

Vital Partners: How Trade Linkages with Korea, Mexico, and Taiwan Help Power America's Innovation Economy

Join the conversation with #ITIFtrade.

Stephen Ezell, ITIF, @sjezell

Charles Boustany, The National Bureau of Asian Research

Tami Overby, McLarty Associates, @tamioverby

Jimmy Goodrich, Semiconductor Industry Association (SIA)

Global Trade Interdependence-U.S. Trade Linkages with Mexico, Taiwan, and Korea

Stephen Ezell
VP, Global Innovation Policy

June 25, 2019

About ITIF

- The world's leading science and technology policy think tank.
- Supports policies driving global, innovation-based economic growth.
- Focuses on a host of issues at the intersection of technology innovation and public policy across several sectors:
 - Innovation and competitiveness
 - IT and data
 - Telecommunications
 - Trade and globalization
 - Life sciences, agricultural biotech, and energy



Global Supply Chains Maximize Production and Value

Beyond Borders: Semiconductors are a Uniquely Global Industry

Typical semiconductor production process spans multiple countries: 4+ Countries, 4+ States, 3+ trips around the world, 25,000 miles travelled, 100 days TPT, 12 days in transit



Source: Nathan Associates, "Beyond Borders: The Global Semiconductor Global Value Chain"

Examination of U.S. Trade with Mexico, Taiwan, and Korea

1. Trade in value added (TiVA).
2. Intra-industry trade in value added.
3. Composition of product trade: capital, intermediate, or final goods.
4. Domestic value added as share of countries' gross exports and imports.
5. Industry-level trade in value added across six key sub-industries.
6. Domestic value added as share of gross exports & imports, by industry.
7. Intermediate and final goods trade linkages among countries, by industry.



Global Trade Interdependence: U.S. Trade Linkages with Korea, Mexico, and Taiwan

BY STEPHEN J. EZELL AND CALEB FOOTE | JUNE 2019

Korea, Mexico, and Taiwan represent vital trade partners for the United States, not only as destinations for U.S. exports, but more importantly as key partners whose firms supply critical intermediate goods on which the health of America's advanced-technology industries depend.

The global economy has become increasingly interlinked, as nations—and enterprises therein—specialize in productive activities wherein they enjoy the greatest levels of comparative advantage. This phenomenon has become especially pronounced in the globalization of value chains for sectors such as information and communications technologies (ICT), electronics, aerospace, and automotive, with Asia becoming a central player in many of these supply chains, especially for ICT products. This internationalization of supply chains means that the success of original equipment manufacturers (OEMs) depends greatly on the health and vitality of suppliers in other nations and the ability to pursue trade, ideally on mostly unimpeded terms, with them. This report examines trade linkages between the United States and three key partner nations—Mexico, Korea, and Taiwan—analyzing the extent of inter- and intra-industry trade across six key sectors: automobiles, chemicals, computers and electronics, machinery, other transportation equipment (including aerospace), and pharmaceuticals. The report demonstrates both that U.S. industries in these sectors depend greatly on trade with suppliers in study partner nations and that these nations are key importers of U.S. goods in these industries.

INFORMATION TECHNOLOGY & INNOVATION FOUNDATION | JUNE 2019

PAGE 1

Source: ITIF, “Global Trade Interdependence: U.S. Trade Linkages with Korea, Mexico, and Taiwan”

U.S. Trade Balances With Partner Nations (\$M)

Country	Year	Gross			Value Added			Intra-industry		
		Exports	Imports	Balance	Exports	Imports	Balance	Exports	Imports	Balance
Taiwan	2014	\$24,088	\$40,584	-\$16,496	\$16,415	\$34,050	-\$17,635	\$5,304	\$4,951	\$352
Mexico	2014	\$193,345	\$293,916	-\$100,571	\$178,587	\$267,366	-\$88,778	\$42,200	\$29,078	\$13,123
Korea	2014	\$42,138	\$68,679	-\$26,541	\$43,887	\$78,341	-\$34,454	\$7,867	\$9,300	-\$1,434
Taiwan	2002	\$21,457	\$40,935	-\$19,478	\$17,052	\$36,584	-\$19,532	\$6,249	\$4,400	\$1,849
Mexico	2002	\$110,024	\$171,362	-\$61,338	\$113,839	\$169,043	-\$55,203	\$29,563	\$16,534	\$13,029
Korea	2002	\$27,029	\$45,123	-\$18,094	\$29,319	\$47,452	-\$18,133	\$7,421	\$4,421	\$3,000

