U. S. International Trade Commission Report to the GTAP Advisory Board

for

The Advisory Board Meeting
June 5-6, 2017
Purdue University, West Lafayette, IN, USA

The United States International Trade Commission (USITC) uses the GTAP database and model to analyze and assess the potential impacts of trade and FDI policies, in response to requests from the United States Trade Representative (USTR) and Congress. In addition, GTAP has been used to provide technical assistance to the Congress and the USTR on a variety of topics.

In collaboration with Peter Dixon and Maureen Rimmer from the Center of Policy Studies (CoPS), Victoria University, the USITC continues to work with the USAGE-ITC model and the subnational USAGE-TERM model. In June 2017, Peter Dixon and Maureen Rimmer will give a short course at the USITC on the use of the model.

The following USITC public studies or papers by USITC economists completed since May 2016:

Probable Economic Effect of Certain Modifications to the U.S.-Morocco FTA Rules of Origin, Investigation No. FTA-103-020, USITC Publication 4662, February 2017.
The United States Trade Representative requested advice from the U.S. International Trade Commission (Commission or USITC) on the probable economic effect of certain proposed modifications to the textile and apparel rules of origin of the United States-Morocco Free Trade Agreement (Agreement or U.S.-Morocco FTA) on U.S. trade under the U.S.-Morocco FTA, total U.S. trade, and domestic producers of the affected articles. The articles covered by this advice are certain women's or girls' dresses, skirts, blouses, tops, shirts, shirt-blouses, and pants ("certain women's or girls' apparel"). These proposed modifications would liberalize the current ROOs by allowing the use of more non-originating fabrics (fabrics produced outside of Morocco or the United States) in the production of certain women's or girls' apparel. The Commission's analysis indicates that the proposed modifications would likely have a negligible effect on U.S. imports under the U.S.-Morocco FTA, total U.S. imports, total U.S. exports, and U.S. production.

Recent Trends in U.S. Services Trade: 2016 Annual Report, Investigation No. 332-345, USITC Publication 4643, October 2016.
This report focuses on U.S. exports and imports of financial services, including banking, insurance, and securities services. In 2015, the United States exported $119.6 billion in financial services and imported $72.9 billion, resulting in a trade surplus of $46.7 billion. By comparison, the total U.S. services trade surplus was $263.5 billion, a decrease of $2.5 billion from the previous year. U.S. financial services contributed $1.2 trillion to U.S. gross domestic product (GDP) in 2015, or 9 percent of total U.S. private sector GDP. Financial services employed over 6.4 million full-time equivalent employees in 2015, representing almost 6 percent of U.S. total private sector employment. Despite slow wage growth in financial services in recent years, workers on average earned $99,672 in 2015, nearly twice the average wage for the private sector as a whole. Financial services are facing significant challenges and disruptions from digital technologies and in navigating the post-recessionary financial landscape of

increased regulation and low interest rates. U.S. financial services firms have adapted by incorporating new financial technologies into their operations, but also face rising cybersecurity risks. In addition, the growth of the Chinese financial system has increased competition for U.S. banks while at the same time creating an attractive market for U.S. securities firms. Furthermore, climate change has emerged as both a challenge and an opportunity for U.S. insurers. Overall, U.S. and global financial services firms' business models will continue to evolve in response to a variety of emerging market conditions.

Shifts in U.S. Merchandise Trade, 2015. Investigation No. 332-345, USITC Publication 4641, September 2016.
This report provides a comprehensive review of U.S. trade performance in 2015. It focuses on changes in U.S. exports and imports of key natural resources, as well as products of leading agricultural and manufacturing industries; it also examines changes in U.S. trade with 4 key partners and country groups. Profiles of the U.S. industry and market for 10 major U.S. sectors that cover a majority of the products traded are also included. The analyses principally examine industry developments and the principal drivers influencing trends in U.S. trade, and bilateral trade flows between the United States and 4 key trading partners/regions, addressing the factors which influenced trade in the leading products traded. The report concludes with a "special topic"—"Effects of Declining Crude Petroleum and Natural Gas Prices on U.S. Sectoral Trade"—which examines the impact that declining energy prices have had on U.S. sectoral trade flows.

The Year in Trade 2015. USITC Publication 4627, July 2016.
This report is the 67th in a series of annual reports on the operation of the United States' trade agreements program. It covers key U.S. trade developments for 2015.

