrary to the assertions of trade critics, they are just as likely to benefit from trade liberalization as larger firms. Carolyn Freund and her colleagues at the Peterson Institute for International Economics found that "FTAs significantly boost exports of both small and large firms."²⁴

Freund, moreover, points out that trade agreements impact businesses differently.²⁵ Among larger firms, trade volumes are likely to grow, while among smaller firms, participation rates are likely to grow. Boosting participation rates for smaller businesses is key. Only 4 percent of U.S. SMEs export, and collectively, they represent 34% of all U.S. exports.²⁶ Helping SMEs connect to the global marketplace through education, market research, and a reduction in export costs promises to boost their trade participation rate, unlocking growth opportunities for thousands of U.S. companies.

The growth opportunity for U.S. electronics manufacturers is disproportionately significant. The overwhelming majority of U.S. electronics companies are SMEs. High-volume, low-mix manufacturing has largely gone offshore. The low-volume, high-mix manufacturing that remains is largely performed by SMEs operating on thin margins. They serve critical U.S. industries such as defense, medical, automotive, IT and telecoms, in which reliability, security, intellectual property, and real-time performance are paramount. USMCA will allow these firms to expand trade opportunities

²³ Office of the United States Trade Representative (USTR). "Small Business." <https://ustr.gov/issue-areas/small-business>

²⁴ Caroline Freund, Gary Clyde Hufbauer and Euijin Jung. "Enhancing Export Opportunities for Small and Medium-Sized Enterprises." Policy Brief 16-7. Washington, DC: Peterson Institute for International Economics, June 2016. <https://piie.com/system/files/documents/pb16-7.pdf>.

²⁵ *ibid*

²⁶ *ibid*



among USMCA countries, leveraging their collective strengths to build a resilient supply chain that better competes with other economic blocs globally.

Mirroring macro trade flows, Mexico and Canada are the top two destinations for U.S. SME goods' exports. In 2016, 82,000 U.S. SMEs exported \$51 billion in goods to Canada, and 53,000 U.S. SMEs exported \$76 billion in goods to Mexico. Electronics products, which are overwhelmingly manufactured by SMEs in the U.S., rank as the seventh-largest manufacturing industry by shipments in the U.S., which makes the inclusion of the SME chapter in USMCA truly significant for the electronics industry.²⁷

USMCA Will Promote the Expansion of Digital Services

Although NAFTA was a suitable trade agreement in its time, the world is much different today than it was in the early 1990s. There are many industries and technologies that either did not exist then or were only in their infancies. Thus, the inclusion of digital trade and e-commerce chapters in USMCA – the first U.S. free trade agreement to address these 21st century issues – marks an important advancement in trade policy. It is an improvement even over other recent trade agreements that included only limited chapters on “electronic commerce,” without a holistic view of services.

While there is a clear and growing relationship between the electronics manufacturing sector and digital services, the full scope and positive impacts of this USMCA update are difficult to foresee and probably larger than can be predicted. On the one hand, electronics are at the heart of many crucial products and systems desired by consumers and businesses, and that symbiosis will continue to grow, creating upward momentum in multiple categories. Digital services are also becoming critical to the operation of digitally connected factories and supply chains. Thus, USMCA's digital trade chapter could pave the way to unprecedented innovation and investment in all three countries.

The USMCA chapter on digital trade draws significantly from provisions that were negotiated for the now-abandoned Trans-Pacific Partnership, and the electronics industry will be impacted by several facets of these new chapters. The ability of companies to freely conduct cross-border information flows will be highly valuable. As previously described, the electronics industry has a highly integrated North American supply chain and a growing digital component, and thus the ability to send data between countries is key. The U.S. International Trade Commission (ITC) concluded that USMCA's new international data transfer provisions would cut trade costs in electronic equipment by 1.31% to both Canada and Mexico.²⁸

Small- and medium-sized electronics manufacturers will be helped by the increased de minimis standard, as they are more likely to conduct e-commerce transactions that fall under the \$2,500 threshold. Because USMCA increases the de minimis threshold for both Canada and Mexico, American electronics manufacturers will be able to compete on a more level playing field by lowering prices for other North American customers to buy products manufactured in the U.S. The ITC report describes these “trade-facilitating measures” as extremely valuable to SMEs that sell to foreign customers.²⁹

²⁷ U.S. Trade Representative, U.S.-Mexico-Canada Trade Agreement Fact Sheet: Supporting America's Small and Medium-Sized Businesses, <https://ustr.gov/trade-agreements/free-trade-agreements/united-states-mexico-canada-agreement/fact-sheets/supporting>, accessed May 15, 2019.

