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**THE EFFECTS OF U.S. TRADE AGREEMENTS  
ON FOREIGN AFFILIATE TRANSACTIONS  
IN SERVICES**

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# The Effect of U.S. Trade Agreements on Foreign Affiliate Transactions in Services

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## **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.

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## 1. Introduction

Despite the significant expansion of international trade in services supplied through commercial presence in foreign markets (mode 3 trade), there is limited data and research on this area of services trade. U.S. International Trade Commission (2016) is an important exception. It quantifies the effect of U.S. bilateral and regional trade agreements on both inbound and outbound foreign direct investment (FDI) and on services supplied by affiliates of U.S. and foreign-owned multinationals. The estimates suggest that the U.S. agreements did not have a statistically significant impact on FDI or affiliate transactions in services. This is an unexpected result, so we investigate it further.

The econometric analysis of foreign affiliate transactions in this paper extends this analysis by accounting for the delayed impact of some of the agreements, which moved foreign affiliate sales in opposite directions at different time horizons. The immediate effect of the agreements appears to be reduced reliance on foreign affiliate sales in response to the removal of barriers to the cross-border supply of services.<sup>1</sup> Over time, investment provisions of the agreements dominate and foreign affiliate sales increase relative to their level prior to the agreements. Investment provisions in trade agreements are often phased in over time and that it takes time to adjust to changes in regulations or to the greater certainty generated by the agreements in cases where they bind policies already in place. Our analysis focuses on the services sector as a whole. It includes industries that are able to substitute between modes of supplying services and others that are not.

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<sup>1</sup> However, even cross-border provisions may not be implemented immediately. For example, cross-border trade chapters include provisions on requiring regulatory transparency which would not have an immediate impact, since it would take time for partner countries to make their regulations compliant. An example of one that might be more immediate is a common provision barring parties from requiring service providers to establish a commercial presence in their territory.

The mix of industries determines how the aggregate foreign affiliate sales respond to the trade agreements.<sup>2</sup>

Since investment rules are particularly important for the provision of services through commercial presence, our econometric model also allows for significant differences in the degree and coverage of investment liberalization across agreements by accounting for industry-specific exceptions to investment provisions found in the agreements' annexes of nonconforming measures (NCMs). In practice, we may be capturing differences in the extent of liberalization or differences in the extent that prior policies became binding.<sup>3</sup> Using a panel of countries for the years since 2004, we estimate the average effect of U.S. bilateral and regional trade agreements on foreign affiliate sales of services in the years after the agreements entered into force as well as the importance of differences in the investment commitments across the agreements.

The rest of this paper is organized into six sections. Section 2 reviews the relevant literature on the determinants of foreign affiliate sales. Section 3 presents the modeling framework, and section 4 describes the sources of the data. Section 5 describes the methodology for scoring the extent of liberalization in the investment provisions of the trade agreements. Section 6 reports our econometric estimates, and section 7 offers our conclusions.

## **2. Literature Review**

### **2.1. Free trade agreements, trade restrictions, and services trade**

There is only a small literature that directly addresses the effects of free trade agreements on the sales of services through the foreign affiliates of U.S.-owned companies. U.S. International Trade

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<sup>2</sup> See van der Marel and Shepherd (2013) and Riker (2015) for evidence of inter-modal switching at the aggregated services level. The first paper shows heterogeneity across services industries with respect to inter-modal substitutability versus complementarity.

<sup>3</sup> However, throughout the paper, we simply refer to the index we created as the extent, or intensity, of investment *liberalization*.

Commission (2016) estimated the impact of U.S. free trade agreements on the value of U.S. foreign affiliate sales of services. Using available data on inbound and outbound sales of multinational firms, the International Trade Commission's report estimated that the U.S. trade agreements did not have a statistically significant effect on foreign affiliate sales.

In contrast, there is a much larger literature examining the impact of free trade agreements on *cross-border services trade*, reflecting the greater availability of data. Kimura and Lee (2006) and Marchetti (2009) find that trade agreements tend to have a positive and statistically significant effect on total cross-border services trade. More recently, van der Marel and Shepherd (2013) find that the positive and significant impact of free trade agreements on total trade in services disappears when their model includes EU membership, and the effect of trade agreements varies across sectors. Similarly, Nordås and Rouzet (2015) find that trade agreements generally do not have a significant impact on cross-border exports and that the sign of the trade agreement indicator varies across industries.

