

The Trans-Pacific Partnership (TPP): Analysis of Economic Studies

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Summary

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) that (1) sets trade policy objectives for the President to negotiate in trade agreements; (2) requires the President to engage with and keep Congress informed of negotiations; and (3) provides for Congressional consideration of legislation to implement trade agreements on an expedited basis, based on certain criteria. The United States is considering the recently concluded Trans-Pacific Partnership (TPP) among the United States and 11 other countries. The 12 TPP countries signed the agreement in February 2016, but the agreement must be ratified by each country before it can enter into force. In the United States this requires implementing legislation by Congress.

The agreement is viewed by the participants as a “comprehensive and high standard” mega-regional free trade agreement that may hold the promise of greater economic opportunities and closer economic and strategic ties among the negotiating parties.

For Members of Congress and others, international trade and trade agreements may offer the prospect of improved national economic welfare. Such agreements, however, have mixed effects on U.S. domestic and foreign interests, both economic and political. In considering the TPP, Congress likely will examine various economic studies to assess the impact of the agreement on the economy. The results of these studies vary depending on the model and the assumptions that are used to generate the results. The U.S. International Trade Commission is tasked with providing the official U.S. government estimate of the economic effects of the agreement. This report provides an analysis of various studies and information on the types of economic models that are used to assess the impact of trade agreements and the importance of the assumptions that are used in generating these estimates.

Estimating the employment effects from a trade agreement is imprecise because (1) estimates can vary widely as a result of the model and assumptions that are used; (2) limitations arise from the types of data available, particularly concerning non-tariff barriers; and (3) it is difficult to disentangle the effects of trade and trade agreements from other factors that affect the U.S. economy, among other things.

This report analyses some studies of the economic impact of TPP that are playing an important role in affecting the public policy debate, including the following:

- U.S. International Trade Commission (USITC): estimated the TPP would increase annual U.S. GDP by 0.15%, and trade by 1.0% by 2032; U.S. annual employment would be higher by 128,000.
- Peter A. Petri and Michael G. Plummer (Peterson Institute for International Economics) estimated that the TPP would increase annual GDP by 0.5% and increase U.S. exports by 9.0% by 2030.
- World Bank: estimated the TPP would increase U.S. GDP by 0.5% by 2030.
- Tufts University, Global Development and Environment Institute study by Jeronim Capaldo and Alex Izurieta: estimated that all TPP participants would lose 770,000 jobs and non-TPP developing economies would lose 4.5 million jobs.
- Other studies that use such proxy indicators as trade balances and jobs associated with exports to assess the impact of the TPP.

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Introduction

In February 2016, the United States signed the Trans-Pacific Partnership (TPP) with 11 countries: Canada, Mexico, Chile, Peru, Japan, Australia, New Zealand, Singapore, Malaysia, Vietnam, and Brunei.¹ The TPP, now subject to approval and implementation by Congress, is termed by its participants as a comprehensive and high-standard agreement, designed to eliminate and reduce trade barriers and establish and enhance trade rules and disciplines among the parties. If implemented, it would be the largest plurilateral FTA by value of trade, encompassing roughly 40% of world GDP, and could serve further to integrate the United States in the dynamic Asia-Pacific region. As a “living agreement,” it has the potential to negotiate new rules and expand its membership. It could also mark a shift to the negotiation of “mega-regional” trade liberalization agreements in lieu of bilateral FTAs and broader multilateral trade liberalization in the World Trade Organization (WTO).²

In considering TPP and other trade agreements, discussions often focus on potential economic effects, and especially on potential gains or losses in employment.³ In addition, some observers have tied U.S. trade deficits to existing U.S. free trade agreements (FTAs) by arguing that the agreements have worsened the trade deficit and, thereby, have negatively affected U.S. employment and wages. According to many economists, trade in general provides economy-wide net positive benefits for consumers as a whole and for producers, especially for firms in export-oriented industries. They also note, conversely, that economic adjustment costs stemming from lower trade barriers may be highly concentrated, affecting some workers, firms, and communities disproportionately. The relationship between trade and jobs, however, is complicated and subject to a number of different and, at times, opposing forces. In addition, impediments in local labor markets may raise adjustments costs for some workers, firms, and communities in ways that may not be fully reflected in traditional trade models.

This report examines recent studies on the potential economic impact of the TPP. It also provides a limited discussion of the role of trade agreements in the economy and examines selected studies on the impact of TPP. For a broader treatment of some of these issues see CRS Report R44546, *The Economic Effects of Trade: Overview and Policy Challenges*, by James K. Jackson.

In general, economists and others use various economic models and approaches to estimate the magnitude of changes in U.S. economic activity and employment that could arise from a trade agreement. Both proponents and opponents of trade agreements often cite the results of these studies to support their respective positions. These models, however, differ in the estimates they produce, reflecting different assumptions and differences in the structure of the models themselves. While all the various models and approaches have strengths and weaknesses,

¹ The United States currently has 14 free trade agreements with 20 countries in force.

² For additional information see CRS Report R44489, *The Trans-Pacific Partnership (TPP): Key Provisions and Issues for Congress*, coordinated by Ian F. Fergusson and Brock R. Williams.

³ For example, Public Citizen, has a Global Trade Watch office that 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.

although not always in equal proportions, they vary in the degree to which they reflect economic reality, and they are highly sensitive to the assumptions they use.⁴

Estimating the Economic Effects of Trade Agreements

The TPP, considered by participants to be a high-standard and comprehensive agreement, is designed to eliminate and reduce trade barriers and establish and enhance trade rules and disciplines of the trading system among the parties to the agreement. The agreement covers goods, services, investment, and a number of other issues including trade facilitation, digital trade, intellectual property rights, and standards, or technical barriers to trade. Due to the limitations of data and other theoretical and practical issues involved with services, investment, and non-tariff barriers, most estimates of the economic and employment effects of trade and trade agreements focus narrowly on the goods sector, where data on trade and tariff rates are available, to estimate how demand for these goods may change as a result of changes in tariffs. Accordingly, such estimates do not represent the total impact of the agreement on the economy.

Costs and Benefits of Trade

Most economists argue that liberalized trade creates both economic costs and benefits, as indicated in **Table 1**, 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 throughout the economy benefit by having available to them 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 that enhances both production and employment. In addition, trade agreements of the type currently being negotiated by the United States comprise a broad range of issues that could have far-ranging economic effects on trade and commercial relations over the long run between the negotiating parties, particularly for developing and emerging economies.

Table 1. Economic Costs and Benefits of International Trade

Economy-wide benefits	Concentrated adjustment costs
Efficiency gains as a result of greater competition.	Potential job losses in some sectors.
Consumption gains for consumers throughout the economy by having access to a wider variety of goods and services at varying levels of quality and price.	Potential lower wages for some workers.
Gains in real income for consumers and producers by having access to lower priced goods and services.	Concentrated adjustments costs. Some workers and firms may experience a disproportionate share of the adjustment costs. Recent research is shedding new light on the extent to which these adjustment costs are concentrated in some communities.

⁴ 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.

Economy-wide benefits	Concentrated adjustment costs
Long-term positive dynamic effects arising through increased productivity and technological development.	The benefits and costs to the economy do not accrue at the same speed: the costs to the economy in the form of job losses are experienced in the initial stages, while the benefits to the economy accrue over time.
Potential economic gains achieved through trade agreements that affect trade and commercial relations over the long run.	

Source: CRS.

Most economists acknowledge that international trade and trade agreements can entail some negative effects through greater access to markets and increased competition, with the effects falling more heavily on some workers and firms. Generally, the costs and benefits associated with trade agreements do not accrue to the economy at the same speed; costs to the economy are felt in the initial stages of the agreement, while benefits to the economy accrue over time. The expected costs to the economy in the form of job losses and downward pressure on wages in some sectors and some segments of the labor force are experienced in the initial stages of the agreement, while the anticipated benefits to the economy in terms of enhanced consumer welfare and improvements in resource utilization accrue over time.

In addition, while research is ongoing, most economists have concluded that trade liberalization, or international trade more broadly, has not been a major factor affecting the distribution of income, whether in the United States, or in other economies, developed or developing.⁵ Some economists also estimate that international trade and trade liberalization have a different impact on workers in various occupations in the economy, termed by some as the occupational exposure to international trade.⁶ This means that trade liberalization can have a disproportionate impact on workers and firms not only in different sectors of the economy, but even within the same industry. Such types of microeconomic analysis at the firm level generally are not within the scope of trade models.

⁵ 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*, p. 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.

⁶ 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.

Data Limitations

The lack of data in areas other than direct trade in goods and services means that data on traded goods and some services can drive policy debates. Economists and others face numerous challenges in their efforts to estimate precisely the economic and employment effects that are associated with agreements that reduce or eliminate barriers to trade and investment flows, including non-tariff barriers to trade in services and other sectors. Trade in services, in particular, is characterized by a broad array of formal and informal barriers that complicate efforts to translate the barriers into tariff-equivalent values. Also, little analysis has been done to date on the potential economic effects of removing or reducing technical barriers to trade.⁷ Reduced barriers to trade in services potentially could have a large and positive impact on the U.S. economy, since informal barriers to trade in services are numerous, the United States is highly competitive in a number of services sectors, and U.S. direct investment abroad often spurs exports.

The economic environment within which trade occurs is also being constantly shaped by domestic and international activities in ways that may be difficult to model and may not be fully reflected in the time series data that are the fundamental building blocks of trade models. For instance, the sharp decline in energy and raw material prices in 2015-2016 and the slowdown in global trade since 2011 are altering the global economy in ways that arguably exceed any potential trade agreement. It is unlikely that the complete effects of these changes have been fully reflected in global economic and trade data. Trade models also do not explicitly incorporate exchange rates, in part due to the difficulty involved in estimating future movements in exchange rates. Such models, therefore, rely on existing trade patterns that may limit their ability to estimate the impact of new trade patterns that could arise from a multi-country agreement.

Trade models also generally treat exports and imports 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) have significantly increased the amount of trade in intermediate goods in ways that challenge traditional concepts of domestic versus foreign firms and blur the distinction between exports and imports. For instance, foreign value added accounts for about 28% of the content on average of global exports.⁸ 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 that are used in producing those goods and services. Trade in intermediate goods also means that imports may be essential for exports and that countries that impose trade measures restricting imports may negatively affect their own exports.⁹ This complex process of cross-border production and trade in intermediate goods also utilizes a broad range of services in ways that have expanded and redefined the role that services play in international trade. Increased trade in intermediate goods has also meant that the number of jobs in the economy tied directly and indirectly to international trade has increased in ways that are not captured fully by trade models.