²⁸ U.S. International Trade Commission (USITC). U.S.-Mexico-Canada Trade Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors, Table 7.2, p. 178.

²⁹ *ibid*, 172.



In addition to the changes that directly affect IPC members, some of the USMCA digital trade provisions will impact the industry's customers. The addition of rules outlawing forced data localization, eliminating customs duties and fees on digital products, and protecting companies from being forced to disclose proprietary algorithms or source code are all positive for electronics industry customers, and as such will benefit the electronics industry itself.

USMCA Strengthens Intellectual Property Protection

Chapter 20 in USMCA is devoted entirely to intellectual property (IP) rights and is a badly needed update to the provisions in NAFTA. Protecting the IP of American companies is one of the U.S. government's highest priorities in trade negotiations, and USMCA is no different. While NAFTA established guidelines that were acceptable in the 1990s, the U.S. Trade Representative (USTR) billed this chapter as a "significant upgrade" to those protections.³⁰ Protecting intellectual property and trade secrets is fundamental to the success of the electronics industry; without them, IPC member companies would not be able to compete and thrive in global markets.

The USMCA's IP chapter would make several changes that would benefit the industry. Instead of the ten-year protections for industrial designs that were included in NAFTA, USMCA increases those protections to 15 years. USMCA also mandates patent term extensions for applications that have been delayed unreasonably by regulations or patent office issues. The electronics industry will also benefit from USMCA's expansion and strengthening of trade secrets protections, including subjecting state-owned entities to potential penalties, not just companies in the private sector.

Of course, new IP protections are only as robust as their enforcement mechanisms, and USMCA makes important updates in this area. The new agreement would allow customs officials to halt goods suspected of being counterfeit in transit or in free trade zones – a provision that is especially important to the electronics industry. This would include stopping counterfeit goods that originate from outside North America.

The Sunset Clause Injects Long-Term Uncertainty

The sunset provision is cause for some concern, as it could potentially lead to a sudden termination of the agreement and/or shifting planning horizons. The USMCA would mandate that after six years, and then every six years thereafter, the parties would conduct a joint review and determine whether they want to extend the agreement for another 16 years. (It is unclear why there is a mismatch between reviews that are conducted every six years for extensions that could extend the life of the agreement by 16 years.) If one of the three countries wanted to prevent an extension, the joint reviews would occur annually until a 16-year extension is agreed to or the agreement simply expires. In addition, any party could give six-months' written notice that it intends to withdraw from the agreement. Because the U.S. has never entered into an agreement with a sunset clause, there are differing analyses about how it could impact the overall agreement. However, there is certainly

³⁰ Office of the United States Trade Representative (USTR). "The United States-Mexico-Canada Agreement Fact Sheet: Intellectual Property." <https://ustr.gov/sites/default/files/files/Press/fs/USMCA/USMCA-IP.pdf>



a legitimate concern that the lack of long-term certainty created by this clause could negatively affect U.S. businesses. While the electronics industry supports the concept of regular reviews within the framework of the agreement, this section, as currently structured, would inject unnecessary uncertainties into long-term business plans and supply chains.

USMCA Automotive Rules Create Uncertainties for Electronics Sector

One of the areas in which USMCA makes a clear departure from NAFTA are the many changes that the U.S. government demanded to the automobile sector's rules-of-origin, which govern how the government determines where a product was manufactured. The automotive industry – much like the electronics industry – has a highly complex, internationally integrated supply chain, especially in North America. The U.S. automotive sector depends on being able to export car parts to Canada and Mexico, where they are assembled and sent back as more completed products. Both countries serve as the destinations for the majority of U.S. car part exports.

Though the agreement makes significant changes to labor value, steel, and aluminum content rules, the electronics industry is most affected by changes to the regional value content (RVC) requirements. Under NAFTA, in order to qualify for duty-free treatment, passenger vehicles and light trucks were required to contain a regional value content – meaning that the component parts were manufactured in North America – of at least 62.5 percent. Under USMCA, the RVC requirement jumps to 75 percent for passenger vehicles and light trucks. Individual automotive part categories also have specific RVC requirements in order to qualify for duty-free treatment: 75 percent for core parts, 70 percent for principal parts, and 65 percent for complementary parts. All of these auto parts categories may contain electronics. Meanwhile, the RVC requirement for heavy trucks would increase from 50 percent to 70 percent.

The electronics industry manufactures a variety of parts for automobiles across the spectrum, from passenger cars to heavy-duty commercial trucks. Thus, depending on how the automotive industry adjusts to these new standards, it may have an outsized impact on the electronics industry. The ITC points out that some automakers already would meet the new standard, while others may have to increase their North American-produced content or give up their tariff preference. The electronics industry could get a boost if automotive companies choose to increase their RVC by using more electronics manufactured in North America.

