Journal of
Economics and Political Economy
www.kspjournals.org
Volume 5 September 2018 Issue 3

International trade effects of a potentially revived Trans-Pacific partnership for North America

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Abstract. This paper analyzes the international trade relations of the United States, Canada, and Mexico with the now defunct Trans-Pacific Partnership (TPP12) member countries currently and historically in order to provide insights for potential future effects provided United States decides to join the new Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP or TPP11) with the remaining original TPP countries. Using a gravity model estimation, we find that the existing free trade agreements (FTAs) between TPP12 countries (intra-TPP) and FTAs between TPP12 members and other countries (extra-TPP) have positively impacted trade in the 1980-2015 period. A revived TPP12 agreement promises to boost trade further.
Keywords. International trade, Gravity model, Free trade agreements, Trans-Pacific partnership.
JEL. F10.

1. Introduction

This paper focuses on the international trade of the United States (U.S.), Canada, and Mexico with the now defunct Trans-Pacific Partnership (TPP12) member countries between 1980-2015. The goal is to examine the potential TPP12 effects, if United States decides to join the new Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP or TPP11) with the remaining original TPP countries.

There are over 300 preferential trade agreements (PTAs) currently in force with more than 200 of them established after 1990. The effect of these regional/preferential agreements on the global trade in general and whether they help or hinder multilateral trade liberalization process involving majority of the countries in the world is an important concern for both economists and policymakers (c.f. Karacaovali & Limao 2008 for a detailed discussion). In this paper, we intend to analyze the potential trade creation and diversion effects of TPP12. On the one hand, under trade diversion, a country's national welfare may decrease because rather than gaining tariff revenue from inexpensive imports from world markets, a country may import expensive products from member countries but not gain any tariff revenue. On the other hand, trade creation leads to welfare gains by substituting inefficient domestic production with cheaper imports and efficiently reallocating resources in a nation. Yet, Karacaovali (2016) shows trade diversion may make such an agreement politically more feasible.

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Although the benefits from TPP12 may be more non-economic in nature, such as increased geo-political influence or coordination on legal issues and investment, a number of studies attempted to quantify the potential welfare effects of the agreement by relying on a computable general equilibrium (CGE) modeling analysis. For instance, in the most widely-cited study, Petri & Plummer (2016) predict an overall favorable impact of the agreement on TPP12 members. However, Capaldo & Izurieta (2016) obtain negative welfare effects for Japan and the U.S. by relaxing the full employment assumption and allowing income distribution variation over time. The positive welfare effect predictions are echoed by the USITC (2016) study for the U.S. and the World Bank (2016) study for the TPP12 member countries. Nevertheless, Li & Whalley (2014) find a negative welfare impact for China and other non-TPP12 countries while member countries are expected to gain.

We start by mapping out the free trade agreements (FTAs) that were in force between the twelve original TPP12 countries as of 2015 (Figure 1). Separating the sets of countries into five—North America (Canada, Mexico, United States), South America (Chile, Peru), Japan, Australia-New Zealand, and Southeast Asia (Brunei, Malaysia, Singapore, Vietnam)—we notice that the members are already linked regionally in their groupings (Figure 1). For example, in 1994, US, Canada, and Mexico formed North American Free Trade Agreement (NAFTA), which is the largest existing preferential trade group within the TPP12. Similarly, Brunei, Malaysia, Singapore, Vietnam have belonged to Association of Southeast Asian Nations (ASEAN) Free Trade Area (AFTA) since the early 1990s, and Australia and New Zealand have had FTA arrangements since 1965 (and the current one effective since 1983). Chile, Peru, and Japan's FTAs with other TPP12 members are more recent, e.g. Chile-Peru in 2009 and Japan-Australia in 2015. Table 1 presents the complete list of FTAs that were in force for TPP12 members as of 2015 and we can observe that they have several other FTAs with the rest of the world as will be discussed in Section 3.

Next, we analyze the trade patterns of the twelve TPP12 member nations using the 2014 trade (exports plus imports) data. In a series of figures for each TPP12 member state, we provide the share of trade with the top ten trading partners relative to total trade with the world and then, in a series of companion figures we list the trade shares of the TPP12 partners excluding the ones which are already displayed in the top ten trading partners list (Figure 2). A noteworthy feature of the figures is that trade with TPP12 member states generally constitute a small share unless they are already a major trading partner.

In Section 4, we look more closely at the North America region, namely Canada, Mexico, and United States, by considering the historical patterns of their trade structure for the 1980-2015 period. Then, we analyze the exports and imports of the North America region at a more disaggregated level vis-à-vis the rest of the TPP12 member states.

Finally, in Section 5, in order to better understand the future effects of TPP12 and examine potential trade diversion and creation effects, we rely on the gravity model and estimate the effects of the existing FTAs between TPP12 members (intra-TPP) and FTAs between TPP12 states and other countries (extra-TPP) on their trade during the 1980-2015 period. The gravity model states that the volume of trade between two countries are directly proportional to their economic size and negatively related to the distance between them (Anderson, 1979). Other factors such as geographical location, cultural affinity, common language, historical ties, and PTAs play a role too (Anderson & van Wincoop 2003 and 2004; Baier & Bergstrand 2001). We find that NAFTA and all other intra-TPP and extra-TPP FTAs have positive effects on trade for the TPP12 countries. This is promising given that the existing intra-TPP FTAs (excluding NAFTA) are not between major economies such as U.S. and Japan, and hence a successful implementation of the TPP12 agreement would be expected to further boost trade between member states in the future.

The rest of the paper is organized as follows. Section 2 describes data and sources. Section 3 presents a general overview of the trade and existing FTAs of TPP12 countries. Section 4 focuses on the North American trade patterns historically and at the industry level. Section 5 provides the gravity model and estimation results. Section 6 concludes.

2. Data

The main source for trade data is the United Nations Comtrade Database, accessed via the World Integrated Trade Solutions (WITS) software provided by the World Bank. The exports and imports are measured in nominal US dollars and span the 1980-2015 period. The preferential trade agreements data is mainly from the World Trade Organization's Regional Trade Agreements Information System (RTA-IS)[1] which is supplemented by country level sources.

Gross domestic product (GDP) and population data are obtained from World Development Indicators (WDI) of the World Bank. GDP data are in current US dollars as well in accordance with the trade data.

The bilateral, time-invariant gravity model variables mainly rely on the CEPII Database[2] using Head, Mayer, & Ries (2010) and Mayer & Zignago (2011) data. Distance between nations is a weighted measure relying on city-level data and geographic distribution of population in each nation.[3] Other bilateral variables are indicators for common/shared border (i.e. contiguity), common language, common colonial history, and common legal origins.[4] Common language is a dummy equal to one if a language is spoken by at least 9% of the population in the two countries and common colonial history is one if both countries had a common colonizer after 1945. Finally, the time-varying GATT/WTO membership data is also from Head, Mayer, & Ries (2010) updated until 2015 from the WTO website.[5]

3. Trade patterns and existing free trade agreements of TPP countries

The twelve TPP12 countries not only had existing regional FTA connections but the FTAs also extended between different regions potentially motivated by the anticipated enactment of the TPP12 agreement as of 2015. As illustrated in Figure 1, we can think of 5 groupings in TPP12: North America (Canada, Mexico, United States), South America (Chile, Peru), Australia-New Zealand, Japan, and Southeast Asia (Brunei, Malaysia, Singapore, Vietnam). The color-coded regional FTA connections can be clearly observed from Figure 1. Furthermore, Table 1 provides a complete listing of the FTAs TPP12 members had in force between each other (intra-TPP) and with other countries in the world (extra-TPP) as of 2015. The years of entry into force are denoted in parentheses and we can see that some of the FTAs have been in force for over two decades. For example, U.S. and Canada first had the Canada-United States Free Trade Agreement (CUSFTA) in 1988 and then it was superseded by the North American Free Trade Agreement (NAFTA) in 1994 with the addition of Mexico. The next section will focus on the North America region so we will discuss the trade patterns and FTAs of the other nine TPP12 member states here.

In the South America group both Chile and Peru have a wide network of FTAs already in place, a process which seems to have accelerated especially in recent years. For example, Chile is the only TPP12 country which has an FTA with all the other eleven TPP12 members already while Peru has with six (Figure 1 and Table 1). Chile's agreements reach not only across the Pacific but also the Atlantic. Chile's FTA with the European Union (EU), which currently includes twenty-eight member nations[6], went into force in 2003 and its FTA with the European Free Trade Association (EFTA), which has four members[7], in 2004. Peru also has a recent FTA with the EU in 2013 as well as with EFTA in 2011. This seems to be in line with Chile and Peru taking part in the Transatlantic FTA vision linking North America to Europe. Both Chile and Peru have FTAs with several Central American

countries and have economic complementation agreements, which are not full FTAs, with most of the rest of South America covered under MERCOSUR (Argentina, Brazil, Paraguay, and Uruguay). Interestingly, apart from the TPP12 link, both countries have agreements with China and Korea in Asia. Chile also has agreements with India, Hong Kong, and Thailand in Asia. As can be observed in Figure 2, Panel G for Chile and Panel I for Peru, both countries have trade agreements with all of their top ten trading partners including Argentina and Brazil with a partial agreement. China and U.S. are the top two partners comprising about 40% of total trade. After U.S. in the second place, Japan is the third largest trade partner for Chile (with 6.8% of the total), Mexico the seventh (with 2.5%), and Peru the ninth (with 2.3%). Trade with other TPP12 members constitute a relatively smaller share, apart from Canada, for both Chile (Figure 2-Panel H) and Peru (Figure 2-Panel J).

Apart from FTAs with TPP12 members, Mexico, Chile, Peru, and Australia, Japan's FTAs are concentrated in Asia with the exception of Switzerland (Table 1). As compared to other TPP countries, Japan is relatively a latecomer to bilateral trade agreements, becoming active over the last decade. Eight of its seventeen FTAs in force are with TPP12 countries. China and U.S. are Japan's largest trading partners covering 34% of its total trade (Figure 2-Panel K).