There is also a large literature on the effects of barriers to trade, rather than trade agreements, on services trade. For example, barriers to trade are included in van der Marel and Shepherd (2013), Ciuriak and Lysenko (2016), and Nordås and Rouzet (2015), and their analysis indicates that they had a negative and significant impact on cross-border services trade.<sup>4</sup> Additionally, there is a growing literature which examines the impact of services trade barriers on the sales of services by foreign affiliates. The results typically indicate that restrictions have a significant negative impact on foreign affiliate sales. In an industry-specific study, Reisman and Vu (2012) examine sales by foreign affiliates in the retailing industry across select countries with available data. Riker (2015) analyzes data on U.S. multinationals' foreign affiliate sales of services at the sector level.

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<sup>4</sup> Both aggregate and sector specific regressions are estimated; with varying significance levels of sector-specific specifications.

Finally, there is also a less closely related empirical literature that focuses on the application of gravity models to the sales of foreign affiliates of multinational firms, including contributions in Brainard (1997) and Kleinert and Toubal (2010). Since the purpose of both papers is to differentiate between alternative theories of multinational firms, neither estimates the effects of trade agreements on affiliate sales, nor is it clear if services are included in their analyses.

## **2.2 Delayed impacts and heterogeneity across free trade agreements**

The lack of a significant effect of trade agreements on services trade may be related to the emerging consensus that trade agreements merely lock-in existing policies and do not liberalize services trade barriers (WTO 2011, USITC 2016, Gootiiz and Mattoo 2017). Even if this is the case, trade agreements may have beneficial impacts for services firms by generating greater transparency and certainty important for foreign investors' operations and by leveling the playing field between domestic and foreign services suppliers.<sup>5</sup>

Estimating these potential positive impacts on trade (and on foreign affiliate sales in particular) requires accounting for the inclusion of key investment or other provisions and commitments across trade agreements and also allowing for the effects of the agreements to manifest several years after entry into force. According to Kohl et. al (2016), trade agreements (measured by the inclusion of various provisions as well as their legal enforceability) have very heterogeneous effects on trade flows. Focusing on the inclusion of certain investment provisions in particular and the structure of the agreements (for example, whether they are organized as positive or negative lists), Berger et. al (2010) provide evidence of differential impacts on bilateral FDI flows between a set of

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<sup>5</sup> See chapter 2 of USITC (2016). Recent research finds evidence of a positive impact from reductions in uncertainty through trade agreements (as measured by the differences under the WTO General Agreement on Trade in Services (GATS) commitments and applied regulatory regimes) on cross-border trade (sector level regressions show heterogeneity in impacts from uncertainty); the presence of a free trade agreement is also estimated in certain specifications (Ciuriak and Lysenko 2016).

source countries and developing host countries. Similarly, Leshner and Miroudot (2006) estimate a positive and significant impact on trade and FDI when accounting for the inclusion and extensiveness of several investment provisions in free trade agreements across countries. Finally, although not specific to services trade, there is an empirical literature that allows for an extended period of time for the provisions of trade agreements to phase-in and for economic effects to become visible. The studies point to an increased effect on trade when allowing for phase-in periods (Kohl 2014; Baier and Bergstrand 2007).

As discussed in the following sections, we address these two points within our estimation framework. First, we take into account the heterogeneity across agreements with respect to the extent of investment liberalization, as measured by sector-specific NCMs in the agreements. Second, we account for potential delayed adjustment to the entry into force of the agreements.

### **3. Modeling Framework**

As in USITC (2016), we apply the gravity model of foreign direct investment from Bergstrand and Egger (2007) to U.S. firms' foreign affiliate sales.<sup>6</sup> Data on affiliate sales, described more fully in the next section, are from the U.S. Bureau of Economic Analysis (BEA) and include foreign affiliates of U.S.-owned multinationals.

In the BEA data, the United States is the source country of all of the foreign affiliate sales in the host countries, denoted by  $j$ , across years denoted by  $t$  (between 2004 and 2013). We include time and host country fixed effects to account for the potential endogeneity of the trade policy, following Baier and Bergstrand (2007). The fixed effects control for unobserved characteristics of the United

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<sup>6</sup> Bergstrand and Egger estimate a gravity model of FDI between a set of OECD countries and find that free trade agreements have a significant negative impact on FDI flows (and a significant positive impact on trade).