The agreement also weaves in some uncertainty regarding how RVC may be applied to parts and components in advanced-technology vehicles. These vehicles often contain a greater number of electronics components than traditional vehicles, so understanding how an RVC standard will be applied is critical. In USTR's study of the estimated impact of USMCA on the U.S. automotive sector, released in April, it specifically calls out the need to incentivize local production of high-value autonomous-vehicle sensing and computing platforms to help such vehicles to meet USMCA's RVC requirement.³¹ Increasing the RVC in advanced vehicles may benefit the U.S. electronics industry in the long run, but more clarity is needed to determine how companies can best position themselves.

³¹ Office of the United States Trade Representative (USTR), Executive Office of the President. Estimated Impact of the United States-Mexico-Canada Agreement (USMCA) on the U.S. Automotive Sector. Washington, DC: USTR, 18 April 2019. <https://ustr.gov/sites/default/files/files/Press/Releases/USTR%20USMCA%20Autos%20White%20Paper.pdf>



However, the electronics industry might be impacted negatively by higher RVC requirements if production and/or sales drop due to rising costs. For example, the ITC analysis that USMCA would lead to a 40.8 percent increase of U.S. imports of small cars from the rest of the world; a 33.2 percent decrease in U.S. small car vehicle production for North America; and a decrease in U.S. exports of vehicles to both Canada and Mexico if the automotive rules of origin in USMCA become law.³² An examination by the International Monetary Fund (IMF) of the RVC requirement in USMCA goes further, saying that it will ultimately lead to “globalized sourcing” of vehicle parts from non-USMCA countries – the very thing the rules of origin are meant to guard against.³³

For the electronics industry, the potential changes in the regional value content requirements for automobiles are a mixed bag. While some companies stand to benefit from vehicle manufacturers looking to increase their RVC by including electronics components made in North America, other companies are likely to lose market share if vehicle costs rise and production is cut.

In addition to changing requirements on the regional value content of automobiles, USMCA also would add a labor value content (LVC) requirement – a provision not contained in any other trade agreement that the U.S. is party to. The agreement would require that at least 40 percent of passenger vehicles and 45 percent of light trucks must be made by workers who earn at least \$16 per hour; and of that 40 or 45 percent, high-wage technology and R&D expenditures can make up 10 percent of the labor value content. This requirement is intended to support increased production in the U.S., as that wage is almost triple the hourly pay of a typical worker in a Mexican automotive factory. The requirement is also meant to incentivize companies to invest in research and development.

USMCA Strengthens Labor Requirements

The USMCA builds on some of the labor provisions that were included in NAFTA, which was the first U.S. free trade agreement to have worker rights provisions. The provisions included in USMCA demonstrate how far labor provisions have come in 25 years and takes some steps to ensure greater enforceability. For example, USMCA requires parties to adopt laws consistent with the guidelines of the International Labor Organization, as well as laws that ensure worker safety. The pact also would require Mexico to enact legislation to recognize collective bargaining rights; maintain independent bodies to register union activities and collective bargaining agreements; and establish an independent body to adjudicate labor disputes. The Mexican government recently enacted a law that it believes lives up to these commitments.

³² U.S. International Trade Commission (USITC). U.S.-Mexico-Canada Trade Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors, Table 3.8, p. 86.

³³ Mary E. Burfisher, Frederic Lambert, and Troy Matheson. “NAFTA to USMCA: What is Gained?” IMF Working Paper WP/19/73. March 2019. <https://www.imf.org/~media/Files/Publications/WP/2019/WPIEA2019073.ashx>



Conclusion

For the electronics industry, NAFTA was key to establishing an integrated North American supply chain, which in turn led to the growth of the industry in all three countries. The USMCA is a needed update to the existing agreement. The global economy has changed dramatically in the last 25 years, as new and innovative industries have sprouted. With the addition of chapters on digital trade and updates to intellectual property protections that address the new realities of the 21st century, USMCA establishes new norms for a new age.

USMCA also makes important changes that will help advance the electronics industry. From encouraging small- and medium-sized businesses to enter into global markets, to ensuring that American manufacturers can continue to compete in North America, there are many positives for the electronics industry in this agreement. While IPC has questions about the impact of some provisions that may have unintended consequences, such as the sunset provision and changes to regional value content for the automotive sector, in total, the agreement is a positive step forward. USMCA can be a growth engine for the electronics sector as it seeks to maintain and grow its supply chains, customers, and workforces.

IPC strongly supports U.S. enactment of the USMCA and will work with industry leaders and all three governments to support its implementation.



Strengthening Interconnections: The U.S.- Mexico-Canada Agreement and the Electronics Industry



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