Economic Impact of Trade Agreements Implemented Under Trade Authorities Procedures, 2016 Report. Investigation No. 332-555, USITC Publication 4614, June 2016.
The report assesses the economic impact on the United States of U.S. trade agreements implemented under trade authorities procedures since 1984. Its scope includes the multilateral Uruguay Round agreements as well as 15 U.S. bilateral and regional trade agreements. The report analyzes many of the diverse effects of the trade agreements, including effects on international trade in goods and services, consumers, labor markets, international investment, receipts for intellectual property, and the trade position of small and medium-sized enterprises (SMEs).

Identifying Multilateral Dependencies in the World Trade Network, Publication No. 2017-04-A, Peter Herman, April 2017.
Abstract: When studying the formation of trade between two countries, traditional modeling has described this decision as being primarily dependent on characteristics of the two trading partners. It is likely the case, however, that this decision to trade is dependent not only on the two countries involved but on the patterns by which all partners trade with one another. Standard efforts to control for these higher level dependencies such as the inclusion of multilateral resistance measures provide only a blunt reflection of these dependencies and neglect valuable information that the global trade network contains. This paper proposes the explicit incorporation of higher level dependencies in traditional modeling frameworks. Two network-based, gravity-inspired approaches are considered–a probit model of trade incidence and an exponential random graph model. Each approach uses the structure of the

entire world trade network to explain the formation of trade between individual of countries. The use of exponential random graph modeling techniques (ERGM) in particular, which have largely been unexplored in economics, provides a powerful yet flexible framework with which to model and estimate bilateral trade in a way that allows for the identification of a wider variety of multilateral dependencies and a deeper consideration of the patterns that emerge in the world trade network. Using a standard gravity data set, a series of probit and ERGM estimations are conducted for observed world trade networks. The results from these models provide strong evidence that higher level dependencies are present in international trade and that ERGM analysis represents an effective modeling environment in which to study them.

Modeling Trade in Services: Multiple Modes, Barriers to Trade, and Data Limitations, Publication No. 2017-04-B. Andre Barbe, Arthur Chambers, Tamar Khachaturian and David Riker, April 2017.
Abstract: We develop a model of trade in services that includes firm heterogeneity and multiple modes of delivery, including cross-border trade and foreign affiliate transactions. We then use the model to estimate the effect of a 50 percent reduction in the barriers faced by non-EU services providers in EU markets. We find that this liberalization would increase the value of cross-border imports into the EU and purchases from foreign affiliates in EU countries. This increase in sales ranges from 21.7 to 27.3 percent, depending on the services category and EU country. However, the liberalization would only decrease the sales of domestic producers by 0.4 to 6.1 percent, and reduce overall prices of the services in EU countries by 0.1 to 1.2 percent.

The Effects of U.S. Trade Agreements on Foreign Affiliate Transactions in Services, Publication No. 2017-03-C. Tamar Khachaturian and David Riker, March 2017.
Abstract: We examine the impact of U.S. bilateral and regional trade agreements on U.S. companies' foreign affiliate sales of services. The predictions of economic theory are ambiguous: the agreements can increase foreign affiliate sales by facilitating investment abroad, but they can also reduce foreign affiliate sales by removing barriers to the cross-border supply of services. Which of these effects dominates is an empirical question. We report an econometric analysis that introduces a new measure of the extent of liberalization in each trade agreement, based on a detailed scoring of the industry-specific exceptions to investment provisions found in the agreements' annexes of nonconforming measures. We estimate that the agreements initially reduce foreign affiliate sales but after a short period increase these sales as investments adjust to the liberalizing provisions of the agreements and the greater certainty generated by the agreements. We estimate that the increase in foreign affiliate sales ten years after the trade agreements entered into force range from 12 percent for the U.S.-Korea FTA to 21 percent for the U.S.-Peru FTA, with an average increase of 16 percent over the ten trade agreements included in the econometric analysis.