⁷ One such attempt concluded that, “Agreements on standards raise issues that are both politically and analytically challenging. Unlike tariffs, standards cannot be simply negotiated away because the original reason for their existence is not trade protection, but arguably the enhancement of welfare by remedying market failure-arising, for example, from invisible risks of product use, negative environmental externalities, or product incompatibility due to the producers’ failure to coordinate. Agreements on standards, therefore, aim to secure the gains from integrated markets without unduly compromising the role of standards as remedies for market failure. Chen, Maggie Xiaoyang, and Aaditya Mattoo, Regionalism in Standards: Good or Bad for Trade?, *Canadian Journal of Economics* 41 (3), p. 838-863.

⁸ *World Investment Report 2013*, United Nations Conference on Trade and Development, 2013, p. 123-127.

⁹ *Ibid.*, p. 172.

Current Trade Arrangements

Efforts to estimate the economic impact of the proposed TPP are further complicated by the existence of overlapping trade agreements among the TPP countries: the United States already has FTAs with six TPP partners: Australia, Canada, Chile, Mexico, Peru, and Singapore.¹⁰ In addition, Singapore, Malaysia, Vietnam, and Brunei are members of the ASEAN (Association of Southeast Asian Nations) FTA. Such agreements have both trade creating and trade diverting dimensions that can interact in tandem or in opposite ways that may complicate the trade environment. While it may not be possible for any trade model to incorporate all the economic effects that potentially could arise from overlapping trade agreements, such agreements may be reshaping trade patterns that ostensibly could be enhanced further by the TPP.

In addition to the direct economic effects expected to result from cuts in tariffs, the TPP may offer additional long-term indirect benefits to bilateral and regional trade through changes in domestic non-tariff trade barriers that form the structure under which trade is conducted. In broad terms, the TPP incorporates rules and disciplines for open, transparent, non-discriminatory treatment for participants. These rules are expected to reduce market-distorting activities that not only reduce the overall level of trade, but create market inefficiencies. Some TPP participants have indicated that they intend to use the rules and disciplines in the TPP to support a reform agenda within their own economies. To the extent that countries undertake such reforms, the TPP potentially could provide long-term economic benefits to the countries themselves and to other TPP participants.

Anticipated Changes in Trade Patterns

Preferential multi-country trade agreements, such as the TPP, generally are expected to alter trade relations among the participants, stimulate economic growth, and improve overall economic welfare. By eliminating and reducing tariffs, trade agreements alter the external market conditions under which nations trade, while removing internal trade barriers alters the domestic structure under which trade is organized and conducted. Removing formal barriers to trade, primarily in the form of tariffs and quotas, directly lowers the prices of traded goods and thereby increases competition. In turn, lower prices are expected to alter trade patterns by increasing the amount of trade that occurs (trade creation) and by shifting trade away from countries that are not party to the agreement to those that are in the agreement (trade diversion). As a result, trade agreements may alter the composition of trade among a nation's various trading partners and alter the mix of goods and services that are traded. At times, countries are motivated to participate in trade agreements to forestall this type of trade diversion.

The magnitude of trade creation and trade diversion effects that may arise from the TPP are expected to depend on a number of factors, including the difference between pre-and post-agreement tariff rates, the speed with which tariff cuts are implemented, and other external economic factors that may affect global trade as a whole. In addition, the impact of tariff cuts under the TPP may be muted to some extent by the multiplicity of trade agreements that already exist among the participants and the already-low average tariff rates that are characteristic of trade among a number of the participants, although countries may have currently high tariffs on specific products.

For some countries, trade agreements may serve as a driving force for economic change in ways that cannot be quantified. Comprehensive free trade agreements as they currently are negotiated by the United States and others include a range of policy issues that have potentially significant

¹⁰ Deardorff, Alan V., *Trade Implications of the Trans-Pacific Partnership for ASEAN and Other Asian Countries*, July 24, 2013.

cross-border implications, including trade in goods and services, investment, regulatory and other non-tariff barriers, government procurement, e-commerce, agricultural barriers, intellectual property rights, state-owned enterprises, worker rights, and the environment. As such, these trade agreements potentially can serve as catalysts for economic growth and development in ways that can affect a nation's economy beyond what would be predicted from traditional trade models. This can be particularly important for developing countries that are trying to raise their own standards and see trade agreements as important tools for integrating themselves into regional and global economies and for implementing domestic economic reforms. In addition, trade agreements may attempt to standardize such governance issues as dispute resolution procedures that work to enforce and ensure that trade commitments are implemented.¹¹

Potential Changes in Employment

Estimating the impact of trade and trade agreements on employment and wages in the economy is particularly challenging, because trade is only one among a number of factors that affect the overall level of employment and wages in an economy in both the short run and long run. In addition, most trade models lack the detailed industry and employment data that are necessary to make forecasts beyond broad categories of employment to identify specific jobs that may be affected positively or negatively. It is also difficult in most circumstances to disentangle the myriad number and types of forces within the economy that can affect employment and wages at the micro, or firm, level. Additionally, a broad range of internal and external activities can affect national economies to a greater degree than most trade agreements in ways that cannot be factored in ahead of time. These activities can complicate efforts to derive cause and affect relationships.

Most economists argue that macroeconomic forces within the economy are the dominant factors that shape trade and foreign investment relationships. Nevertheless, changes at the microeconomic level associated with new technologies can affect particular industries or sectors of the economy in ways that are unrelated to international trade. In addition, changes in currency exchange rates, technology, interest rates, and the business cycle, among other things, can affect the overall state of the economy in ways that can outweigh the effects of trade agreements, given the already highly open nature of the U.S. economy. For the United States, exports account for about 13% of U.S. GDP and support over 11 million jobs, or about 8% of a total of 141 million workers in the U.S. economy.¹² Imports also support a broad spectrum of jobs, including wholesale and retail trade, transportation, and various other services, among others. As a result of the small share of trade-related jobs in the U.S. economy relative to other sectors, most economists argue that international trade is only one among a number of forces that determine total U.S. employment, real wages, or the distribution of income.¹³

¹¹ 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.

¹² Johnson, Martin, and Chris Rasmussen, *Jobs Supported by Exports 2013: An Update*, Manufacturing and Services Economics Brief, International Trade Administration, February 24, 2014.

¹³ For instance see Jorgenson, Dale W., Productivity and Economic Growth, in: *Fifty Years of Economic Measurement: The Jubilee of the Conference on Research in Income and Wealth*, ed. by Ernst R. Berndt and Jack E. Triplett, University of Chicago Press, 1991; 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.

Labor Supply

Over the long run, the national birth rate, improvements in productivity, and flows of immigration/emigration, among other things, affect the overall supply of labor in the economy. Although trade agreements arguably have no impact on the fundamental supply of labor in the economy, the level and extent of globalization of the economy has broadened the definition of the labor market. As a result, the labor market itself has become more globalized, especially with the opening of major markets to international trade and the growing use of new technologies. The shares of national income that go to labor as wages also depend on the overall demand for labor in the economy relative to the supply and the overall level of utilization of the other factors of production in the economy, all of which can change over the course of the business cycle and during periods of pronounced structural transformation.

As an economy expands, greater demands are placed on labor and other factors of production. At some stages of the business cycle, labor may reap a larger share of the rewards of production, while at other stages, a greater share of the rewards may accrue to the owners of production. In addition, structural changes in the economy can reshuffle capital and labor in the economy in ways that may alter the share of income that goes to labor and capital. Such structural changes also can reflect changes in technology that place a greater emphasis on certain types of skills. In addition, as technology is spread internationally, emerging economies can similarly experience improvements in productivity that may place additional competitive pressures on U.S. workers in some industries and at some skill levels. While such structural changes can be unsettling to some workers and sectors of the economy, other conditions such as economic stagnation are potentially more unsettling since all workers and sectors in the economy would be affected negatively.¹⁴

Firm and Job Turnover

In a dynamic economy such as the United States, firms and jobs are constantly being created and replaced as some economic activities expand, while others contract, reflecting both microeconomic and macroeconomic developments. These processes would be expected to occur during the implementation period of a trade agreement, but they would occur even in the absence of international trade. This constant change, however, complicates efforts to isolate the impact of a trade agreement on the structure of the economy from other dynamic forces that are constantly reshaping the economy. Moreover, various industries and sectors evolve over time at different speeds, reflecting differences in technological advancement, productivity, and efficiency. International trade may add to these forces to provide added impetus to both growing and declining industries.

Those sectors of the economy that are the most successful in developing or incorporating new technological advancements generate greater economic rewards and are capable of attracting greater amounts of capital and labor. In contrast, those sectors or individual firms that lag behind are less capable of attracting capital and labor and confront ever-increasing competitive challenges. Indeed, depending on the overall state of the economy, some sectors may need to relinquish some capital and labor in order for others sectors to grow to avoid economic stagnation. Also, advances in communications, technology, and transportation have facilitated a global transformation of economic production into sophisticated supply chains that span national borders and defy traditional concepts of trade that potentially can involve a greater share of the

¹⁴ Most standard economic textbooks have information on business cycles, see Samuelson, Paul A., and William D. Nordhaus, *Economics*, Irwin/McGraw-Hill Book Company.

labor force in trade-related activities.¹⁵ How firms respond to these challenges likely will determine their long-term viability in the market place.

Job Churning

Another factor that complicates attempts to equate a specific trade agreement, or even trade in general, with job gains or losses in the economy is the constant turnover in jobs, referred to as “churn,” taking place in the U.S. economy. At the plant level, job openings may come from new business openings or expansions at existing facilities, including those that are used to support increased exports. Job losses may come from voluntary departures, involuntary discharges, or business closures for any reason, including bankruptcy, personal choice, an inability to compete in the domestic market, import competition, or production shifts. In 2015, there was an average of 141.1 million jobs in the U.S. economy, of which 11.7 million jobs, or about 8%, were supported directly and indirectly by exports. At the same time, there were 7.6 million gross jobs gained in the economy and 6.7 million gross jobs lost, accounting for 5.4% and 4.8%, respectively, of the total number of jobs in the economy.¹⁶ This combined share of 14.3% (the combined shares of gross jobs gained and lost) reflects annual churning in the labor market, or an amount that is greater than both the number of jobs in the economy that are supported by exports and the projected impact on labor that potentially could arise from the TPP.

Adjustment Costs

International trade may not have a determinative role in shaping the U.S. economy as a whole, but economic theory recognizes that trade can affect the economy through a number of channels, including through increased competition. Economic theory also recognizes that some workers, firms, and communities in the economy may experience a disproportionate share of the short-term adjustment costs associated with shifts in resources stemming from greater international competition. There may also be instances in which foreign firms engage in unfair competition or trade-distorting practices. Most trade models do not contain enough consumer information to estimate these potential costs and benefits or enough industry and employment data to determine which specific jobs or which specific firms might be affected negatively or positively by a particular trade agreement. Although the attendant adjustment costs for businesses and workers are difficult to measure, some estimates indicate that they potentially are significant over the short-run. For some communities, closed plants can result in depressed commercial and residential property values and lost tax revenues, with effects on schools, public infrastructure, and community viability.¹⁷

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 trade-related dislocations may be “substantial.”¹⁸ In a study of the impact of trade liberalization on occupations, a number of economists used detailed microeconomic data to conclude that trade

¹⁵ See CRS Report R40167, *Globalized Supply Chains and U.S. Policy*, by Dick K. Nanto.