Australia and New Zealand have the oldest FTA among TPP12 countries dating back to 1983 between themselves (Table 1). Apart from FTAs with TPP12 countries, all of their other FTAs are in Asia. Both have recent FTAs with their top trading partner China and U.S. is in the third place (Figure 2-Panels M and O, and Table 1). Japan and Korea are the other two main trading partners and Australia is New Zealand's second and New Zealand Australia's eighth.

In the Southeast Asia group (Brunei, Malaysia, Singapore, Vietnam), almost all of the top trading partners are linked through FTAs (Figure 2-Panels Q, S, U, and X). China tops the list for Malaysia, Singapore, and Vietnam while Japan is the largest for Brunei. With the exception of U.S. being one of the major trading partners for Malaysia, Singapore, and Vietnam, Southeast Asia group's main trade seems to be concentrated in Asia and a bit with Australia. In general, trade with TPP12 countries not already in the top ten trading partner list is relatively small for all TPP12 members.

4. U.S., Canada, and Mexico trade

4.1. Overall Trade and FTAs

Canada, Mexico, and Japan are the first, third, and fourth largest trading partners of the U.S. with 16.2%, 12.9%, and 5.3% shares respectively (Figure 2-Panel A). China takes the second place with 15.9% and Germany the fifth place with 4.5% of the U.S. trade. Canada and Mexico are neighboring countries and belong to NAFTA. China, Japan, and Germany are large trading economies so these trade patterns are not surprising. This picture fits the gravity model which states that the volume of trade between two countries are directly proportional to their economic size and negatively related to the distance between them (Anderson, 1979). Other factors such as geographical location, cultural affinity, common language, historical ties, multinational corporations, and PTAs play a role too (Anderson & van Wincoop 2003 and 2004; Baier & Bergstrand 2001). In the case of U.S.-Canada and U.S.-Mexico trade, the existence of an FTA between them is especially important (Trefler 2004 and Tybout & Westbrook, 1995). The share of U.S. trade with the eight remaining TPP12 countries is small. It ranges from 0.02% with Brunei to 1.12% with Singapore (Figure 2-Panel B). Yet, when we consider historical patterns, the trade with Vietnam shows a significant rise over the last decade (Figure 3-Panel B) which might be further boosted if the TPP12 goes into force and more American direct investment gets channeled to Vietnam.

For Canada and Mexico, U.S. is by far the largest trading partner with a share of 67.2% for Canada (Figure 2-Panel C) and 64.5% for Mexico (Figure 2-Panel E). For Canada, China comes in second place with a 7.8% share followed by Mexico

with 3.4% and Japan with 2.4% (Figure 2-Panel C). Similarly, for Mexico, China comes in second with a 9.1% share followed by Canada with 2.6% and Japan with 2.5% (Figure 2-Panel E). Trade with other TPP12 members is even smaller for both Canada and Mexico as compared to the U.S. For Canada, Vietnam, Malaysia, and Australia top the list with approximately 0.3% trade shares each (Figure 2-Panel D). For Mexico, Chile is the largest trade partner among the remaining TPP12 members with a 0.45% trade share followed by Peru with 0.36% and Vietnam 0.29% (Figure 2-Panel F). Our conjecture is that TP12P will potentially increase the trade share of Japan for all three NAFTA members substantially and will increase trade with the other TPP12 signatories although their trade shares are relatively insignificant.

In Figures 3, 4, and 5 we present the historical trade patterns of the three NAFTA members. China's rise in trade for all three countries is notable. China actually replaced Canada as the top trading partner in 2015 for the U.S. (Figure 3-Panel A). Similarly, China took the second place to the U.S. with an ever-rising share in trade for Canada (Figure 4-Panel B) and Mexico (Figure 5-Panel B) especially after becoming a WTO member in 2001. However, the importance of Japan, the fourth largest trading partner for all three countries, has gradually declined since the 1990s although it halted in Mexico after the two signed an FTA, effective 2005 (Table 1). Therefore, TPP12 might help prevent the erosion in the trade share of Japan in the North America region.

Apart from NAFTA and a recent FTA with Korea, the top ten trading partners are not covered under FTAs for the U.S. (Figure 2-Panel A) and Canada (Figure 2-Panel C). Furthermore, regardless of NAFTA the two have been largest partners of each other historically (Figure 3-Panel A and Figure 4-Panel A). Similarly, U.S. has always been the top partner for Mexico in the 1980-2015 period (Figure 5-Panel A). However, NAFTA seems to have positively impacted the trade between Canada and Mexico as can be observed with the rise in their bilateral trade shares after NAFTA went into force in 1994 (Figure 4-Panel B and Figure 5-Panel B) and both became the third largest partner of each other eventually.

In terms of trade with the TPP12 partners not in the overall top five, Vietnam's rise is significant for North America (Figure 3-Panel B, Figure 4-Panel C and Figure 5-Panel C). Malaysia's share is notable too, where, for example, it takes the lead for Mexico in this group (Figure 5-Panel C).

Unlike U.S. and Canada, Mexico has an FTA with EU since 2001. However, U.S. is still negotiating an agreement with EU and Canada concluded negotiations with EU in 2014 waiting to be ratified. Mexico also has an FTA with EFTA since 2001 and Canada since 2009. North American trade with EU is sizeable with several EU countries making the top ten trading partners lists (Figure 2-Panels A, C, and E). Mexico is also the only one among the three with an existing FTA with Japan (since 2005, Table 1) and it seems to have halted the trend of declining trade shares of Japan (Figure 5-Panel B). Finally, U.S. has one with Australia since 2005 with a similar effect (Figure 3-Panel B).

4.2. Industry level trade

Next, we look at the trade (exports and imports) of the North America region with other TPP12 countries at the Standard International Trade Classification (SITC) 1-digit level (Tables 2, 3, and 4). In these tables, highlighted cells indicate the share of trade (%) in the given SITC-1 industry relative to total trade with the respective TPP12 partner and the last row considers "World" as the partner so it indicates the overall total industry trade shares. Unhighlighted cells indicate the share of trade (%) with the respective TPP12 partner relative to total trade with the world in the given SITC-1 industry.

With a 31.62% share, "Machinery and transport equipment" (SITC1 Code 7) is the highest export item of the U.S. to the world (last row of Table 2.A) which is reflected in export shares of this industry to various TPP12 countries. The exceptions are exports to Malaysia in this industry with 55.76% and Australia with

45.62% shares (Table 2.A). However, shares of exports to these countries relative to the world is low in this industry with 1.4% for Malaysia and 2.52% for Australia. Another notable export section is "Food and live animals" (SITC1 Code 0) where U.S. export shares in this industry relative to total exports to Japan and Vietnam are proportionately higher as compared with the world: 19.75% for Japan and 26.31% for Vietnam compared with 7.87% to the world (Table 2.A). However, while exports to Japan in this industry is sizeable with 11.16% of the U.S. exports to the world in the same industry, Vietnam's share is only 1.29%. On the flip side, "Food and live animals" (SITC1 Code 0) is the highest import industry from Australia, Chile, New Zealand, and Peru, with 29.09%, 44.79%, 48.51%, and 35.64% shares, respectively, although it only constitutes 4.25% of U.S. imports from the world (Table 2.B). With a 39.82% share, "Machinery and transport equipment" (SITC1 Code 7) is also the highest import item of the U.S. from the world (last row of Table 2.B) which is reflected in import shares of this industry from various TPP12 countries. Therefore, at this aggregate level of industry classification there's understandably a large amount of intra-industry trade. In the "Machinery and transport equipment" (SITC1 Code 7) industry U.S. import shares relative to total imports from Japan, Malaysia, and Mexico are proportionately much higher and from Chile and Peru much lower as compared with the world: 73.64% for Japan, 72.14% for Malaysia, 59.16% for Mexico, 1.53% for Chile, and 0.51% for Peru compared with 39.82% from the world (Table 2.B).

For Canada, "Mineral fuels, lubricants and related materials" (SITC1 Code 3) is the biggest export industry with a 28.07% share of Canadian exports to the world and 93.76% of which gets exported to the U.S. (Table 3.A). Similarly, "Machinery and transport equipment" (SITC1 Code 7) is the second largest export industry of Canada with a 25.95% share of Canadian exports to the world and 82.97% of which gets exported to the U.S. (Table 3.A). In the "Food and live animals" (SITC1 Code 0) industry, exports to Japan, Vietnam, and Peru relative to total are proportionately much higher as compared with the world: 23.02% for Japan, 38.31% for Vietnam, and 56.42% for Peru compared with 8.43% to the world. With a 41.91% share, "Machinery and transport equipment" (SITC1 Code 7) is the highest import industry of Canada from the world (last row of Table 3.B) and the bilateral import patterns of Canada with other TPP12 countries is similar to U.S. in this industry.

For Mexico, "Machinery and transport equipment" (SITC1 Code 7) is again, by far, both the largest export and import industry with a 59.16% share of exports to the world (Table 4.A) and a 46.86% share of imports from the world (Table 4.B). Furthermore, the salient features of bilateral trade of Mexico with other TPP12 countries is similar to U.S. and Canada.

5. Gravity estimations

The gravity model is the most widely used and empirically robust methodology for explaining bilateral trade in the international trade literature with strong theoretical foundations under various models (for example, Anderson & van Wincoop 2003, Baier & Bergstrand 2001, Chaney 2008, and Eaton & Kortum 2002).

