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The Economic Effects of Trade: Overview and Policy Challenges

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Summary

During the Obama Administration, the United States negotiated two comprehensive and high-standard mega-regional free trade agreements: the Trans-Pacific Partnership (TPP) among the United States and 11 other countries, and the U.S.-European Transatlantic Trade and Investment Partnership (T-TIP). The 12 TPP countries signed the agreement in February 2016, but the agreement required ratification by each country before it could enter into force. In the United States this requires implementing legislation by Congress. Upon taking office, President Trump withdrew the United States from the TPP and halted further negotiations on the T-TIP, but may reengage in the TPP under different terms. The remaining 11 partners to the TPP concluded, without U.S. participation, a revised TPP, now identified as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The Trump Administration is also attempting to revise the two largest existing U.S. FTAs, through the ongoing renegotiation of the North American Free Trade Agreement (NAFTA), and modification talks regarding the U.S.-South Korea (KORUS) FTA. For Members of Congress and others, international trade and trade agreements offer the prospect of improving national economic welfare, while also raising questions about the potential cost to the economy. Congress plays an important role in shaping and considering legislation to implement U.S. trade agreements.

Discussions of trade and trade agreements often focus on a number of issues, including the role that trade plays in the U.S. economy, the impact of trade agreements on employment gains and losses, and the size of the U.S. trade deficit. This report focuses on some of the major issues associated with trade and trade agreements and the impact of trade on the U.S. economy. The key findings include the following:

- From the perspective of the U.S. economy as a whole, trade is one among a number of forces that drive changes in employment, wages, the distribution of income, and ultimately the standard of living. Most economists argue that broad macroeconomic forces, including technological advances, are generally considered to be more important than trade.
- Economists generally conclude that trade provides net overall positive benefits to economies. Changes in trading patterns associated with changes in trading partners and composition or with new trade agreements, however, may entail certain adjustment costs, including changes in employment, which can be highly concentrated with some workers, firms, and communities affected disproportionately.
- In discussions of trade agreements, both proponents and opponents use the results of a variety of trade models and underlying assumptions to estimate the impact on the U.S. economy. Such models have various strengths and weaknesses, although not always in equal proportion. Most economists argue that such estimates represent a partial accounting of the total economic effects and, therefore, are not representative of the overall impact of trade agreements on the U.S. economy.
- Some argue that trade, trade agreements, and globalization more broadly contributed to growing wealth and income equality within countries. Growing income inequality domestically is not unique to the United States, or even to developed countries, but is found in both developed and developing countries. Despite intense focus in the academic literature, there is no consensus on the direct impact that trade or trade agreements have on income inequality.

- Congress faces a number of challenging policy issues relative to trade and the impact of trade agreements on the U.S. economy. These challenges include assessing the quality of data on trade and what, if any, additional resources should be devoted to collecting trade data and analyzing the role of trade in the economy. Congress also has legislative and oversight responsibility over various government programs that assist workers and firms adjust to increased competition from trade.

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Introduction

The United States historically has led the global economic order that evolved after World War II. This economic order established multilateral economic institutions to advance rules-based commercial economic engagement, open markets, and transparent, nondiscriminatory treatment of all economic players. In turn, these efforts supported overall domestic and global economic growth and the nation's broader strategic interests. This agenda was broadly supported by successive Congresses and Administrations over seven decades. Congress plays a key role in U.S. trade policy by approving trade agreements, overseeing trade-oriented government agencies and adjustment assistance programs, and setting the terms for U.S. engagement with the global economy.

Congress plays a major role in formulating and implementing U.S. trade policy through its legislative and oversight responsibilities. Under the U.S. Constitution, Congress has the authority to regulate foreign commerce, while the President has the authority to conduct foreign relations. In 2015, Congress reauthorized Trade Promotion Authority (TPA) through the Bipartisan Congressional Trade Priorities and Accountability Act of 2015 (P.L. 114-26), which (1) sets trade policy objectives for the President to negotiate in trade agreements; (2) requires the President to engage with and keep Congress abreast of negotiations; and (3) provides for congressional consideration of implementing legislation on an expedited basis, e.g., guaranteed consideration, up-or-down vote, no amendments, limited time period.[1]

The United States concluded the Trans-Pacific Partnership (TPP) among the United States and 11 other countries and negotiated the U.S.-European Transatlantic Trade and Investment Partnership (T-TIP).[2] The 12 TPP countries signed the agreement in February 2016, but it required ratification by each country before it could enter into force. In the United States, this requires implementing legislation by Congress. Upon taking office, President Trump withdrew the United States from the TPP and halted further negotiations on the T-TIP, but may reengage in the TPP under different terms. The remaining 11 partners to the TPP concluded, without U.S. participation, a revised TPP, now identified as the Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP). The Trump Administration is also attempting to revise the two largest existing U.S. FTAs, through the ongoing renegotiation of the North American Free Trade Agreement (NAFTA), and modification talks regarding the U.S.-South Korea (KORUS) FTA. For Members of Congress and others, international trade and trade agreements offer the prospect of improving national economic welfare, while also raising questions about the potential cost to the economy. Congress plays an important role in shaping and considering legislation to implement U.S. trade agreements. Other countries also are participating in, or currently negotiating, a variety of FTAs.[3]

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[1] CRS In Focus IF10156, *U.S. Trade Policy: Background and Current Issues*, by Shayerah Ilias Akhtar, Ian F. Fergusson, and Brock R. Williams.

[2] CRS Report R44489, *The Trans-Pacific Partnership (TPP): Key Provisions and Issues for Congress*, coordinated by Ian F. Fergusson and Brock R. Williams; CRS In Focus IF10000, *TPP: Overview and Current Status*, by Brock R. Williams and Ian F. Fergusson; CRS Insight IN10443, *CRS Products on the Trans-Pacific Partnership (TPP)*, by Ian F. Fergusson and Brock R. Williams. The United States currently has 14 free trade agreements with 20 countries in force.

[3] Other trade agreements recently concluded or under negotiation include EU-Canada Comprehensive Economic and Trade Agreement (CETA); EU-Japan Free Trade Agreement; and the Regional Comprehensive Economic Partnership (RCEP), which includes the 10 ASEAN countries plus Australia, China, India, Japan, South Korea, and New Zealand. These agreements vary significantly in terms of the comprehensive nature of the agreement and the degree of market liberalization. The World Trade Organization (WTO) indicates that in January 2015 it had received notifications of 604 regional trade agreements, 398 of which are in force, and notifications of 27 preferential trade agreements, all of which are in force. See http://www.wto.org/english/tratop_e/region_e/region_e.htm.

These proposed trade agreements raise questions and concerns over the role of trade in a country's economy and how increased trade, or globalization more generally, affects its employment, the distribution of income, and its standard of living. For some observers, these negotiations hold the potential to open markets further and establish new trade rules and disciplines, and they may reenergize the World Trade Organization (WTO), whose broad Doha Round negotiations have been stalled for over a decade. For Members of Congress and others, however, international trade and trade agreements offer not only the prospect of improved national economic welfare, but also the potential for lost jobs in some sectors.

This report focuses on a number of major issues concerning the role of trade and trade agreements in the economy and issues that are particular to FTAs, including

- the role of trade in the economy and the macroeconomic forces that drive the trade deficit;
- the impact of trade on employment and the adjustment costs experienced by firms and workers;
- estimates of the number of jobs in the economy that are supported by trade and economic models used to estimate the impact of FTAs on employment;
- the impact of FTAs on foreign investment and employment; and
- the relationship between trade and the distribution of income.

Background

Discussions of trade broadly and trade agreements in particular often focus on potential effects on economic growth, the distribution of income, and employment gains or losses.[4] Most economists argue that liberalized trade results in both economic costs and benefits, but that the long-run net effect on the economy as a whole is positive. They contend that the economy as a whole operates more efficiently as a result of competition through international trade and that consumers benefit by having available a wider variety of goods and services at varying levels of quality and price than would be possible in an economy closed to international trade. They also contend that trade may have a long-term positive dynamic effect on an economy and enhance production and employment. According to the World Bank, liberalizing trade and foreign investment have reduced the number of people in the world living in extreme poverty (under $1 per day) by half, or 600 million, over the past 25 years, transforming the global economy.[5]

The United States International Trade Commission (ITC) released a study in June 2016 on the economic impact of trade agreements on the United States, based on the 14 trade agreements the United States has signed with 20 countries.[6] The report concluded that these trade agreements increased U.S. aggregate trade by about 3% and U.S. real GDP and U.S. employment by,

[4] For example, Public Citizen's Global Trade Watch office has written reports on globalization and free trade agreements. The group argues that the North American Free Trade Agreement (NAFTA) has a "disastrous legacy" and has failed to live up to promises made by NAFTA proponents at the time it was being negotiated. Their report is *NAFTA at 20,* Public Citizen's Global Trade Watch, January 2014. Other viewpoints include Gary Clyde Hufbauer and Jeffrey J. Schott, *NAFTA Revisited: Achievements and Challenges,* Institute for International Economics, October 2005, Chapter 1; Pardee Center Task Force Report, *The Future of North American Trade Policy: Lessons from NAFTA,* Boston University, November 2009.

[5] *Global Economic Prospects,* The World Bank, 2008, p. 46.

[6] *Economic Impact of Trade Agreements Implemented Under Trade Authorities Procedures, 2016 Report,* United States International Trade Commission, June 2016.

respectively, less than 1%, or $32.2 billion, and 159.3 thousand fulltime equivalent employees. In response to the report, however, Representative Sander Levin indicated in a statement:

> ....the ITC fails to adequately and innovatively address the real economic impact of previous U.S. free trade agreements. The ITC claims a small increase in GDP based on traditional economic models. The ITC fails to address the costs associated with workers losing their jobs or factories leaving communities as a result of trade agreements. Those transition costs are largely ignored in this report. They focus on the long-term benefit of lower tariffs in other countries and cheap imports coming into the United States, failing to capture the impact – which they may call short term – which can have a dramatic impact on jobs in America.[7]

Most economists also argue that macroeconomic forces within an economy are the dominant factors that shape trade and foreign investment relationships. In particular, the prominent role of these macroeconomic forces complicates efforts to disentangle the distinct impact that trade has on the economy. According to standard economic theory, macroeconomic conditions within an economy determine capital flows, which in turn affect exchange rates and the overall size of the trade deficit. In addition, economic theory holds that trade agreements between countries alter trade relationships and thus the composition of the trade deficit, but have little impact on the trade deficit's overall size.

Changes at the microeconomic level of the economy, such as new technologies, also can affect particular industries or sectors of the economy in ways that are unrelated to international trade.[8] In addition, changes in currency exchange rates, productivity, economic policies, and the business cycle can affect the overall performance of the economy in ways that may outweigh the effects of trade agreements, given the already open nature of the U.S. economy. For instance, the decline in the value of the peso in late 1994, followed by a financial crisis in Mexico and severe economic recession,[9] had a major impact on U.S.-Mexico trade, arguably greater than anything anticipated by the completion of the North American Free Trade Agreement (NAFTA).

More open markets globally and other changes have subjected a larger portion of the domestic workforce to international competition. According to the International Monetary Fund (IMF), the effective global labor market quadrupled over the past two decades through the opening of China, India, and the former East European bloc countries.[10] In particular, the entry of China into the global economy is an unprecedented development given the size of the Chinese economy and the speed with which it became a major participant in the global economy. The global economy experienced this transformation initially through a rapid increase in trade of goods and services that were produced through labor-intensive processes. It also occurred secondarily, through a major disruption in global commodity markets as China's economy experienced slower growth and it began shifting its economy away from dependence on exports to an economy focused more on domestic consumption.[11]

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[7] Representative Levin, Sander, *Rep. Levin: ITC Report Fails to Evaluate Real Impact of Trade Agreements*, June 29, 2016. https://democrats-waysandmeans.house.gov/media-center/press-releases/rep-levin-itc-report-fails-evaluate-real-impact-trade-agreements.

[8] For a bibliography of articles, see Tassey, Gregory, *Annotated Bibliography of Technology's Impact on Economic Growth,* September 2009. http://www.nist.gov/director/planning/upload/economic_impacts_of_technology.pdf.

[9] Whitt, Joseph A. Jr., "The Mexican Peso Crisis," *Economic Review*, Federal Reserve Bank of Atlanta, January/February 1996.

[10] The Globalization of Labor, *World Economic Outlook*, International Monetary Fund, April 2007, p. 161.

[11] CRS Report RL33534, *China's Economic Rise: History, Trends, Challenges, and Implications for the United States*, by Wayne M. Morrison.

According to the IMF, the internationalization of labor contributed to rising labor compensation in the advanced economies by increasing productivity and output, while emerging market economies benefited from rising wages.[12] Increased exports from labor-intensive developing economies would be expected to push down wages, adjusted for productivity, for relatively unskilled workers in developed economies, thereby reducing labor's share of income.[13]

At the same time, most economists argue that workers in developed economies are better off if the net effects of increased trade and productivity on the economy are positive. Rising employment and wages in developing economies would increase living standards in those economies and increase demand for imports from developed economies, which would place upward pressure on wages and employment. The IMF concludes that globalization is only one of several factors that have acted to reduce the share of income accruing to labor in advanced economies and that technological change likely has played a larger role in affecting the distribution of income in the economy, especially for workers in lower-skilled sectors.[14]

Another development that has upended global trade and capital and labor markets is the impact of the digital revolution. In particular, the digital revolution, as a form of technological advancement, is a new variant of the long-term trend of labor-saving technologies that improve productivity and provide opportunities for labor to shift from labor-intensive activities to more knowledge-intensive activities. According to one economist, the new technologies, termed labor-linking, are transforming the global job landscape by linking labor with demand in faraway places and creating opportunities for small and medium-sized firms to participate in the global economy.[15] In describing this new technology, this economist writes:

> What this new technology has done is to make it possible for nations that are not yet rich and industrialized, such as the low-income economies and lower middle-income economies, to connect workers with corporations in industrialized nations. If these nations are moderately well-organized and have basic infrastructure such as power and digital connectivity, their workers can do well by working for companies and customers in rich and upper-middle-income nations. This in turn is creating new competition for workers in rich and some middle-income countries, dragging their salaries down and exacerbating unemployment. In brief, while the rise of labor-saving technology is tending to curb labor demand all over the world, some emerging economies and developing economies are able to offset the decline by taking advantage of labor-linking technologies.[16]

Trade and Employment

The effects that trade and trade agreements such as the TPP have on economic growth and employment are often among the most controversial issues. Economic theory concludes that the economy as a whole benefits over the long run from a more open trade environment and greater competition, because such an environment pushes an economy to use its resources more efficiently. Standard economic theory also recognizes that some workers and producers in the economy may experience a disproportionate share of the short-term adjustment costs that are associated with shifts in resources stemming from greater international competition. Although the

[12] The Globalization of Labor, p. 161.

[13] Ibid., p. 161.

[14] Ibid., p. 161.

[15] Basu Kaushik, *Globalization of Labor Markets and the Growth Prospects of Nations*, Policy Research Working Paper 7590, World Bank Group, March 2016, p. 3.

[16] Ibid., p. 3.

attendant adjustment costs for businesses and labor are difficult to measure, some estimates suggest they may be significant over the short run and can entail dislocations for some segments of the labor force, for some companies, and for some communities. Closed plants can result in depressed commercial and residential property values and lost tax revenues, with effects on local schools, local public infrastructure, and local community viability.[17]

Many research organizations, academics, and others are analyzing the impact of trade on employment. A group of 10 international organizations, including the Asian Development Bank, the International Labor Organization, the World Bank, the Organization of American States (OAS), Organization for Economic Cooperation and Development (OECD), World Trade Organization (WTO), and the United Nations Conference on Trade And Development (UNCTAD), among others, joined together to form the International Collaborative Initiative on Trade and Employment (ICITE) to analyze the relationship between trade and employment.