¹⁶ *Business Employment Dynamics-Second Quarter 2015*, Bureau of Labor Statistics, January 27, 2016, and *Employment Situation-January 2016*, Bureau of Labor Statistics, February 5, 2016; *Jobs Supported by Exports 2014, An Update*, International Trade Administration, March 4, 2015.

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 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.

liberalization has a small effect on wages and jobs at the industry level, but that it 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.¹⁹ 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 lower-income countries. In contrast, occupations that were associated with exports, generally higher skilled jobs, experienced a positive relationship between rising incomes and the growth in export shares.

Trade Models

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, including an industry input-output (I-O) table,²⁰ employment, and labor data, on as many as 100 countries. The most commonly used CGE economic model and database is the Global Trade Atlas Project (GTAP), located at Purdue University,²¹ that is used to estimate changes in trade (exports and imports) from changes in tariff rates and tariff rate quotas.²² CGE 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. The United States International Trade Commission (USITC), economists Peter A. Petri and Michael G. Plummer, and the World Bank all use the GTAP model for their simulations. In contrast, economists Jeronim Capaldo and Alex Izurieta use a different model to develop their estimates of the impact of TPP. Due to the unique nature of the model and the approach used by Capaldo and Izurieta, this model and its estimates are given a relatively lengthy treatment in this report.

CGE models are long-run microeconomic models that have been used widely and tested thoroughly. The models 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. Modelers argue that the microeconomic approach is justified because trade policies operate through microeconomic channels by tracing changes in trade policy to national productivity levels, wages, and incomes.²³ Although the limitations of the models are well-known (see earlier sections), the models arguably represent a rigorous, data-centric approach to estimating the economic effects of trade agreements. Trade models also use data that represent well-established trade relationships between countries, which means they are limited in their ability to estimate the impact of a new trade agreement on goods

¹⁹ Ibid.

²⁰ 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.

²¹ The databases are cooperatively produced and maintained by researchers and scholars. The model includes many sectors and 100 countries in the world.

²² 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 U.S. 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.

²³ Petri, Peter A. and Michael G. Plummer, *The Economics of Analyzing the TPP: Submission to the U.S. International Trade Commission*, February 15, 2016, p. 2.

or services that previously had not been traded due to barriers or on trade between countries that previously had a limited trade relationship.

Given the size and complexity of the CGE models, they must necessarily operate with a number of assumptions. One such assumption is that the economies in question are operating at full employment. While some experts question the assumption of full employment, it does not seem unreasonable considering the long-term time frame generally required for most trade agreements to be fully implemented. 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 persistently low level of unemployment is unlikely to have a significant impact on the results of the models, given the multitude of other assumptions involved in generating the estimates. In addition, during the implementation period, it seems questionable 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 most cases, 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 move the economy toward full employment.

As a result of the large number of countries that often are included in trade models and the vast amounts of trade data used, the models necessarily must sacrifice some level of precision in their estimating abilities. The models are intended to provide insight into the mechanisms by which changes in tariffs or other parameters may affect changes in trade flows among a set of countries. As a consequence, trade models aggregate vast amounts of data into a manageable size, for instance by reducing more than 17,000 individual commodities into about 50 categories and over 150 countries into 29 different country and geographic regions. 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 tariffs rates, which often are the target of new trade agreements.

Trade models 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. These models also make no assumptions about the basic input-output structure of the economy and 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 important, because standard economic theory indicates that changes in goods prices, whether from changes in tariff rates or from some other source, give rise to changes in the demand for labor and capital and, therefore, that price changes ultimately will alter the basic input-output structure of the economy. Since most large trade models originally were developed with the intent of analyzing the economic effects of such broad multi-country 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 and plurilateral free trade agreements where the overall amount of trade, and therefore the impact of the agreement, generally would be expected to be less than that of a WTO-style multilateral agreement.

Trade models such as the CGE differ from large macroeconomic models that are used to forecast changes in the rate of growth of gross domestic product (GDP), wages, taxes, or jobs. As a result, trade models do not yield precise estimates of the number of jobs that will be affected by any particular trade agreement. In response, some groups have used various methods and proxy estimators to assess the potential impact of trade agreements on jobs, which have produced a wide range of estimates. As examples of these approaches, some groups have used such indicators as trade deficits, or estimates of the number of jobs in the economy that are supported by exports, to

develop estimates of the impact of trade and trade agreements on jobs in the economy. These models may face important limitations of data and theoretical and practical issues that make it difficult to derive precise estimates of the impact of a particular trade agreement on the economy.²⁴

Overview of Economic Estimates of the TPP

This section provides an overview of various studies, their assumptions and a description of the models used to estimate the economic impact of the proposed TPP on U.S. trade, employment, and GDP relative to a baseline projection. The studies were selected because they are widely cited and are affecting the public policy debate about TPP.

United States International Trade Commission

The United States International Trade Commission (ITC) is tasked by Congress to provide economic assessments of U.S. trade agreements.²⁵ It released a comprehensive assessment of the economic impact of the TPP agreement in May 2016. The ITC used the GTAP model (see above) to estimate changes in trade (exports and imports) from changes in tariff rates and tariff rate quotas. The ITC also adjusted the GTAP model to provide a more detailed estimate of the impact of the TPP on foreign investment and trade in services. In addition, the ITC:

- Used a qualitative approach to estimate the economic impact commitments on government procurement, competition, state-owned enterprises, and intellectual property.²⁶
- Made some assumptions about the evolution of the U.S. and world economies without the TPP in five-year steps to 2047, including a straight-line projection of annual U.S. growth rate of 2%.
- Attempted to make the traditional GTAP model more dynamic by incorporating projections of capital accumulation, labor availability, and growth rates for population and gross domestic product (GDP) developed by the International Monetary Fund (IMF), the Organization for Economic Cooperation and Development (OECD), and the International Labor Organization (ILO). The model simulations also include potential trade policy changes that would be expected to occur in the absence of TPP.
- Modified the standard GTAP model to include the 12 TPP countries and to include various regions²⁷ and 56 industry sectors.
- Adjusted the model to account for dynamic labor supply effects by assuming that labor supply would expand or contract as real wages rise or fall and that skilled and unskilled labor would receive the largest share of the gains in GDP. The

²⁴ For additional information see CRS Report R44546, *The Economic Effects of Trade: Overview and Policy Challenges*, by James K. Jackson.

²⁵ Section 105(c)(2)–(3) of the Bipartisan Congressional Trade Priorities and Accountability Act of 2015 (P.L. 114-26).

²⁶ The qualitative approach contrasts the commitments in TPP to current practices and/or obligations under existing agreements with TPP parties in order to highlight the extent of the changes introduced by TPP. *Trans-Pacific Partnership Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors*, United States International Trade Commission, Publication No. 4607, May 2016, p. 48.

²⁷ The regions include China, European Union, Hong Kong, Indonesia, South Korea, Thailand, and the Rest of the World.

GTAP model does not capture the employment and age effects in the short run, but reflects such changes in its long-run forecasts²⁸

- The simulations assume that nations are at full employment and will take full advantage of reduced tariffs and increases in tariff-rate quotas.

The results of the GTAP model are expressed as proportional effects (percentage increases or decreases or changes in dollar amounts) for a number of variables, relative to a projection of the economy, which serves as the baseline condition for the modelling exercise. According to this analysis, by 2032, U.S. annual real income would be \$57.3 billion (0.23 percent) higher than the baseline projections, real GDP would be \$42.7 billion (0.15 percent) higher, annual employment would be 0.07 percent higher (128,000 full-time equivalents), and the capital stock would increase by 0.18% with TPP, as indicated in **Table 2**.

Table 2. ITC Estimated Economy-Wide Effects of TPP
(in billions of dollars; percentage change from baseline projections to 2032 and 2047)

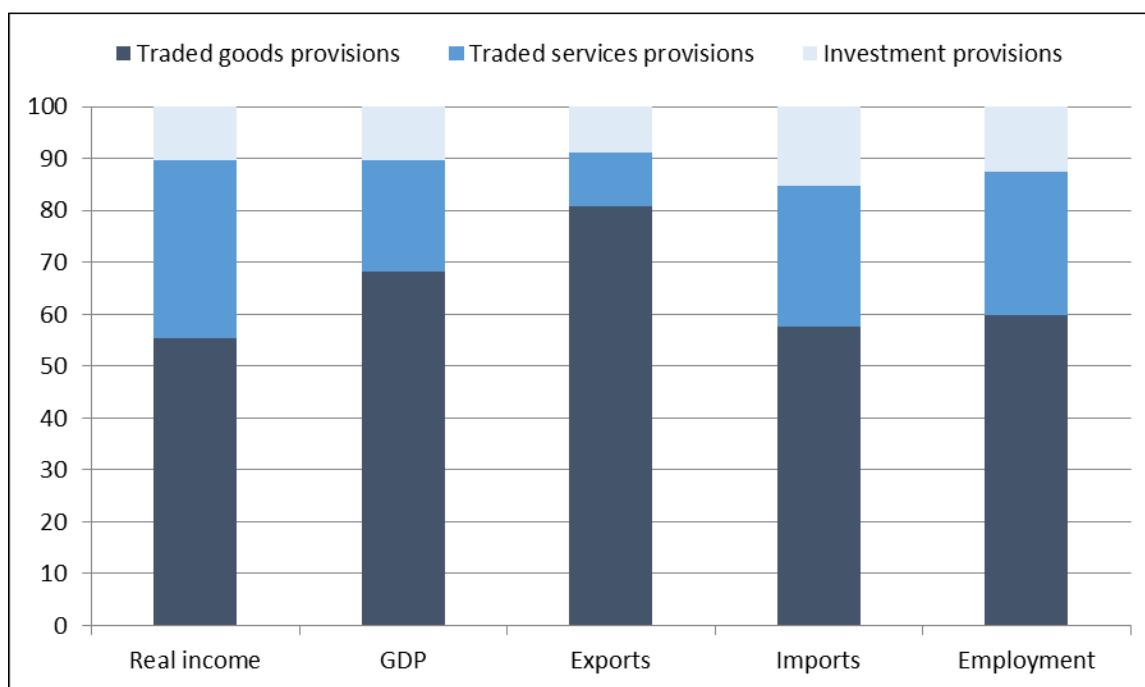
	2032		2047	
Real Income	\$57.3	0.23%	\$82.5	0.28%
Real GDP	\$42.7	0.15%	\$67.0	0.18%
Employment (full time equivalents, thousands)	128.2	0.07%	174.3	0.09%
Capital stock	\$171.5	0.18%	\$343.5	0.24%

Source: *Trans-Pacific Partnership Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors*, United States International Trade Commission, Publication No. 4607, May 2016, p. 70.