In order to better understand the future trade effects of TPP12, we estimate the effect of existing intra-TPP and extra-TPP FTAs on the trade of the twelve TPP12 members between 1980 and 2015. We employ the gravity model as a useful tool and abstract from several modeling and estimation details as they are not the focus of this paper and keep the discussion brief here. As derived in numerous models in the literature, such as the ones mentioned above, our estimating equation takes the form

$$\begin{aligned}\ln Exports_{ijt} = {} & \beta_0 \\ & + \beta_1 \ln Population_{it} + \beta_2 \ln GDP\ per\ Capita_{it} \\ & + \beta_3 \ln Population_{jt} + \beta_4 \ln GDP\ per\ Capita_{jt} \\ & + \beta_5 \ln Distance(avg)_{ij} + \beta_6 Contiguity_{ij} \\ & + \beta_7 Common\ Language_{ij} \\ & + \beta_8 Common\ Colonial\ History_{ij} \\ & + \beta_9 Common\ Legal\ Origins_{ij} \\ & + \beta_{10} Both\ GATT|WTO\ Member_{ijt} + \beta_{11} FTA_{ijt} \\ & + \beta_{12} TPP{-}FTA_{ijt} + \beta_{13} NAFTA_{ijt} + \beta_{14}\delta_i + \beta_{15}\delta_j \\ & + \beta_{16}\theta_t + \varepsilon_{ijt}\end{aligned} \quad (1)$$

for exporter country *i* and importer country *j* at year *t*, where either the exporter or the importer is one of the twelve TPP12 members in each bilateral link for 1980-2015. Both trade and GDP data are in current US dollars as indicated in Section 2. The gravity model suggests a positive link between economic size of the trading economies and their bilateral trade mediated by other factors such as distance and cultural affinity.

The dependent variable, ln $Exports_{ijt}$, denotes the natural logarithm of the exports from country *i* to country *j* in year *t*. An important time-invariant bilateral variable is the average log distance between major cities of countries *i* and *j* weighted by respective populations of the cities, which is expected to have an inhibiting effect by increasing trade costs. As described in Section 2, other bilateral factors that should make trade easier are captured by a number of indicator variables that are equal to one if *i* and *j* share a border (i.e. contiguous) or a language, and have common colonial history or legal origins. Other trade policy factors are captured by time-varying bilateral dummy variables. If both countries are GATT/WTO members or have an FTA in force between them in a given year, this should boost their two-way trade. As commonly done, exporter and importer fixed effects, δ_i and δ_j, and year fixed effects, θ_t, are added to control for other unspecified country factors and macroeconomic developments that might affect prices and hence the trade between countries. Alternatively, one can use bilateral fixed effects instead of country fixed effects as we also do to confirm robustness of our results. The disadvantage of bilateral fixed effects is that they completely absorb the time-invariant bilateral variables so the estimating equation simply becomes

$$\begin{aligned}\ln Exports_{ijt} = {} & \beta_0 \\ & + \beta_1 \ln Population_{it} + \beta_2 \ln GDP\ per\ Capita_{it} \\ & + \beta_3 \ln Population_{jt} + \beta_4 \ln GDP\ per\ Capita_{jt} \\ & + \beta_5 Both\ GATT|WTO\ Member_{ijt} + \beta_6 FTA_{ijt} \\ & + \beta_7 TPP{-}FTA_{ijt} + \beta_8 NAFTA_{ijt} + \beta_9 \gamma_{ij} + \beta_{10}\theta_t + \varepsilon_{ijt}\end{aligned} \quad (2)$$

Table 5 provides estimation results based on equation (1) and Table 6 based on equation (2). First, note that all gravity equation variables are highly significant with their expected signs and the regressions have a good explanatory power as evidenced by the R-squared figures–0.8 in Table 5 and 0.9 in Table 6. Trading partners with larger populations and GDP per capita trade more while distance works as an impediment to bilateral trade. Sharing a border, language, colonial history, legal origin as well as jointly being GATT/WTO members in a given year positively affect trade between countries.

Our main objective is to estimate the effect of existing FTAs on trade to gain insight about the potential future effects of TPP for its members. As discussed extensively in sections 3 and 4, there are already several FTAs between the TPP12 members. Although some of these FTAs are relatively recent and in certain cases

the trade between TPP12 countries are not very large, a positive effect of them on trade would be informative.

We distinguish between the effects of intra and extra-TPP FTAs and also single out NAFTA since the North America region is our main focus in this paper. Given that the main left-hand-side variable is in natural logs, the coefficients on the FTA dummies enable us to obtain estimates of average percentage changes in trade due to FTAs. More specifically, raising the exponential constant e to the estimated coefficient on a dummy minus one provides the average percentage change in exports for countries with an FTA in force relative to bilateral trade lacking an FTA between partners. Referring to the coefficient estimates in Table 5, for example, the average general FTA effect is obtained from column (1) as ($e^{0.496}$-1)=0.64 indicating that FTAs increase bilateral trade by 64% as compared to their lack thereof. Then in column (2) we distinguish between the average effect of extra-TPP and intra-TPP FTAs by controlling for the two dummies separately. In this case, the coefficient for FTA_{ijt} alone captures the extra-TPP FTA effect since FTA_{ijt} equals one while $TPP\text{-}FTA_{ijt}$ equals zero for an extra-TPP FTA. However, to capture the intra-TPP FTA effect we need the sum of the two coefficients since both FTA_{ijt} and $TPP\text{-}FTA_{ijt}$ are equal to one for an intra-TPP FTA. Therefore, for example, the average intra-TPP FTA effect is computed as ($e^{(0.584-0.522)}$-1)=0.06 while the average extra-TPP FTA effect is ($e^{0.584}$-1)=0.79. Based on these calculations, general, extra-TPP, intra-TPP (with and without NAFTA), and NAFTA effects are reported under tables 5 and 6.

Since the intra-TPP FTAs are generally more recent and/or cover relatively smaller trade relations, it is not surprising that the average intra-TPP FTA effect is smaller than the average extra-TPP effect (6% versus 79% in Table 5, column 2 and 11% versus 46% in Table 6, column 2). However, its effect is still significantly positive on trade for the TPP12 members. Furthermore, distinguishing between NAFTA and other intra-TPP FTAs in column (3) of tables 5 and 6, we see that the effect of NAFTA is strong for the North America region although the average effect of the rest of the intra-TPP FTAs is small but positive. The extra-TPP FTA effect is 79% (46%), whereas intra-TPP FTA effect without NAFTA is 3% (7%) and NAFTA effect is 29% (64%) in Table 5 (6). In sum, the gravity estimations present a promising result pointing to further potential gains of the TPP12 provided that it gets revived and integrates especially Japan and the large economies of North America.

6. Concluding remarks

This paper analyzes the international trade relations of the U.S., Canada, and Mexico with the now defunct Trans-Pacific Partnership (TPP) countries from 1980 to 2015 with the objective of providing insights for future TPP12 effects if the agreement becomes revived with United States joining the remaining 11 original members in their Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP or TPP11).

We start out by providing an assessment of the existing FTAs the twelve member countries had as of 2015 and discuss their trade with the main trading partners inside and outside of the TPP12 agreement. Next, we look at the historical trends of trade between the North America region and their major trading partners and also analyze their exports and imports to TPP12 countries and the rest of the world at the industry level. Finally, we rely on gravity model estimations and find that the existing free trade agreements (FTAs) between TPP12 countries (intra-TPP) and FTAs between TPP12 members and other countries (extra-TPP) have positively impacted trade in the 1980-2015 period which implies that a successful revival of the TPP agreement promises to boost trade further.

Notes

[1] [Retrieved from].
[2] [Retrieved from].
[3] Distance between two countries is based on the bilateral distance between the largest cities of the two countries weighted by the share of each city's population in the country's total. See Mayer & Zignago (2011) for details.
[4] All are from Mayer & Zignago (2011) except data on legal origins which is from LaPorta, Lopez-de-Silanes, & Shleifer (2008) [Retrieved from].
[5] [Retrieved from].
[6] EU membership (with accession years in parentheses) comprises Belgium, Germany, France, Italy, Luxembourg, Netherlands (1958); Denmark, Ireland, UK (1973); Greece (1981); Portugal, Spain (1986); Austria, Finland, Sweden (1995); Cyprus, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Malta, Poland, Slovakia, Slovenia (2004); Bulgaria, Romania (2007); Croatia (2013). Chile also has an FTA with Turkey, effective 2011. (Turkey has a customs union with the EU since 1995.)
[7] EFTA's members are Liechtenstein, Switzerland, Iceland and Norway.