States and host country  $j$  that do not change over time, allowing us to estimate the incremental effect of the trade policy. The econometric specification in equation (1) also includes the market size of host country  $j$ , proxied by its GDP.

$$\ln FAS_{jt} = \beta_1 \ln GDP_{jt} + \beta_2 (FTA_{j,t-s} \times INT_j) + \beta_3 (FTA_{j,t} \times INT_j \times FTAYEARS_{j,t}) + \alpha_t + \gamma_j + \varepsilon_{jt} \quad (1)$$

The variable  $\ln FAS_{jt}$  is the natural logarithm of foreign affiliate sales in the services industry of firms from the United States (the source country) in country  $j$  (the host country) during year  $t$ ,  $\ln GDP_{jt}$  is the natural logarithm of the gross domestic product of host country  $j$  during year  $t$ . Since a larger GDP indicates a larger market in the host country, we expect that  $\beta_1$  is positive.  $FTA_{j,t-s}$  is a measure that either indicates whether the countries entered into a bilateral or regional free trade agreement  $s$  or more years before year  $t$ .  $INT_j$  is a measure of the extent of liberalization under the trade agreement with country  $j$ , and is equal to zero if there is no agreement in force. We consider two alternative versions of  $INT_j$  in our econometric analysis. The first version scores the investment provisions of the agreement with country  $j$ , in terms of the intensity of liberalization. The score is greater than zero if there is an agreement and is less than one if there are any non-conforming measures that limit the liberalization in the investment provisions.<sup>7</sup> The second version is simply an indicator that is equal to zero if the United States and host country  $j$  do not have a trade agreement in year  $t$  and is equal to one if the countries have a trade agreement in year  $t$ . The first version reflects heterogeneity across the trade agreements, while the second version assumes that all of the agreements have the same impact of foreign affiliate sales.  $FTAYears_{jt}$  is the number of years that the agreement has been in force by year  $t$ . The variable  $\alpha_t$  is a set of year fixed effects

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<sup>7</sup> The methodology for scoring the intensity of liberalization is described in Section 4.



that control for time-varying factors that are common across countries, such as the U.S. (source country) GDP. The variable  $\gamma_j$  represents a set of factors that vary across countries but are time-invariant, such as whether the country has a shared border with the United States and the international distance. The variable  $\varepsilon_{jt}$  is the error term of the econometric model.

The coefficients  $\beta_2$  and  $\beta_3$  could be positive or negative: we would expect a trade agreement to facilitate greater investment, ease of doing business in host markets, and demand for the services of foreign affiliates; however, the overall effect of the FTA measure may be negative or not significantly different from zero if key investment or other provisions are missing from the agreements, the effects are delayed, or firms substitute between modes of supply. The model does not separately estimate these different effects. It estimates the combination (or net) of the two effects at different points in time.

We estimate several versions of the model. First, we set  $\beta_3 = 0$  and estimate  $\beta_2$  assuming that the lag period  $s$  is equal to 1, 2, or 3 years. In the final version, we set the lag period  $s$  equal to 0 and estimate  $\beta_3$ . By comparing these alternative estimates, we can assess whether there are delayed adjustment or phase-in effects of the trade agreements, as discussed above. We estimate all of the versions of the model separately for the two alternative measures of  $INT_j$ .

Finally, we use equation (2) and our econometric estimates of the parameters of the model to estimate the impact of the agreements on foreign affiliate sales in partners countries at different time horizons (both three and ten years after the trade agreements entered into force),

$$\% \Delta FAS_j = \left( \hat{\beta}_2 \times INT_j \right) + \left( \hat{\beta}_3 \times INT_j \times TIME HORIZON \right) \quad (2)$$

## 4. Data Sources and Descriptive Statistics

The data on affiliate transactions are from the BEA and include services supplied to foreign persons by U.S.-owned firms' affiliates abroad (foreign affiliate sales).<sup>8</sup> Although foreign affiliate sales data are available by destination, we focus on sales in foreign countries in our estimations (in 2013, host country sales accounted for 78 percent of the affiliates' total sales to foreign countries). The countries included in the econometric models of outbound foreign affiliate sales are listed in table 1. Some FTA partner countries of the United States are not included in the analysis, either because BEA does not report the value of foreign affiliate sales in the country or because the U.S. trade agreement entered into force before 2000 and is therefore outside of the scope of our econometric analysis. Data on foreign affiliate sales has incomplete coverage from 2004 to 2008, and then full coverage since 2009.<sup>9</sup>

Data on whether there is an FTA between the United States and a country in the BEA dataset is based on USITC (2016).<sup>10</sup> Table 2 lists the countries that have entered into a bilateral or regional trade agreement with the United States since 2000, the year of entry of force of the agreement, the range of available years of data on foreign affiliate sales, and the number years of data after the agreement entered into force. There are a few countries for which only one year of data is available after entry into force, and in these cases only one of the potential lag lengths could be estimated.<sup>11</sup>

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<sup>8</sup> BEA Interactive Data Tables 4.2 ("Services Supplied to Foreign Persons by U.S. MNEs Through Their MOFAs, by Country of Affiliate and by Destination") (accessed November 7, 2016).