The ITC also estimated the share of the dynamic U.S. economy-wide effects of TPP by 2032 related to three groups of provisions: traded goods, services, and investment on five economic areas—real income, GDP, exports, imports, and employment—indicated in **Figure 1**. This analysis indicates that the largest share of the overall gains from TPP arise from provisions related to traded goods (reductions in tariffs, tariff quotas, and non-tariff measures).

²⁸ The ITC reviewed academic literature on the responsiveness of the supply of labor to a change in wages, or the labor supply elasticity. According to this literature, the elasticity ranged from 0.2 to 0.8; the ITC used the middle estimate of 0.4%, or a 1% change in wages affects a 0.4% change in labor supply. *Trans-Pacific Partnership Agreement*, p. 89-90.

Figure 1. ITC Estimated Share of Gains in U.S. Real Income, GDP, Exports, Imports, and Employment From Major Provisions of TPP
(shares in percentage)



Source: International Trade Commission.

In addition, annual U.S. exports and U.S. imports with TPP partners are projected to be \$57.2 billion (5.6%) and \$47.5 billion (3.5%) higher, respectively, relative to baseline projections, as indicated in **Table 3**. Of this amount, annual exports and imports with new FTA partners under TPP are projected to increase by \$34.6 billion (18.7%) and \$23.4 billion (10.4%), respectively by 2032. This data indicate that the majority of growth in U.S. exports is with new TPP partners. Overall, annual U.S. exports to the world are projected to increase by \$27.2 billion and imports are projected to increase by \$48.9 billion by 2032 under TPP, reflecting projected increases in U.S. real incomes, changes in real international prices, and some diverting of trade away from non-TPP countries toward TPP countries.

Table 3. ITC Estimated Effects of TPP on U.S. Trade
(in billions of dollars; changes relative to baseline projections to 2032 and 2047)

	Exports		Imports	
Trade with TPP partners	\$57.2	5.6%	\$47.5	3.5%
New FTA partners	\$34.6	18.7%	\$23.4	10.4%
Existing FTA partners	\$22.6	2.7%	\$24.2	2.1%
Trade with the world	\$27.2	1.0%	\$48.9	1.1%

Source: *Trans-Pacific Partnership Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors*, United States International Trade Commission, Publication No. 4607, May 2016, p. 71.

Similar to previous studies of FTAs, the ITC analysis of the TPP estimated the effects of liberalizing tariffs and nontariff measures (NTMs) on goods. The largest U.S. tariff reductions for TPP countries that currently do not have a trade agreement with the United States are for certain

footwear, sugars and sugar-containing products, titanium downstream products, and wearing apparel. The largest reduction in tariffs on U.S. exports by TPP countries that currently do not have a trade agreement with the United States include exports of beef, footwear, and corn grain.²⁹

The ITC study also examined the effects of TPP on specific industries. According to this analysis, gains in output and employment would be driven by changes in the agriculture and food sector, while output and employment in the manufacturing, natural resources and energy sectors would fall slightly as resources would be shifted from these sectors to other sectors in the economy, as indicated in **Table 4**. Shifts in employment and changes in the use of resources reflect the changes in tariff rates that would provide incentives for resources to shift from other sectors of the economy to those sectors in which foreign tariff rates were reduced. Global U.S. exports of services were estimated to be \$4.8 billion higher by 2032, while services exports to TPP countries was projected to be 10.8 % (\$16.6 billion) higher, and exports of services to non-TPP countries were projected to be 1.9% (\$11.8 billion) lower.

Table 4. ITC Estimated Broad Sector-Level Effects of TPP on U.S. Output, Employment, and Trade

(in billions of dollars; changes relative to baseline estimates in 2032)

	Exports		Imports		Output		Employment
Agriculture and food	\$7.2	2.6%	\$2.7	1.5%	\$10.0	0.5%	0.5%
Manufacturing, natural resources, and energy	\$15.2	0.9%	\$39.2	1.1%	-\$10.8	-0.1%	-0.2%
Services Trade Total	\$4.8	0.6%	\$7.0	1.2%	\$42.3	0.1%	0.1%
Services Trade with TPP countries	\$16.6	10.8%	\$2.1	2.5%	NA	NA	NA
Services Trade with non-TPP countries	-\$11.8	-1.9%	\$4.9	1.0%	NA	NA	NA

Source: *Trans-Pacific Partnership Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors*, United States International Trade Commission, Publication No. 4607, May 2016, p. 73, and p. 337-338.

The ITC study also examined the effects of the agreement on removing certain non-tariff measures on trade in services and cross-border investment among member economies. In order to estimate changes in services trade as a result of the TPP, ITC adjusted the standard GTAP model to reflect the impact of liberalizing cross border trade in services by estimating the tariff equivalent value of existing barriers to trade in services.³⁰ This estimating process used data

²⁹ *Trans-Pacific Partnership Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors*, p. 79; and CRS Report R44489, *The Trans-Pacific Partnership (TPP): Key Provisions and Issues for Congress*, coordinated by Ian F. Fergusson and Brock R. Williams.

³⁰ *Trans-Pacific Partnership Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors*, United States International Trade Commission, Publication No. 4607, May 2016, p. 756. The main academic source cited in the report on estimates of tariff equivalent values for trade in services is, Fontange, Lionel, Amelie Guilllin, and Cristina Mitaritonna, *Estimates of Tariff Equivalents for the Services Sectors*, CEPII, December 2011. The unique nature of services themselves and a lack of data hamper efforts to estimate directly the cost of barriers to trade in services. As a result, this analysis used an indirect approach to estimating tariff equivalents. It used a gravity model (which highlights the importance of geographic proximity in determining trade patterns) with data on gross domestic

published in academic articles and an indirect approach to derive tariff equivalents of barriers to trade in services. The TPP would remove restrictions on trade in services on a negative list basis, meaning that all services that are not explicitly excepted would be covered by the agreement's provisions. In addition, it includes broad disciplines on ensuring the ability to transmit data across borders and prohibiting data-localization measures (except for services). These estimates indicate that output for the U.S. services sector would be \$42.3 billion higher (0.1% increase) under TPP relative to the 2032 baseline, as indicated in **Table 5**. Services exports were projected to increase by 0.6% and services imports by 1.2% by 2032. Employment in all services sectors except transportation was projected to be higher by 2032 under TPP.

Table 5. ITC Estimated Effects of TPP on U.S. Output, Employment, and Trade in Services

(in millions of dollars; changes relative to baseline estimates in 2032)

	Exports		Imports		Output		Employment
Services	\$4,797.4	0.6%	\$6,962.5	1.2%	\$42,342.6	0.1%	0.1%
Wholesale and retail trade	\$848.7	2.5%	\$542.4	1.2%	\$7,447.5	0.1%	0.1%
Transportation, logistics, travel, and tourism	\$-1,258.4	-1.1%	\$1,770.5	1.5%	\$-719.9	0.0%	-0.1%
Communications	\$877.7	2.8%	\$306.4	1.2%	\$2,845.6	0.2%	0.1%
Financial services	\$-12.1	0.0%	\$787.8	1.1%	\$1,520.0	0.1%	0.1%
Insurance	\$34.4	0.1%	\$703.5	1.1%	\$707.9	0.1%	0.0%
Business services	\$4,575.5	1.6%	\$2,031.5	1.2%	\$11,576.0	0.2%	0.1%
Recreational and other services	\$-687.8	-1.5%	\$199.3	0.9%	\$1,749.8	0.1%	0.1%

Source: *Trans-Pacific Partnership Agreement: Likely Impact on the U.S. Economy and on Specific Industry Sectors*, United States International Trade Commission, Publication No. 4607, May 2016, p. 35.

The ITC adjusted its modelling process to account for potential changes in direct investment that could stem from the TPP. The ITC used a four-step process to make its estimate. In the first step, the ITC calculated how much the TPP would change investment restrictions by using the OECD's (Organization for Economic Cooperation and Development) foreign direct investment Regulatory Restrictiveness Index [RRI], which covers 42 sectors and subsectors in 31 countries.³¹ Next, the ITC calculated how changes in the RRI would affect foreign affiliate sales for host countries and foreign affiliate home countries. In the third step, the ITC used a modified GTAP model to

product (GDP), distance, remoteness, adjacency, regional trade agreements (RTAs), economic freedom index, and common language. This gravity model simulation was based on estimates of a theoretical level of trade in services in nine service sectors (Communication; Construction; Business; Transport; Trade; Finance; Other Services comprising education, health, defense, and public administration) that would arise if there were no restrictions on trade among developed economies and a few emerging economies. These estimates, in turn, were used to compare the differences between the estimated values of trade in services with the actual value of trade in services to derive an estimate of the tariff equivalent value of the non-tariff restrictions. In addition, in order to estimate the impact of restrictions on trade in services, an estimate of the elasticity of substitution between domestic and foreign services is assumed, since there are no reliable data on the actual value of this elasticity.

³¹ The Index focuses on four types of overt restrictions on foreign direct investment: equity restrictions; screening and approval requirements; restrictions on key foreign personnel; and operational restrictions (limits on purchases of land and repatriation of profits and capital), see <http://www.oecd.org/investment/fdiindex.htm>.

calculate how changes in foreign affiliate sales would affect productivity in each sector in each TPP country. Finally, the ITC estimated how the changes in productivity would affect macroeconomic variables in the United States.³² Since the United States is considered to be largely open to foreign direct investment, the ITC concluded that TPP is not expected to alter investment inflows in a significant way. The United States does not have FTAs with five of the TPP countries (Brunei, Japan, Malaysia, New Zealand, and Vietnam); the ITC estimates that the TPP could increase U.S. direct investment into these countries.³³

Peterson Institute for International Economics

An analysis conducted by Peter A. Petri and Michael G. Plummer and published by the Peterson Institute for International Economics³⁴ also used the GTAP model, assumed full employment, and made some adjustments to the standard GTAP model to estimate the economic impact of the TPP. These adjustments generated a more positive impact on trade in services and a greater response by foreign investment than the ITC study. This estimate concluded that the agreement would increase U.S. income and directly generate jobs in the U.S. economy. The study also estimated that the TPP could increase U.S. annual GDP by \$131 billion, or 0.5% of GDP, and could increase annual exports by \$357 billion, or 9.1% of U.S. exports, by 2030 when the TPP would be expected to be fully in force, as indicated in **Table 6**.