Appendix

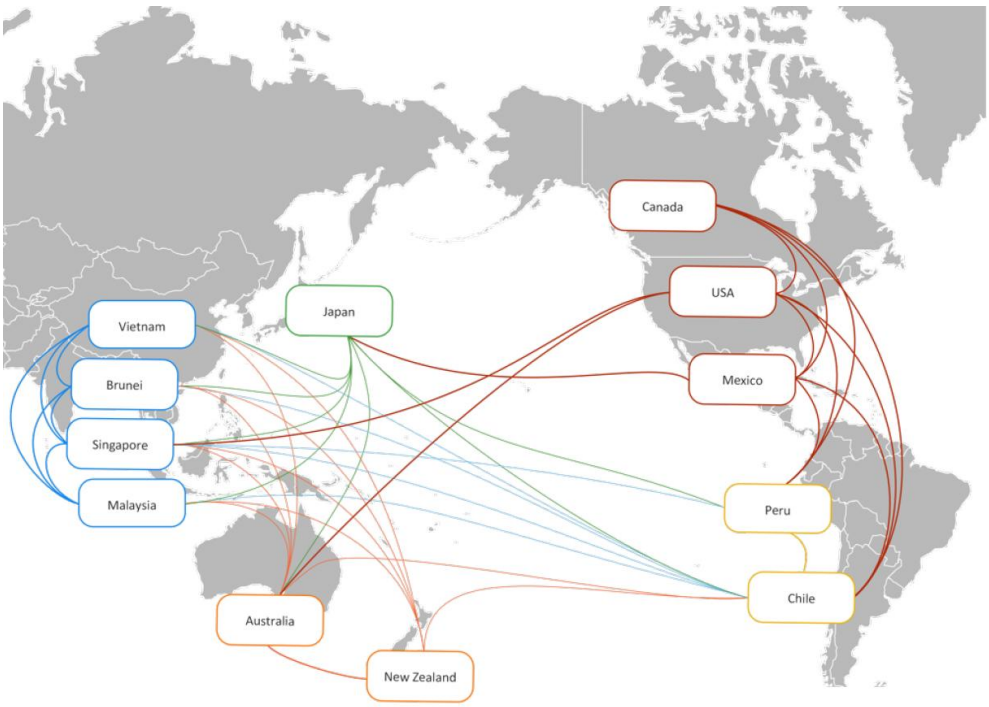
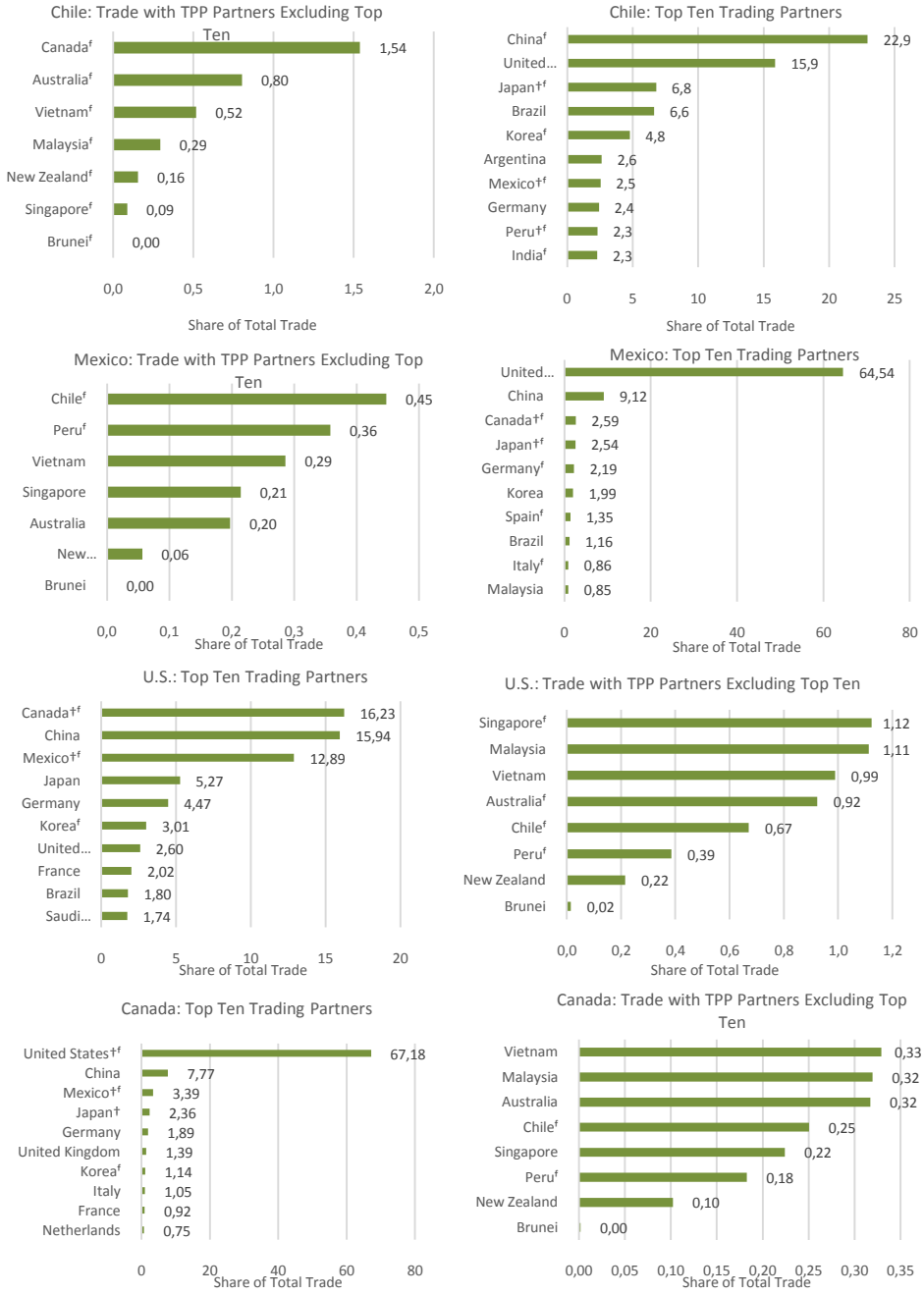
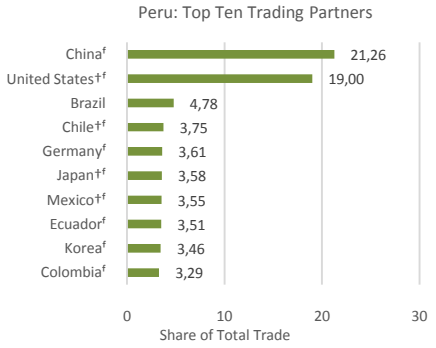
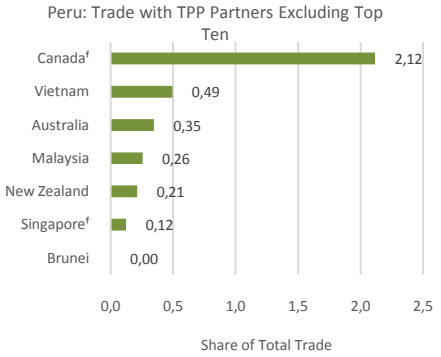


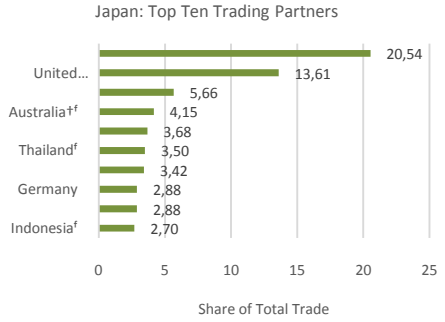
Figure 1.
Existing Free Trade Agreements between TPP12 Countries as of 2015

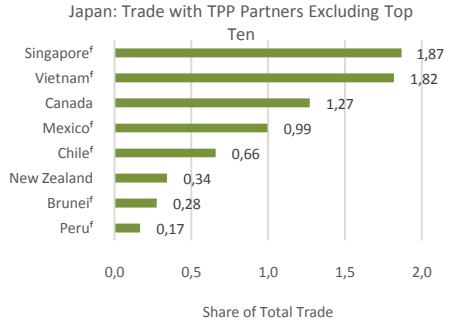
Figure 2.
Intra and Extra TPP12 Trade, 2014

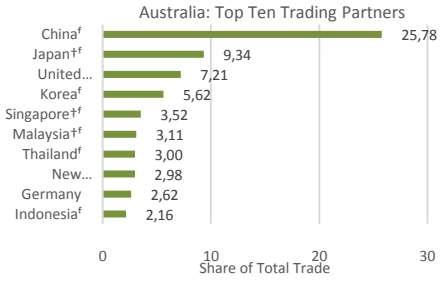


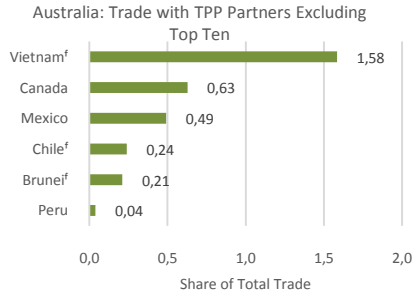

Peru: Top Ten Trading Partners
China[f] 21,26
United States[†f] 19,00
Brazil 4,78
Chile[†f] 3,75
Germany[f] 3,61
Japan[†f] 3,58
Mexico[†f] 3,55
Ecuador[f] 3,51
Korea[f] 3,46
Colombia[f] 3,29
0 10 20 30
Share of Total Trade


Peru: Trade with TPP Partners Excluding Top Ten
Canada[f] 2,12
Vietnam 0,49
Australia 0,35
Malaysia 0,26
New Zealand 0,21
Singapore[f] 0,12
Brunei 0,00
0,0 0,5 1,0 1,5 2,0 2,5
Share of Total Trade

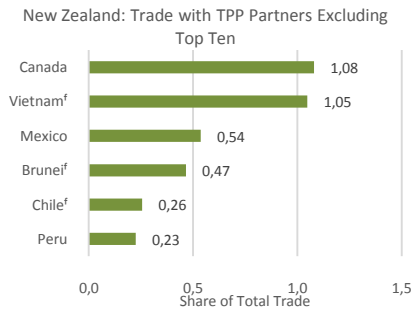

Japan: Top Ten Trading Partners
20,54
United… 13,61
5,66
Australia[†f] 4,15
3,68
Thailand[f] 3,50
3,42
Germany 2,88
2,88
Indonesia[f] 2,70
0 5 10 15 20 25
Share of Total Trade

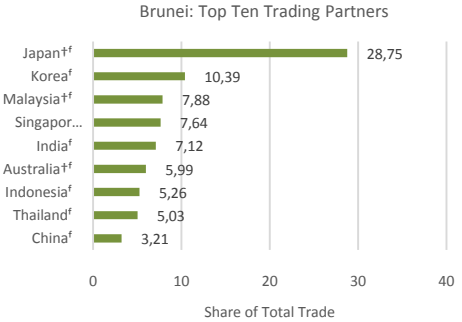

Japan: Trade with TPP Partners Excluding Top Ten
Singapore[f] 1,87
Vietnam[f] 1,82
Canada 1,27
Mexico[f] 0,99
Chile[f] 0,66
New Zealand 0,34
Brunei[f] 0,28
Peru[f] 0,17
0,0 0,5 1,0 1,5 2,0
Share of Total Trade