<sup>9</sup> For more information on the data, see [http://bea.gov/international/international\\_services\\_definition.htm](http://bea.gov/international/international_services_definition.htm). A change in methodology in 2004 (data refer to services supplied instead of services sales and include bank affiliates) precludes a longer time series. A constructed series before 2004 would limit country and industry availability. BEA representative, email communication with USITC staff, September 28, 2015.

<sup>10</sup> See Figure 1.1, page 28.

<sup>11</sup> There are also cases, such as Honduras, where a delayed effect is not yet apparent due to the lag between entry into force of the agreement and the beginning of the foreign affiliate data series.

Finally, the measure of GDP at market prices (in current US\$) is from the World Bank's World Development Indicators. Both the GDP data and the affiliate sales data are deflated using the GDP implicit price deflator from the 2016 Economic Report of the President.

## **5. Scoring the Extent of Liberalization and Commitments in the Investment Provisions**

The U.S. bilateral and regional trade agreements established since 2004 are very similar in their treatment of services trade. Notably, they are all “negative list” agreements. This means that all services are comprehensively subject to the obligations set forth in the agreements, unless specifically excluded as set forth in the annexes of NCMs. All agreements contain chapters on cross-border services trade, financial services, telecommunications, and investment.<sup>12</sup> The investment chapters cover the supply of services through commercial presence.

Given the focus of this paper – estimating the impact of free trade agreements on foreign affiliate sales – we seek to capture heterogeneity in the agreements with respect to sectoral exceptions to commercial presence provisions in the investment chapters. Although other parts of the agreements impact the commercial presence mode of supplying foreign markets, we have isolated this one aspect of heterogeneity (which we expect to have a direct impact on foreign affiliate sales) to build a measure that quantifies the extent of sectoral investment commitments  $INT_j$ . The simpler alternative is to ignore the heterogeneity in the investment provisions and simply assume that  $INT_j$  is equal to one for all FTA partner countries. This is a very common simplification in the literature. Our more detailed score of the intensity of liberalization is especially relevant if the only part of the agreements that matters to foreign affiliate sales is the investment provisions. On the

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<sup>12</sup> See chapter 2 in USITC (2016) for a more detailed discussion of the treatment and coverage of services trade in U.S. trade agreements, including a separate discussion on investment provisions.

other hand, the simpler indicator variable measure is more inclusive, and therefore more appropriate, if there are other parts of the agreement that affect foreign affiliate sales, since it does not place as much emphasis on the investment provisions.

Given the relative similarity of investment provisions across agreements and the negative list structure of the agreements noted above, we capture the differences across the agreements based on the annexes of NCMs. There are typically two annexes that specify exceptions to investment obligations (covering existing and future measures) and a separate annex for financial services. We map each sector listed in these annexes to an industry category in BEA's data on foreign affiliate sales. This mapping weights the sectors by foreign affiliate sales.<sup>13</sup> In some cases, the sectors listed in the trade agreements closely matched the BEA industries categorized by NAICS code. For example, "legal services" appear in both. In other cases, BEA aggregates sectors at a higher level. Although the "private security and surveillance services" sectors in the trade agreements best matched 4-digit NAICS "Investigation and Security Services," the sector was coded under an aggregated category, "Other," within the 3-digit category "Administrative and Support Services."<sup>14</sup> We then assigned a score of "1" for each sector-specific exception to the investment chapters' obligations, and otherwise assigned "0" to signify the sector is completely open. In all instances, a "1" indicates some restrictions, as there were no cases where an NCM completely restricted a sector, or at least the mapping to the NAICS (typically at higher industry aggregations) operationally meant sectors were never coded as completely closed.<sup>15</sup>

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<sup>13</sup> Specifically, the weights use data from "Table 4.1. Services Supplied to Foreign Persons by U.S. MNEs Through Their MOFAs, by Industry of Affiliate and by Country of Affiliate," October 24, 2016 release date.

<sup>14</sup> "Other" consisted of everything in the 3-digit category apart from "Employment services" and "Travel arrangement and reservation services."

<sup>15</sup> The degree to which a specific NCM restricts trade is not captured since all restrictions are coded as "1." For example, nationality requirements for a majority of the members of the board of directors (BOD) is far more restrictive than similar requirements for one member of the BOD, or more restrictive than if the requirement referred to residency instead of nationality.

Certain NCMs in the agreements' annexes are not captured in the score. They include measures that were specific to the cross-border services trade chapters (as opposed to the investment chapters), measures that were applied broadly across sectors (for example, related to ownership of property in border regions and national coasts or to social services established or maintained for a public purpose), and measures that were related to manufacturing.<sup>16</sup>

Finally, we weighted each NAICS category score by the share in total U.S. (outbound) foreign affiliate sales of U.S.-owned companies in 2010. For example, "motion picture and sound recording industries" accounted for 0.013 percent of total foreign affiliate sales in 2010. If a country was coded as restricting this sector, the weight was 0.013 ( $1 \cdot 0.013$ ) and otherwise 0 ( $0 \cdot 0.013$ ). These weights were then summed and subtracted from 1 in order to have country-specific scores that ranged from zero (completely closed, no liberalization) to one (completely open, full liberalization). The scores for each country, which range from 0.4 for Korea to 0.69 for Peru, are reported in Table 3.