Table 6. PIIE Estimated Changes in Baseline GDP With the TPP, 2015-2030
(in billions of 2015 dollars)

	Baseline (billions of dollars (2015))				Change with TPP (billions of dollars (2015))		
	2015	2020	2025	2030	2020	2025	2030
TPP members	\$28,969	\$32,971	\$37,094	\$41,011	\$98	\$291	\$465
United States	18,154	20,736	23,372	25,754	29	88	131
Japan	4,214	4,462	4,693	4,924	39	91	125
Canada	1,981	2,227	2,472	2,717	8	22	37
Australia	1,704	1,986	2,292	2,590	1	8	15
Mexico	1,339	1,598	1,868	2,169	3	11	22
Malaysia	349	444	553	675	7	28	52
Singapore	320	380	437	485	2	8	19
Chile	269	329	397	463	0	2	4
Vietnam	209	281	378	497	7	22	41
Peru	219	287	363	442	1	6	11

³² ITC, *Trans Pacific Partnership Agreement*, p. 760.

³³ *Ibid.*, p. 39.

³⁴ The model used in the study attempted to provide a robust and comprehensive estimate of the agreement and to simulate the dynamic rates of growth and trade that have occurred in the Pacific region by estimating annual rates of GDP growth out to 2030. The model estimates were based on historical data available at the time of the study, updated in 2016. Petri, Peter A., Michael G. Plummer, and Fan Zhai, *The Trans-Pacific Partnership and Asia-Pacific Integration: A Quantitative Assessment*, The Peterson Institute for International Economics, November 2012; Petri, Peter A.; and Michael G. Plummer, *The Economic Effects of the Trans-Pacific Partnership: New Estimates*, Working Paper Series, WP 16-2, The Peterson Institute for International Economics, January 2016.

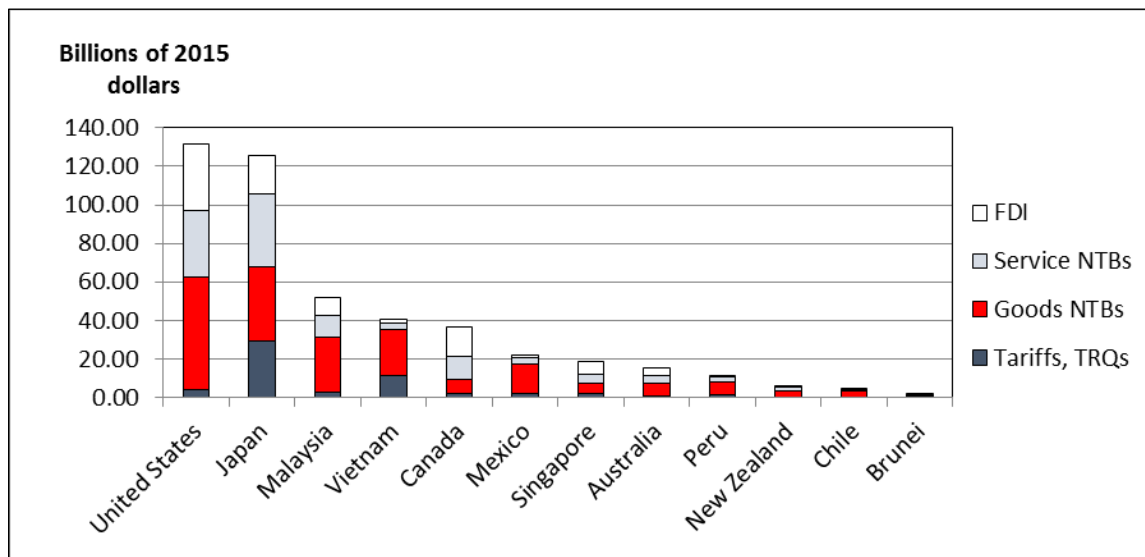
	Baseline (billions of dollars (2015))				Change with TPP (billions of dollars (2015))		
	2015	2020	2025	2030	2020	2025	2030
New Zealand	192	217	241	264	1	4	6
Brunei	20	24	27	31	0	1	2
Non-TPP members	\$52,066	\$63,652	\$77,596	\$92,790	\$13	\$28	\$27
Europe	17,893	19,746	21,451	23,189	12	34	48
China	11,499	16,058	21,689	27,839	-1	-8	-18
India	2,210	3,086	4,197	5,487	0	-2	-5
Korea	1,384	1,672	1,967	2,243	-1	-5	-8
Indonesia	927	1,240	1,687	2,192	0	-1	-2
Taiwan	511	619	707	776	0	1	1
Thailand	411	516	656	812	-1	-4	-7
Philippines	329	436	547	680	0	-1	-1
Hong Kong	300	358	412	461	2	4	6
WORLD	\$81,035	\$96,623	\$114,690	\$133,801	\$111	\$319	\$492

Source: Petri, Peter A.; and Michael G. Plummer, *The Economic Effects of the Trans-Pacific Partnership: New Estimates*, Working Paper Series, WP 16-2, The Peterson Institute for International Economics, January 2016.

In the short run, the model scenario estimated that the potential for unemployment in the U.S. economy would be equivalent to about 0.1% of U.S. annual GDP.³⁵ This increase in GDP is comprised of four components: (1) increased flows in foreign direct investment; (2) reduced non-tariff barriers (NTBs) to trade in goods; (3) reduced in non-tariff barriers to trade in services; and (4) cuts in tariff rates, as indicated in **Figure 2**. Similar in some respects to the ITC study, which attributed the largest gains from TPP to provisions in the agreement that affect traded goods, the authors estimate that the largest economic gains from TPP will arise from reductions in non-tariff barriers (NTBs) for goods and services. While incorporating estimates of NTBs allows for a more complete analysis, it also introduces an increased degree of uncertainty, since the value of NTBs is not observed directly, but must be estimated. Also, the authors estimate that annual global GDP will increase by \$492 billion by 2030, and Japan, Malaysia, and Vietnam will experience large increases in GDP, in large part because they are the countries with the highest existing trade barriers in certain sectors. Countries potentially experience the largest economic gains from trade agreements by lowering trade barriers and increasing domestic competition.

³⁵ Petri and Plummer, *The Economics of Analyzing the TPP*, p. 4-5.

Figure 2. PIIE Estimated Components of Economic Gains for TPP Members, 2030
(in billions of 2015 dollars)



Source: Petri, Peter A.; and Michael G. Plummer, *The Economic Effects of the Trans-Pacific Partnership: New Estimates*, Working Paper Series, WP 16-2, The Peterson Institute for International Economics, January 2016.

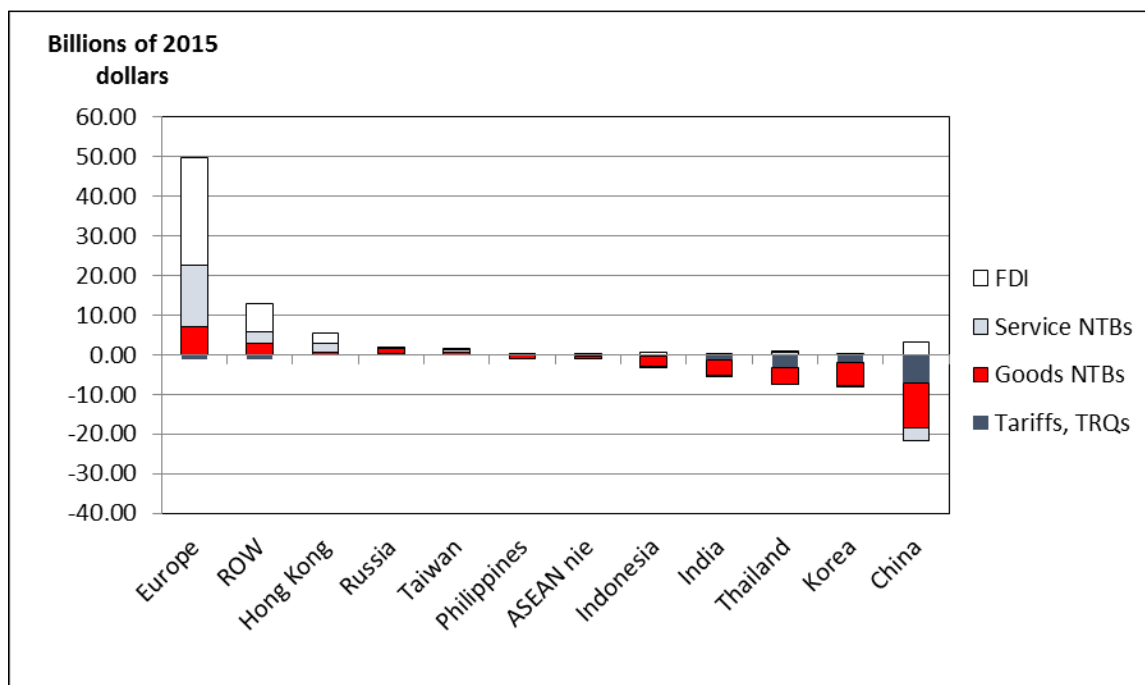
Among non-TPP countries, Europe is projected to experience an increase in GDP of about \$50 billion by 2030, due to increased exports to TPP countries that experience gains in real incomes and by increases in exports of services due to liberalization of services trade and foreign investment by TPP members. China, India, and Thailand, which are direct competitors to TPP countries, are projected to lose income. South Korea is projected to lose some of the economic gains it has experienced under the South Korea-United States FTA, as indicated in **Figure 3**.

The authors also estimate that the TPP likely will raise U.S. wages, and alter the composition of jobs in the economy, but not alter the overall level of U.S. employment, similar to the estimates by the ITC. Both capital and labor are expected to benefit from the agreement, although labor's share is projected to increase somewhat more as a proportionate share of the total amount of benefits. Given these benefits, the authors argue that each year the agreement is delayed will result in a \$94 billion permanent loss to the U.S. economy. The authors further estimate that the agreement could add about 19,000 jobs annually to the overall number of jobs gained and lost annually in the economy, or jobs that are eliminated in one sector, but added in another, or job churn. The authors also project that using a different and more expansive, but potentially unrealistic, approach would be to estimate all jobs that are directly and indirectly displaced by imports, which potentially could total 53,000 U.S. jobs, adding an estimated 0.1% to annual labor market turnover.³⁶

³⁶ Petri, *New Estimates*, p. 3.

Figure 3. PIIE Estimated Components of Economic Gains for Non-TPP Members, 2030

(in billions of 2015 dollars)



Source: Petri, Peter A.; and Michael G. Plummer, *The Economic Effects of the Trans-Pacific Partnership: New Estimates*, Working Paper Series, WP 16-2, The Peterson Institute for International Economics, January 2016.

Note: ROW stands for “rest of the world.”