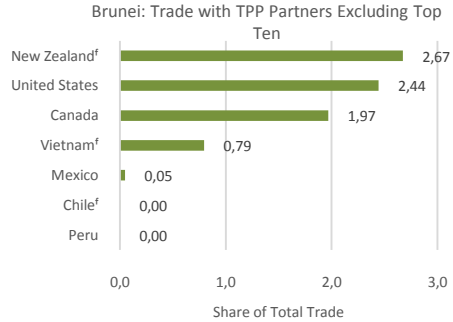

Australia: Top Ten Trading Partners
China[f] 25,78
Japan[†f] 9,34
United… 7,21
Korea[f] 5,62
Singapore[†f] 3,52
Malaysia[†f] 3,11
Thailand[f] 3,00
New… 2,98
Germany 2,62
Indonesia[f] 2,16
0 10 20 30
Share of Total Trade


Australia: Trade with TPP Partners Excluding Top Ten
Vietnam[f] 1,58
Canada 0,63
Mexico 0,49
Chile[f] 0,24
Brunei[f] 0,21
Peru 0,04
0,0 0,5 1,0 1,5 2,0
Share of Total Trade


New Zealand: Top Ten Trading Partners
China[f] 18,83
Australia[†f] 13,89
United… 10,64
Japan[†] 6,41
Korea[f] 4,10
Malaysia[†f] 3,34
Germany 3,14
Singapore[†f] 3,05
United… 2,86
Thailand[f] 2,56
0 5 10 15 20
Share of Total Trade


New Zealand: Trade with TPP Partners Excluding Top Ten
Canada 1,08
Vietnam[f] 1,05
Mexico 0,54
Brunei[f] 0,47
Chile[f] 0,26
Peru 0,23
0,0 0,5 1,0 1,5
Share of Total Trade


Brunei: Top Ten Trading Partners
Japan[†f] 28,75
Korea[f] 10,39
Malaysia[†f] 7,88
Singapor… 7,64
India[f] 7,12
Australia[†f] 5,99
Indonesia[f] 5,26
Thailand[f] 5,03
China[f] 3,21
0 10 20 30 40
Share of Total Trade


Brunei: Trade with TPP Partners Excluding Top Ten
New Zealand[f] 2,67
United States 2,44
Canada 1,97
Vietnam[f] 0,79
Mexico 0,05
Chile[f] 0,00
Peru 0,00
0,0 1,0 2,0 3,0
Share of Total Trade

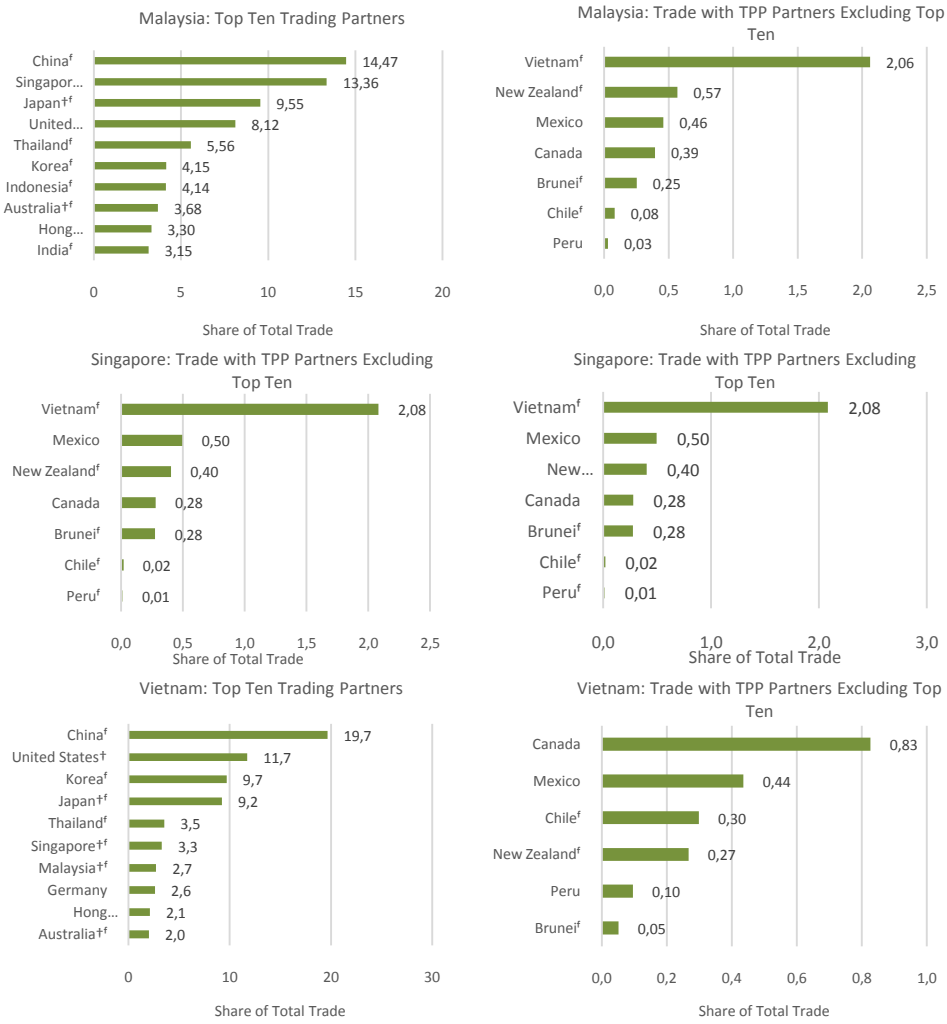
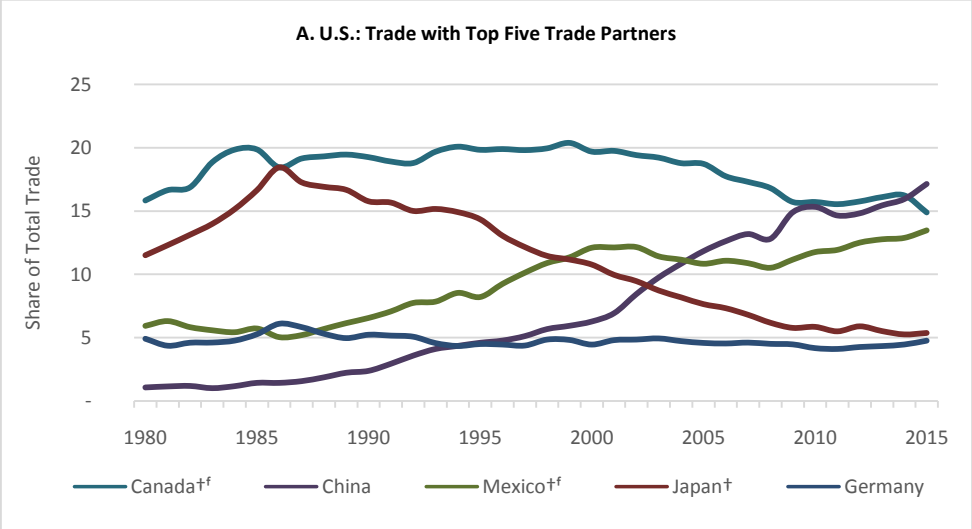


Figure 2.
Intra and Extra TPP12 Trade, 2014

Figure 3.
Trade Patterns for U.S. 1980 – 2015



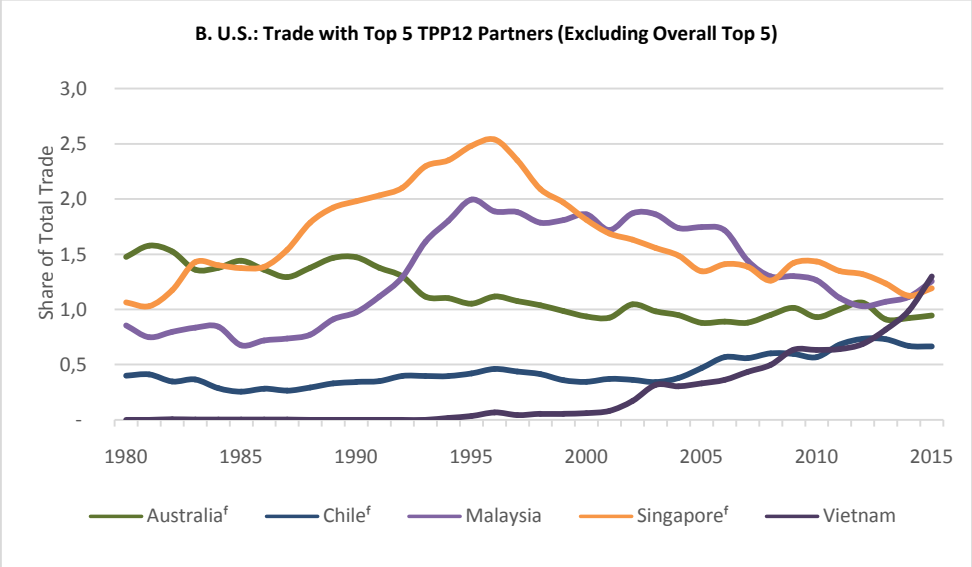
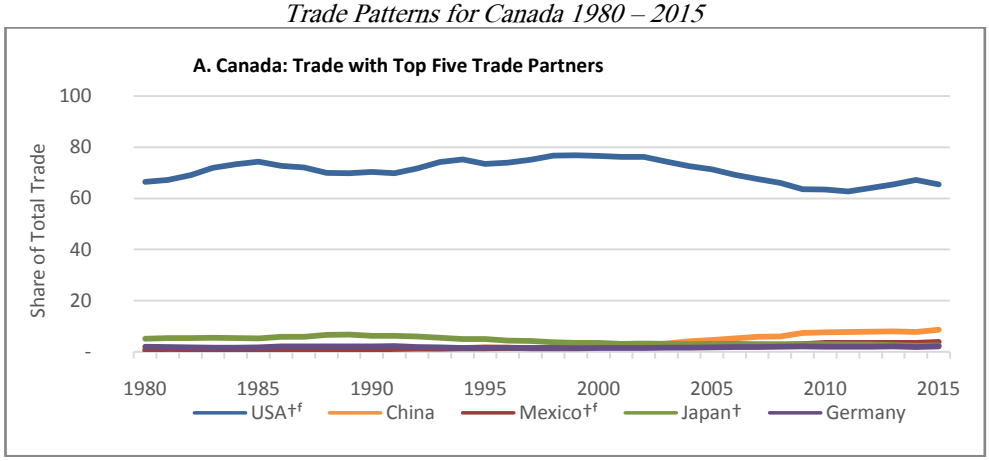
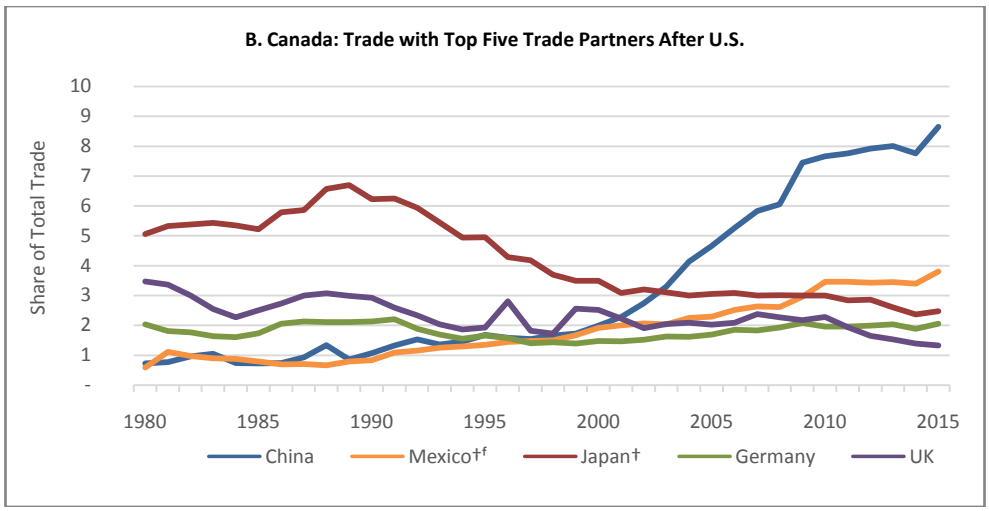