## **6. Econometric Estimates**

Our main estimation results are reported in tables 4 and 5. Table 4 reports estimations using the measure of the intensity of investment liberalization, while table 5 reports estimations using the simple FTA indicator variable. The first specification in table 4, which assumes an immediate effect, indicates that the FTAs have a negative but insignificant impact on foreign affiliate sales. The second, third, and fourth specifications relax the immediate effect assumption and allow the impact of the trade agreements to begin in the second, third, and fourth years after implementation. Those estimates indicate a positive and significant effect when the impact is considered three or more years after the agreement enters into force. Similarly, the fifth specification, which includes the

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<sup>16</sup> The specific mapping of services from the agreements' annexes to the BEA NAICS categories are available upon request.

number of years an FTA has been in force, indicates that there was a positive and significant impact after several years. In the sixth specification, we allow for both immediate and lagged effects. The results indicate that there is a significant negative impact in the year of implementation with a positive effect that grows over time, leading to a net positive effect after three years. These results are consistent with the idea that the effects of trade agreement investment provisions take time to manifest, as companies adjust to the new degree of certainty or reductions in regulations that result from the agreements.

The results in table 5, based on the simple FTA indicator, are very similar. The one difference is the *significant* negative impact of the FTAs shown in the first specification, which may be due to the FTA indicator's greater inclusiveness, not limited to the exceptions to the investment provisions.<sup>17</sup> The significant negative immediate effect in that specification (along with the sixth specification in both tables) suggest that there may be switching away from foreign affiliate sales to cross-border exports in the short-run.

As indicated above, we use equation (2) and our econometric estimates of the parameters of the models to estimate the impact of the agreements on foreign affiliate sales in partner countries at differing time horizons. Table 6 and 7 show the estimated percent increase in foreign affiliate sales by country (using the sixth specification in table 4, since it has the best fit according to the Akaike Information Criterion (AIC) and the R-squared Statistics) and as an average across all countries (using the sixth specification in table 5) at three and ten years after the agreements entered into force.

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<sup>17</sup> USITC (2016) reported the estimated effect of U.S. trade agreements on U.S. outbound sales was not statistically different from zero. The analysis in this paper (specification I of table 5) replicates that analysis but has an additional year of data for 2013 and potentially different country coverage and shows a significant negative impact of FTAs. USITC (2016) also reported the estimated effect of U.S. trade agreements on U.S. inbound sales was not statistically different from zero. We also update that analysis (specification I of appendix table 1) and do not find significant impacts. Aligned with the results of the outbound models in tables 4 and 5, the impact of the agreements on inbound sales are significant and positive when moving beyond the contemporaneous effect.

The average impact of the FTAs three years after implementation is a 3.2 percent *decrease* in foreign affiliate sales. However, this effect ranges from a low of approximately 1.7 percent (in Australia and Korea, which have among the lowest investment liberalization scores) to near 3 percent (in Chile and Peru, which have among the highest investment liberalization scores). The average impact ten years after implementation is a 16.1 percent *increase* in foreign affiliate sales. Over the longer time horizon, foreign affiliate sales see a higher increase in the countries with greater investment commitments as the effects range from a low of approximately 12 percent (again in Australia and Korea) to above 20 percent (in Chile, the Dominican Republic, Peru, and Colombia). These calculated impacts indicate that the reduction in foreign affiliate sales (and likely switching to cross-border exports) is greater in partner countries that have more expansive investment commitments, as we would expect.

## **7. Discussion and Conclusions**

This paper has provided econometric analysis of the impacts of U.S. trade agreements on foreign affiliate sales of services. The econometric models have focused on two aspects of these impacts that have not been addressed as clearly in the prior literature. First, we focus on the possibility that the trade agreements have different effects over different time horizons. They seem to have an immediate negative effect on foreign affiliate sales, probably due to the removal of barriers to cross-border exports, but then a positive effect after several years as firms adjust their investments. Second, we focus on the possibility that the trade agreements are not all alike, especially in the exceptions in their investment provisions, and it is probably not as informative to estimate a pooled effect that averages over all of the agreements. We focus on differences in the sector-specific non-conforming measures through a scoring analysis of the details of the agreements. We find evidence that this is an important distinction: the extent of the exceptions to the investment provisions varies across the agreements, and by incorporating this into the econometric model, we are able to

estimate agreement-specific effects on the foreign affiliate sales of U.S.-owned companies. At the low end, we estimate a 12 percent increase in foreign affiliate sales in Korea ten years after the agreement entered into force. At the high end, we estimate a 21 percent increase in foreign affiliate sales in Peru after ten years.