A study published by ICITE surveyed the economic literature on trade and employment and restated the general position that over the long run higher levels of international trade are associated with positive rates of economic growth, rising wages, and higher levels of employment.[18] Similarly, higher levels of economic growth are associated with higher levels of international trade, which complicates efforts to disentangle cause and effect relationships between economic growth and trade. The study also concluded that countries that experienced greater trade liberalization also experienced higher levels of investment, higher levels of productivity, and improvements in both physical and human capital. In addition, the study indicated that the positive correlation between trade and economic growth seems to be predicated on companion policies that countries adopted, including policies to create a positive investment climate and labor market as well as social protection systems that support trade liberalization.

The study concluded that forces within the economy that support trade competitiveness, primarily shifts in capital and labor to more internationally competitive sectors with higher productivity, also may result in frictional unemployment and income losses for displaced workers in the short run. According to the authors, for those countries that experience greater income inequality, factors other than trade are likely to be more important. The authors concluded that

> ....working conditions in developing countries, contrary to the assertions of some, have not deteriorated with trade openness. Indeed the positive effect of trade on investment and incomes carries with it important implications for reduced child labor, workplace injuries, and informality, while offering new opportunities for female entrepreneurs. However, trade, as with changes in technology, does entail reallocation of resources, so policies that help workers to move more quickly into new, higher productivity jobs can help attenuate human costs of normal job transitions and unemployment arising from economic shocks as well as lay the foundations for more rapid growth.[19]

In addition, the authors concluded

> ....trade liberalization may (sooner or later) be a necessary but not a sufficient condition for attaining more rapid growth. Whether countries realize the potential gains from trade liberalization depends heavily on companion policies and the general economic

[17] Schneider, Howard, "When a Factory Leaves Town: In the Shadow of Silicon Valley, A City Reels From Job Losses," *The Washington Post,* August 22, 2014.

[18] Newfarmer, Richard, and Monika Sztajerowska, Trade and Employment in a Fast-Changing World, in *Policy Priorities for International Trade and Jobs,* ed., by Douglas Lippoldt, Organization for Economic Cooperation and Development, ICITE, 2012, pp. 8-9; available at http://www.oecd.org/trade/icite.

[19] Newfarmer and Sztajerowska, Trade and Employment in a Fast-Changing World.

> environment. These supportive policies—stable macroeconomic policies, adequate property rights, effective regulation, and well-designed public investments—can determine the difference between a trade reform that helps catapult trend growth to a higher level or one that produces little.[20]

Job Churning

Another factor that complicates efforts to equate gains or losses of jobs in the economy with trade or with a specific trade agreement is the constant turnover in jobs, referred to as "churn," that is continuously taking place in the U.S. economy. At the plant level, job openings may come from new businesses or from expansions at existing facilities, including those that support increased exports. Job losses may come from voluntary departures, involuntary discharges, or from business closures for any reason, including bankruptcy, personal choice, an inability to compete in the domestic market, import competition, or production shifts.

In a dynamic economy like that of the United States, jobs are constantly being created and replaced as some economic activities expand, while others contract. As part of this process, various industries and sectors evolve at different speeds, reflecting differences in technological advancement, productivity, and efficiency. Those sectors that are the most successful in developing or incorporating new technological advancements generate greater economic rewards and are capable of attracting larger amounts of capital and labor. In contrast, those sectors or individual firms that lag behind attract less capital and labor and confront ever-increasing competitive challenges. Indeed, to avoid economic stagnation, some sectors may need to relinquish some capital and labor so that others sectors can grow. Also, advances in communications, transportation, and technology have facilitated a global transformation of economic production into sophisticated supply chains that span national borders and defy traditional concepts of trade. This expanded reach of trade means that economic activities potentially can involve a greater share of the labor force in trade-related activities. How firms respond to these challenges likely will determine their long-term viability in the marketplace.

As indicated in **Table 1**, there was an annual average of 144.4 million jobs in the U.S. economy in 2016, up from the 141.8 million jobs recorded in 2015. During this same period, jobs supported by exports were estimated at 10.7 million jobs, or about 7.4% of employment in 2016. The data also indicate that in 2016 there were 13.1 million gross jobs gained in the economy and 10.6 million gross jobs lost, accounting for 9.1% and 7.4%, respectively, of the number of jobs in the economy, or amounts that bracket the total number of jobs in the economy that were supported by exports. The combined share of 16.5% (the combined shares of gross jobs gained and lost) reflects the process of job turnover during the year, or the churning in the labor market.

Job churning in the United States was more pronounced from 2008 to 2010, during the deepest part of the economic recession, when job turnover averaged over 18% of the jobs in the economy. High rates of job turnover also can occur during periods of strong economic growth, when demand for labor can prompt greater shifts in employment between growing and declining sectors of the economy. During 2008-2010, job turnover was more pronounced in the goods-producing sector of the economy, the sector most closely tied to international trade, where rates of job turnover ranged between 25% and 30%. Also, as the United States was experiencing a sharp decline in its trade deficit in 2009 and 2010, job turnover in the goods-producing sector recorded rates of 31.6% and 27.5%, respectively, rates that were much higher than the rate of job turnover in the overall economy. This likely reflected the sharp reduction in consumer spending during this period and a sharp drop in global trade due to the financial crisis and economic recession. Since

[20] Ibid., p. 13.

2011, job gains have been greater than job losses, helping to drive down the U.S. rate of unemployment. Also, since 2011, the share of jobs in the economy supported by exports has maintained a share of total employment between 10.7% and 11.2%, total goods-producing employment (6.3% and 6.7%), and services (4.1 and 4.8%).[21]

[21] Rasmussen, Chris, and Martin Johnson, *Jobs Supported by Exports 2016: An Update*, Manufacturing and Services Economics Brief, International Trade Administration, August 2, 2017.

Table 1. Jobs Gained or Lost Annually and Job Turnover in the U.S. Economy, 2011-2016

(in millions of jobs; and percentage share of jobs in the respective sectors)

Year	2011		2012		2013		2014		2015		2016	
	Jobs	% share	Jobs	% share	Jobs	% share	Jobs	% share	Jobs	% share	Jobs	% share
Total Employment												
Total	131.9	100.0%	134.2	100.0%	136.4	100.0%	139.0	100.0%	141.8	100.0%	144.4	100.0%
Gross job gains	11.6	8.8%	12.2	9.1%	12.0	8.8%	12.3	8.8%	12.8	9.1%	13.1	9.1%
Gross job losses	9.7	7.4%	9.5	7.1%	9.9	7.3%	10.0	7.2%	10.1	7.1%	10.6	7.4%
Net change	1.9	1.4%	2.7	2.0%	2.1	1.6%	2.3	1.6%	2.7	1.9%	2.5	1.7%
Jobs supported by exports	10.7	8.1%	11.2	8.4%	11.2	8.2%	11.3	8.1%	10.9	7.7%	10.7	7.4%
Goods Producing Sector												
Total	18.0	100.0%	18.4	100.0%	18.7	100.0%	19.2	100.0%	19.6	100.0%	19.8	100.0%
Gross job gains	2.2	12.4%	2.4	12.8%	2.2	11.9%	2.2	11.6%	2.3	11.6%	2.2	11.3%
Gross job losses	2.0	11.0%	1.8	10.0%	1.9	10.1%	1.8	9.6%	1.8	9.4%	2.1	10.6%
Net change	0.2	1.4%	0.5	2.8%	0.3	1.8%	0.4	2.0%	0.4	2.3%	0.1	0.7%
Jobs supported by exports	6.6	36.5%	6.7	36.6%	6.7	35.6%	6.8	35.2%	6.4	32.8%	6.3	32.0%
Services Sector												
Total	91.8	100.0%	93.8	100.0%	95.8	100.0%	97.9	100.0%	100.2	100.0%	102.4	100.0%
Gross job gains	9.4	10.2%	9.9	10.5%	9.8	10.2%	10.0	10.3%	10.6	10.5%	10.9	10.6%
Gross job losses	7.7	8.4%	7.7	8.2%	8.0	8.4%	8.2	8.3%	8.3	8.2%	8.5	8.3%
Net change	1.7	1.8%	2.2	2.3%	1.8	1.9%	1.9	1.9%	2.3	2.3%	2.3	2.3%
Jobs supported by exports	4.1	4.5%	4.5	4.8%	4.4	4.6%	4.5	4.6%	4.4	4.4%	4.4	4.3%

Sources: *Business Employment Dynamics-Second Quarter 2017*, Bureau of Labor Statistics, January 26, 2018, and *Employment Situation-March 2018*, Bureau of Labor Statistics, April 6, 2018; *Jobs Supported by Exports 2016, An Update*, International Trade Administration, August 2, 2017.

Worker Dislocation

As previously discussed, trade can have different effects on workers in different occupations, which some economists have termed the occupational exposure to international trade. As a result, trade liberalization not only can have a different effect between sectors of the economy on workers and firms, but also within the same industry. Some estimates indicate that the short-run costs to workers who attempt to switch occupations or switch industries in search of new employment opportunities as a result of dislocations related to international trade agreements may be "substantial."[22] In a study of the impact of trade liberalization on occupations, a number of economists concluded that trade liberalization has had a small effect on wages and jobs at the industry level, but that trade liberalization has provided an additional impetus within the economy for workers to shift their employment among sectors of the economy, particularly from the manufacturing sector to the services sector.[23] The study also concluded that workers who switched jobs as a result of trade liberalization generally experienced a reduction in their wages, particularly in occupations where workers performed routine tasks. These negative income effects were especially pronounced in occupations exposed to imports from low-income countries. In contrast, occupations associated with exports experienced a positive relationship between rising incomes and growth in export shares.[24]

U.S. Trade With China

Changes in trade patterns can affect the types of goods that are traded and, therefore, the types of industries and workers that are directly exposed to trade. Some economists argue that U.S. and global trade patterns were altered by the approval of permanent normal trade relations (PNTR) for China in 2000 by the United States and by China's accession to the WTO in December 2001.[25] In particular, these economists estimate that these developments increased U.S. imports from China at the expense of exporters in other Asian countries and had a major impact on U.S. manufacturing employment from 2001 to 2007. While the impact of increased Chinese imports on the U.S. economy is multifaceted and, in some cases, disruptive, the analysis also points to features and rigidities in U.S. labor markets, particularly at the local level, that hamper the adjustment process. Also, the U.S. manufacturing sector had been undergoing a fundamental restructuring for more than two decades prior to China joining the WTO and opening its economy. As **Figure 1** indicates, U.S. manufacturing employment has slowly declined since at least 1980, falling by more than one-third between 1980 and 2014. During the same period, real output in the manufacturing sector nearly doubled, reflecting the increase in productivity in the

[22] Artuc, Erhan, and John McLaren, *Trade Policy and Wage Inequality: A Structural Analysis With Occupational and Sectoral Mobility*, Policy Research Working Paper, The World Bank, September, 2012, p. 35.

[23] Ibid.

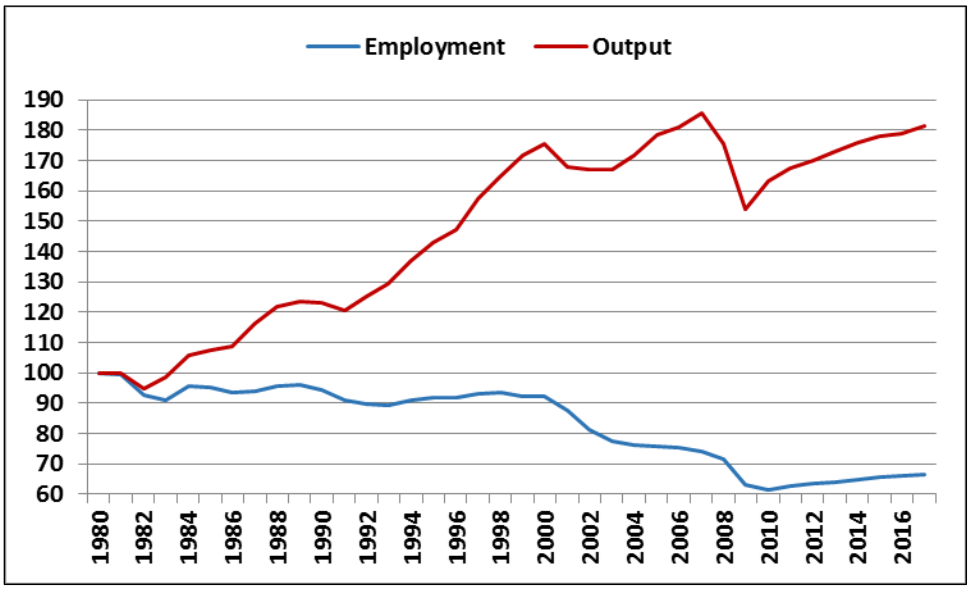
[24] Ibid.

[25] Although the change in status for China did not involve changes in tariff rates, some economists argue that the adoption of PNTR status removed uncertainty in U.S.-China trade related to the annual process of congressional approval of China's trade status and potential consideration of a resolution of disapproval under the Jackson-Vanik Freedom of Immigration requirement (Freedom of Emigration in East-West Trade, Trade Act of 1974, P.L. 93-618). A number of economists argue that imports from China since 2000 were a major factor in the loss of jobs in the U.S. manufacturing sector from 1999 through 2011. This analysis, however, is a partial accounting of the total economic effects, because it does not include the offsetting impact of increased U.S. exports to China, or the broad macroeconomic effects that stem from lower goods prices and higher real incomes for U.S. consumers and increased consumer welfare. Acemoglu, Daron, David Autor, David Dorn, Gordon H. Hanson, and Brendon Price, *Import Competition and the Great U.S. Employment Sag of the 2000s*, NBER Working Paper Series, Working Paper No. 20395, August 2014.

U.S. manufacturing sector. During the economic recession of 2009, both employment and output in the manufacturing sector declined, along with most sectors of the U.S. economy. Between 2010 and 2017, U.S. manufacturing sector employment has increased by about 8% and output has increased by more than 11%.

Figure 1. Employment and Real Output in the U.S. Manufacturing Sector, 1980-2017

(1980 = 100)



Source: Bureau of Labor Statistics; Bureau of Economic Analysis.

Some estimates indicate that imports from China have been concentrated in a relatively small number of product areas in ways that have magnified the economic impact of Chinese imports on certain U.S. economic sectors and localities. According to a recent widely cited study, the local impact of increased import competition from China was associated with increased unemployment in manufacturing, decreased labor force participation, and increased use of disability and other transfer payments in certain localities.[26] In part, these effects on local labor markets may persist over time because noncollege-educated workers, who experience the lowest levels of mobility between geographical areas or sectors, are overrepresented in manufacturing.[27] These economists argue that a combination of demand and supply factors accounts for the growth in Chinese exports, including reform-induced changes within China, rising productivity, greater movement in labor-intensive export sectors, and a lowering of trade barriers.[28]

According to this analysis, Chinese imports appear to have little effect on average U.S. manufacturing wages, in part because the most productive workers retained their manufacturing jobs and manufacturing plants accelerated technological and organizational innovations. The authors argue that wages in the U.S. nonmanufacturing sector fell because the decline in the

[26] Autor, David, H., David Dorn, and Gordon H. Hanson, The China Syndrome: Local Labor Market Effects of Import Competition in the United States, *American Economic Review*, October 2013, p. 2125. This analysis focused exclusively on U.S. imports from China and did not factor in the offsetting impact of increased U.S. exports to China or the impact of lower-priced goods from China on U.S. consumer's real incomes.

[27] Ibid., p. 2124.

[28] Ibid., p. 2159.

number of workers employed in manufacturing reduced demand for local services while increasing the supply of workers.[29] The authors also indicate that Chinese productivity grew at a faster rate than U.S. productivity from 1997 to 2007. Such a difference by itself is not unusual since Chinese productivity was growing from a lower level than that of the U.S. economy and China was importing technology and technical know-how. U.S. productivity, however, grew at a pace that was consistent with historical trends and at a faster rate than other similarly highly developed economies, which may have necessitated the shifting of some resources from import-competing manufacturing industries to other sectors of the economy, even in the absence of increased trade with China.