Source: ITIF, "Global Trade Interdependence: U.S. Trade Linkages with Korea, Mexico, and Taiwan"

U.S. Trade With Taiwan, Adjusted by Value Added, 2014 (\$M)

Taiwan	Gross			Value Added			Intra-industry		
Industry	Exports	Imports	Balance	Exports	Imports	Balance	Exports	Imports	Balance
TOTAL	\$24,088	\$40,584	-\$16,496	\$16,415	\$34,050	-\$17,635	\$5,304	\$4,951	\$352
Chemicals	\$3,346	\$1,302	\$2,044	\$3,068	\$2,891	\$176	\$1,875	\$822	\$1,053
Pharmaceuticals	\$420	\$202	\$218	\$267	\$135	\$132	\$41	\$3	\$38
Computers and Electronics	\$3,213	\$15,554	-\$12,341	\$2,563	\$8,274	-\$5,711	\$1,675	\$1,015	\$660
Machinery	\$4,133	\$3,628	\$505	\$985	\$2,676	-\$1,691	\$264	\$242	\$22
Automobiles	\$154	\$2,345	-\$2,191	\$195	\$2,558	-\$2,363	\$23	\$1,353	-\$1,329
Other Transportation (Including Aerospace)	\$3,365	\$1,333	\$2,032	\$812	\$903	-\$91	\$488	\$289	\$199

Source: ITIF, "Global Trade Interdependence: U.S. Trade Linkages with Korea, Mexico, and Taiwan"

U.S. Trade With Korea, Adjusted by Value Added, 2014 (\$M)

Korea	Gross			Value Added			Intra-industry		
Industry	Exports	Imports	Balance	Exports	Imports	Balance	Exports	Imports	Balance
TOTAL	\$42,138	\$68,679	-\$26,541	\$43,887	\$78,341	-\$34,454	\$7,867	\$9,300	-\$1,434
Chemicals	\$5,542	\$2,653	\$2,889	\$5,143	\$6,439	-\$1,296	\$1,974	\$1,662	\$312
Pharmaceuticals	\$1,217	\$119	\$1,098	\$858	\$92	\$766	\$184	\$3	\$181
Computers and Electronics	\$5,645	\$16,363	-\$10,717	\$4,005	\$14,652	-\$10,647	\$2,236	\$1,411	\$825
Machinery	\$6,019	\$5,901	\$118	\$3,851	\$5,065	-\$1,214	\$500	\$378	\$121
Automobiles	\$1,587	\$20,866	-\$19,280	\$1,106	\$21,246	-\$20,140	\$297	\$3,217	-\$2,920
Other Transportation (Including Aerospace)	\$3,374	\$970	\$2,405	\$2,273	\$1,606	\$666	\$1,112	\$314	\$797

Source: ITIF, "Global Trade Interdependence: U.S. Trade Linkages with Korea, Mexico, and Taiwan"

U.S. Trade With Mexico, Adjusted by Value Added, 2014 (\$M)

Mexico	Gross			Value Added			Intra-industry		
Industry	Exports	Imports	Balance	Exports	Imports	Balance	Exports	Imports	Balance
TOTAL	\$193,345	\$293,916	-\$100,571	\$178,587	\$267,366	-\$88,778	\$42,200	\$29,078	\$13,123
Chemicals	\$22,208	\$5,499	\$16,709	\$23,099	\$7,019	\$16,080	\$6,113	\$1,559	\$4,554
Pharmaceuticals	\$1,628	\$327	\$1,301	\$1,646	\$277	\$1,369	\$70	\$5	\$65
Computers and Electronics	\$14,504	\$51,281	-\$36,777	\$16,867	\$44,530	-\$27,662	\$8,858	\$1,995	\$6,863
Machinery	\$18,231	\$17,217	\$1,014	\$17,306	\$18,931	-\$1,625	\$1,151	\$2,132	-\$981
Automobiles	\$21,697	\$86,986	-\$65,289	\$18,739	\$56,295	-\$37,556	\$10,126	\$12,514	-\$2,389
Other Transportation (Including Aerospace)	\$4,218	\$2,700	\$1,518	\$3,367	\$5,364	-\$1,998	\$812	\$1,931	-\$1,119