There are several areas in where the analysis could be extended and improved upon in future research. One possibility is to extend the detailed scoring to other provisions of the trade agreements that are likely to be relevant to foreign affiliate sales of services. A second possibility is to analyze the effects of a broader set of agreements, including agreements that do not involve the United States. In this paper, we have focus on U.S. trade agreements and the foreign affiliate sales of U.S.-owned companies because we believe that the BEA data are relatively high quality, but this focus has limited the implications that can be drawn from our analysis.



**Table 1: Countries in Model of Outbound Affiliate Sales**

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Argentina	Italy
Australia	Japan
Austria	Korea
Barbados	Luxembourg
Belgium	Malaysia
Bermuda	Netherlands
Brazil	New Zealand
Chile	Nigeria
China	Norway
Colombia	Panama
Costa Rica	Peru
Czech Republic	Philippines
Denmark	Poland
Dominican Republic	Portugal
Ecuador	Russia
Egypt	Saudi Arabia
Finland	Singapore
France	South Africa
Germany	Spain
Greece	Sweden
Honduras	Switzerland
Hong Kong	Thailand
Hungary	Turkey
India	United Arab Emirates
Indonesia	United Kingdom
Ireland	Venezuela

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**Table 2: U.S. Trade Agreements and Foreign Affiliate Sales Data**

<b>Partner Country</b>	<b>Entry into force of the agreement</b>	<b>Foreign affiliate sales data, years available</b>	<b>Number of years of data after entry into force</b>
Jordan	12/17/2001	Not available	Not available
Singapore	1/1/2004	2004-2013	9
Chile	1/1/2004	2004-2013	8 (missing 2005)
Australia	1/1/2005	2004-2013	8
Morocco	1/1/2006	Not available	Not available
Bahrain	1/11/2006	Not available	Not available
El Salvador	3/1/2006	Not available	Not available
Honduras	4/1/2006	2009-2013	5
Nicaragua	4/1/2006	Not available	Not available
Guatemala	7/1/2006	Not available	Not available
Dominican Republic	3/1/2007	2009-2013	5
Costa Rica	1/1/2009	2009-2013	4
Oman	1/1/2009	Not available	Not available
Peru	2/1/2009	2009-2013	4
Korea	3/5/2012	2004-2013	1
Colombia	5/12/2012	2009-2013	1
Panama	10/31/2012	2009-2013	1

Source: U.S. International Trade Commission (2016), Figure 1.1 and BEA Table 4.2.

**Table 3: Scoring of Investment Provisions**

<b>Partner Country</b>	<b>Score</b>
Singapore	0.54
Chile	0.68
Australia	0.42
Honduras	0.64
Dominican Republic	0.66
Costa Rica	0.65
Peru	0.69
Korea	0.40
Colombia	0.66
Panama	0.55

This table lists the investment liberalization score of each FTA partner country (since 2000) that is included in the regression models. The FTA partner countries not included in the models are Jordan, Morocco, Bahrain, El Salvador, Nicaragua, Guatemala, and Oman.

**Table 4: Econometric models of foreign affiliate sales with measure of the intensity of liberalization**

<b>Explanatory variables</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>	<b>VI</b>
Log of GDP	0.566** (0.08)	0.554** (0.09)	0.545** (0.09)	0.547** (0.08)	0.535** (0.09)	0.536** (0.09)
FTA Measure: Intensity of Investment Liberalization	-0.125 (0.08)					-0.192** (0.08)
Impact that starts in the year after implementation (second year)		0.12 (0.10)				
Impact that starts in the third year			0.238** (0.10)			
Impact that starts in the fourth year				0.178** (0.08)		
Number of years FTA in force					0.024** (0.01)	
FTA Measure * Number of years FTA in force						0.050** (0.02)
Constant	1.604 (1.08)	1.754 (1.09)	1.876* (1.09)	1.845* (1.09)	1.998* (1.13)	1.985* (1.13)
No. of Obs.	404	404	404	404	404	404
AIC	-274.2331	-274.8110	-278.9400	-277.6131	-279.6719	-280.8182
R-Squared	0.9879	0.9879	0.9880	0.9880	0.9880	0.9881

\* p<0.05, \*\* p<0.01

Note: The table reports robust standard errors in parentheses. All specifications include country and year fixed effects.