The impact of increased U.S. imports from China on U.S. import-competing industries, however, represents only a partial accounting of the total economic impact of increased trade with China. Lower-priced goods from China would be expected to have a negative impact on import-competing industries, as consumers shifted their purchases toward the lower-priced imports and away from the relatively more expensive domestic products (the substitution effect). This substitution of imports for domestic products would negatively affect firms and workers in the import-competing industries, as indicated in the previous analysis. At the same time, lower-priced imports would increase the real incomes for all consumers in the economy (the income effect), improving consumer standards of living by increasing their purchasing power and allowing them to increase their consumption of additional goods and services. Lower prices also would be expected to spur increased production and employment in other sectors of the economy. In addition, increased exports by China would raise national income in China, which would increase Chinese consumption of both domestic and imported commodities, affording U.S. exporters more opportunities to increase their sales in China. The authors conclude their analysis by stating, "trade theory suggests that trade with China yields aggregate gains for the U.S. economy."[30]

Others experts argue that it was China's entry into the WTO, combined with extensive policy changes in China, that increased China's productivity and manufacturing capacity. China also removed barriers to investment by U.S. firms, which helped Chinese firms develop long-term trade and investment relationships with the United States.[31] Other estimates indicate that increased trade with China has sped up technological innovation and the adoption of new technologies, both of which have contributed to productivity growth.[32]

Adjustment Policies

As a result of the differing impact of trade liberalization on workers and firms, some governments have adopted special safeguards and worker retraining and other social safety net policies to mitigate the potential adverse effects of trade liberalization or address certain trade practices that may cause or threaten to cause injury. For example, the United States established the Trade Adjustment Assistance (TAA) program to assist workers and firms adversely affected by trade agreements.[33] The primary benefits of the program are funding for retraining and weekly income

[29] Ibid., p. 2147.

[30] Ibid., p. 2159.

[31] Ibid., pp. 2121-2168; and Pierce, Justin R., and Peter K. Schott, *The Surprisingly Swift Decline of U.S. Manufacturing Employment*, Finance and Economics Discussion Series, Federal Reserve Board, April 2014.

[32] Bloom, Nicholas, Mirko Draca, and John van Reenen, *Trade Induced Technical Change: The Impact of Chinese Imports on Innovation*, NBER Working Paper 16717, January 2011.

[33] See CRS Report R40206, *Trade Adjustment Assistance for Farmers*, by Mark A. McMinimy.

support payments while affected workers are enrolled in retraining.[34] In negotiating trade agreements, governments are mindful of potential adjustment costs and address them in different ways, including negotiating longer transitional periods to phase out tariffs. At times, governments are constrained in their ability to liberalize trade due to opposition by groups within the economy that may bear a disproportionate share of the adjustment costs from such liberalization. These costs can be especially acute for older workers who may have a difficult time transitioning to other jobs and for workers who may lack advanced education and other skills. The length and impact of this adjustment process may vary greatly, depending on circumstances.[35]

The United States and its trading partners use trade remedies to mitigate the injury (or threat thereof) of various trade practices to domestic industries and workers. The three most frequently applied U.S. trade remedies are (1) antidumping (AD), which provides relief to domestic industries that have experienced, or are threatened with, material injury caused by the adverse impact of imports sold in the U.S. market at prices determined to be less than fair market value; (2) countervailing duties (CVD), which provide relief to domestic industries that are threatened with material injury due to the adverse impact of imported goods that have been subsidized by a foreign government or public entity; and (3) safeguards (also referred to as escape clause), which provide temporary relief from imports of fairly traded goods that cause or threaten to cause serious injury. Identified as Section 201 of the Trade Act of 1974, the safeguards clause may provide domestic industries with temporary relief from import competition through a temporary import duty, import quota, or a combination of both, based on a presidential decision.[36]

U.S. Jobs Supported by Exports

Various measures are used to estimate the role and impact of trade in the economy and of trade on employment. One such measure developed by the Department of Commerce's International Trade Administration (ITA) provides a unique estimate of the number of jobs in the U.S. economy that currently are supported directly and indirectly, not created, by exports. These estimates use available historical U.S. input-output data[37] and projections in years when the input-output data are not updated. The 2007 benchmark input-output table was substantially revised and updated in February 2014.[38] The benchmark input-output tables are revised every five years.

The ITA bases its approach on three economic relationships: (1) average relationships between the value of goods and services in the economy relative to the average number of jobs that are required to produce that output for each industry; (2) the value of inputs used in their production; and (3) the value of transportation and other marketing services required to bring goods and services to buyers.[39] The agency does not develop a similar methodology to estimate the number of jobs related to imports, or any job gains or losses that may be due to imports. In its 2017

[34] CRS Report R44153, *Trade Adjustment Assistance for Workers and the TAA Reauthorization Act of 2015*, by Benjamin Collins.

[35] Koenig, Gary, Lori Trawinski, and Sara Rix, *The Long Road Back: Struggling to Find Work After Unemployment*, Public Policy Institute, AARP, March 2015.

[36] See CRS InFocus 10018, *Trade Remedies: Antidumping and Countervailing Duties*, by Vivian C. Jones.

[37] Input-output tables follow the use of resources through the economy at the industry level by tracking the outputs of one industry as inputs to another.

[38] Kim, David, D., Erich H. Strassner, and David B. Wasshausen, Industry Economic Accounts: Results of the Comprehensive Revision, Revised Statistics for 1997-2012, *Survey of Current Business*, February 2014.

[39] Tschetter, John, *Exports Support American Jobs: Updated Measure Will Quantify Progress as Global Economy Recovers*, International Trade Research Report no. 1, International Trade Administration.

update, ITA estimated that U.S. exports of goods and services in 2016 supported 10.7 million jobs—6.3 million in the goods producing sector and 4.4 million in the services sector, as indicated in **Figure 2**.

ITA adjusted its methodology in 2011 to differentiate between changes in the prices of exports and changes in labor productivity. This methodology uses export price levels and a proxy estimator of U.S. export labor productivity to estimate the real value of U.S. exports (rather than the nominal value of exports reported in official sources) that support a given number of jobs as determined through input/output analysis and adjusted for changes in productivity.[40]

Goods and Services Jobs Supported by Exports

ITA projects that on average $1 billion of merchandise goods exports supported (not created) 5,223 jobs, and $1 billion of services exports supports 6,706 jobs, or an average of 5,744 jobs supported by goods and services exports combined. Expressed differently, $191,461 in merchandise goods exports, $149,120 in services exports, or an average of $174,095 in goods and services exports, supports one job in each respective sector.[41] For the economy as a whole, the share of GDP associated with exports has increased since 1990. While the value of U.S. exports has grown, the number of jobs supported by exports is not significantly different from that estimated in 1990, suggesting that labor productivity in export sectors and export-supporting sectors has grown at a faster rate than that for the economy as a whole.[42]

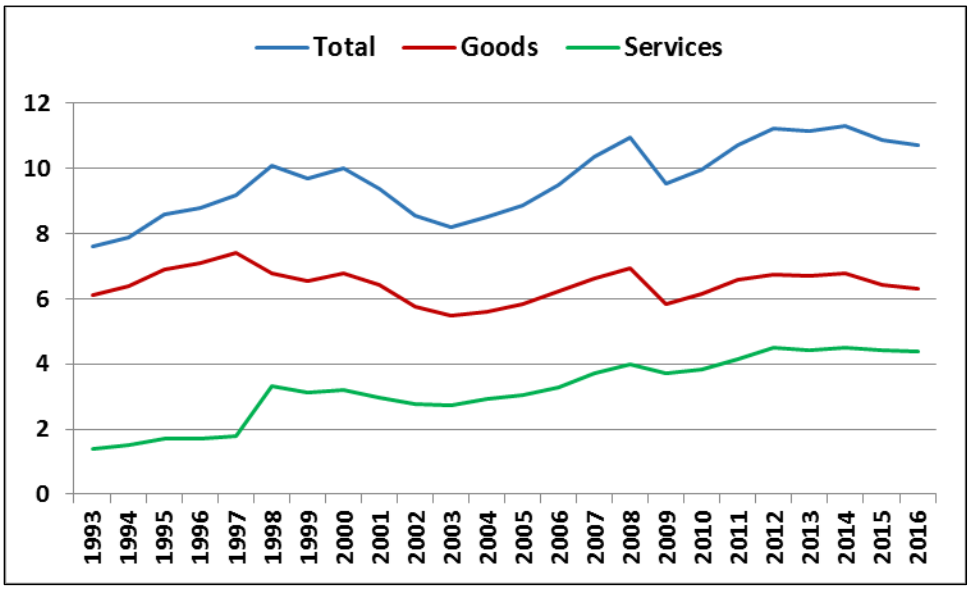
[40] Rasmussen, Chris, and Martin Johnson, *Jobs Supported by Exports, 1993-2011*, Manufacturing and Services Economics Brief, International Trade Administration, October 2012, p. 3-5. The Department of Commerce published results of an earlier version of this model in 1996 and published its first major update of that data in 2010 (14 years later), reflecting updated employment/output relationships for the years 1993-2008. Additional updates have been published annually since 2012. U.S. Department of Commerce, Economics and Statistics Administration, *U.S. Jobs Supported by Goods and Services Exports, 1983-1994*, by Lester A. Davis, Research Series OMA-1-96, November, 1996; *Jobs Supported by Exports, 1993-2011*, Manufacturing and Services Economics Brief, Chris Rasmussen and Martin Johnson, October 2012; *Jobs Supported by Exports 2013: An Update*, Martin Johnson and Chris Rasmussen, February 24, 2014, and *Jobs Supported by Exports 2016: An Update*, Chris Rasmussen and Martin Johnson, August 2, 2017.

[41] *Jobs Supported by Exports 2016: An Update*, pp. 2-3.

[42] Ibid., p. 4.

Figure 2. Estimated Number of Jobs Supported by Exports in the Goods and Services Sectors in the U.S. Economy, 1993-2016

(in millions of jobs)



Source: International Trade Administration.

Earnings for Workers in Jobs Supported by Exports

According to ITA estimates, jobs associated with international trade, especially jobs in export-intensive manufacturing industries, earn 18% more on a weighted average basis (termed the export earnings premium) than comparable jobs in other manufacturing industries, as indicated in **Figure 3**. ITA attributes this earning differential to several factors, including the observation that industries with greater access to international markets invest heavily in technology and capital in those areas where the United States has an international comparative advantage, which likely improves worker productivity. They also estimate that firms in export-oriented industries employ a more highly educated workforce on average, which also increases the average earnings of workers.[43] Estimates indicate that U.S. labor productivity, particularly in the manufacturing sector, has been robust compared to other sectors in the U.S. economy. From 1993 to 2010, labor productivity in the U.S. manufacturing sector doubled, while U.S. nonfarm business labor productivity increased by about 50%.[44] In addition, from 2002 to 2011, U.S. unit labor costs expressed in U.S. dollars fell by 15%, while unit labor costs rose in 18 other developed and developing countries.[45]

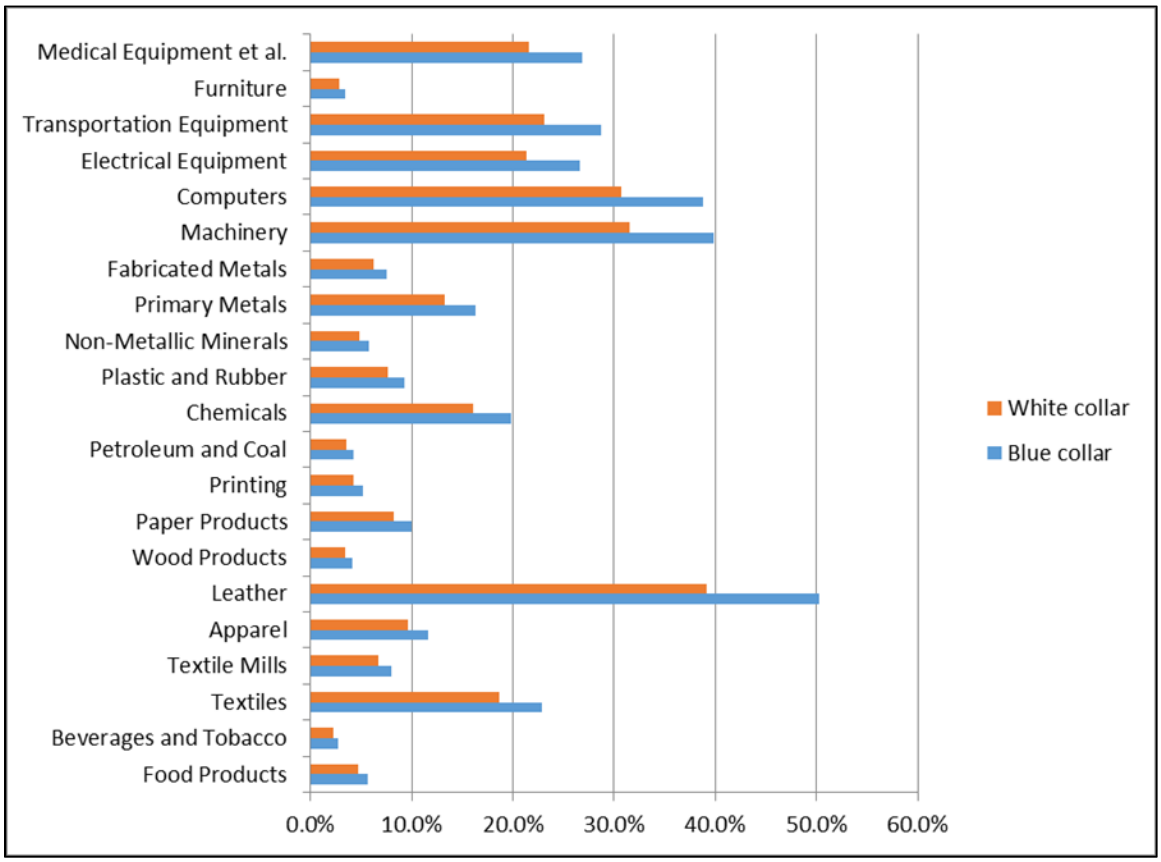
[43] Riker, David, "Do Jobs in Export Industries Still Pay More? And Why?", *Manufacturing and Services Economics Brief*, International Trade Administration, July 2010.

[44] *Jobs Supported by Exports 2013: An Update*, p. 7.

[45] *International Comparisons of Manufacturing Productivity and Unit Labor Cost Trends, 2011 Tables*, Bureau of Labor Statistics, December 6, 2012. The Bureau of Labor Statistics discontinued its international labor comparisons series in 2012.

Figure 3. Estimated Export Earnings Premium by Industry for Blue Collar and White Collar Workers, 2013

(Export earnings premium as percentage share of average weekly earnings)



Source: International Trade Administration.

ITA concludes that its estimate of export earnings premiums for 2013 likely understates the actual export earnings differential.[46] It estimates that the earnings differential for blue collar workers in export industries, at 20%, was higher than the average for white collar workers. In such industries as leather, computers, and machinery, the average weekly earnings of workers that supported exports were more than 30% higher than their counterparts in similar activities that were not involved in exporting. ITA also estimates that foreign tariffs may reduce the earnings of U.S. workers in manufacturing by 12% annually in the beverages and tobacco, food products, and apparel industries. Some economists conclude, however, that other factors, such as technological change, could account for the observed relationship between exporting and worker incomes, and they question the ability to estimate a direct cause and effect relationship between exporting, or trade more generally, and workers' earnings.[47]

[46] *Jobs Supported by Exports 2013: An Update*, pp. 2-3.