Source: ITIF, "Global Trade Interdependence: U.S. Trade Linkages with Korea, Mexico, and Taiwan"

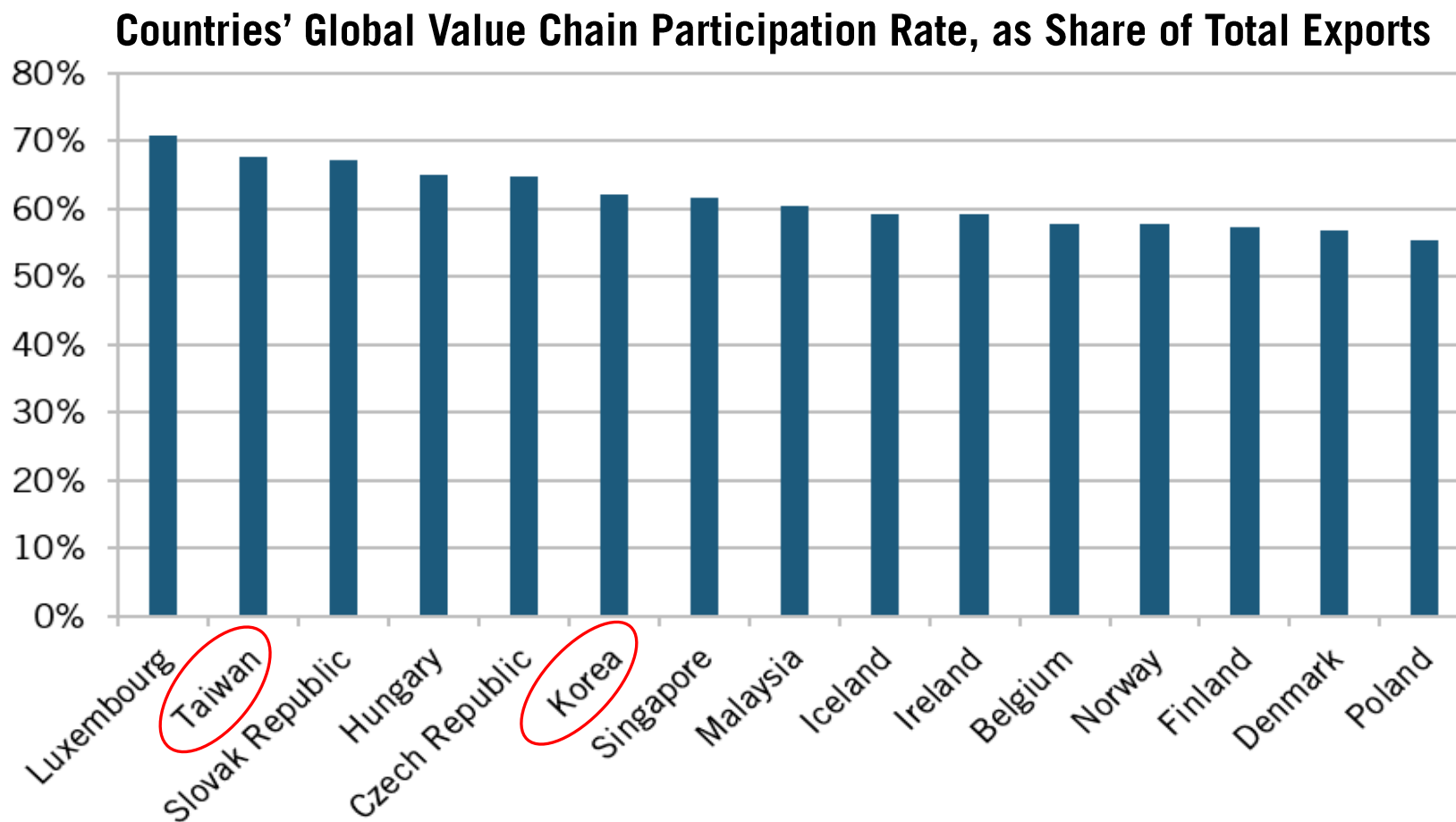
U.S.-Mexico Trade



- Bilateral U.S.-Mexico trade reached \$671 billion in 2018, making Mexico America's third-largest trading partner and second-largest goods importer.
- U.S. trade with Mexico supports over 6 million jobs, 1.7 million of which are attributable to NAFTA.*
- Value chains deeply integrated: U.S. inputs account for 40% of the value of finished manufacturing goods Mexican exports coming into the United States.
- The U.S. and Mexico form a “high-wage/low-wage partnership,” bringing complementary labor forces, investments, innovation capacity, and industry strengths together create a region able to compete globally.

*Source: U.S. Chamber of Commerce “The Facts on NAFTA”

Taiwan and Korea Among World's Most GVC-Dependent Nations



Source: World Trade Organization

Yet Have Lost Share of Global Income From Mfg. GVCs

Country	Real Manufacturers' GVC Income		Share of World Manufacturers' GVC Income	
	1995	2011	1995	2011
China	280,325	1,626,578	4.1%	16.2%
India	124,482	336,877	1.8%	3.4%
Indonesia	84,716	168,601	1.2%	1.7%
Japan	1,159,456	734,694	16.9%	7.3%
Korea	156,577	214,578	2.3%	2.1%
Taiwan	88,338	85,086	1.3%	0.8%
Germany	663,129	682,369	9.7%	6.8%
United States	1,325,204	1,456,101	19.3%	14.5%

Source: Kiyota, Oikawa, and Yoshioka, "The Global Value Chain and the Competitiveness of Asian Countries"

U.S.-Taiwan Trade




- Bilateral U.S.-Taiwan trade reached \$86 billion in 2017.