One Model to Rule Them All? The Importance of Firm Heterogeneity in CGE Modeling of the Gains from Trade, Publication 2017-03-B. Zeynep Akgul, March 2017.
Abstract: There are many different types of Computable General Equilibrium (CGE) models that vary in their underlying industrial organization. Prominent examples include the Armington, Krugman, and Melitz-based CGE models that differ in whether they include imperfect competition, scale economies, and heterogeneity in productivity of firms within industries. There is an ongoing debate about which type of CGE model is more suitable for modeling the impact of trade policy. The question of whether the differences in underlying microeconomic theory in Armington, Krugman, and Melitz-based CGE models

leads to different macroeconomic predictions, in particular those on the gains from trade, is critically important. The answer remains elusive since important information is scattered across technical and theory-intensive studies. This paper addresses this question by surveying the theoretical literature along with recent advances in related CGE implementations. One branch of the literature suggests that the market structure does not make a difference and the predictions about the gains from trade from Armington, Krugman, and Melitz-based models are, for the most part, equivalent. In contrast, other studies argue that the models are not equivalent when model assumptions are relaxed to incorporate more of the behaviors of real economies. In the light of the review, we discuss that welfare equivalence across Armington, Krugman, and Melitz models breaks as one departs from the assumptions of stylized models. We conclude that the incorporation of multiple factors and sectors as well as tradable intermediate inputs enhances the economic relevance of models, alters their general equilibrium properties, allows different welfare components to be operative, and breaks the remarkable welfare equivalence findings. As such, when one deviates from the stylized setting, welfare predictions of the Melitz model become more pronounced compared to the rest by capturing new sources of gains from trade.

Trade Liberalization with Heterogeneous Workers: A Structural Approach, Publication No. 2017-03-A. Scott Baier, Serge Shikher and Yoto Yotov, March 2017.
Abstract: We examine the impact of U.S. bilateral and regional trade agreements on U.S. companies' foreign affiliate sales of services. The predictions of economic theory are ambiguous: the agreements can increase foreign affiliate sales by facilitating investment abroad, but they can also reduce foreign affiliate sales by removing barriers to the cross-border supply of services. Which of these effects dominates is an empirical question. We report an econometric analysis that introduces a new measure of the extent of liberalization in each trade agreement, based on a detailed scoring of the industry-specific exceptions to investment provisions found in the agreements' annexes of nonconforming measures. We estimate that the agreements initially reduce foreign affiliate sales but after a short period increase these sales as investments adjust to the liberalizing provisions of the agreements and the greater certainty generated by the agreements. We estimate that the increase in foreign affiliate sales ten years after the trade agreements entered into force range from 12 percent for the U.S.-Korea FTA to 21 percent for the U.S.-Peru FTA, with an average increase of 16 percent over the ten trade agreements included in the econometric analysis.

A U.S. Regional Model of Import Competition and Jobs, Publication No. 2017-02-A. Ross Hallren and David Riker, February 2017.
Abstract: We examine the impact of U.S. bilateral and regional trade agreements on U.S. companies' foreign affiliate sales of services. The predictions of economic theory are ambiguous: the agreements can increase foreign affiliate sales by facilitating investment abroad, but they can also reduce foreign affiliate sales by removing barriers to the cross-border supply of services. Which of these effects dominates is an empirical question. We report an econometric analysis that introduces a new measure of the extent of liberalization in each trade agreement, based on a detailed scoring of the industry-specific exceptions to investment provisions found in the agreements' annexes of nonconforming measures. We estimate that the agreements initially reduce foreign affiliate sales but after a short period increase these sales as investments adjust to the liberalizing provisions of the agreements and the greater certainty generated by the agreements. We estimate that the increase in foreign affiliate sales ten years after the trade agreements entered into force range from 12 percent for the U.S.-Korea

FTA to 21 percent for the U.S.-Peru FTA, with an average increase of 16 percent over the ten trade agreements included in the econometric analysis.

Firm Heterogeneity, Imported Input Quality, and Export Pricing in India, Publication 2017-01-B. Michael Anderson, Martin Davies, José Signoret and Stephen Smith, January 2017.
Abstract: Using a novel dataset we examine the pricing behavior of Indian exporters, in particular looking at the relationship between export prices and firm capability (productivity) conditioning on the quality of imported inputs that firms use. Conditioning on firm productivity among firms that directly import, higher quality (higher price) imports are associated with higher quality (higher price) exports. We also find that export prices fall with firm capability, decrease with distance and increase with remoteness.

Extending the CEPII Gravity Data Set, Publication No. 2017-01-A. Tamara Gurevich, Peter Herman, Serge Shikher and Ricky Ubee, January 2017.
Abstract: This research note describes in detail the process and data sources used in the CEPII gravity data set update for the years 2007 to 2015. This data update preserves the nomenclature and the structure of the original CEPII data for easier integration into ongoing studies.