**Table 5: Econometric models of foreign affiliate sales with the simpler measure of FTAs**

<b>Explanatory variables</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>	<b>VI</b>
Log of GDP	0.566** (0.08)	0.556** (0.08)	0.546** (0.09)	0.547** (0.09)	0.535** (0.09)	0.536** (0.09)
FTA Measure: Simple Indicator Variable						-0.114** (0.04)
Impact that starts in the year after implementation (second year)		0.061 (0.06)				
Impact that starts in the third year			0.132** (0.06)			
Impact that starts in the fourth year				0.100** (0.05)		
Number of years FTA in force					0.024** (0.01)	
FTA Measure * Number of years FTA in force						0.028** (0.01)
Constant	1.61 (1.07)	1.74 (1.09)	1.866* (1.10)	1.846* (1.10)	1.998* (1.13)	1.984* (1.13)
No. of Obs.	404	404	404	404	404	404
AIC	-274.3734	-274.5215	-278.4634	-277.2532	-279.6719	-280.3545
R-Squared	0.9879	0.9879	0.9880	0.9880	0.9880	0.9881

\* p<0.05, \*\* p<0.01

Note: The table reports robust standard errors in parentheses. All specifications include country and year fixed effects.

**Table 6: Estimates Percent Increases in Foreign Affiliate Sales, by Country Three Years After Implementation**

<b>Partner Country</b>	<b>Impact using the Intensity of Investment Liberalization Measure (Model VI in Table 4)</b>	<b>Impact using the Simple FTA Indicator (Model VI in Table 5)</b>
Singapore	-2.305 (5.196)	-3.178 (4.777)
Chile	-2.903 (6.544)	-3.178 (4.777)
Australia	-1.793 (4.042)	-3.178 (4.777)
Honduras	-2.732 (6.159)	-3.178 (4.777)
Dominican Republic	-2.818 (6.351)	-3.178 (4.777)
Costa Rica	-2.775 (6.255)	-3.178 (4.777)
Peru	-2.946 (6.640)	-3.178 (4.777)
Korea	-1.708 (3.849)	-3.178 (4.777)
Colombia	-2.818 (6.351)	-3.178 (4.777)
Panama	-2.348 (5.293)	-3.178 (4.777)

Note: The table reports robust standard errors in parentheses.

**Table 7: Estimates Percent Increases in Foreign Affiliate Sales, by Country Ten Years After Implementation**

<b>Partner Country</b>	<b>Impact using the Intensity of Investment Liberalization Measure (Model VI in Table 4)</b>	<b>Impact using the Simple FTA Indicator (Model VI in Table 5)</b>
Singapore	16.545 (10.341)	16.116 (10.534)
Chile	20.835 (13.022)	16.116 (10.534)
Australia	12.868 (8.043)	16.116 (10.534)
Honduras	19.609 (12.256)	16.116 (10.534)
Dominican Republic	20.222 (12.639)	16.116 (10.534)
Costa Rica	19.916 (12.447)	16.116 (10.534)
Peru	21.141 (13.213)	16.116 (10.534)
Korea	12.256 (7.660)	16.116 (10.534)
Colombia	20.222 (12.639)	16.116 (10.534)
Panama	16.852 (10.532)	16.116 (10.534)

Note: The table reports robust standard errors in parentheses.