- America is Taiwan's second-largest trading partner and largest source of FDI.
- Taiwan is America's 11th-largest trading partner, 13th-largest source of imports, and 14th-most significant export destination.
- U.S. trade with Taiwan supported 210,000 U.S. jobs in 2015.

U.S.-Taiwan Trade



- “U.S. data on trade with Taiwan may understate the importance of Taiwan to the U.S. economy because of the role of global value chains.” – CRS
- Taiwanese-headquartered enterprises play key roles in the manufacture of intermediate components and final assembly for a wide range of ICT goods, from semiconductors and laptops to mobile phones.

 Congressional Research Service
Informing the legislative debate since 1914

IN FOCUS

Updated March 25, 2019

U.S.-Taiwan Trade Relations

Overview
With a population of 23.6 million people, Taiwan has evolved to become a highly developed, dynamic, and globally competitive economy. In 2018, Taiwan's gross domestic product (GDP) on a purchasing power parity (PPP) basis was \$1.25 trillion, making it the world's 22nd-largest economy. Its per capita GDP on a PPP basis (a common measurement of living standards) was 19% greater than Japan's and about 85% of the U.S. level. In 2018, Taiwan was the world's 21st-largest trading economy for goods and services. The World Economic Forum ranked Taiwan as the world's 13th-most competitive economy in 2018, and the World Bank ranked Taiwan the 15th-best economy in terms of the ease of doing business. Taiwan is a major global producer of information and communications technology (ICT) products and semiconductors.