The estimates by Petri, et. al. are based on projections of annual growth in GDP and national income for the participants in the TPP agreement from 2015 to 2030, relative to the baseline projections, with a large share of the benefits accruing after 2020. The model incorporates provisions agreed upon in the final version of the agreement, but also necessarily incorporates some subjective assessments of the nature and economic impact of the 30 chapters that comprise the agreement. The analysis also projects increased inward and outward investment flows, reflecting reduced barriers to foreign investment and a more attractive investment climate. This analysis projects that U.S. exports of certain types of goods will increase, including, primary goods (agriculture and mining), advanced manufacturing, and services, while imports are expected to increase in labor-intensive manufacturing products and in some types of services.

According to the authors, the projection of investment flows in the model attempts to reflect the dynamic nature of economic activity in the TPP economies by assuming that the agreement potentially could induce additional firms into exporting. Such an assumption likely would make the estimated impact of the agreement larger than would projections using models that did not incorporate this assumption. This assumption also would require a number of subjective decisions, since trade models generally do not contain the types of microeconomic behavioral data on firms that would be necessary to forecast accurately which firms might decide to engage in exporting directly as a consequence of a particular trade agreement. The model also relies on estimates of the annual value of national income for the participants that stems from the trade agreement and a projection of the annual rates of GDP growth for the countries involved.

The authors projected U.S. GDP in 2025 of \$20 trillion and by dividing the GDP projection by the projected number of workers in the U.S. labor force in 2025 of 168 million, they derive an

equivalent value of \$121,000 (\$20 trillion / 168 million) for the average income for each U.S. worker in 2025. The authors also estimate the FTA will generate annual gains in income for the U.S. economy that will rise to \$59 billion annually, rising slowly to reach \$79 billion annually by 2025.³⁷ The authors argue that the estimated annual income effect can be equated to an annual increase in employment, which some observers have interpreted to mean that the data imply a net positive annual gain in employment over the baseline projection of 487,000 jobs (\$59 billion / \$121,000) by 2025, more than twice the number of annual job gains projected by the ITC.

The authors argue, however, that the estimated employment effects will consist primarily of shifts in employment among sectors of the economy as a result of the full employment assumption. The authors caution that

the trade-employment relationship is complicated and not well understood. For one thing, the relationship is very sensitive to underlying macroeconomic circumstances. The macroeconomic analysis of employment effects, in turn, requires very different models from those used to understand the microeconomics of international competition.³⁸

The authors also state that they purposely did not attempt to estimate the number of jobs that might arise from the agreement.³⁹ They argue that “[t]he reason we don’t project employment is that, like most trade economists, we don’t believe that trade agreements change the labor force in the long run. The consequential factors are demography, immigration, retirement benefits, etc. Rather, trade agreements affect how people are employed, and ideally substitute more productive jobs for less productive ones and thus raise real income.”⁴⁰

World Bank

Another estimate of the potential economic impact of the TPP was published by the World Bank, based in part on the study by Petri and Plummer, who served as co-authors.⁴¹ The estimate also used the GTAP model, with some adjustment, and the full employment assumption. These adjustments assume that trade in goods and services will increase as a result of regulatory convergence among TPP and non-TPP members. The model simulation projects that by 2030 relative to baseline projections, the TPP would increase member country GDP on average by 1.1%, ranging from over 8% for Vietnam to 0.5% for the United States, or about the same as the projections by Petri and Plummer for the Peterson Institute, as indicated in **Figure 4**. This upward shift in GDP stems from model simulations that the agreement would stimulate a shift in resources towards more productive firms and sectors and expand export markets, as indicated by conventional trade theory. The impact on members of the North American Free Trade Agreement (NAFTA: United States, Canada, and Mexico) would be about 0.6% of GDP, due to the low share of trade in GDP, primarily in the United States, and the already-low average tariff rates.

Spillover effects on non-TPP countries are expected to be small, but positive as a result of greater regulatory harmonization. For non-TPP members, the trade diversion effects are projected to be

³⁷ Ibid., p. 75.

³⁸ Ibid., p. 57.

³⁹ Other economists have used the analyses by Petri and Plummer to make such an assessment. 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.

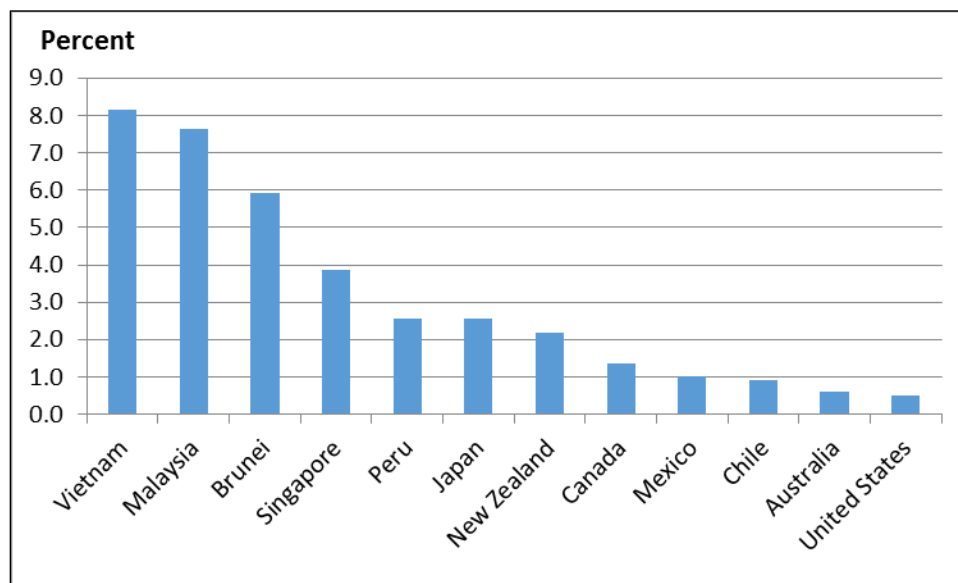
⁴⁰ Kessler, Glenn, The Obama Administration’s Illusionary Job Gains From the Trans-Pacific Partnership, *The Washington Post*, January 30, 2015.

⁴¹ Lakatos, Csilla, Maryla Maliszewska, Franziska Ohnsorge, Peter Petri, and Michael Plummer, Potential Macroeconomic Implications of the Trans-Pacific Partnership, *Global Economic Perspectives: Spillover Amid Weak Growth*, World Bank Group, January 2016.

limited, as a result of the large share of trade that currently occurs among TPP countries. Consequently, aggregate losses to non-TPP countries are estimated to amount to 0.1% of GDP by 2030. Only South Korea, Thailand, and some other Asian economies are expected to experience losses exceeding 0.3% of GDP. The study also projects that the agreement will lift trade among the TPP members by 11% by 2030.

According to the authors, the benefits of the agreement will materialize slowly, but accelerate towards the end of the projection period. These benefits would be derived mostly from reductions in non-tariff measures and measures that benefit services. The authors estimate that 15% of the projected increase in GDP would be due to lower tariff rates, while non-tariff measures would account for 53% of the increase in exports of goods and 51% of the increase in exports of services.⁴² This estimate also “allows for the emergence of trade in products not previously traded between pairs of countries.”⁴³

Figure 4. World Bank Estimated Changes in GDP With TPP, 2030
(percentage change in GDP)



Source: Lakatos, Csilla, Maryla Maliszewska, Franziska Ohnsorge, Peter Petri, and Michael Plummer, Potential Macroeconomic Implications of the Trans-Pacific Partnership, *Global Economic Perspectives: Spillover Amid Weak Growth*, World Bank Group, January 2016

The authors adopt three assumptions that are important to deriving their results:

1. *Cumulative rules of origin*—are expected to encourage regional production networks. The authors estimate that the rules of origin will lead to the replacement of 40% of imported inputs with higher-cost inputs from TPP members to qualify for low TPP tariffs.
2. *Existing services barriers*—estimated indirectly from bilateral trade flows, based in part on results from the U.S.-South Korea FTA.

⁴² Ibid., p. 226-227.

⁴³ Ibid., p. 225.

3. *Non-discriminatory trade liberalization*—more transparent regulatory approaches are expected to facilitate increased trade with non-TPP members.⁴⁴

The authors expect that over the long run the TPP will accelerate shifts among the various sectors of the economy. For advanced economies, these shifts likely will favor traded services, advanced manufacturing, and for some resource-rich economies, primary products and investments. Developing countries are projected to experience growth in manufacturing, especially in unskilled labor-intensive industries, and in some production of primary products. These shifts translate into a higher value placed on skilled workers in the advanced economies and an increase in wages of unskilled workers in developing economies. For the United States, the authors project that changes in real (adjusted for inflation) wages are expected to be small as wages for unskilled and skilled workers increase by 0.4% and 0.6%, respectively, by 2030, or that wages for skilled workers are expected to rise by more than wages for unskilled workers.

This approach attempts to incorporate the effects of the agreement's rules of origin and potential economic benefits that arise from greater regulatory convergence among the TPP members. The authors conclude that a common rules approach will increase intra-regional trade in affected industries.⁴⁵ In the model, trade with non-TPP members depends on existing standards in non-member countries and on hypothetical mutual recognition agreements on the rules of origin. Such agreements would provide limited preferential treatment to some trade with non-TPP members, but such countries currently are not party to the agreement. As a result of changes in regulatory standards alone, trade with non-TPP members are projected to vary by the level of economic development. Trade with non-TPP developed economies is expected to increase, while trade with non-TPP developing economies is expected to decrease, because firms in developing countries are expected to be hurt more by more stringent regulatory standards in some markets and are less able to gain from the types of economies of scale that are available to firms in developed economies. Trade between TPP and non-TPP countries is also expected to be affected by rules of origin with countries that have adopted mutual recognition with permissive rules of origin and are likely to fare better than countries with more restrictive rules.

The authors conclude by arguing that

Against the background of slowing trade growth, rising non-tariff impediments to trade, and insufficient progress in global negotiations, the TPP represents an important milestone. The TPP stands out among FTAs for its size, diversity, and rulemaking. Its ultimate implications, however, remain unclear. Much will depend on whether the TPP is quickly adopted and effectively implemented, and whether it triggers productive reforms in developing and developed countries. Broader systemic effects, in turn, will require expanding such reforms to global trade, whether through TPP enlargement, competitive effects on other trade agreements, or new global rules.⁴⁶

Tufts University, Global Development and Environment Institute

Tufts University's Global Development and Environment Institute sponsored another study of the economic impact of the TPP, using the United Nations Global Policy Model (GPM).⁴⁷ This study differs markedly from the previous studies, because the GPM model is not a GTAP-type CGE

⁴⁴ Ibid., 225-226.

⁴⁵ Ibid., p. 232.

⁴⁶ Ibid., p. 229.

⁴⁷ Capaldo, Jeronim and Alex Izurieta, *Trading Down: Unemployment, Inequality, and other Risks of the Trans-Pacific Partnership Agreement*, GDAE Working Paper No. 16-01, Global Development and Environment Institute, Tufts University, January 2016.

model and the structure of the model and the assumptions that are used differ substantially from those used in the three previous examples. As a result of these differences, the authors reach the non-standard conclusion that all TPP members will experience job losses, which are projected to total 771,000 jobs, with the largest losses occurring in the United States, as indicated in **Table 7**.