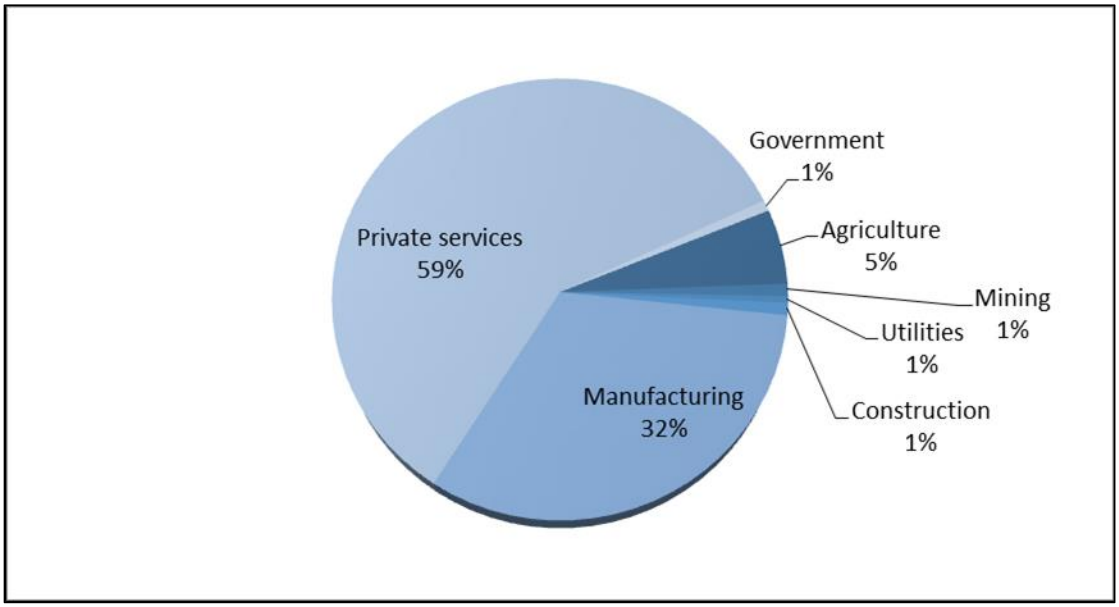
[47] Ebenstein, Avraham, Ann Harrison, Margaret McMillan, and Shannon Phillips, "Estimating the Impact of Trade and Offshoring on American Workers Using the Current Population Surveys," *The Review of Economics and Statistics*, October, 2014.

Industry Distribution of Jobs Supported by Exports

Additional estimates by ITA address the potential distribution of jobs by industry that were supported by exports in 2013, as indicated in **Figure 4**. Exports can support jobs directly and indirectly through industries that produce materials and services that serve as intermediate inputs to exports. According to ITA, jobs supported by exports in the manufacturing industry accounted for 32% of all jobs supported by exports. In addition, most of the jobs in the manufacturing sector that were supported by exports were in goods-producing activities. In contrast, jobs supported by exports in the services sector accounted for 59% of the total number of jobs that were supported by exports. Within the services sector, however, service-related jobs accounted for 40.5% of the jobs in the goods-producing sector that were supported by exports, reflecting the growing service component of merchandise exports. According to ITA, jobs supported by exports in the manufacturing sector have declined from 41.4% of the total number of jobs supported by exports in 1993 to 32.4% in 2010, also due to the relatively more rapid increase in labor productivity in the manufacturing sector.

Figure 4. Estimated Distribution by Industry of U.S. Jobs Supported by Exports, 2010

(percentage share)



Source: International Trade Administration.

Jobs Supported by State Exports

In addition to estimates of the total number of jobs in the United States that are supported by exports, ITA published estimates in 2015 of the number of jobs by state that are supported by the exports of goods, including manufactured goods, natural resources, and agricultural commodities, as indicated in **Table 2**.[48] Estimating exports by state and, therefore, estimating the number of jobs in each state that are supported by exports, however, is hampered by a lack of detailed export data. Such state-level data are based on the Census Bureau's origin of movement (OM) data, or

[48] Hall, Jeffrey and Chris Rasmussen, *Jobs Supported by State Exports 2014*, International Trade Administration, April 9, 2015.

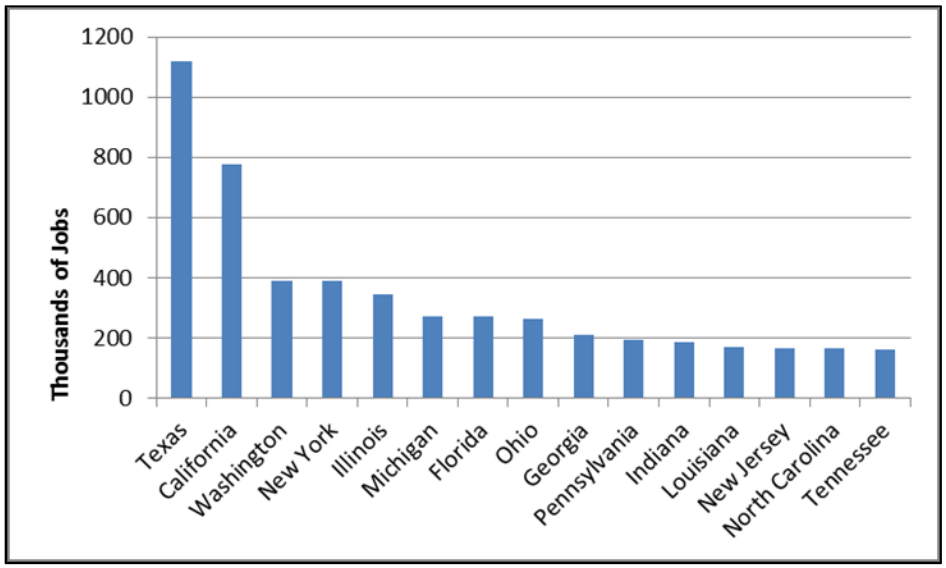
trade data based on the state in which a good began its journey to the port of export, which may not always be the state where the good was manufactured or from which it originated.[49] These data are especially problematic for agricultural commodities when those commodities are shipped on the Mississippi River to New Orleans and are credited to Louisiana, instead of to the state where the commodities were produced. To improve its estimates, the ITA used a combination of OM data and export data from the Department of Agriculture, which uses a measure of state-level farm cash receipts to estimate each state's export value based on a state's share of the total cash receipts. These shares are applied to U.S. national export values to create state export values.[50]

In using the data, the ITA cautioned that

> Given the data used to estimate jobs supported by state-level exports, care should be taken in the interpretation of the results. The figures should best be thought of as representing the number of jobs supported by the exports *from* a state as opposed to the number of jobs supported by exports *within* a state. As calculated, exports from a particular state are not necessarily produced in that state and, therefore, not all the labor embodied in the production of the export will be located in the state.[51]

According to the ITA estimates, 15 states accounted for over 70% of the total number of U.S. jobs that were supported by exports in 2014. Exports from Texas and California accounted for nearly one-fourth of the total number of U.S. jobs supported by exports, as indicated in **Figure 5**.

Figure 5. U.S. Jobs Supported by Exports, Top 15 States, 2014



Source: International Trade Administration.

[49] For exports based on origin of movement data, see http://www.census.gov/foreign-trade/statistics/state/origin_movement/index.html.

[50] *Jobs Supported by State Exports 2014*, p. 3.

[51] Ibid., p. 4.

Table 2. Estimated Number of U.S. Jobs Supported by Exports by State, 2014

State	No. of jobs	State	No. of jobs	State	No. of jobs
Alabama	95,258	Kentucky	137,138	North Dakota	32,332
Alaska	39,540	Louisiana	170,200	Ohio	263,356
Arizona	93,354	Maine	17,120	Oklahoma	36,401
Arkansas	50,490	Maryland	59,650	Oregon	86,157
California	775,320	Massachusetts	124,016	Pennsylvania	191,779
Colorado	43,615	Michigan	270,927	Rhode Island	13,459
Connecticut	75,292	Minnesota	128,863	South Carolina	153,816
DC Washington	4,114	Mississippi	51,892	South Dakota	24,407
Delaware	23,278	Missouri	86,602	Tennessee	158,913
Florida	270,473	Montana	13,319	Texas	1,117,318
Georgia	209,071	Nebraska	62,214	Utah	50,578
Hawaii	6,198	Nevada	30,319	Vermont	14,728
Idaho	26,017	New Hampshire	20,048	Virginia	90,788
Illinois	345,050	New Jersey	165,695	Washington	390,690
Indiana	187,309	New Mexico	16,546	West Virginia	35,822
Iowa	107,366	New York	389,957	Wisconsin	124,913
Kansas	70,889	North Carolina	164,023	Wyoming	6,489

Source: International Trade Administration.

U.S. Jobs, Exports, and Trade Deficits

Both opponents and proponents of trade and trade agreements have used the numerical relationship developed by ITA on the number of jobs supported by exports in the economy to serve as a proxy for estimating the employment effects of FTAs. In some cases, various groups have used these data in reverse to argue that if a certain number of jobs were supported by $1 billion of exports, then that same number could be used to argue that a certain number of jobs would be "lost" by $1 billion of imports, represented by the trade deficit (the difference between exports of goods and services and imports of goods and services) so that any net increase in imports with countries that are associated with a trade agreement would necessarily result in a loss of employment for the economy.[52] This approach also has been used by some to argue that the U.S. trade deficit implies a net loss of jobs in the economy; they contend that domestic production could be substituted for imports, which would boost both production and jobs in the U.S. economy.

While some imports and exports are substitutable, other imports represent items that are not available or are more costly to produce domestically. Also, demands on labor and capital markets

[52] In the balance of payments accounts, exports are recorded as a positive amount even though they are an outflow of goods and services from the economy, because they represent a credit for which there is a specific obligation of repayment. Similarly, although imports are an inflow of goods and services to the economy, they typically have been recorded as a negative amount, because they represent a debt that must be repaid. See *Balance of Payments and International Investment Position Manual, Sixth Edition*, International Monetary Fund, 2013, pp. 30-35.

vary substantially between export and import sectors. While some job losses associated with imports can be highly concentrated, imports also support a broad range of widely-dispersed service-sector jobs, including transportation, sales, finance, marketing, insurance, legal, and accounting.

Many economists argue that equating a trade deficit (whether on a bilateral basis or overall) with a specific amount of unemployment or job losses in the economy is questionable.[53] According to standard economic theory, the overall size of the trade deficit arises from the imbalance of saving and investment in the economy as a whole, represented by the combined net savings or dissaving of households (individuals), firms, and the government sector relative to the amount of investment that takes place in the economy. This imbalance either increases capital inflows or outflows depending on whether the net amount of saving and investment is positive, which would tend to reduce domestic interest rates and increase capital outflows, or negative, which would tend to raise domestic interest rates and induce capital inflows. Such inflows and outflows affect the international exchange value of the dollar and, therefore, the prices of exports and imports.[54]

In contrast, trade agreements and other factors alter trading relationships by changing the composition of trade, or by changing the share of trade that is represented by different countries and a different mix of goods and services. As a result, most economists argue that, given the current composition of the U.S. economy, globalization, international trade, and trade agreements are not major determinants of the overall level of employment or wages in the U.S. economy, although trade can affect various sectors of the economy disproportionately.[55] They assert that, for the U.S. economy, the total number of jobs and the overall level of production are determined by such macroeconomic factors as productivity growth, the growth rate of the population, and the pace of technological innovation.

ITA Clarification and Disclaimer

As indicated above, the methodology developed by ITA was unique to estimating a static number of jobs in the U.S. economy that were supported by exports, and ITA did not develop a similar methodology for linking imports or a trade deficit to jobs in the economy.[56] The composition of U.S. imports is fundamentally different from that of U.S. exports. While some imports and exports represent clearly substitutable items, other imports represent inputs to further processing, or are items that either are not available or are not fully available in the economy. In addition, import-competing industries likely do not have the same mix of capital and labor in their production processes as do export-oriented industries, so that demands on capital and labor markets can vary substantially across industrial sectors.

ITA has issued various statements indicating that using the data on jobs supported by exports to estimate any relationship between imports and jobs (as has been done by some) is a misuse of the

[53] For an example, see Scissors, Derek, *The Trade Deficit Does not Cost US Jobs*, American Enterprise Institute, March 16, 2015. https://www.aei.org/publication/the-trade-deficit-does-not-cost-us-jobs/.

[54] For additional information, see CRS Report RL33274, *Financing the U.S. Trade Deficit*, by James K. Jackson.

[55] Burstein, Ariel, and Jonathan Vogel, "Globalization, Technology, and the Skill Premium: A Quantitative Analysis," *NBER Working Paper Series*, Working Paper 16459, October 2010, p. 23; *Divided We Stand: Why Inequality Keeps Rising*, Organization for Economic Cooperation and Development, 2011, p. 25-26; Autor, David H., Lawrence F. Katz, and Melissa S. Kearney, Trends in U.S.. Wage Inequality: Revising the Revisionists, *The Review of Economics and Statistics*, May 2008.

[56] *Jobs Supported by Exports, 1993-2011*, p. 1.

data.[57] As ITA has stated, the employment estimate is a static relationship, or it reflects a relationship at a point in time, and is not a multiplier and should not be used to estimate changes in jobs associated with changes in exports or imports in a multiplier fashion; nevertheless, this has been done by both opponents and proponents of trade liberalization to estimate the number of U.S. jobs that have been lost or created as a result of trade agreements. In addition, the ITA estimates relate to the average number of jobs supported by exports across a broad section of the economy, which is not the same as estimating the number of jobs that would be added or lost as a result of a trade agreement. Such an estimate would need to focus on estimating the change in the composition of employment that would be associated directly with a change in trade as a result of a trade agreement. Also, most trade agreements incorporate provisions governing trade in services, investment, nontariff barriers, and a broad range of other issues that are not reflected in ITA's estimates.

ITA argues that its estimate of the number of jobs supported by exports should *not* be used with projected changes in trade to estimate potential employment effects from trade agreements. It says:[58]

> Averages derived from IO [input-output][59] analysis should not be used as proxies for change. They should not be used to estimate the net change in employment that might be supported by increases or decreases in total exports, in the exports of selected products, or in the exports to selected countries or regions.
>
> The averages are not proxies because the number of jobs supported by exports usually does not change at the same rate as export value. The rate is not the same because other factors, such as prices, resource utilization, business practices, and productivity, do not usually change at the same rate. In addition, the material and service inputs and the labor and capital inputs differ significantly across types of exports. For example, the labor requirements for an exported aircraft are significantly different from those of an exported agricultural product or an educational service.

Ideally, estimates of trade changes from tariff reductions would be multiplied by figures that reflect *actual* changes in employment (based on the mix of goods traded) that would occur *at the margin* as a result of changes in the volume of goods traded. According to ITA, though, such data do not exist. The only data that are available reflect the estimated *average* number of jobs supported across the U.S. economy by a given level of exports. Further, according to the ITA, **"[a]s a result, multiplying trade estimates from the computable general equilibrium (CGE) models by employment averages would tend to overestimate the actual number of jobs potentially lost to trade changes."**[60]

ITA also indicated that

> In addition, estimates of the average number of jobs associated with exports cannot be adjusted for fluctuations in manufacturing capacity over the course of the business cycle. As explained by the USITC, the more slack capacity there is in the U.S. economy, the more potential there would be for job creation.[61]

[57] U.S. Department of Commerce, International Trade Administration, *Exports Support American Jobs*, by John Tschetter, 2010.

[58] Ibid., p. 3.

[59] Input-output analysis takes into consideration the outputs of one industry in value terms as inputs in value terms in another.

[60] *Exports Support American Jobs*, p. 3.

[61] Ibid., pp. 3-4.

During periods of slack business activity, increased output, including from export-oriented sectors, would tend to increase employment, lower unemployment, and increase labor force participation. Conversely, during periods of strong business activity, when industry operates at or near full capacity and employment, increased output, including output for exports, tends to raise employment less—if at all—and instead mainly shifts employment to industries that pay higher wages.

Trade Agreements and Employment Estimates

In contrast to ITA's estimates of the number of jobs in the economy currently supported by exports, some economists and others use various trade models to forecast the number of jobs that may be affected by FTAs. Most economists argue, however, that estimates of employment gains or losses represent a partial accounting of the total economic effects of FTAs and, therefore, are not representative of the overall impact of FTAs on the economy. In general, various economic models and approaches used to provide differing estimates of the magnitude of changes in U.S. employment that could arise from an FTA reflect different assumptions and conditions. Both proponents and opponents of FTAs cite results of these studies to support their respective positions. The various models and approaches have strengths and weaknesses, although not always in equal proportions, and they vary in the degree to which they reflect economic reality and are highly sensitive to the assumptions that are used.[62]

Trade models are different from macroeconomic models used to forecast GDP, employment, wages, taxes, and investment in the economy. Trade models are not structured to allow them to directly estimate changes in the number of job gains or losses in the economy that may arise from a trade agreement. Instead, trade models estimate changes in employment between sectors of the economy given certain baseline assumptions about changes in prices of traded goods and GDP. The models are hampered by data limitations and other theoretical and practical issues that make it difficult to derive precise estimates of the impact of a particular trade agreement on the economy. In response, some groups use various methods and proxy estimators to assess the potential impact of trade agreements on jobs, producing a wide range of estimates.