Firm Level Analysis of Services Trade Restrictions in the Life Insurance Industry, Publication No. ID-045. Tamar Khachaturian and Sarah Oliver, December 2016.
Abstract: This paper presents a simple econometric framework to assess the impact of barriers on the profitability and the number of firms (participation) that supply life insurance services across countries. The average impact of restrictions on participation is negative and statistically significant in some specifications, lending modest support for the hypothesis that restrictions limit firm participation across countries. However, we do not find a statistically significant relationship between restrictions and average life insurance profitability, which may be due to the unique business models of life insurance firms. Depending on data availability, avenues for future research include examining profitability over a longer time horizon and differentiating the impact of restrictions on foreign versus domestic firms.

The Effect of Reducing Investment Barriers in China's Construction and Financial Services Sectors on the Chinese Economy, Publication No. 2016-12-A. Wen Jin Yuan, December 2016.
Abstract: This paper analyzes the economy-wide impact of China opening up its construction and financial services sector to all non-Chinese foreign investors, using the GTAP-FDI model developed by Lakatos and Fukui (2014). The GTAP-FDI model is a newly developed computable general equilibrium model that incorporates the global foreign direct investment (FDI) stock and foreign affiliate sales data. This paper finds that the reduction of investment barriers in China's construction and financial services sectors towards foreign investors will benefit the Chinese economy overall. It will also increase the overall output in China's construction and financial services sectors. However, the simulation results also indicate that liberalizing China's construction and financial services sectors will hurt Chinese domestic construction companies, and Chinese domestic financial services firms, respectively. It will also negatively affect employment in Chinese-owned construction and financial services firms in China.

A Multi-Mode Partial Equilibrium Model of Trade in Professional Services, Publication 2016-11-A. Tamar Khachaturian and David Riker, November 2016.
Abstract: We develop a partial equilibrium analysis of trade in services based on the theoretical model with firm heterogeneity and multiple modes of supply in Helpman, Melitz, and Yeaple (2004). We

calibrate the model to the U.S. markets for architectural and engineering services and legal services, and then we estimate the economic impact of reducing fixed costs of supplying U.S. markets for these two types of professional services through cross-border trade and affiliate transactions. For example, we estimate that 50 percent reductions in the fixed costs of trade in these professional services would have large effects on the value of cross-border imports into the U.S. market and on foreign affiliate purchases in the U.S. market but would have only small effects on the sales of domestic producers and on overall prices of the services in the U.S. market. The modeling framework can be easily reapplied to other national markets and other types of services (or goods) with multiple modes of supply if industry data are available.

The Impact of U.S. Trade Agreements on Growth in Output and Labor Productivity of FTA Partner Countries, Publication No. 2016-10-A. Tamar Khachaturian and David Riker, October 2016.
Abstract: U.S. bilateral and regional trade agreements contain many provisions that may affect the economies of partner countries. Through the transfer of technology and increases in capital expenditure, the trade agreements can be growth enhancing. In this paper, we report a series of econometric models that estimate the effects of U.S. bilateral and regional trade agreements on real gross domestic product per capita growth in the partner countries. Since there is conflicting evidence in the literature about the timing of these effects, we consider several versions of the econometric model that vary in their assumptions about the immediacy and persistence of these effects. We find that the U.S. trade agreements have had a positive and significant impact on partner countries' growth rates, though the increases in growth rates occur with a delay and appear to be only temporary.

Trends and Complexity of USITC Fact-Finding Reports, Publication No. 2016-09-C. William Deese and Darren Sheets, September 2016.
Abstract: This report explains the context in which fact-finding reports at the USITC are produced. We assemble data about the types of analyses in the reports and combine this information with data on the labor needed to produce the reports; the period studied is 2002–2014. Based on the literature about complexity, we develop indicators for organizational and task complexity and apply these indicators in linear regressions and a stochastic boosted regression tree model to explain the numbers of hours used to produce the reports. We find that these indicators explain a significant degree of the variation in hours per report, which trended upward over the period studied. Organizational indicators, such as the number of organizational units needed to produce the report, outperformed the task indicators, which are related to the approach and types of analyses in the reports.