The study also estimates that the TPP will negatively affect growth and employment in non-TPP countries, with Europe losing 879,000 jobs and non-TPP developing countries projected to lose about 4.5 million jobs by 2025. The authors argue that these effects increase the risk of “global instability and a race to the bottom, in which labor incomes will be under increasing pressure.”⁴⁸ The authors also argue that their model is based on “more realistic assumptions about economic adjustment and income distribution,” than the standard CGE model.⁴⁹ They term their model a “demand-driven, global econometric” macroeconomic model, compared with the microeconomic feature of the GTAP model. Previously, the authors used this model to develop estimates of the Trans-Atlantic Trade and Investment Partnership (T-TIP), a study that has come under critical review by trade economists.⁵⁰

Table 7. Capaldo and Izurieta Estimated Changes With TPP, 2015-2025

(in percentage change and thousands)

	Net Exports (% of GDP)	GDP Growth (%)	Employment (thousands)
Total TPP			-771
United States	0.20%	-0.54%	-448
Canada	-0.58	0.28	-58
Japan	1.54	-0.12	-74
Australia	0.71	0.87	-39
New Zealand	2.13	0.77	-6
Brunei, Malaysia, Singapore, and Vietnam	1.69	2.18	-55
Chile and Peru	1.18	2.84	-14
Mexico	0.20	0.98	-78
Non-TPP, Developed		-3.77	-879
Non-TPP, Developing		-5.24	-4,450

Source: Capaldo, Jeronim and Alex Izurieta, *Trading Down: Unemployment, Inequality, and other Risks of the Trans-Pacific Partnership Agreement*, GDAE Working Paper No. 16-01, Global Development and Environment Institute, Tufts University, January, 2016.

Basic Assumptions

The authors reject the standard CGE model on a number of grounds. In particular, they argue that the standard model (1) incorporates “dubious” assumptions about full employment; (2) does not distinguish between wage-earners and profit-earners in ways that obscure potential changes in the

⁴⁸ Ibid., p. 1.

⁴⁹ Ibid., p. 10.

⁵⁰ Bauer, Matthias and Frederik Erixon, “*Splendid Isolation*” as Trade Policy: Mercantilism and Crude Keynesianism in “the Capaldo Study” of TTIP, ECIPE Occasional Paper 03/2015, European Centre for International Political Economy. March, 2015.

distribution of income; (3) assumes that real wages increase at the same rate as the growth in productivity; (4) assumes constant balances in the government account and in the current account; and (5) assumes that there will be an increase in foreign direct investment.⁵¹ Due to these assumptions and the nature of the GPM model, the analysis that follows is necessarily more detailed and expansive than that for the previous studies, which are more conventional in their approach.

The UN GPM model is not a trade model under conventional definitions in large part because the model uses very little trade data. Similar to other models, the UN model provides estimates of the impact of the TPP on a limited number of individual countries (the United States, Japan, Mexico, Australia, Canada, and New Zealand, in the case of this analysis), while it aggregates all other countries into regional blocs. In contrast to the GTAP model, however, the GRM model includes only four broad international trade sectors: energy products; primary commodities; manufacturing; and services. The authors argue that this aggregation is not significant, because their study focuses on “macroeconomic impacts.”⁵²

In deriving their results, the authors borrow estimates from other studies, generated primarily from CGE models, of the potential trade effects of the TPP, since the GPM model itself does not contain enough trade data to generate such estimates. As previously explained, CGE models typically estimate changes in goods trade only unless they are modified to estimate changes in services trade, investment, or consumer welfare. The authors offer the unconventional conclusion that the TPP will result in job losses not only in each TPP country, but negative dislocations in non-TPP countries as well. Without a detailed explanation of the results by the authors, it is difficult to assess how the model derived the results, or how various assumptions may have affected the results. The authors proceed by

- Following the “widely held belief” that TPP would affect international competition by “pushing countries to increase trade performance.” This is accomplished by producers in each country lowering their prices and cutting their costs in order to preserve their market shares. The authors “assume” that this process would lower nominal unit labor costs through the combined actions of business managers and “policymakers” who negotiate lower wages;
- Contending that this process would affect the distribution of income between labor and business profits in favor of profits for businesses, thereby lowering labor’s share of income, because the TPP would affect the incentives for countries to “tilt income distribution in favor of profits,” which the authors analyze by “estimating the impact of changes in unit labor costs on international market shares;”⁵³
- Assuming that economic sectors of the economy that are affected negatively by the TPP agreement would create a demand shortfall in the economy, because, as a sector contracts, “other sectors may suffer as well,” leading to “large job losses and drive the economy into recession;”⁵⁴

⁵¹ Capaldo, p. 7-8.

⁵² Ibid., p. 12.

⁵³ Ibid., p. 13.

⁵⁴ Ibid., p. 11.

- Arguing that the TPP would push firms and other borrowers to seek higher returns in order to avoid losing investors. The authors assume that a higher profit rate necessarily requires a lower labor share of income;
- Asserting that inflows of foreign income “depend on a country’s fiscal policy,” which would require countries to adjust to attract foreign capital; and
- Concluding by asserting that, “since all TPP countries would want to preserve their market shares, we assume that they will engage in a race to the bottom, pushing labor shares downward across the whole TPP bloc.”⁵⁵

Other Assumptions

This series of steps requires assumptions and assertions that, in a number of cases, contradict standard economic concepts, often without explanation or the requisite theoretical or analytical basis. As previously indicated, standard trade theory indicates that trade agreements such as the TPP generally are expected to generate a number of economic effects, both positive and negative, although the net sum is expected to be positive for all participating countries. This study, however, focuses exclusively on the negative effects, or on the adjustments costs, even though trade models are not capable of precisely estimating these adjustment costs. As noted above, the costs and benefits associated with trade agreements do not accrue to the economy at the same speed: costs to the economy in the form of job losses generally are experienced in the initial stages of the agreement, while the benefits to the economy generally accrue over time.

The authors also criticize the typical CGE model assumption of full employment. Given the long-term time horizon of most trade agreements to be fully implemented, assumptions of full employment generally are not thought to be unreasonable, since economic activity is expected to adjust to shocks by returning to its long-run growth pattern of full employment.⁵⁶ The adjustment of the economy to shocks is thought to be either automatic through market adjustments, or through deliberate adjustments in macroeconomic policies (either through fiscal policies including adjustments in tax rates or in government spending, or in monetary policies). Also, at an unemployment rate of 4.7%, the United States is effectively nearing its theoretical full-employment limit. Concurrently, measures of capacity utilization, or the amount of slack productive capacity in the economy, indicate that levels in early 2016 are below long-run rates of utilization. With excess productive capacity and with tightening labor markets, benefits going to labor may well rise relative to returns to businesses as firms compete for workers by offering higher wages.

The net positive economic effects from trade agreements are expected to arise from lower tariff rates that, in turn, increase the amount of trade among all TPP participants. Lower import costs increase choices for consumers, improve their real purchasing power, and improve long-run productivity in ways that affect the overall efficiency of the economy. In the TPP, businesses are anticipated to improve their performance through the mutual lowering of market-distorting tariffs and non-tariff barriers during the implementation period rather than through a “race to the bottom,” as assumed by the authors. The TPP also is expected to yield other long-term productivity gains through mutual reductions in informal market barriers that can stifle competition within national economies, create market inefficiencies, and distort international trade.

⁵⁵ Ibid., p. 13.

⁵⁶ Petri, Peter A., and Michael G. Plummer, *The Economic Effects of the Trans-Pacific Partnership: New Estimates*, Peterson Institute for International Economics, Working Paper 16-2, January, 2016, p. 7.

Adjustment Costs

As previously indicated, the negative effects of trade agreements, generally thought to be economic inefficiencies in production, job losses, and downward pressure on wages in import-competing industries, are referred to as “adjustment costs,” because economies are expected to shift, or adjust, capital and labor within the economy from declining sectors to growing sectors of the economy in response to market forces. The authors, however, make no assumptions about shifting resources within the economy in response to market signals to more productive activities and base their analyses exclusively on the negative adjustment costs. International trade, both bilaterally and multilaterally, can also be affected by a broad range of economic factors, including economic recessions or financial crises and such new entrants into the global economy as the former Eastern European countries, India, and China, that can affect the global supply of labor and, therefore, the wages of workers in certain import-sensitive industries.

According to the IMF, for instance, the effective global labor market quadrupled over the past two decades through the opening of China, India, and the former Eastern bloc countries. The United States and other developed economies access this global labor market through (1) imports of final goods and services, including intermediate goods; (2) offshoring of production; and (3) immigration. 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.⁵⁷ Increased exports from labor-intensive developing economies would be expected to push down wages, adjusted for productivity, for unskilled workers in developed economies, thereby reducing labor’s share of income. Nevertheless, workers in developed economies could still be better off if the positive effects of increased trade and productivity on the economy are positive, as expected. The IMF also concluded 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.⁵⁸

Estimates of losses of jobs and GDP generated by the GPM model are weighted exclusively in favor of the projected adjustment costs of the TPP, since the model is not capable of capturing the full range of economic effects that are expected with the TPP. In addition, the demand-driven GPM macro model does not incorporate important supply side effects that arise from trade agreements and, therefore, assumes large losses in employment, output, and wages in all TPP partners. As a result, the GPM estimates adjustment costs in a way that precludes any positive gains for either consumers or producers in contravention of traditional economic thought and decades of experience.

GPM Model Limitations

In part, the author’s estimates of losses in jobs and in GDP arise from the limited amount of trade data and the absence of tariff or industry data in the GPM model. While the authors argue that such limited trade data are not necessary in the context of their macroeconomic model, trade agreements affect the economy as a whole through the accumulated effects at the microeconomic level. As a result, without detailed micro data on tariffs, trade, and industry-specific employment and output, it is not clear how the GPM macro model captures either the trade creation or the trade diversion effects, or the benefits to consumers’ choices or real incomes that arise from

⁵⁷ The Globalization of Labor, *World Economic Outlook*, International Monetary Fund, April 2007, p. 161.

⁵⁸ *Ibid.*, p. 161.

increased access to a greater variety of goods and services and to lower-priced imports. The GPM model also does not capture the gains in productivity and efficiency that arise in the economy from the adjustment of capital and labor from import-sensitive sectors to other sectors of the economy.

The GPM model seems to preclude any shift in capital and labor among sectors within the economy from declining sectors to more productive sectors. Also, the authors focus on wages as a key government policy variable. Among economies that possess differing levels of technological development and productivity, however, trade likely is driven more by the value of wages relative to the level of productivity than a simple comparison of nominal wages across countries. Although the United States is a relatively high wage country, it also is a high productivity country, which makes it possible to export high capital-intensive, high technology-intensive products. Even U.S. agriculture is considered to be a high technology export activity relative to other countries given the vast amount of land available for agriculture in the United States and a high degree of mechanization.