Some groups argue that in certain cases FTAs negatively affect employment in the United States, worsen the nation's trade deficit, and reduce wages for U.S. workers. Most economists acknowledge that international trade and FTAs can entail some negative effects, particularly job losses and lower wages, with the effects falling more heavily on some workers and some firms, but they also argue that the overall net effect is positive. Generally, the costs and benefits associated with FTAs do not accrue to the economy at the same speed; costs to the economy in the form of job losses are felt in the initial stages of the agreement, while benefits to the economy accrue over time. In addition, while research is ongoing, many economists conclude that there is little evidence indicating that trade liberalization, or international trade more broadly, is a major factor affecting income distribution, whether in the United States or in other economies, developed or developing. (See the section on "International Trade and Income Inequality" in this report.)

In comparison to the limited amount of data on nontariff barriers to trade in goods and services and the difficulties involved in translating nontariff barriers into tariff equivalents, the relative availability of data on trade in goods and tariff rates has tended to drive the policy dialogue

[62] Hertel, Thomas, David Hummels, Maros Ivanic, and Roman Keeney, *How Confident Can We Be in CGE-Based Assessments of Free Trade Agreements?*, GTAP Working Paper No. 26, March 2004; Brockmeier, Martina, A *Graphical Exposition of the GTAP Model*, GTAP Technical Paper No. 8, March 2001.

concerning the impact that cuts in tariffs will have on employment, wages, and output in the economy. The rapid digitalization of the global economy, however, is reshaping global trade, as well as broader global value chains. As a result of these developments, global trade patterns arguably are being shaped more by nontariff activities than they are by traditional cuts in tariffs, due to successive rounds of trade negotiations that have lowered average tariff rates. Perhaps more importantly, the digital revolution is affecting the economy in unpredictable ways that are complicating efforts to collect data and to forecast the impact of the phenomenon in ways that capture their impact in trade models, thereby challenging the relevance of traditional trade models and some of the more common measures that often are used to assess the performance of trade agreements. As one study concluded, "globalization is being accelerated by flows of data that embody ideas, information, and innovation."[63]

Faced with pressure on jobs and wages from international trade, governments are tempted at times to protect domestic producers or vulnerable segments of the workforce. Such actions, however, have broader implications for the economy as a whole. Faced with these price pressures, firms can respond by upgrading their own production processes and improving their productivity. In lieu of making such structural changes, firms can also outsource production, fold, or attempt to alter the trade environment. Such attempts can include (1) negotiating with other producers to set a global price that is consistent with their own production costs, essentially creating a cartel price; (2) lobbying governments to raise the price of imported goods to match the domestic price through tariffs or nontariff measures, or some other form of a tax on imports; or (3) lobbying for subsidies to compensate domestic producers for the difference between the domestic and the international price. While the economic impact of these specific policies differs, they may impose costs on the economy as a whole by affecting the allocation of capital and labor. In almost all cases, efforts to protect a segment of the economy from international competition involve costs that are dispersed throughout the economy.

Trade Models

While the ITA provides annual estimates of the number of jobs in the economy that currently are supported by exports, the U.S. International Trade Commission (USITC) is directed to provide the official U.S. Government estimate of the impact of proposed trade agreements on the future course of the economy. The ITC uses an economic model known as the Global Trade Atlas Project (GTAP), located at Purdue University,[64] to estimate changes in trade (exports and imports) that arise from changes in tariff rates and tariff rate quotas.[65] This model is a long-run microeconomic model that has been used widely and tested to provide estimates of the distribution of potential gains and losses expressed as proportional effects (percentage increases or decreases in trade) for various sectors, relative to certain baseline economic projections.

Trade models used to analyze FTAs are part of a class of economic models referred to as computable general equilibrium models (CGE) that incorporate data on trade and a range of domestic economic variables from as many as 100 countries. These models generally operate with the assumption that the economy is operating at full employment and provide estimates of the distribution of potential gains and losses expressed as proportional effects (percentage

[63] *Digital Globalization: The New Era of Global Flows*, McKinsey & Company, March 2016, p. 23.

[64] The databases are cooperatively produced and maintained by researchers and scholars. The model includes many sectors and 100 countries in the world.

[65] Tariff-rate quotas permit a specific quantity of imported merchandise to enter at a reduced rate of customs duty during the quota period. There is no limit on the amount of the quota product that may be imported into the United States at any time, but quantities entered during the quota period in excess of the quota quantity for that period are subject to higher duty rates.

increases or decreases in trade) for various sectors, relative to certain baseline economic projections. As a result of the large number of countries that often are included in trade models and the vast amounts of trade data that are used by the models, the models necessarily must sacrifice some level of precision in their estimating abilities. The models aim to provide insights into the mechanisms by which changes in tariffs or other parameters can affect changes in trade flows among a set of countries. Since such trade models originally were developed with the intent of analyzing the economic effects of such broad multilateral trade agreements as the Uruguay Round, this lack of precision was not considered to be an important drawback. However, this lack of precision may be an issue when the models are used to estimate the effects of bilateral trade agreements where the overall amount of trade, and therefore the impact of the agreement, is expected to be less than that of a comprehensive multilateral agreement.

Since tariff reductions and other provisions in trade agreements are phased in over a number of years, trade models must incorporate a number of assumptions that invariably compromise their ability to make accurate estimates. Trade agreements also attempt to strike a balance between commitment to an implementation schedule and flexibility to allow governments to adjust their commitment schedules due to events that may affect the length of time it takes for the agreement to be fully implemented. Such models also reflect various assumptions and subjective analysis that is used to estimate the economic impact of removing nontariff barriers, increasing foreign investment, and reducing or removing other barriers to trade. Nontariff measures have become an increasingly important component of trade agreements and may offer the greatest long-term benefits. Successive rounds of multilateral trade agreements have instituted across-the-board cuts in tariffs that have stimulated global trade among developed and developing economies and increased global economic welfare. What largely remain are higher tariffs on products that are the most politically sensitive.

Estimating the effect of trade agreements on employment is complicated further by two major economic forces. When import prices are lowered due to a trade agreement, the lower prices have two main effects: (1) they lower the prices of imported goods, which can stimulate a shift in domestic demand toward the comparably lower-priced imported goods (the substitution effect); and (2) they increase the real purchasing power of consumers and producers, which may increase demand for all goods and services (the income effect). For some goods, these two effects work in tandem to unambiguously increase demand, tending to increase production and employment. In some cases, however, the two effects work in opposite directions: the substitution effect has a negative impact on demand, while the income effect has a positive impact on demand. In these cases, the result of these two effects is ambiguous.

Other Domestic Effects of Trade

Beyond external forces that affect the economy, multi-directional interactions within the economy complicate efforts to determine cause and effect between trade and trade agreements and the gains or losses of jobs. International trade is not the primary force that creates jobs in the U.S. economy; exports account for about 13% of total U.S. annual GDP, compared with 45% in Germany and 30% in Canada.[66] The total number of jobs and the overall level of production in the United States are determined by such macroeconomic factors as productivity growth, the growth rate of the population, and the pace of technological innovation.

Although trade agreements may have a limited impact on the U.S. economy as a whole, trade agreements with specific countries may have a concentrated impact on certain sectors of the economy due to the nature of the trade relationship. As indicated, it is difficult to determine

[66] *Quarterly National Accounts*, Organization for Economic Cooperation and Development, various issues.

beyond broad generalizations how a trade agreement will affect jobs in the economy, given the range of other factors that can affect job gains and losses in the U.S. economy, especially considering the extended phase-in period of most FTAs. Also, significant gaps in data, particularly relative to formal and informal barriers in the services sector, hinder the ability to model the effects of trade agreements that lower barriers to trade in services. These gaps are important for the United States, because the services sector accounts for 66% of output and 70% of full- and part-time employment in the U.S. economy, and increased trade in services offers the possibility of large gains for the U.S. economy.[67] U.S. trade also is characterized by the extent of trade with developed economies that are similar to the United States. In 2015, for instance, 63% of U.S. exports and 57% of U.S. imports were from countries with similarly highly developed economies.[68]

In general, economists view trade agreements as a potential force in encouraging greater economic openness. Consequently, trade agreements potentially can serve as a driving force for economic change. This change, however, cannot always be quantified and, therefore, cannot always be represented in trade models. Comprehensive free trade agreements include a range of policy issues that have cross-border implications, including trade in goods and services, investment, regulatory and other nontariff trade barriers, government procurement, e-commerce, agricultural barriers, intellectual property rights, state-owned enterprises, worker rights, and the environment. As such, these trade agreements can serve as catalysts for economic growth and development that can have a significant impact on a nation's economy beyond what would be predicted from traditional trade models. This can be particularly important for developing countries; such countries may be trying to raise their own standards and see trade agreements as important tools for integrating themselves into regional and global economies, as well as for implementing domestic economic reforms. In addition, trade agreements may help standardize such matters as dispute resolution procedures and other governance issues.[69]

General Assumptions and Limitations of Trade Models

Beyond the general limitations discussed above, trade models incorporate a number of other, often unstated, assumptions that affect their forecasting accuracy. Despite these limitations, CGM trade models are widely used and have proven to be helpful in estimating the effects of trade liberalization in such sectors as agriculture and manufacturing where the barriers to trade are more easily identifiable and quantifiable. Barriers to trade in services and investment, however, have proven to be more difficult to identify and, therefore, to quantify in an economic model. In general, trade models attempt to estimate the impact on domestic economic activity as a result of changes in the volumes of exports and imports that would arise from changes in the prices of goods that, in turn, are affected by changes in tariff rates. These estimated changes in exports and imports are based on assumptions noted below.

General Assumptions

Trade models like the GTAP model noted above must aggregate vast amounts of data into a manageable size, for instance by reducing more than 17,000 individual commodities into about

[67] GDP by Industry, Revised, Bureau of Economic Analysis; and *Employment Situation*, Bureau of Labor Statistics, Table B-1.

[68] *International Trade in Goods and Services*, Census Bureau, February 5, 2016, Exhibit 14.

[69] Tussie, Diana, and Carlos Aggio, Economic and Social Impacts of Trade Liberalization, in *Coping With Trade Reforms: A Developing Country Response on the WTO Industrial Tariff Negotiations*, ed. by Fernandez de Cordoba, Santiago, and Sam Laird, United Nations Conference on Trade and Development, July 8, 2008, p. 92.

50 categories. As a result, tariffs in the models represent weighted averages of tariffs for the commodities that are aggregated into these basic groups. This procedure tends to mask the importance of those products within the aggregate that have high tariff rates. This also means that products within a group may not be good substitutes for products in another country and imported products in a category may be quite dissimilar to a country's domestic product in that same category.

Trade models also generally do not incorporate assumptions about the speed with which tariff changes affect the relevant economies, leaving it to the modelers to make assumptions about how quickly changes in tariff rates will be passed along in goods prices and about the timing of any adjustments that occur. Also, these models make no assumptions about the basic input-output structure of the economy, and they do not attempt to adjust this structure to account for economic or technical changes that lead an industry to substitute one factor for another. This assumption is particularly important, since the basic economic theories that relate changes in the prices of goods, whether from changes in tariff rates or from some other source, to changes in the demand for such factors as labor and capital assume that price changes drive changes in the basic input-output structure of the economy.

Full Employment Assumption

Despite the attention that often is focused on the impact of trade agreements on jobs, trade models generally do not incorporate the types of labor market and other economic data that are necessary to estimate job gains or losses in specific industries. As a result, most model simulations assume that changes in aggregate demand that result from a trade agreement will lead to changes in prices (wages and exchange rates) instead of changes in quantities (employment and output). Most trade models also assume that the economies of the countries involved are operating at full employment and that the level of employment is fixed. These assumptions mean that any gains that are experienced as a result of trade liberalization appear as gains in income and changes in the composition of employment by industry, not as changes in the total amount of employment.

While some analysts have questioned the assumption of full employment, other experts argue that it is not unreasonable considering the long-term time frame that generally is required for most trade agreements to become fully implemented.[70] During this time, the economy would be expected to return to its long-term growth path at or near full employment. Over the estimating period, a persistent low level of unemployment is unlikely to have a significant impact on the results of the models, given the multitude of other assumptions that are involved in generating estimates. In addition, over the implementation period of the agreements, it does not seem reasonable to assume that the rate of unemployment would persist at levels that would be high enough to have a significant impact on the estimates. In such a case, either the economy would be expected to return to full employment solely through market forces, or the government would be expected to intervene by adopting Keynesian-style stimulative macroeconomic policies (changes in tax rates or government spending) to assist the economy in returning to full employment. It seems questionable, however, that populations in democratic societies would accept high levels of unemployment that would persist long enough to materially affect the economy and, therefore, the estimates of a trade agreement, without these same populations expecting the government to take action.

[70] Lawrence, Robert Z., and Tyler Moran, *Adjustment and Income Distribution Impacts of the Trans-Pacific Partnership*, Working Paper 16-5, Peterson Institute for International Economics, March 2016.

Consumer Indifference Assumption

Trade models also generally assume that consumers are indifferent to the quality of the goods they consume and whether they are produced domestically or imported. Academic research has indicated, however, that product variety and quality play important roles in consumer choices and, therefore, in determining trade flows between countries.[71] Consumers may prefer imported goods not necessarily because they are cheaper, but because they are viewed as being of a different quality than goods produced domestically, or vice versa. This would mean that consumers would distinguish an automobile not only by the country of origin, but also by perceived differences in the quality of the automobile. According to this research, consumers base their buying decisions on more than the price of a good alone; they likely compare goods based on a combination of factors in a manner that is not reflected in traditional trade models.[72]

Differences in Firm Behavior

Trade models also generally assume that all firms in the economy operate at the same level of efficiency. However, research indicates that the productive efficiency of firms often varies by country and industry and also within an industry in the same country; some firms may operate at a very high level of efficiency, while others in the same industry may operate at a lower level of efficiency.[73] As a result of these differences in productivity, not all firms will be affected to the same degree by a decline in import prices as a result of a reduction in tariff rates. Higher-efficiency firms may have the flexibility to match the lower import prices that arise from a change in tariff rates by lowering their domestic prices, especially if the changes in tariff rates are small in percentage terms. Similarly, other foreign firms, whose governments are not party to a trade agreement, may attempt to maintain their market shares by lowering their prices to match those of other competitors. Generally, only those firms that are operating at the margin of the domestic industry, or the less efficient firms, may not be able to match the lower import prices and may well be forced to close, with the attendant losses in jobs. Some recent trade models have taken an additional step by including assumptions that distinguish between firms that export, those that do not, and those that might export given certain conditions. These models generate a greater export response by firms to a trade agreement due to these assumptions about firms that may choose to participate in exporting as a result of a trade agreement.[74]

Similarly, trade models generally assume that the full change in tariff rates will be passed along to consumers and domestic producers and that other foreign competitors will not react to changes in their competitors' prices by adjusting their own prices, an assumption that seems unlikely given the emphasis that firms often place on maintaining their market shares.[75] The impact on bilateral

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[71] Hummels, David, and Peter J. Klenow, "The Variety and Quality of a Nation's Exports," *The American Economic Review*, June 2005.

[72] Hallak, Juan Carlos, *The Effect of Cross-Country Differences in Product Quality on the Direction of International Trade*, Discussion Paper No. 493, Research Seminar in International Economics, the University of Michigan, February 2003; Baldwin, James, and James Harrigan, Zeros, "Quality, and Space: Trade Theory and Trade Evidence," *American Economic Journal: Macroeconomics 3*, May 2011; Feenstra, Robert C., and John Romalis, "International Prices and Endogenous Quality," *The Quarterly Journal of Economics*, May 2014; Manova, Kalina, and Zhiwei Zhang, "Export Prices Across Firms and Destinations," *The Quarterly Journal of Economics*, February 1, 2012.