Firm Heterogeneity and Export Pricing in India, Publication No. 2016-09-B. Michael Anderson, Martin Davies, José Signoret and Stephen Smith, September 2016.
Abstract: We examine the export pricing behavior of Indian manufacturing firms in the early 2000s using a unique data set that matches detailed firm characteristics with product and destination-level trade data. We find, in contrast to evidence for other countries, that firm productivity is negatively associated with export prices, and that export prices are negatively associated with distance, and positively associated with remoteness. We suggest that it is the higher cost of innovation in India, driving down the scope for quality differentiation, which leads to the negative association between productivity and prices. We use the framework of Antoniades (2015) to place our results (heterogeneous goods, homogeneous markets) relative to two other groups identified in the literature: (homogeneous goods, homogeneous markets) and (heterogeneous goods, heterogeneous market). To our knowledge this is the first empirical evidence consistent with this particular theoretical possibility.

Whence the Beef? The Effect of Repealing Mandatory Country of Origin Labeling (COOL) using a Vertically Integrated Armington Model with Monte Carlo Simulation, Publication No. 2016-09-A. Ross Hallren and Alexandra Opanasets, September 2016.
Abstract: Increasingly, international trade policy analysis explores the economic effects of changes in ad-valorem tariffs, or ad-valorem equivalent non-tariff measures, on vertically integrated markets for which high quality data are not available. Standard Constant Elasticity of Substitution (CES) Armington models fail to account for either vertical linkages or parameter uncertainty. Here we introduce a modified Armington CES vertically integrated two-sector model, with nested Armington Elasticities, that incorporates uncertainty in the estimates of Armington Elasticities and market shares through a Monte Carlo simulation. As an illustrative case, we model the effects of changes in country of origin labeling (COOL) rules on the market shares of domestic and foreign cattle in the U.S. beef market. By accounting for parameter uncertainty in this way, we are able to illustrate the distribution of potential effects of repealing mandatory COOL. Moreover, we are able to decompose the effect of repealing COOL via its effect on relative prices, information available to consumers, and the quasi-general equilibrium effect. Finally, we uncover the conditions under which Canada and Mexico would benefit from the repeal of mandatory COOL by at least as much as they claim in their WTO filings against the regulation.

Analysis of Employment Changes over Time in the U.S. Motor Vehicles Industry, Publication No. 2016-08-A. David Coffin, Tamar Khachaturian and David Riker, August 2016.
Abstract: Over the period from 1997 to 2014, U.S. employment in the combined motor vehicle industry declined from 932,265 to 719,983 employees. During this time, significant changes in trade and non-trade factors occurred that have likely impacted employment, such as the value and composition of U.S. imports and exports and the intensified use of technology in manufacturing which increased labor productivity in some segments of the industry. This analysis decomposes the annual growth rates of employment in three separate segments of the combined motor vehicle industry into the contributions from international trade, labor productivity, and total U.S. consumption. Employment fell in both the motor vehicle and the parts manufacturing segments during this period. Labor productivity gains and increased imports both contributed to the employment declines, with labor productivity associated with a larger decline in employment. In both segments, higher domestic consumption played a larger role than increased exports in offsetting part of the employment declines. On the other hand, the vehicle body manufacturing segment posted an employment increase during this period. In this segment, employment gains from increased domestic consumption and exports offset the reductions in employment from gains in labor productivity.

Examining Barriers to Trade in Used Vehicles, Publication No. ID-044. David Coffin, Jeff Horowitz, Danielle Nesmith and Mitchell Semanik, August 2016.
Abstract: Used vehicles represent a significant share of global vehicle trade, but many countries have policies in place that specifically limit used vehicle imports. Among five top passenger vehicle exporting countries (Canada, Japan, Korea, Mexico, and the United States), the United States is the largest exporter of used vehicles, with used vehicle exports accounting for an estimated 14 percent of total U.S. vehicle exports in 2014. Developing countries tend to show a preference for used vehicles versus new vehicles due to cost savings and greater product varieties. Top used vehicle markets include the United Arab Emirates, Russia, Nigeria, Mexico, and Burma. This paper uses a gravity model to estimate how policies from 140 countries limited used vehicle exports from five of the top passenger vehicle exporting countries, updating and improving on research published in 2006. Policies that almost entirely ban used

vehicle imports are found to reduce used vehicle imports by 76 percent, while other policies limiting used vehicle imports reduce imports of used vehicles by 38 percent.