Figure 4.
Trade Patterns for Canada 1980 – 2015





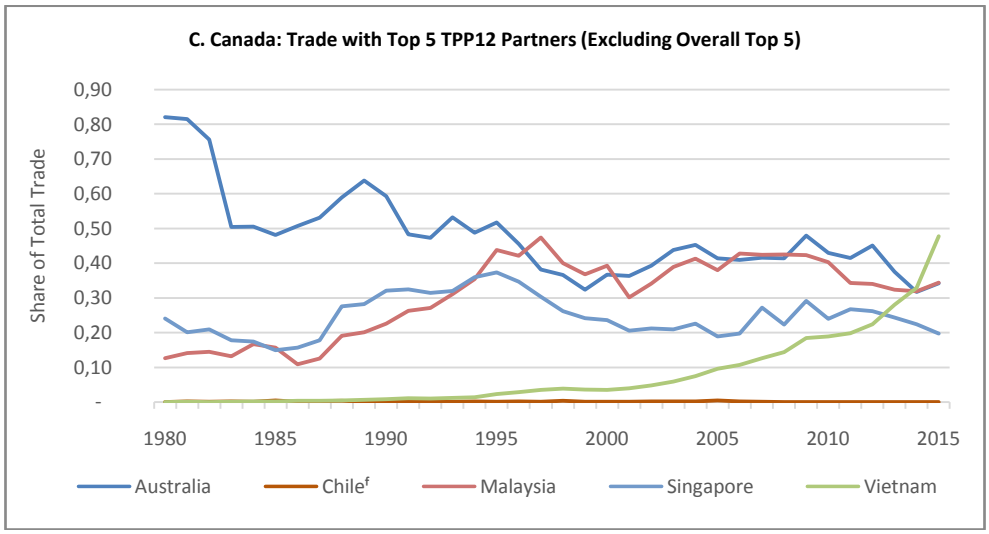


Figure 5.
Trade Patterns for Mexico 1980 – 2015

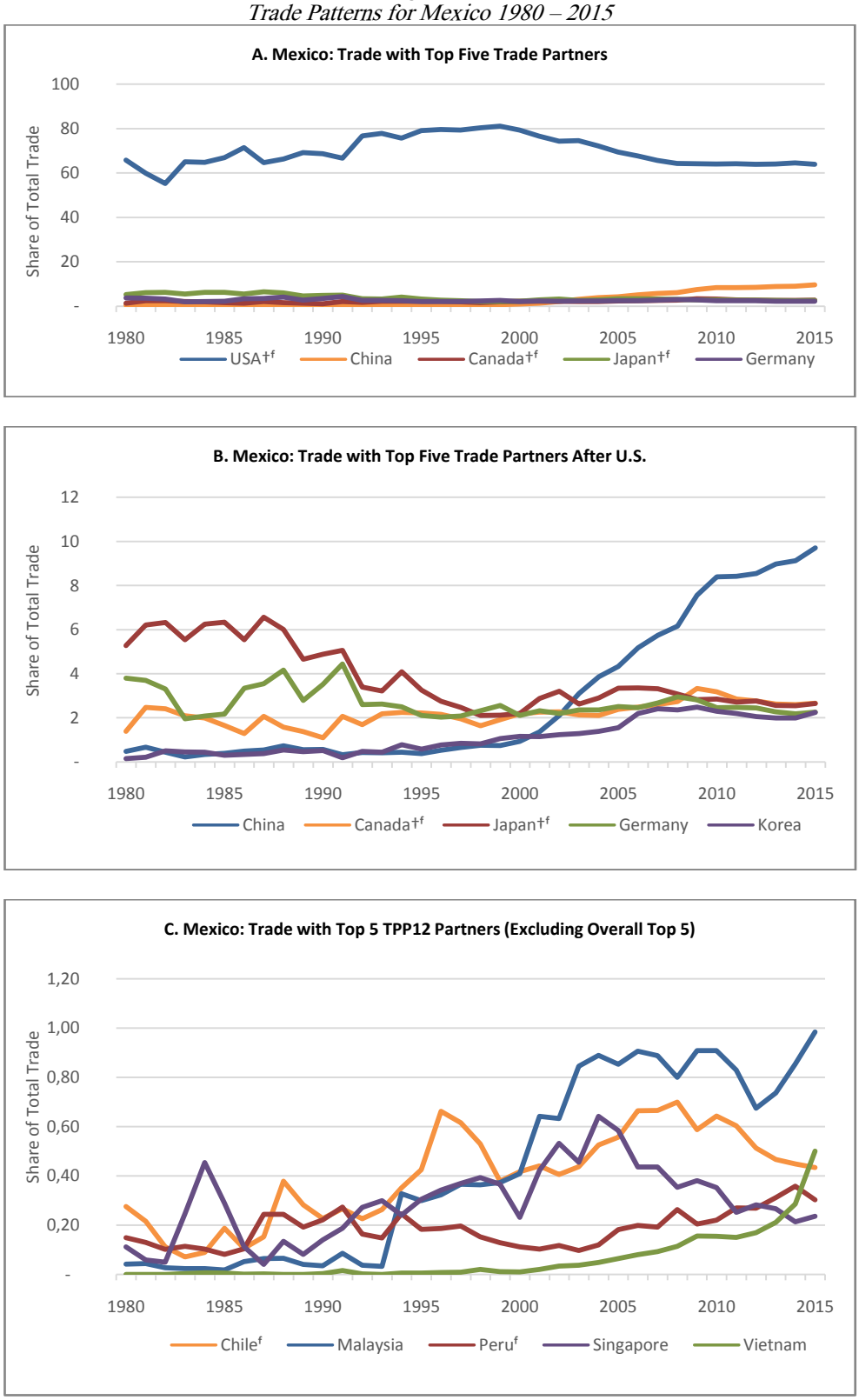


Table 1. *Existing Intra and Extra-TPP12 Free Trade Agreements as of 2015*

	U.S.	Canada	Mexico	Chile	Peru	Japan
Intra TPP	Canada (1988, 1994) Mexico (1994) Chile (2004) Singapore (2004) Australia (2005) Peru (2009)	USA (1988, 1994) Mexico (1994) Chile (1997) Peru (2009)	Canada (1994) USA (1994) Chile (1999) Japan (2005) Peru (2012)	Canada (1997) Mexico (1999) USA (2004) Brunei (2006) New Zealand (2006) Singapore (2006) Japan (2007) Peru (2009) Australia (2009) Malaysia (2012) Vietnam (2014)	USA (2009) Chile (2009) Singapore (2009) Canada (2009) Mexico (2012) Japan (2012)	Singapore (2002) Mexico (2005) Malaysia (2006) Chile (2007) Brunei (2008) Vietnam (2008) Peru (2012) Australia (2015)
	U.S.	**Canada**	**Mexico**	**Chile**	**Peru**	**Japan**
Extra TPP	Israel (1985) Jordan (2001) Bahrain (2006) Morocco (2006) Guatemala (2006) Honduras (2006) Nicaragua (2006) Dominican Rep. (2007) Costa Rica (2009) El Salvador (2009) Oman (2009) Colombia (2012) Korea (2012) Panama (2012)	Israel (1997) Costa Rica (2002) Liechtenstein (2009) Switzerland (2009) Iceland (2009) Norway (2009) Colombia (2011) Jordan (2012) Panama (2013) Honduras (2014) Korea (2015)	Venezuela (1994) Costa Rica (1994, 2013) Colombia (1995) Bolivia (1995, 2010) Nicaragua (1998, 2012) Israel (2000) El Salvador (2000, 2012) Honduras (2000, 2013) Guatemala (2000, 2013) EU (2001) Liechtenstein (2001) Switzerland (2001) Iceland (2001) Norway (2001) Uruguay (2004) Panama (2015)	Costa Rica (2002) El Salvador (2002) EU (2003) Liechtenstein (2004) Switzerland (2004) Iceland (2004) Norway (2004) Korea (2004) China (2006) India (2007) Honduras (2008) Panama (2008) Colombia (2009) Guatemala (2010) Turkey (2011) Nicaragua (2012) Hong Kong (2014) Thailand (2015)	Bolivia (1988, 1997) Colombia (1988, 1997) Ecuador (1988, 1997) China (2010) Liechtenstein (2011) Switzerland (2011) Iceland (2011) Korea (2011) Norway (2012) Panama (2012) Costa Rica (2013) EU (2013)	Thailand (2007) Indonesia (2008) Philippines (2008) Laos (2008) Myanmar (2008) Switzerland (2009) Cambodia (2009) India (2011) Mongolia (2016)

Source: Primary source is WTO, Regional Trade Agreements Information System (RTA-IS) supplemented by country sources. [Retrieved from].
Note: The years in parentheses indicate year of entry into force.