[73] Johnson, Robert C., *Trade and Prices With Heterogeneous Firms*, October 2008;

[74] Petri, Plummer, and Zhai, *The Trans-Pacific Partnership and Asia-Pacific Integration*, p. 24.

[75] Froot, Kenneth A., and Paul D. Klemperer, "Exchange Rate Pass-Through When Market Share Matters," *The American Economic Review*, September 1989, p. 637; Yu, Zhi George, *Tariff Pass-Through, Firm Heterogeneity, and Product Quality*; Mallick, Sushanta, and Helena Marques, "Passthrough of Exchange Rate and Tariffs Into Import Prices of India: Currency Depreciation versus Import Liberalization," *Review of International Economics*, 2008, p. 765-

trade as a result of a change in tariff rates arising from a trade agreement, and therefore the impact on domestic employment and output, would be less than projected by trade models if the full change in tariff rates were not passed along to consumers in the form of lower domestic prices. Similarly, the negative impact on domestic employment and output that is estimated by trade models likely would be lower if domestic and other foreign producers move to match the changes in their competitors' prices to maintain their market shares. This would be especially probable in cases where the change in tariff rates is small in relative terms. Invariably, domestic consumers would benefit from these types of price reductions, but foreign suppliers would not necessarily experience an increase in their overall market shares and not all domestic producers would necessarily experience a decrease in their market shares as a result of a change in tariff rates in a trade agreement.

Trade Creation and Trade Diversion

In addition, economists identify other potential economic effects that arise specifically from trade agreements between two or more countries, often termed preferential trade agreements, in terms of trade creation and trade diversion. Trade creation stems from lower tariff rates and lower import prices for the participants of the trade agreement, which tends to create new trade opportunities. In contrast, trade diversion reflects a shift in trade patterns that could arise as a result of lower tariff rates among the participants to a trade agreement. In this case, trade is diverted away from the relatively higher-priced competitors who are not party to the agreement to competitors with relatively lower-priced goods as a result of the reduction in tariff rates. At times, countries are motivated to participate in trade agreements to forestall this type of trade diversion. For example, China, which initially criticized the TPP agreement and supports the ASEAN-initiated regional trade agreement (the Regional Comprehensive Economic Partnership), reportedly has grown increasingly interested in participating in the TPP to have a voice in the trade framework and to avoid being excluded from the anticipated increase in trade that may occur as a result of the agreement.[76] In addition to these economic effects, trade agreements may also incorporate rules and disciplines for open, nondiscriminatory treatment for participants. This may reduce the ability of authorities to promote industrial policies that discriminate against foreign firms or provide special treatment for domestic firms in ways that distort market activity.

Other Complications

As they currently are negotiated by the United States, trade agreements aim to be comprehensive and relatively high-standard agreements that address a broad range of issues that could have far-ranging effects on the rules and disciplines that govern trade between countries. As a result, the long-run impact of these agreements could outweigh the potential impact that traditional trade models estimate based solely on changes in tariff rates. For instance, the TPP has 30 chapters similar to other recent FTA agreements that deal with rules and disciplines in general areas and specific industries. Such chapters include various industrial sectors, government procurement, trade facilitation measures, investment, and nontariff barriers related to services, among other

782; Atkeson, Andrew, and Ariel Burstein, *Pricing-to-Market, Trade Costs, and International Relative Prices*, January 2008; Burstein, Ariel, Gita Gopinath, *International Prices and Exchange Rates*, January 2013; Auer, Raphael A., Thomas Chaney, and Philip Saure, *Quality Pricing-to-Market*, Working Paper No. 125, Federal Reserve Bank of Dallas Globalization and Monetary Policy Institute, August 2012; Warmedinger, Thomas, *Import Prices and Pricing-To-Market Effects in the Euro Area*, Working Paper Series No. 299, European Central Bank, January 2004.

[76] Ignatius, David, "A Breakthrough on Trade in Asia," *The Washington Post*, January 30, 2015.

provisions. Trade models, however, currently are not capable of estimating precisely the potential impact of such changes on the economy.

Value Chains

Trade models also treat exports and imports of goods and services as strictly domestic or foreign goods. However, the rapid growth of global value chains (GVCs) and intra-industry trade (importing and exporting goods in the same industry) has significantly increased trade in intermediate goods in ways that can blur the distinction between domestic and foreign firms and goods. Intermediate goods are products that are used as inputs into the production of final goods and services. Foreign value added in goods and services, or the share of the value of a good that was imported as an intermediary product, accounts for about 28% of the content on average of global exports, as indicated in **Figure 6.** This share, however, can vary considerably by country and industry; foreign value added in the exports of developed countries on average accounts for about 31% of the content of their exports and about 11% of U.S. exports. The value for developed countries likely is inflated due to the highly integrated economies within the European Union (EU), which accounts for 70% of the exports from EU countries. In developing countries, the highest foreign-value-added shares in exports are found in East and South-East Asia and in Central America, where processing industries account for large shares of exports.[77]

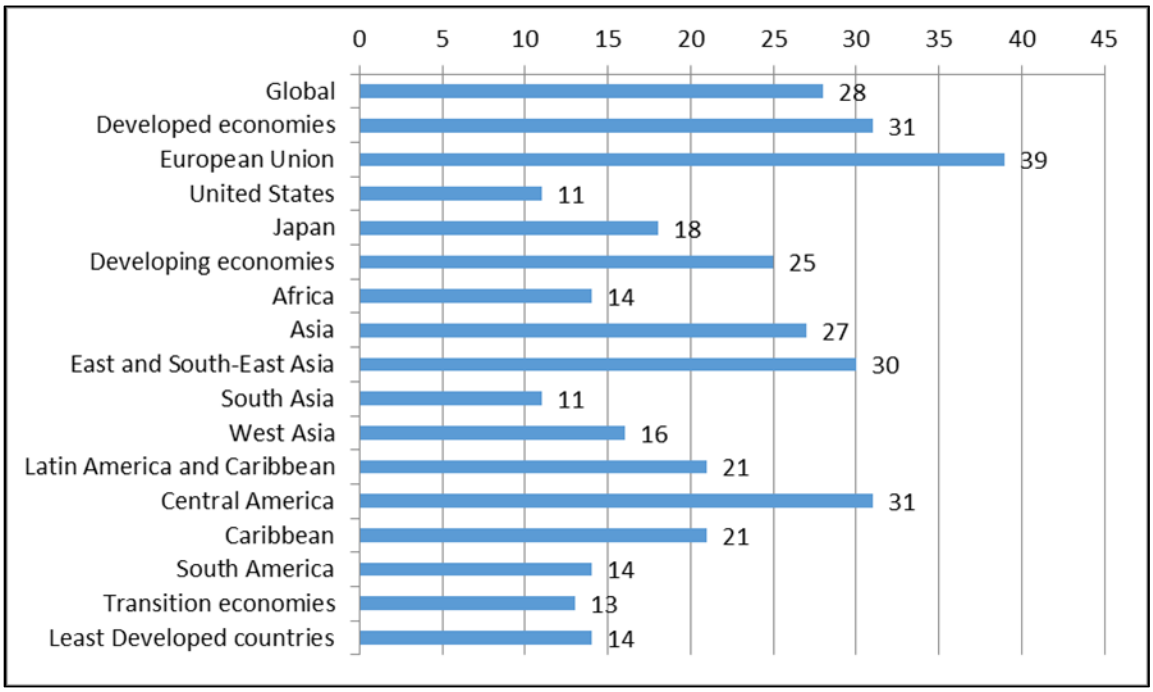
As a result of the growth in GVCs, traditional methods of counting trade may obscure the actual sources of goods and services and the allocation of resources used in producing those goods and services. Trade in intermediate goods also means that imports may be essential for exports. As a result, countries that impose trade measures restricting imports may negatively affect their own exports.[78] Trade in intermediate goods and services through value chains utilizes a broad range of services in ways that have expanded and redefined the role that services play in trade. It also has increased the number of jobs in the economy that are tied directly and indirectly to international trade. This expanded role of trade in goods and services through trade in intermediate goods often is not captured fully in trade data and, therefore, by trade models.

[77] *World Investment Report 2013*, United Nations Conference on Trade and Development, 2013, pp. 123-127.

[78] Ibid., p. 172.

Figure 6. Share of Foreign Value Added in Exports, by Country, 2010

(in percentage shares)



Source: UNCTAD-Eora GVC Database.

Macroeconomic Relationships

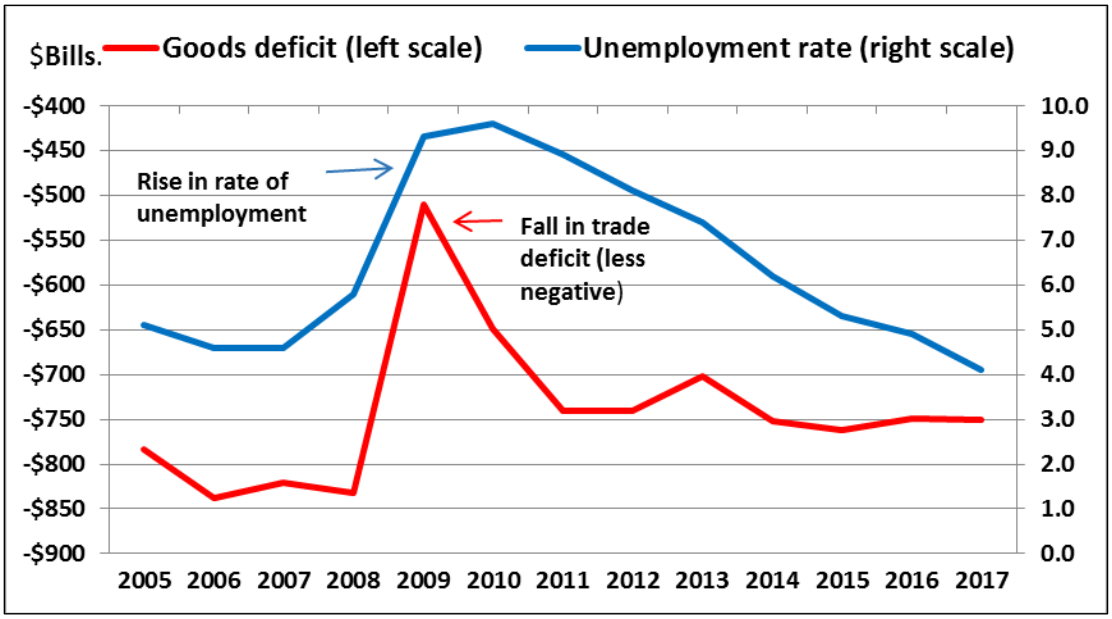
Unemployment and Trade Deficits

Although some observers argue that international trade, and trade deficits in particular, tend to reduce the number of jobs and increase the unemployment rate for the economy as a whole, the data and economic theory offer a mixed assessment. As noted above, international competition may be one among a number of factors that affect the overall composition of employment in the economy and may result in job gains and losses. In general, the unemployment rate and the trade deficit are not directly related.[79] Recent data indicate that high unemployment rates have occurred during periods when there were smaller deficits in the merchandise trade accounts as a result of the overall composition of the economy. For instance, in 2006, the U.S. unemployment rate had fallen to about 4.0%, with the economy growing at an annual rate of 2.7%. At the same time, the economy experienced a merchandise trade deficit of over $800 billion, as indicated in **Figure 7**. In 2009, however, the rate of economic growth had fallen to a negative 3.0% and the rate of unemployment had risen to 9.9%, but the trade deficit had fallen to $510 billion.[80] Since 2010, the rate of unemployment has fallen by more than half from about 10% to 4.1%, while the merchandise trade deficit has averaged around $750 billion.

[79] McCulloch, Rachael, Macroeconomic Policy and Trade Performance: International Implications of U.S. Budget Deficits, in *US-EC Trade Relations*, ed. by Robert E. Baldwin, Carl B. Hamilton, and Andre Sapir, University of Chicago Press, 1988. http://www.nber.org/chapters/c5966.pdf.

[80] *Employment Situation*, Bureau of Labor Statistics, *U.S. International Trade in Goods and Services*, Census Bureau, and *Survey of Current Business*, Bureau of Economic Analysis.

Figure 7. U.S. Merchandise Trade Deficit and Rate of Unemployment 2005-2017



Source: Bureau of Economic Analysis and Bureau of Labor Statistics.

Savings and Investment Balance

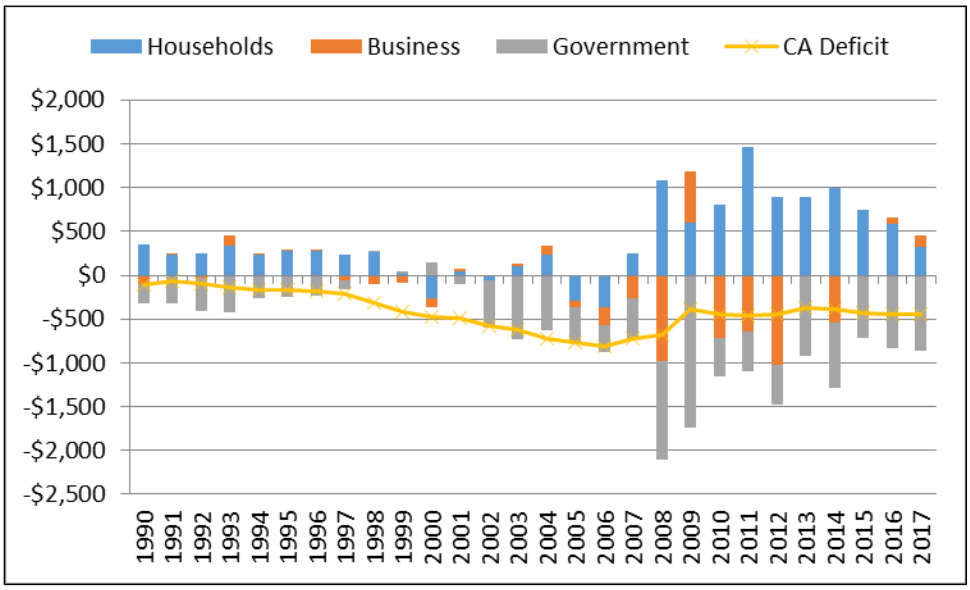
Given the current composition of the U.S. economy, foreign capital inflows play an important role by bridging the gap between domestic supplies of and demand for capital, or between the total amount of saving in the economy relative to the total amount of investment.[81] Indeed, economists generally argue that it is this interplay between the demand for and the supply of credit in the economy, rather than the flow of manufactured goods and services, that drives the broad inflows and outflows of capital and serves as the major factor in determining the international exchange value of the dollar and, therefore, the overall size of the nation's trade deficit. **Figure 8** shows the four major components of the savings-investment balance in the economy: households (individuals), business, government, and the foreign sector, represented here by the current account (CA). Generally, the household sector supplies the funds that are used by the government sector and by businesses to invest. When the combination of the three sectors—households, business, and government—creates a net savings deficit, interest rates rise and foreign capital flows into the economy. Capital inflows, in turn, place upward pressure on the dollar's exchange rate, pushing the exchange value of the dollar up relative to other currencies. As the dollar rises in value, the price of U.S. exports rises and the price of imports falls, which tends to increase the current account deficit. Trade agreements tend to alter the composition of the trade deficit among various trading partners and among a different mix of goods and services, but they do not alter the overall size of the trade deficit.[82]

[81] For additional information, see CRS Report RL33274, *Financing the U.S. Trade Deficit*, by James K. Jackson.

[82] Jackson, *Financing the U.S. Trade Deficit*.

Figure 8. U.S. Net Saving Balances by Major Sector and Current Account Deficit

(in billions of dollars)



Source: Board of Governors of the Federal Reserve System; Bureau of Economic Analysis.