Wages and the Distribution of Income

The authors assume, without providing any evidence from their model in their report, that the TPP will generate only negative adjustment costs. They also assume that businesses and policymakers will undertake to negotiate lower wages for all workers in the economy. This assumption seems to suggest that the government will replace private labor markets by injecting itself into the process of negotiating private labor contracts and setting wage rates throughout the economy. This assumption also seems to arise from the notion that international trade comprises such a commanding role in the economy that the adjustment costs of trade agreements will force wages down throughout the economy and worsen the distribution of income between workers and owners. This assumption seems to be imposed on the model, since the GPM model itself lacks any detailed industry, production, or labor occupational data. As previously indicated, lower tariffs increase opportunities for export-oriented industries. Also, the limited role of trade in the U.S. economy relative to other forces and the relative openness of the economy seem to be at variance with the commanding role that trade plays in the authors' estimates.

Anticipated Economic Gains

The economic gains for the U.S. economy from the TPP likely will be small relative to the overall size of the economy given the extensive number of trade agreements that currently exist among the TPP participants and the already-low average tariff rates that exist in the United States. Nevertheless, economic theory indicates that cutting tariffs and reducing or eliminating non-tariff barriers among the TPP countries likely will generate positive output, employment, and wage gains for the economy as a whole, according to generally-accepted concepts about the way product and labor markets respond to economic stimuli. In addition, within each industry firms differ in their competitive ability: while some import-sensitive firms likely are fully capable of absorbing small cuts in prices that would be required to remain competitive, firms operating at the margin of the industry likely would have to make additional adjustments to remain competitive. How firms respond to such challenges would determine their long-term viability.

Government Policies and Trade

The authors also assume that national governments and businesses will adopt extreme measures to preserve their market shares in major export markets. This assumption seems to contradict the general proposition that firms, not countries, are the actors that engage in international trade. At

times, the policy objectives of national governments can be at odds with those of businesses. For instance, while national governments and central banks are aware that engaging in certain types of monetary policies may move exchange rates in ways that are unfavorable to export-oriented businesses, they rarely surrender the broader macroeconomic objectives of monetary policy to suit the more narrow interests of individual businesses.

Similarly, assuming that national governments would adopt policy objectives to preserve the export shares of firms or the income shares of labor seems questionable. There seems to be no compelling reason why governments would prefer using shares as a policy objective over other indicators such as full employment or a stable price level. Firms not only can maintain, but may even increase, the amount and volume of their exports to individual countries or globally and still experience a declining market share if the total value of exports is rising at a faster rate than are exports from a particular country. Likewise, real wages can increase even if labor's share of national income falls as long as the total amount of national income is rising at a faster pace. In addition, the concept of market shares is becoming increasingly less relevant due to the growth of global value chains, or complex cross-border production systems, that may blur the distinction between exports and imports and challenge traditional concepts of domestic versus foreign firms. Increasingly, value chains are characterized by trade in intermediate goods, or goods that are used as inputs to the final production of goods and services. Trade in intermediate goods means that imports are essential inputs in the production of exports. As a result, countries that impose trade measures that restrict imports may negatively affect their own exports.⁵⁹

The authors also make a number of assumptions about capital flows and the policies they argue governments will take to preserve capital inflows. In particular, they contend that capital inflows depend on a country's fiscal policy, or the government's budget deficit, in order to attract foreign capital. This assumption, however, seems to contradict the more commonly accepted concept that capital inflows reflect the overall savings-investment balance within the economy as a whole, not simply the balance in the government account. Within this context, capital flows bridge the gap between the total supply and demand of capital in the economy, or the savings-investment balance, which includes the combination of the government's budget deficit or surplus, including the national government and state and local governments, and the surplus or deficit of funds in the accounts of households and firms. The combination of these three accounts determines the overall capital surplus or deficit in the economy as a whole, which, in turn, affects interest rates, exchange rates, and capital inflows or outflows. Capital flows can also be affected by events in the global economy. The U.S. dollar effectively serves as the international reserve currency and demand for the dollar and dollar-denominated assets is affected by a myriad of factors, including actions by investors during times of uncertainty to a flight to quality, or such dollar-denominated assets as Treasury securities and U.S. equities. Such foreign investments affect the internal savings-investment balance in the economy and, in turn, the international exchange value of the dollar and the balance of U.S. exports and imports.

Other Estimates

A number of other studies provide estimates of the impact of the TPP on employment in the United States. Often, they use estimates developed by the International Trade Administration (ITA) on the annual average number of jobs that are supported by exports in the U.S. economy. The ITA methodology is based on three economic relationships: (1) average relationships between the value of goods and services in the economy relative to the average number of jobs

⁵⁹ Ibid., p. 172.

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 that are required to bring goods and services to buyers.⁶⁰ ITA did 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 2015 update, ITA estimated that U.S. exports of goods and services in 2014 supported 11.7 million jobs—7.1 million in the goods producing sector and 4.6 million jobs in the services sector.⁶¹

ITA also projected that on average one billion dollars of merchandise goods exports supported 5,210 jobs, and one billion dollars of services exports supported 7,033 jobs, or an average of 5,796 jobs supported by goods and services exports combined. Expressed differently, \$191,938 in merchandise goods exports, \$142,186 in services exports, or an average of \$172,532 in goods and services exports, supported one job in each respective sector.⁶²

Both opponents and proponents of trade and trade agreements have used the relationship developed by ITA on jobs supported by exports in the economy to estimate 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 a billion dollars of exports, then that same number could be used to argue that a certain number of jobs would be “lost” by a billion dollars of imports, represented by the trade deficit (the difference between exports of goods and services and imports of goods and services). They argue further 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.⁶³ 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, because some contend that domestic production could be substituted for imports, which would boost both production and jobs in the U.S. economy.

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 that ITA did not develop a similar methodology for linking imports or a trade deficit to jobs in the economy.⁶⁴ The composition of U.S. imports is fundamentally different from that of U.S. exports. While some imports and exports may represent 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 data.⁶⁵ As ITA has stated, the employment estimate is a static relationship, or it reflects a

⁶⁰ Tschetter, John, *Exports Support American Jobs: Updated Measure Will Quantify Progress as Global Economy Recovers*, International Trade Research Report no. 1, International Trade Administration,

⁶¹ See CRS In Focus IF10161, *International Trade Agreements and Job Estimates*, by James K. Jackson.

⁶² *Jobs Supported by Exports 2014: An Update*, p. 2-3.

⁶³ 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, p. 30-35.

⁶⁴ *Jobs Supported by Exports, 1993-2011*, p. 1.

⁶⁵ U.S. Department of Commerce, International Trade Administration, *Exports Support American Jobs*, by John Tschetter, 2010.

relationship at a point in time; it 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. 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 that are 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.

Issues for Congress

Congress may consider legislation to implement the proposed TPP in the near future. Part of the debate surrounding the agreement likely will focus on the potential impact of the agreement on the U.S. economy, particularly the effect on employment. Although the U.S. rate of unemployment has fallen by more than half since the high rates reached in 2009, many observers remain concerned over the role of international trade and the TPP on the relatively slow growth in wages and the distribution of income. Under such conditions, it is not uncommon for communities or workers to raise concerns over the potential impact of a new trade agreement.

An analysis of the available estimates of the potential effects of TPP on U.S. employment, trade, and economic welfare raises a number of questions concerning the usefulness of those estimates. Economic modeling naturally incorporates various assumptions and entails differing methodologies that can have a profound effect on the estimates that are generated, even when the estimates are derived from the same economic model. Standard models are well known and incorporate standard assumptions and approaches that generally are well explained. Many experts agree that the mark of a good economic model is one that uses assumptions and methodologies that seem reasonable and are not geared toward generating any particular result. Even estimates by these studies can vary substantially. In contrast, some models may use non-standard approaches and assumptions that may be difficult to justify and seem to have been chosen in order to generate pre-determined results. Consequently, estimates of the impact of the TPP on the U.S. economy can vary from positive to negative, reflecting the importance of the assumptions that are used to derive the results.

Given the current state of economic modeling and data availability, the models that are deemed to offer the most accurate representation of the effects of changes in trade policy likely can provide only rough estimates of the magnitude of the potential changes in employment in certain sectors, but cannot offer estimates of the precise size of the shifts in employment. As this report indicates, the most important assumption involved in generating estimates of the impact of TPP on employment appears to be the expected level of labor utilization in the U.S. economy over the phase-in period. Model simulations based on an assumption of full employment likely track closer to the current situation than would data following the 2008-2009 financial crisis when rates of labor unemployment were above historical levels. It seems reasonable to assume, however, that the U.S. economy will perform at or close to its long-term trend approaching full employment during the period following the adoption of TPP. Another major qualification for the estimates may be that they do not account for changes in exchange rates, which may have a wide-ranging effect on the prices of internationally traded goods and may overwhelm changes in prices of goods that arise from changes in tariff rates.

Estimates of employment effects of new FTAs can be subjective and misleading because they represent a partial accounting of the total economic effects of new FTAs. U.S. FTAs typically include comprehensive provisions for goods, services, and investment. With few exceptions, estimates of possible employment effects of the TPP focus primarily on employment effects in the

goods sectors and neglect the potential effects in the services and investment areas. The study by Petri, et al. attempts to bridge this gap by developing a methodology for making such an assessment. It is not possible to draw any conclusions about the extent to which these estimates reflect the actual costs and benefits of liberalizing trade in services and foreign investment flows without additional information. In addition, the estimates neglect a broad range of impacts for the economy as a whole that potentially can provide consumers with large economic benefits and that can yield broad productivity and efficiency gains for the economy and may enhance employment. As a result, estimates of the employment effects of the TPP may serve poorly as an indicator of the total impact of a new FTA on the economy as a whole.

As policymakers consider TPP, they likely will continue to weigh the results of a range of estimates of the employment effects of the agreement to gauge the impact on the economy. In this process, policymakers likely would be aided by estimates that clearly state the assumptions that are used and that inform policymakers about the broad implications of such agreements for the economy as a whole. In addition, policymakers likely would benefit from more reliable data on the potential magnitude of the effects that such agreements might be expected to have on specific sectors, allowing them to craft programs to assist those most directly affected by the agreements. As a result, policymakers may benefit from a number of initiatives to improve information and data on the impact of international trade on the economy. These might include

- Increased information and data on services in the economy, including the shifting of in-house services from the manufacturing sector to the services sector and the formal and informal barriers to U.S. services posed by major trading partners;
- Better data on worker dislocations, including the reasons for business closings; and
- Better understanding of the development of global supply chains and the role they are playing in the U.S. economy.

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