Taiwan's Economic Challenges
Taiwan's economy is very dependent on international trade. Taiwan's exports of goods and services in 2018 totaled \$393 billion (equivalent to 67% of its nominal GDP), and were up 3.4% over 2017 levels. Taiwan's real GDP growth averaged 2.9% from 2009 to 2018, and the International Monetary Fund projects that rate will average 2.1% over the next five years. Taiwan faces a number of economic challenges, including declining competitiveness for many industries, inability to participate in various regional trade agreements, stagnant wages, and a lack of job opportunities for some college graduates. A 2018 survey by the Importers and Exporters Association of Taipei assessed Taiwan to have the 17th-most competitive trading economy out of 54 major countries surveyed, which was down from 9th in its 2011 survey. While unemployment is low at 3.6% (January 2019), the rate for those aged 20-24 is 11.7%. The Taiwanese government estimates that in 2016, 728,000 Taiwanese citizens were employed overseas, of which 407,000 (56%) worked in China. The Taiwanese government has raised concerns over China's attempts to expand incentives for Taiwanese people to move to China for work, investment, and study.

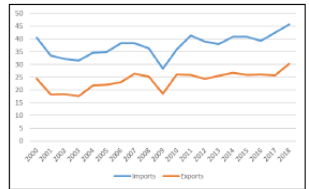
Many in Taiwan, especially those in the Democratic Progressive Party (DPP), view the slowing Taiwanese economy as a consequence of Taiwan becoming overly reliant on China for economic growth (In 2018, 41% of Taiwan's merchandise exports went to mainland China and Hong Kong), and because closer cross-strait economic ties have led to the relocation of many Taiwanese industries to mainland China, which, many argue, may have contributed to lost jobs and stagnant wages in Taiwan. Others in Taiwan, especially those in the Kuomintang (KMT), contend that closer economic ties with China have benefited Taiwan's economy and argue that boosting those ties further, such as through the implementation of new trade agreements, will put Taiwan in a good position to take advantage of opportunities that might arise as China

pursues new economic reforms and seeks to promote private consumption as the main driver of its economy.

Economic issues were a major focus of the January 2016 election in Taiwan, which resulted in a major victory for the DPP and its presidential candidate, Dr. Tsai Ing-wen. She proposed a "New Model for Economic Development" focused mainly on innovation, job creation, and addressing widening income gaps, such as by boosting social safety net policies. In an effort to lessen Taiwan's reliance on China's economy, Tsai has called for closer economic cooperation with the United States and has said that "there is an urgent need" for Taiwan to participate in the proposed Trans-Pacific Partnership (TPP), although the U.S. withdrawal from the TPP in January 2017 complicated this strategy.

U.S.-Taiwan Trade Relations
U.S. trade data show that in 2018, Taiwan was the United States' 11th-largest merchandise trading partner (at \$76 billion), 15th-largest export market (\$30 billion), and the 13th-largest source of imports (\$46 billion). From 2000 to 2018, U.S. exports to Taiwan grew by 24%, while imports grew by 13%. In comparison, U.S. global exports and imports rose by 113% and 109%, respectively.

Figure 1. U.S.-Taiwan Merchandise Trade: 2000-2018
\$ in billions



Sources: U.S. International Trade Commission (USITC).

U.S. data on trade with Taiwan may understate the importance of Taiwan to the U.S. economy because of the role of global supply chains. For example, many of the consumer electronic products developed by Apple Inc. (such as iPads and iPhones) are assembled in China by Taiwanese-owned firms. Taiwan has moved a significant level of its labor-intensive manufacturing overseas, especially to China. This is reflected in Taiwan's data on export orders received by its firms from abroad. That data indicate that the percentage of export orders produced abroad rose from 13% in 2000 to 52% in 2018; and for ICT products, this figure rose from 25% to 94%.