Oil Prices and the Trade Deficit

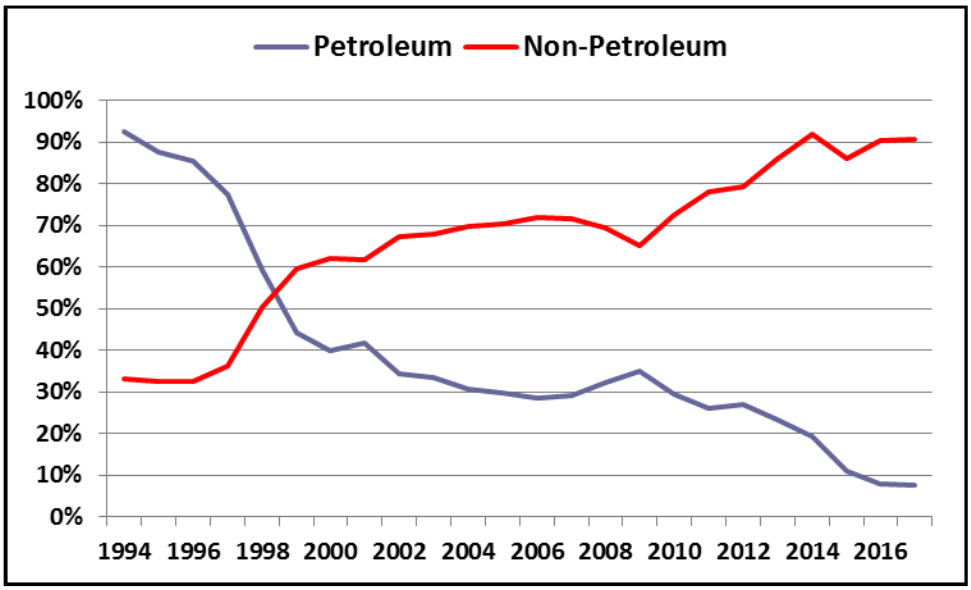
Recent changes in the price of oil and its impact on the U.S. trade deficit demonstrate the macroeconomic origins of the trade deficit. Given the prominent role that energy imports play in the U.S. trade deficit, the U.S. trade deficit might be expected to decline along with the drop in the price of oil, but that has not been the case. From 2014 to 2015, the average price of an imported barrel of crude oil fell by nearly half from an average annual price of $91 per barrel to an average annual price of $47 per barrel, although the price of imported crude oil fell below $40 per barrel by the end of 2015. At the same time that the average price in imported crude oil dropped sharply, the quantity of imported crude oil fell by 1.4%. As a result of this drop in crude oil prices and relatively stable quantity of imports, crude oil imports fell from accounting for more than 40% on average of the annual U.S. merchandise trade deficit in 2012 to about 10% on average of the annual U.S. trade deficit in 2015.[83]

Despite the drop in the average annual price of imported crude oil and the decline in the role of imported crude oil in the value of the U.S. trade deficit, the U.S. merchandise deficit increased in 2015 over that recorded in 2014, as indicated in **Figure 9**. Instead of seeing the overall trade deficit decline, the composition of the trade deficit changed, with non-petroleum products replacing petroleum products, seemingly affirming the proposition that the overall value of the trade deficit is determined by macroeconomic forces.

[83] See CRS Report RS22204, *U.S. Trade Deficit and the Impact of Changing Oil Prices*, by James K. Jackson.

Figure 9. Petroleum and Non-Petroleum Shares of the Annual U.S. Merchandise Trade Deficit

(in percent shares)



Source: U.S. Bureau of the Census.

Capital Inflows and the U.S. Economy

As U.S. demand for capital outstrips domestic sources of funds, domestic interest rates rise relative to those abroad, which tends to draw capital away from other countries to the United States. These foreign funds have been available to the United States because foreign investors have remained willing to loan their excess saving to the United States in the form of acquiring U.S. assets. In turn, these capital inflows have accommodated the current account deficits. The large increase in the nation's current account deficit would not have been possible without the accommodating inflows of foreign capital. Capital inflows, in turn, help keep U.S. interest rates below the level they would reach without them, and they have allowed the nation to spend beyond its current output, including financing its trade deficit.

Due to this savings-investment imbalance in the U.S. economy, as the economy approaches its potential full-employment level of output, the rate of unemployment falls, credit markets tighten, interest rates rise, the savings-investment imbalance worsens, and capital inflows increase. These developments tend to strengthen the value of the dollar relative to other currencies. As a result of the appreciation in the exchange value of the dollar, import prices fall relative to U.S. export prices, worsening the merchandise trade deficit. In addition, as the economy approaches full employment, national income rises, and consumers increase their purchases of all goods, including imports, which adds to the trade deficit.

In contrast, when the U.S. economy is growing at a rate below its potential, demands on financial markets are reduced, interest rates fall, the savings-investment imbalance lessens, and capital inflows decline, which reduces pressure on the dollar, all other things being equal. As a result, the international exchange value of the dollar falls relative to other currencies and the price of U.S. exports falls, while the relative price of imports rises, which tends to make U.S. exports more competitive and reduce the trade deficit. In addition, when the economy underperforms, national

income is below its potential and consumer spending falls. This drop in consumption reduces demand for domestic goods and for imports, which contributes to a decline in the trade deficit.

In addition, the dollar often serves as a "safe haven" currency during periods of instability in the global economy and attracts foreign investors. The global foreign exchange market is vast and far surpasses the size of the U.S. trade account. For instance, a triennial survey of the world's leading central banks conducted by the Bank for International Settlements (BIS) in April 2013 indicates that the *daily* trading of foreign currencies through traditional foreign exchange markets[84] totaled $5.3 trillion. In addition, the over-the-counter (OTC)[85] foreign exchange derivatives market reported daily turnover of $2.3 trillion in April 2013. The combined amount of $7.7 trillion for *daily* foreign exchange trading in the traditional and OTC markets is more than three times the *annual* amount of U.S. exports of goods and services. The data also indicate that 87.0% of the global foreign exchange turnover in April 2013 was in U.S. dollars.[86]

Foreign Investment and Outsourcing

Another important area where opponents and proponents of trade agreements disagree is over the impact that such agreements have on employment as a result of shifts in foreign investment. Some opponents of trade agreements contend that trade agreements have led directly to job losses in the United States by encouraging U.S. multinational companies to outsource jobs to other countries.[87] They also argue that such agreements encourage some U.S. firms to close plants in the United States and shift production and jobs to their affiliates abroad. Indeed, selected anecdotal evidence suggests that there are instances in which some firms may have shifted part of their operations abroad, but the evidence to date suggests that these instances represent isolated activities more than a general pattern of behavior.[88] Instead, some economists argue that the relationship between domestic production, foreign investment, and trade has become complicated through the growth of global value chains in which value is added through production activities in many different locations. This is sometimes referred to as "trade in tasks" as opposed to the traditional "trade in goods."[89]

[84] Traditional foreign exchange markets are organized exchanges which trade primarily in foreign exchange futures and options contracts where the terms and condition of the contracts are standardized.

[85] The over-the-counter foreign exchange derivatives market is an informal market consisting of dealers who custom-tailor agreements to meet the specific needs regarding maturity, payments intervals or other terms that allow the contracts to meet specific requirements for risk.

[86] Rime, Dagfinn, and Andreas Schrimpf, The Anatomy of the Global FX Market Through the Lens of the 2013 Triennial Survey, *Quarterly Review*, Bank for International Settlements, December 2013.

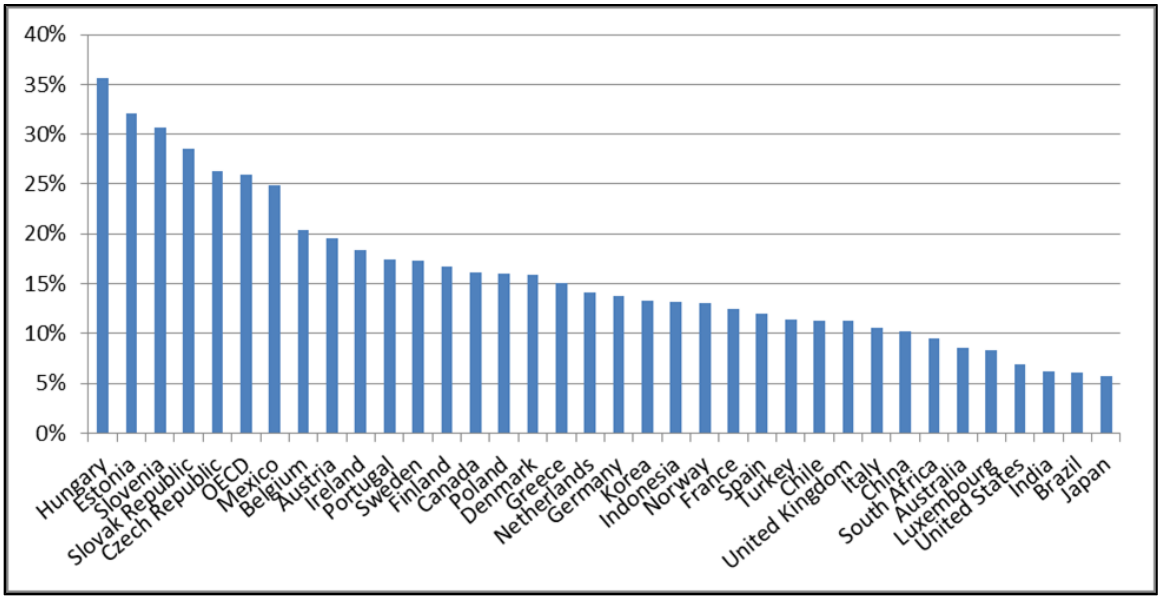
[87] One economist contends that the outsourcing phenomenon eventually could cost the United States 30 to 40 million jobs. This estimate, however, is not based on an analysis of actual outsourcing trends, but on the assumption that any job that is not physically tied to the United States as a location, primarily activities that can be accomplished over a wireless connection, may be subject to being outsourced. This author concludes, however, that " ... the 'threat' from offshoring should not be exaggerated ... [Outsourcing] will not drive all impersonal services offshore. Nor will it lead to mass unemployment." Blinder, Alan S., "Offshoring: The Next Industrial Revolution?," *Foreign Affairs*, March/April 2006, p. 127.

[88] CRS Report RL32461, *Outsourcing and Insourcing Jobs in the U.S. Economy: Evidence Based on Foreign Investment Data*, by James K. Jackson.

[89] Grossman, Gene M., and Esteban Rossi-Hansberg, "Trading Tasks: A Simple Theory of Offshoring," *American Economic Review*, December 2008, pp. 1978-1997; Baldwin, Richard, and Frederic Robert-Nicoud, *Offshoring: General Equilibrium Effects on Wages, Production, and Trade*, NBER Working Paper 12991, NBER, March 2007.

As indicated in **Figure 10**, in 2005 (the latest date for such data) all developed economies were engaging to various degrees in offshore manufacturing, according to the OECD.[90] For the OECD countries as a whole, about 25% of total manufacturing activities on average were taking place through offshore production relationships. At 7% of manufacturing activity occurring offshore, the United States ranked fourth from last among the OECD countries, while Hungary, at a 36% share, ranked first.

Figure 10. Offshore Production as a Share of Total Manufacturing Production, 2005



Source: OECD Economic Globalization Indicators.

In cases where U.S. firms have increased their investment abroad, it is not possible to determine whether they shifted their operations from the United States to another location specifically to replace domestic U.S. production with production abroad to export back to the United States, or to serve the local or regional foreign market. Intra-firm trade, or exports and imports between U.S. parent companies and their foreign affiliates, accounted for 29% and 34% of total U.S. exports and imports, respectively, in 2012. Over the past decade, however, intra-firm trade, both exports and imports, has declined as a share of total U.S. trade, reflecting in part the growing share of trade between U.S. parent companies and firms with which they are affiliated through nonequity relationships, that is, global value chains.[91] The Bureau of Economic Analysis (BEA) collects and publishes an extensive amount of data on U.S. parent companies and their foreign affiliates. These data, however, are not collected to capture the outsourcing phenomenon. Indeed, since the late 1990s, no U.S. government entity has collected comprehensive data specifically to capture the closing of a production facility in the United States and the offsetting opening of a facility abroad.

[90] *Measuring Globalization: OECD Economic Globalization Indicators 2010*, Organization for Economic Cooperation and Development, 2010.

[91] U.S. Direct Investment Abroad, Preliminary 2012 Data, and Foreign Direct Investment in the united States, Preliminary 2012 Data, Bureau of Economic Analysis, 2014; and CRS Report RL32461, *Outsourcing and Insourcing Jobs in the U.S. Economy: Evidence Based on Foreign Investment Data*, by James K. Jackson.

In addition to the traditional equity-based direct investment, there is an increase in various types of nonequity investments through global value chains.[92] These nonequity relationships reflect a new phase in economic globalization in which multinational corporations and workers build interdependent networks of operations. These nonequity forms of ownership include partial ownership, joint ventures, contract manufacturing, logistics management, franchising and licensing, and other forms of contractual relationships through which firms coordinate and control the activities of partner firms.[93] Evidence to date suggests that such forms of control are shaping global trade patterns in such industries as automotive components, consumer electronics, apparel, hotels, and information technology and business process services.[94]

International Trade and Income Inequality

Some opponents of trade agreements contend that international trade, trade agreements, and globalization more broadly have been important factors contributing to the growing inequality in wealth and income within countries. They argue that international trade favors high-skilled activities and workers. Despite intense focus in the academic literature, there is no clear consensus on the direct impact of trade and trade agreements on income inequality.[95] While trade and trade agreements may have a short-run impact on income inequality in some cases and in some sectors of the economy, over the long term, the distribution of income is determined by a range of other factors within the economy, with trade generally judged to be less important. Much of the current controversy in the academic literature over trade and income inequality is not a disagreement over the impact of trade agreements on income inequality in developed economies like the United States, where trade is less important than other factors, but in developing countries, where trade can have a greater effect on income distribution.[96] Some economists emphasized the importance of other factors in affecting the distribution of income. For example, one study concludes that

[92] A global value chain comprises the full range of activities of a firm, from research & development (R&D), design, production, marketing, distribution, and support to the final customer. *Interconnected Economies: Benefitting From Global Value Chains*, Organization for Economic Cooperation and Development, 2013, p. 14.

[93] "Non-Equity Modes of International Production and Development," *World Investment Report 2011*, United Nations Council on Trade and Development, 2011, p. 124.

[94] Ibid., p. 129.

[95] "Distributional Consequences of Trade," *World Trade Report 2008*, World Trade Organization, pp. 123-146.

[96] Stone, Susan, F., and Ricardo H. Cavazos Cepeda, "Wage Implications of Trade Liberalization: Evidence for Effective Policy Formation," in *Policy Priorities for International Trade and Jobs*, ed., D. Lippoldt, OECD, 2012, p. 75; Newfarmer, Richard, and Monika Sztajerowska, "Trade and Employment in a Fast-Changing World," in *Policy Priorities for International Trade and Jobs*, pp. 8-9.; McMillan, Margaret, and Dani Rodrik, *Globalization, Structural Change, and Productivity Growth*, February 2011, p. 23; McMillan, Margaret, and Inigo Verduzco, "New Evidence on Trade and Employment: An Overview," in *Trade and Employment: From Myths to Facts*, Marion Jansen, Ralf Peters, and Jose Manuel Salazar-Xirinachs, eds., International Labor Organization, 2011, p. 2; Gibson, Bill, "Assessing the Impact of Trade on Employment: Methods of Analysis," in *Trade and Employment: From Myths to Facts*, p. 61-62; Helpman, Elhanan, Oleg Itskhoki, and Stephen Redding, *Inequality and Unemployment in a Global Economy*, February 2010; Harrison, Anne, John McLaren, and Margaret McMillan, *Recent Perspectives on Trade and Inequality, Policy Research Working Paper 5754*, The World Bank, August 2011, p.3; Frankel, Jeffrey A., and David Romer, "Does Trade Cause Growth?," *The American Economic Review*, June 1999, p. 379; *Seizing the Benefits of Trade for Employment and Growth: Final Report*, OECD, ILO, World Bank, and WTO, November 2010; *World Trade Report 2008, Differential Consequences of Trade*, World Trade Organization, 2008, p. 123-146; Piketty, Thomas, and Gabriel Zucman, *Wealth and Inheritance in the Long Run*, April 6, 2014; Piketty, Thomas, and Gabriel Zucman, "Capital is Back: Wealth-Income Ratios in Rich Countries 1700-2010," *Quarterly Journal of Economics*, August 3, 2014.