Table 1. *Existing Intra and Extra-TPP12 Free Trade Agreements as of 2015 (Cont.)*

	Australia	New Zealand	Brunei	Malaysia	Singapore	Vietnam
Intra TPP	New Zealand (1983) Singapore (2003) USA (2005) Chile (2009) Brunei (2010) Malaysia (2010) Vietnam (2010) Japan (2015)	Australia (1983) Singapore (2001) Brunei (2006) Chile (2006) Malaysia (2010) Vietnam (2010)	Malaysia (1992) Singapore (1992) Vietnam (1995) Chile (2006) New Zealand (2006) Japan (2008) Australia (2010)	Brunei (1992) Singapore (1992) Vietnam (1995) Japan (2006) Australia (2010) New Zealand (2010) Chile (2012)	Brunei (1992) Malaysia (1992) Vietnam (1995) New Zealand (2001) Japan (2002) Australia (2003) USA (2004) Chile (2006) Peru (2009)	Brunei (1995) Malaysia (1995) Singapore (1995) Japan (2008) Australia (2010) New Zealand (2010) Chile (2014)
	Australia	**New Zealand**	**Brunei**	**Malaysia**	**Singapore**	**Vietnam**
Extra TPP	Papua New Gui. (1977) Thailand (2005) Myanmar (2010) Philippines (2010) Laos (2011) Cambodia (2011) Indonesia (2012) Korea (2014) China (2015)	Thailand (2005) China (2008) Myanmar (2010) Philippines (2010) Cambodia (2011) Laos (2011) Hong Kong (2011) Indonesia (2012) Taiwan (2013) Korea (2015)	Indonesia (1992) Philippines (1992) Thailand (1992) Laos (1995) Myanmar (1995) Cambodia (1999) China (2005) India (2010) Korea (2010)	Indonesia (1992) Philippines (1992) Thailand (1992) Laos (1995) Myanmar (1995) Cambodia (1999) India (2004) China (2005) Pakistan (2008) Korea (2010) Turkey (2015)	Indonesia (1992) Philippines (1992) Thailand (1992) Laos (1995) Myanmar (1995) Cambodia (1999) Liechtenstein (2003) Switzerland (2003) Iceland (2003) Norway (2003) China (2005) Jordan (2005) Korea (2006) Panama (2006) India (2004) Costa Rica (2013) Bahrain (2013) Kuwait (2013) Oman (2013) Qatar (2013) Saudi Arabia (2013) United Arab Em. (2013) Taiwan (2014)	Indonesia (1995) Philippines (1995) Thailand (1995) Laos (1995) Myanmar (1995) Cambodia (1999) China (2005) Korea (2010) India (2010)

Table 2.A. *U.S.: Exports to TPP12 Partners at the SITC-1 Level, 2014*

SITC1 Code	0	1	2	3	4	5	6	7	8	9
	Food and live animals	Beverages and tobacco	Crude materials, inedible, except fuels	Mineral fuels, lubricants and related materials	Animal and vegetable oils and fats	Chemicals	Manufact goods classified chiefly by material	Machinery and transport equipment	Miscellaneous manufactured articles	Commod. & transacts. not class. accord. to kind
Australia	5,54	0,76	1,09	1,69	0,06	12,58	7,12	45,62	11,86	13,67
	1,23	2,85	0,31	0,27	0,51	1,51	1,44	2,52	2,47	2,18
Brunei	0,97	0,00	0,09	0,05	0,01	0,95	1,85	38,33	2,56	55,19
	0,00	0,00	0,00	0,00	0,00	0,00	0,01	0,05	0,01	0,20
Canada	7,45	0,62	2,67	12,39	0,15	11,72	13,46	38,04	8,25	5,26
	18,00	25,10	8,30	21,11	13,68	15,25	29,70	22,88	18,69	9,13
Chile	4,71	0,46	1,61	36,68	0,13	10,85	4,81	21,98	4,25	14,52
	0,66	1,08	0,29	3,63	0,68	0,82	0,62	0,77	0,56	1,46
Japan	19,75	0,90	6,61	4,42	0,08	17,92	5,29	20,10	12,30	12,62
	11,16	8,54	4,81	1,76	1,70	5,45	2,73	2,83	6,51	5,12
Malaysia	6,60	0,09	4,77	0,39	0,15	9,01	5,24	55,76	6,54	11,45
	0,66	0,14	0,62	0,03	0,55	0,49	0,48	1,40	0,62	0,83
Mexico	7,80	0,19	4,20	12,32	0,36	13,40	14,74	34,89	7,06	5,05
	13,85	5,69	9,60	15,43	23,63	12,83	23,89	15,42	11,75	6,44
New Zealand	10,93	0,80	0,76	1,44	0,06	9,19	5,13	27,36	7,15	37,19
	0,40	0,49	0,04	0,04	0,08	0,18	0,17	0,25	0,25	0,98
Peru	10,66	0,08	3,72	30,52	0,70	13,70	7,07	25,39	4,07	4,08
	0,87	0,12	0,39	1,76	2,14	0,60	0,53	0,52	0,31	0,24
Singapore	2,51	0,23	0,54	15,43	0,09	15,22	5,22	32,03	9,98	18,74
	0,60	0,91	0,16	2,59	0,77	1,95	1,13	1,90	2,23	3,20
Vietnam	26,31	0,93	27,81	0,50	0,12	9,93	7,85	21,23	3,96	1,34
	1,29	0,77	1,75	0,02	0,22	0,26	0,35	0,26	0,18	0,05
World	**7,87**	**0,47**	**6,11**	**11,16**	**0,21**	**14,60**	**8,62**	**31,62**	**8,39**	**10,95**

Notes: Highlighted cells indicate the share of U.S. exports (%) in the given SITC-1 industry relative to total U.S. exports to the respective TPP12 partner Unhighlighted cells indicate the share of U.S. exports (%) to the respective TPP12 partner relative to total U.S. exports to the world in the given SITC-1 industry.

Table 2.B. *U.S.: Imports from TPP12 Partners at the SITC-1 Level, 2014*

SITC1 Code	0	1	2	3	4	5	6	7	8	9
	Food and live animals	Beverages and tobacco	Crude materials, inedible, except fuels	Mineral fuels, lubricants and related materials	Animal and vegetable oils and fats	Chemicals	Manufact goods classified chiefly by material	Machinery and transport equipment	Miscellaneous manufactured articles	Commod. & transacts. not class. accord. to kind
Australia	29,09	4,56	7,87	0,61	0,22	10,28	13,86	15,48	10,99	7,04
	3,07	2,18	2,32	0,02	0,38	0,52	0,57	0,17	0,32	0,98
Brunei	5,24	0,00	0,00	0,00	0,00	51,74	0,11	1,94	13,28	27,70
	0,00	0,00	0,00	0,00	0,00	0,01	0,00	0,00	0,00	0,01
Canada	6,32	0,25	4,06	34,63	0,49	8,00	11,54	26,86	3,72	4,11
	21,75	3,91	38,98	33,96	27,61	13,13	15,39	9,87	3,58	18,71
Chile	44,79	3,24	9,24	0,47	0,26	4,92	32,30	1,53	0,34	2,89
	4,45	1,46	2,56	0,01	0,42	0,23	1,24	0,02	0,01	0,38
Japan	0,47	0,06	0,46	0,40	0,03	6,84	7,52	73,64	8,03	2,54
	0,64	0,37	1,73	0,16	0,75	4,40	3,93	10,61	3,04	4,53
Malaysia	1,66	0,05	0,64	0,14	3,59	2,06	2,79	72,14	15,21	1,72
	0,51	0,06	0,55	0,01	17,78	0,30	0,33	2,35	1,30	0,69
Mexico	5,86	1,42	0,61	10,45	0,03	2,06	6,70	59,16	10,83	2,88
	16,89	18,58	4,93	8,58	1,59	2,83	7,49	18,21	8,74	10,98
New Zealand	48,51	8,60	6,02	0,01	0,49	11,23	4,86	8,59	5,16	6,53
	1,98	1,59	0,69	0,00	0,32	0,22	0,08	0,04	0,06	0,35
Peru	35,64	0,09	6,34	23,22	1,00	1,64	16,74	0,51	12,81	2,01
	1,98	0,02	0,98	0,37	0,91	0,04	0,36	0,00	0,20	0,15
Singapore	0,57	0,02	0,88	1,00	0,10	34,92	1,73	35,07	13,81	11,92
	0,09	0,01	0,40	0,05	0,27	2,72	0,11	0,61	0,63	2,57
Vietnam	10,84	0,02	0,32	1,38	0,01	0,35	5,16	21,59	59,89	0,43
	3,41	0,02	0,28	0,12	0,06	0,05	0,63	0,72	5,27	0,18
World	**4,25**	**0,94**	**1,53**	**14,92**	**0,26**	**8,92**	**10,97**	**39,82**	**15,18**	**3,22**

Notes: Highlighted cells indicate the share of U.S. imports (%) in the given SITC-1 industry relative to total U.S. imports from the respective TPP12 partner Unhighlighted cells indicate the share of U.S. imports (%) from the respective TPP12 partner relative to total U.S. imports from the world in the given SITC-1 industry.