## References

- Baier, Scott and Jeffrey Bergstrand (2007): "Do Free Trade Agreements Actually Increase Members' International Trade?" *Journal of International Economics* 71, 8: 72-95.
- Berger, Alex, Busse, Matthias, Nunnenkamp, Peter, and Martin Roy (2010): "Do Trade and Investment Agreements Lead to More FDI? Accounting for Key Provisions Inside the Black Box." *Kiel Working Paper* No. 1647.  
[https://papers.ssrn.com/sol3/papers2.cfm?abstract\\_id=1838660](https://papers.ssrn.com/sol3/papers2.cfm?abstract_id=1838660).
- Bergstrand, Jeffrey H., and Peter Egger (2007): "A Knowledge-and-physical-capital Model of International Trade Flows, Foreign Direct Investment, and Multinational Enterprises." *Journal of International Economics* 73, 2: 278–308.
- Brainard, S. Lael (1997): "An Empirical Assessment of the Proximity-Concentration Trade-off between Multinational Sales and Trade." *American Economic Review* 87, 4: 520-544.
- Ciuriak, Dan and Lysenko, Dmitry (2016): "Quantifying Services-Trade Liberalization: The Impact of Binding Commitments." *C.D. Howe Institute Technical Paper for: Better in than Out? Canada and the Trans-Pacific Partnership*.  
[https://papers.ssrn.com/sol3/papers2.cfm?abstract\\_id=2730265](https://papers.ssrn.com/sol3/papers2.cfm?abstract_id=2730265).
- Gootiiz, Batshur and Mattoo, Aaditya (2017): "Services in the Trans-Pacific Partnership: What Would Be Lost?" *World Bank Policy Research Working Paper* No. 7964.  
<https://ssrn.com/abstract=2913325>.
- Kimura, Fukunari and Hyun-Hoon Lee (2006): "The Gravity Equation in International Trade in Services." *Review of World Economics* 142 (1): 92–121.
- Kleinert, Jörn, and Farid Toubal (2010): "Gravity for FDI." *Review of International Economics* 18, 1: 1–13.
- Kohl, Tristan (2014): "Do We Really Know That Trade Agreements Increase Trade?" *Review of World Economics* 150, 3: 443–69.
- Kohl, Tristan, Steven Brakman, and Harry Gerretsen (2016): "Do Trade Agreements Stimulate International Trade Differently? Evidence from 296 Trade Agreements." *World Economy* 39, 1: 97–131.
- Leshner, Molly and Sébastien Miroudot (2006): "Analysis of the Economic Impact of Investment Provisions in Regional Trade Agreements." *OECD Trade Policy Papers*, No. 36, OECD Publishing, Paris. <http://dx.doi.org/10.1787/322248021805>.
- Marchetti, Juan A. (2009): "Do Economic Integration Agreements lead to Deeper Integration of Services Markets?"  
[http://www.wto.org/english/res\\_e/reser\\_e/gtdw\\_e/wkshop09\\_e/marchetti\\_e.pdf](http://www.wto.org/english/res_e/reser_e/gtdw_e/wkshop09_e/marchetti_e.pdf).

- Nordås, Hildegunn and Dorothee Rouzet (2015): "The Impact of Services Trade Restrictiveness on Trade Flows: First Estimates." *OECD Trade Policy Papers*, No. 178, OECD Publishing, Paris. <http://dx.doi.org/10.1787/5js6ds9b6kjb-en>.
- Reisman, Matthew and Danielle Vu (2012): "Nontariff Measures in the Global Retailing Industry." U.S. International Trade Commission Office of Industries Working Paper ID-30. [https://www.usitc.gov/publications/332/nontariff measures in the global retailing industryWP NoID-30.pdf](https://www.usitc.gov/publications/332/nontariff%20measures%20in%20the%20global%20retailing%20industryWP%20NoID-30.pdf).
- Riker, David (2015): "The Impact of Restrictions on Mode 3 International Supply of Services." *Journal of International and Global Economic Studies* 8(1): 1-20.
- U.S. International Trade Commission (USITC) (2016): "Economic Impact of Trade Agreements Implemented Under Trade Authorities Procedures, 2016 Report." USITC Publication 4614, Washington, DC: USITC.
- Van der Marel, Erik and Ben Shepherd (2013): "Services Trade, Regulation and Regional Integration: Evidence from Sectoral Data." *World Economy* 36: 1393-1405.
- World Trade Organization (2011): "D. Anatomy of preferential trade agreements." *World Trade Report 2011*. [https://www.wto.org/english/res\\_e/booksp\\_e/anrep\\_e/wtr11-2d\\_e.pdf](https://www.wto.org/english/res_e/booksp_e/anrep_e/wtr11-2d_e.pdf).

**Appendix Table 1: Econometric models of U.S. (inbound) affiliate sales with the simple measure of FTAs**

<b>Explanatory variables</b>	<b>I</b>	<b>II</b>	<b>III</b>	<b>IV</b>	<b>V</b>	<b>VI</b>
Log of GDP	0.03 (0.25)	-0.016 (0.26)	-0.065 (0.26)	-0.065 (0.26)	-0.094 (0.28)	-0.091 (0.28)
FTA Measure: Simple Indicator Variable	-0.08 (0.29)					-0.24 (0.31)
Impact that starts in the year after implementation (second year)		0.309 (0.21)				
Impact that starts in the third year			0.612** (0.20)			
Impact that starts in the fourth year				0.497** (0.19)		
Number of years FTA in force					0.087** (0.04)	
FTA Measure * Number of years FTA in force						0.096** (0.04)
Constant	7.218** (3.15)	7.827** (3.18)	8.444** (3.22)	8.442** (3.26)	8.811** (3.43)	8.753** (3.44)
No. of Obs.	363	363	363	363	363	363
AIC	537.5624	534.6208	526.5978	527.8545	529.4403	530.0732
R-Squared	0.9764	0.9766	0.9771	0.9770	0.9769	0.9770

\* p<0.05, \*\* p<0.01

Note: The table reports robust standard errors in parentheses. All specifications include country and year fixed effects.