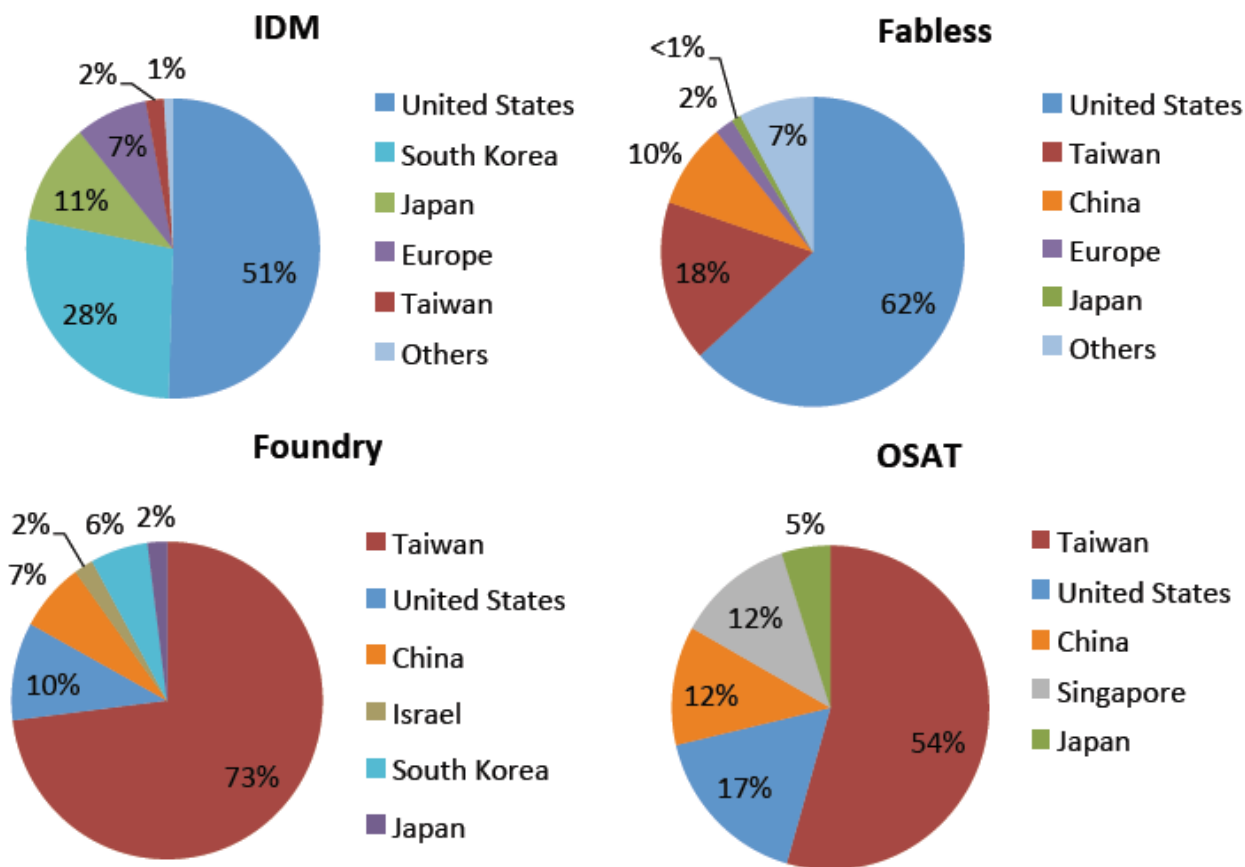
www.crs.gov | 7-5700

Source: Congressional Research Service, “U.S.-Taiwan Trade Relations”

U.S. Semiconductor Industry Empowered by Taiwanese Partners

- U.S. ICT companies account for 65% of global demand for fabless semiconductor manufacturing.
- Taiwanese companies account for 73% of global foundry-based semi. revenues.
- Taiwan consumes 30% of U.S. exports of semiconductor manufacturing equipment.
- The partnership enables continued U.S. leadership in the semiconductor industry.

Share of Revenues in Key Semiconductor Sectors



Source: Nathan Associates, "Beyond Borders: The Global Semiconductor Global Value Chain"

Policy Recommendations

1. Pass the United States-Mexico-Canada Trade Agreement.
2. Pursue a U.S.-Taiwan Free Trade Agreement.
3. Join the CPTPP, and support Taiwan's participation therein.
4. Continue to confront Chinese innovation mercantilism.
5. Tread lightly with export controls on EFTs.

Thank You!

Stephen Ezell | sezell@itif.org | 202.465.2984