> the effect of globalization on inequality depends on many factors, several of which are country- and time-specific, including: a country's trade protection pattern prior to liberalization; the particular form of liberalization and sectors it affected; the flexibility of domestic markets in adjusting to changes in the economic environment, in particular the degree of within-country labor and capital mobility; and the existence of other concurrent trends (e.g., skill-biased technological change) that may have interacted with or even partially been induced by globalization. Given that different countries experienced globalization in different ways and at different times, it is hardly surprising that the relevant mechanisms through which inequality was affected are case specific.[97]

International Trade Theory and Income Distribution

Some opponents of trade agreements have used two concepts in the general theory of international trade to advance the argument that international trade has a disparate effect on workers' incomes and, therefore, that trade contributes to growing income inequality. These two concepts are the factor-price equalization theorem and the Stolper-Samuelson theorem. These theorems postulate that trade between countries will equalize the prices of traded goods, which will then tend to equalize the prices of such factors of production as labor and capital. The Stolper-Samuelson theorem, in particular, postulates that not all the factors of production will benefit equally from the shift in factor prices, but that those factors that are used more intensively in producing a nation's exports will benefit the most, leading to an increase in income inequality. This theorem implies that international trade would tend to increase income inequality in such capital-intensive economies as the United States, because the greater share of the rewards from trade would accrue to capital, while international trade would tend to create greater income equality over time in labor-intensive developing economies where the greater share of the benefits of trade would accrue to labor.

Despite a general recognition by economists that these two theorems are important theoretical tools, empirical research and experience to date have provided little support for the impact of trade on the distribution of income in concert with the two theorems, especially in developed economies. Moreover, experience in developing countries has run counter to the conclusions of the theorems that trade liberalization will lead to greater income equality, since both developed and developing economies have experienced growing income inequality. Evidence from firm-level data also seems to indicate that (1) companies differ significantly within industrial sectors; (2) only a subset of companies within a given sector engage in exporting; and (3) those companies that export tend to pay higher wages.[98] Some economists argue that the restrictive assumptions of both the factor-price equalization theorem and the Stolper-Samuelson theorem largely discount their usefulness in a practical sense. Consequently, some economists have questioned the applicability of the theorems outside a purely academic environment.[99]

For the United States, the implications of these two theorems for the distribution of income have been challenged on a number of grounds. Contrary to standard trade theory, the United States trades with countries that are at similar levels of economic development and that have similar wage rates and consumer preferences.[100] As a result, this part of U.S. trade seemingly may have little impact on wages, prices, or the distribution of income within the economy. In addition, a

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[97] Goldberg, Pinelopi Koujianou, and Nina Pavcnik, *Distributional Effects of Globalization in Developing Countries*, NBER Working Paper 12885, February 2007, p. 4.

[98] *World Trade Report 2008: Trade in a Globalizing World*, World Trade Organization, 2008, p. 124.

[99] Davis, Donald, R., and Prachi Mishra, "Stolper-Samuelson is Dead and Other Crimes of Both Theory and Data," in *Globalization and Poverty*, ed. by Ann Harrison, University of Chicago Press, March, 2007.

[100] *U.S. Trade in Goods and Services (FT900)*, Census Bureau, exhibit 14, August 2015.

large share of U.S. trade involves imports and exports of similar products, or inter-industry trade, and trade in intermediate goods through complex supply chains that requires a more nuanced interpretation of the traditional concepts of comparative advantage and may challenge the general conclusions of the two theorems. Also, the open nature of the U.S. economy and the relatively small share of trade in the economy mean that the marginal effects of trade agreements may have a limited effect on income distribution in the manner postulated by the Stolper-Samuelson theorem.

For the U.S. economy, some economists argue that international trade has accounted for a small share of the shift in income inequality between high-skilled and low-skilled workers.[101] Academic economists are actively researching the relationship between trade and income inequality, which some consider to pose the greatest challenge to policymakers in developed and developing economies.[102] There is growing academic support, however, for the position that factors other than trade, particularly technology and foreign investment, have a more significant effect on income distribution. Economists with the World Bank, for instance, argue that, "[t]he dismantling of trade barriers in many developing countries over the past two decades has dramatically increased developing countries' exposure to foreign technologies" by increasing imports of capital and intermediate goods and by reducing restrictions on foreign direct investment.[103]

While this research is far from conclusive, evidence to date seems to indicate that factors other than trade liberalization are a main source behind the rising level of income inequality.[104] Economists at the IMF conclude that

> Trade liberalization and export growth are found to be associated with lower income inequality, while increased financial openness—mainly through foreign direct investment (FDI)—is associated with higher inequality. However, their combined contribution to rising inequality has been much lower than that of technological change, both at a global level and especially markedly in developing countries. The spread of knowledge is, of course, related to increased globalization, but technological progress is nevertheless seen to have a separately identifiable effect on inequality. The disequalizing effect of financial openness ... and technological progress both appear to be working by increasing the premium on higher skills and possibly higher returns to capital, rather than limiting opportunities for economic advancement.[105]

The academic literature has not reached a consensus on the impact of trade between developed economies on jobs, wages, and the distribution of income.

OECD Analyses of Trade Liberalization and Income Inequality

Growing income inequality is not unique to the United States, or even to developed countries, but is found in both developed and developing countries. After reviewing recent research on the possible links between trade liberalization and employment, the OECD concludes that

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[101] Broda and Weinstein, "Globalization and the Gains From Variety," p. 4. The authors estimate that trade liberalization and increased multinational production accounts for one-ninth of the increase in the skill premium – the relative wage of skilled to unskilled workers. They conclude that "globalization is not as important as the combination of other forces in shaping the recent rise in the skill premium."

[102] Jaumotte, Florence, Subir Lall, and Chris Papageorgiou, "Rising Income Inequality: Technology, or Trade and Financial Globalization?," *IMF Economic Review*, vol. 61, no. 2, International Monetary Fund, 2013.

[103] *Global Economic Prospects: Technology Diffusion in the Developing World*, The World Bank, 2008, p. 9.

[104] Ibid., p. 302.

[105] Ibid., p. 274.

> while other factors appear to be the main drivers, at least 10% of the decline of the share of labor in national income is due to increasing globalization, and in particular to pressures from the relocation of parts of global value chains and from competition from imports from companies that produce in countries with low labor costs. Increased (international) competition not only reduces the size of the rent that employers and workers share, but also decreases workers' bargaining power. The evidence on the role of globalization in growing (income and wage) inequality in OECD countries is mixed, however. It is in fact very difficult to disentangle technological change from globalization patterns that also increase the value of skills.[106]

In a 2011 report on growing income inequality, the OECD surveyed 23 of its members for evidence of growing income inequality and for the possible sources of that inequality, as indicated in **Table 3**.[107] The report concluded that income inequality had increased over the previous two to three decades in nearly *all* OECD countries, whether the countries experienced a trade deficit or a trade surplus. Other studies similarly have concluded that wage inequality has increased over the recent past.[108] According to these studies, this rise in income inequality coincided with a sharp increase in the growth of trade relative to GDP in most OECD countries, primarily due to growing trade with emerging market economies such as China and India. The emergence of India and China as global trade participants essentially increased the global supply of labor and may have resulted in downward pressure on wages globally; this may explain some of the increase in income inequality in both developed and developing economies.

Table 3. Share of Total Income of the Top 10% of All Individuals in Selected Countries

(in percentage shares)

	1970	1980	1990	2000	2005	2006	2007	2008	2009	2010	2011	2012
Australia	27.65	25.39	27.66	31.28	30.54	31.81	31.51	29.34	30.56	30.98	—	—
Canada	—	—	35.41	39.96	40.26	40.8	40.76	40.39	40.09	40.12	—	—
China	—	—	19.34	25.53	—	—	—	—	—	—	—	—
Denmark	33.34	25.85	25.1	25.67	25.66	25.73	26.01	26.17	25.44	26.88	—	—
France	33.14	30.69	32.64	33.05	32.89	32.81	33.15	33.03	32.69	—	—	—
Germany	—	31.67	—	—	—	—	—	—	—	—	—	—
Ireland	—	31.5	31.05	33.87	36.43	37.87	36.67	35.28	36.13	—	—	—
Italy	—	27.17	29.5	32.94	33.19	33.70	34.12	34.00	33.87	—	—	—

[106] *Divided We Stand: Why Inequality Keeps Rising*, Organization for Economic Cooperation and Development, 2011, p. 37.

[107] *Divided We Stand: Why Inequality Keeps Rising*, p. 17. The United States, Canada, and Mexico are all members of the Organization for Economic Cooperation and Development.

[108] Atkinson, Anthony B., Thomas Piketty, and Emmanuel Saez, "Top Incomes in the Long Run of History," *Journal of Economic Literature*, March 2011, pp. 3-71.

	1970	1980	1990	2000	2005	2006	2007	2008	2009	2010	2011	2012
Japan	31.9	31.34	33.7	37.15	40.56	40.81	41.03	40.94	40.32	40.50	—	—
Malaysia	—	—	—	22.53	24.65	—	—	—	24.76	24.18	—	—
Mauritius	—	21.55	15.55	14.21	13.96	—	—	19.09	—	—	18.33	—
Netherlands	31.34		28.2	28.02	30.69	30.84	31.72	30.69	30.56	30.71	30.60	30.90
New Zealand	30.76	28.83	31.12	31.19	33.23	30.32	29.37	30.02	29.72	29.03	—	—
Norway	29.84	25.26	22.19	30.45	37.06	28.22	28.97	27.11	26.95	27.99	28.33	—
Portugal	—	18.77	31.19	36.13	38.25	—	—	—	—	—	—	—
Singapore	—	32.07	35.04	38.06	38.25	39.24	37.82	43.6	41.35	39.62	41.85	—
South Africa	—	—	—	—	—	—	—	54.3	53.23	53.62	54.14	—
Spain	—	—	35.35	33.45	32.81	33.32	32.78	32.29	32.3	31.98	—	—
Sweden	29.36	22.73	22.75	26.72	26.96	27.3	27.76	28.07	27.93	28.27	28.33	27.9
Switzerland	—	—	—	32.32	31.88	32.65	33.25	33.63	33.15	—	—	—
United Kingdom	—	—	36.90	38.43	41.62	41.99	42.61	—	41.53	38.08	39.15	—
United States	31.51	32.87	38.84	43.11	44.94	45.5	45.67	45.96	45.47	46.35	46.63	48.16
Uruguay	—	—	—	—	—	—	—	—	46.20	46.10	45.20	—

Source: Alvaredo, Facundo, Anthony B. Atkinson, Thomas Piketty and Emmanuel Saez, *The World Top Incomes Database,* http://topincomes.g-mond.parisschoolofeconomics.eu/, February 21, 2014.

The OECD report also indicated that during the 2000s income inequality had increased in Israel, the United States, Germany, Denmark, and Sweden, and had fallen considerably in Chile, Mexico, Greece, and Turkey.[109] The report concluded that although trade liberalization has been debated as the main cause of widening inequality, the empirical evidence is inconclusive. Other studies have indicated that the impact of trade on income inequality depends on the country in question, the relative importance of trade in its economy, the nature of trade liberalization, and the

[109] *Divided We Stand*, p. 22.

type of trade in which the country is engaged.[110] The OECD reached a number of other conclusions concerning the rise in income inequality, including the following:

- Neither rising trade integration nor financial openness has a significant impact on either wage inequality or employment trends within the OECD countries. The wage inequality effect of trade appears neutral even when only the effects of increased import penetration from emerging economies are considered. Increased imports from low-income countries tend to heighten wage dispersion, although only in countries with weak employment protection legislation.
- Increased financial flows and technological change affect inequality primarily through increased flows of foreign direct investment and technological progress by increasing overall wage dispersion in the upper half of the wage distribution.
- Regulatory reforms to strengthen competition in the markets for goods and services and to make labor markets more adaptable affect the way globalization and technological change influence the distribution of income by making a positive impact on employment levels. In contrast, such institutional reforms as changes in household structure, increases in self-employment, increases in part-time employment, changes in income tax rates, and reductions in worker benefit programs and protections contribute to widening wage disparities. The increase in wage disparities between skilled and unskilled workers was driven by inequality within rather than between sectors. The combination of the two effects—higher employment levels and greater wage dispersion—on overall earnings inequality and household income inequality has been inconclusive.
- The rise in the supply of skilled workers offsets the increase in wage dispersion associated with technological progress, regulatory reforms, and institutional changes, highlighting the central role of education. The growth in average educational attainment appears to have been the single most important factor contributing not only to reducing wage dispersion among workers but also to higher employment rates.[111]

Issues for Congress

Congress faces a number of difficult issues as it considers the Trump Administration's approach to trade policy, including a possible reconsideration of its opposition to the TPP agreement, potential T-TIP, renegotiation of NAFTA and the U.S.-South Korea FTA, and the use of tariffs. Both the TPP and the T-TIP comprise, or could comprise, a set of measures that could open major markets to increased U.S. exports and establish new trade rules and disciplines. The agreements could lead to major reforms in the developing economies of the participating countries. Of particular concern is the number of jobs that could be affected—positively and negatively—by the two agreements. Various groups have used trade models to offer their predictions about the employment effects of the agreements with differing and, at times, conflicting results, arising primarily from the number and kinds of assumptions they make.

[110] Pavcnik, Nina, "Globalization and Within-Country Income Inequality" in *Making Globalization Socially Sustainable,* ed. by Marc Bacchetta and Marion Jansen, World Trade Organization, September 13, 2011.

[111] *Divided We Stand,* pp. 32-33; also Bassanini, Andrea, and Thomas Manfredi, "Capital's Grabbing Hand? A Cross-Country/Cross-Industry Analysis of the Decline of the Labor Share," *OECD Social, Employment and Migration Working Papers,* No. 133, OECD, 2012.

The different estimates of the employment effects of trade agreements highlight the limitations of the models themselves and the data they use. Congress may decide to try to improve the predictive capability of current trade models; Congress could redirect or add resources to improve the forecasting ability of current models. Congress could also contract with private entities to develop new models. Congress may also consider conducting oversight of the current state of U.S. data on trade and trade-related employment to determine what actions, if any, may be taken to improve such data and the costs and benefits involved in doing so. Such efforts could provide (1) greater insights into the dynamic adjustments that would occur as the result of a given trade agreement; (2) improved estimates of the number of jobs currently related to international trade; (3) improved assessments of the impact of trade agreements on particular sectors in the economy; and (4) a more informed assessment of the potential long-run impact of a trade agreement on the economy as a whole and on particular sectors within the economy.

Given the constant churning that occurs in U.S. labor markets, most economists likely would conclude that labor markets are sufficiently fluid to minimize the long-term impact of any adjustment costs that could arise from a trade agreement. Economists recognize, however, that the adjustment costs associated with trade agreements and other types of market transformations can be highly concentrated on some workers, firms, and communities. Recent research also indicates that impediments may inhibit the adjustment process in some local labor markets, resulting in prolonged periods of unemployment or underemployment for some workers. Congress may choose to consider reviewing the effectiveness of current efforts to assist workers and firms in adjusting to changes in product and labor markets and how best to address impediments in these markets.

At times, Members of Congress are concerned about the impact a particular FTA could have on employment and production within their states. Trade data by state are often quoted, but admittedly are unreliable. Some trade data are especially difficult to allocate by state because they represent data attributed to the port from which the goods or materials were exported or they represent bulk items sent to a warehouse and repackaged. Given the increased attention that is being placed on global supply chains and international trade, Congress could explore and assess how trade data are allocated to individual states and determine the costs and benefits of improving the way trade data are collected to improve the reliability of state-level data.

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