Table 3.A. *Canada: Exports to TPP12 Partners at the SITC-1 Level, 2014*

SITC1 Code	0	1	2	3	4	5	6	7	8	9
	Food and live animals	Beverages and tobacco	Crude materials, inedible, except fuels	Mineral fuels, lubricants and related materials	Animal and vegetable oils and fats	Chemicals	Manufact goods classified chiefly by material	Machinery and transport equipment	Miscellaneous manufactured articles	Commod. & transacts. not class. accord. to kind
Australia	11,51	0,33	11,55	0,42	0,71	10,45	8,12	42,06	10,74	4,12
	0,47	0,51	0,44	0,01	0,41	0,44	0,25	0,56	0,85	0,39
Brunei	1,27	0,04	3,83	0,26	0,17	1,09	1,53	24,44	67,09	0,26
	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,03	0,00
Chile	17,04	0,01	3,88	23,39	7,98	14,50	5,34	23,27	4,20	0,40
	0,45	0,01	0,10	0,19	3,00	0,39	0,11	0,20	0,21	0,02
Japan	23,02	0,10	43,22	10,74	0,78	8,10	5,23	5,48	2,19	1,15
	5,64	0,91	9,88	0,79	2,69	2,03	0,95	0,44	1,02	0,65
Malaysia	7,65	0,24	11,14	5,53	1,58	38,35	3,35	24,24	6,91	1,01
	0,14	0,17	0,19	0,03	0,41	0,73	0,05	0,15	0,25	0,04
Mexico	15,56	0,15	16,44	0,50	1,54	10,20	18,33	32,28	3,66	1,35
	2,00	0,71	1,98	0,02	2,80	1,34	1,75	1,35	0,90	0,40
New Zealand	15,62	0,46	10,20	0,10	0,50	17,58	6,41	29,82	14,54	4,77
	0,15	0,17	0,09	0,00	0,07	0,17	0,05	0,09	0,27	0,11
Peru	56,42	0,03	1,14	0,23	0,08	5,05	8,33	22,87	5,27	0,58
	1,05	0,02	0,02	0,00	0,02	0,10	0,11	0,14	0,19	0,02
Singapore	4,92	0,20	7,56	5,53	1,74	8,29	6,09	48,49	12,25	4,94
	0,13	0,19	0,18	0,04	0,63	0,22	0,12	0,40	0,60	0,29
U.S.	6,26	0,25	3,96	33,49	0,50	7,81	11,80	27,40	4,34	4,19
	58,39	88,02	34,46	93,76	65,54	74,35	81,39	82,97	77,44	89,98
Vietnam	38,31	0,44	17,86	0,14	0,09	15,77	8,52	15,01	2,93	0,92
	0,43	0,19	0,19	0,00	0,01	0,18	0,07	0,05	0,06	0,02
World	**8,43**	**0,22**	**9,02**	**28,07**	**0,60**	**8,26**	**11,39**	**25,95**	**4,40**	**3,66**

Notes: Highlighted cells indicate the share of Canadian exports (%) in the given SITC-1 industry relative to total Canadian exports to the respective TPP12 partner Unhighlighted cells indicate the share of Canadian exports (%) to respective TPP12 partner relative to total Canadian exports to the world in the given SITC-1 industry

Table 3.B. *Canada: Imports from TPP12 Partners at the SITC-1 Level, 2014*

SITC1 Code	0	1	2	3	4	5	6	7	8	9
	Food and live animals	Beverages and tobacco	Crude materials, inedible, except fuels	Mineral fuels, lubricants and related materials	Animal and vegetable oils and fats	Chemicals	Manufact goods classified chiefly by material	Machinery and transport equipment	Miscellaneous manufactured articles	Commod. & transacts. not class. accord. to kind
Australia	21,68	15,84	17,86	0,01	0,17	12,67	6,35	14,34	9,44	1,65
	0,95	4,61	2,09	0,00	0,25	0,33	0,15	0,10	0,22	0,23
Brunei	7,29	0,00	0,00	0,00	0,00	91,62	0,04	0,56	0,49	0,00
	0,00	0,00	0,00	0,00	0,00	0,01	0,00	0,00	0,00	0,00
Chile	44,98	7,79	8,84	0,00	0,49	2,72	34,18	0,80	0,13	0,08
	1,90	2,19	1,00	0,00	0,69	0,07	0,77	0,01	0,00	0,01
Japan	0,70	0,06	0,23	0,40	0,06	4,33	9,84	76,60	7,71	0,06
	0,28	0,15	0,25	0,10	0,81	1,06	2,13	4,87	1,70	0,08
Malaysia	3,98	0,03	0,60	0,02	4,59	2,18	3,75	65,50	19,32	0,03
	0,29	0,01	0,12	0,00	11,38	0,10	0,15	0,76	0,78	0,01
Mexico	5,82	0,49	1,21	3,61	0,05	2,08	3,99	69,00	12,64	1,11
	5,09	2,85	2,84	1,95	1,35	1,09	1,86	9,43	6,00	3,13
New Zealand	44,75	16,56	2,76	0,00	0,05	11,24	6,41	13,05	4,37	0,82
	0,84	2,07	0,14	0,00	0,03	0,13	0,06	0,04	0,04	0,05
Peru	27,68	0,03	44,49	1,70	5,74	1,42	14,00	1,25	3,61	0,08
	0,88	0,01	3,80	0,03	6,12	0,03	0,24	0,01	0,06	0,01
Singapore	1,72	0,06	0,39	0,93	0,12	31,57	1,40	46,13	13,36	4,33
	0,06	0,02	0,04	0,02	0,14	0,67	0,03	0,25	0,26	0,49
U.S.	7,40	0,61	2,69	12,90	0,15	12,07	13,10	40,57	7,69	2,81
	62,83	34,53	61,30	67,69	42,59	61,57	59,10	53,82	35,45	76,95
Vietnam	15,32	0,04	0,59	0,00	0,03	0,54	8,29	23,05	52,13	0,01
	1,33	0,02	0,14	0,00	0,10	0,03	0,38	0,31	2,45	0,00
World	**6,55**	**0,99**	**2,44**	**10,59**	**0,20**	**10,90**	**12,32**	**41,91**	**12,06**	**2,03**

Notes: Highlighted cells indicate the share of Canadian imports (%) in the given SITC-1 industry relative to total Canadian imports from the respective TPP12 partner Unhighlighted cells indicate the share of Canadian imports (%) from respective TPP12 partner relative to total Canadian imports from the world in the SITC-1 industry

Table 4.A. *Mexico: Exports to TPP12 Partners at the SITC-1 Level, 2014*

SITC1 Code	0	1	2	3	4	5	6	7	8	9
	Food and live animals	Beverages and tobacco	Crude materials, inedible, except fuels	Mineral fuels, lubricants and related materials	Animal and vegetable oils and fats	Chemicals	Manufact goods classified chiefly by material	Machinery and transport equipment	Miscellaneous manufactured articles	Commod. & transacts. not class. accord. to kind
Australia	2,07	15,16	10,09	0,00	0,04	13,08	2,29	53,85	3,22	0,22
	0,10	3,52	1,33	0,00	0,20	0,86	0,08	0,23	0,08	0,05
Brunei	0,00	0,00	0,00	0,00	0,00	0,04	2,38	73,76	23,82	0,00
	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Canada	3,86	0,72	2,16	6,50	0,04	3,49	3,57	69,05	6,48	4,11
	1,97	1,73	2,96	1,63	2,45	2,38	1,36	3,12	1,75	10,80
Chile	2,49	4,34	9,09	0,11	0,05	18,84	11,39	50,55	2,90	0,22
	0,26	2,15	2,55	0,01	0,63	2,63	0,89	0,47	0,16	0,12
Japan	29,32	0,84	10,27	8,32	0,18	4,43	4,30	36,97	4,88	0,48
	3,73	0,51	3,49	0,52	2,60	0,75	0,41	0,42	0,33	0,32
Malaysia	4,47	0,43	1,12	0,00	0,22	10,12	3,85	73,52	6,14	0,14
	0,04	0,02	0,03	0,00	0,23	0,13	0,03	0,06	0,03	0,01
New Zealand	4,51	19,97	7,19	0,00	0,05	4,41	3,12	57,41	3,07	0,28
	0,02	0,46	0,09	0,00	0,03	0,03	0,01	0,02	0,01	0,01
Peru	3,62	0,55	7,89	0,35	0,03	19,07	9,62	55,78	3,02	0,07
	0,31	0,22	1,78	0,01	0,30	2,15	0,60	0,42	0,13	0,03
Singapore	1,00	2,56	5,25	0,00	0,02	10,43	4,01	69,38	5,66	1,69
	0,03	0,30	0,35	0,00	0,05	0,35	0,07	0,15	0,07	0,22
U.S.	5,00	1,09	0,59	9,57	0,03	2,06	6,87	62,61	11,17	1,01
	76,92	78,88	24,07	72,26	54,40	42,23	78,63	85,10	90,86	80,01
Vietnam	46,06	0,42	10,80	0,00	0,00	5,18	12,04	22,26	2,30	0,94
	0,39	0,02	0,24	0,00	0,00	0,06	0,08	0,02	0,01	0,04
World	**5,23**	**1,11**	**1,95**	**10,65**	**0,05**	**3,92**	**7,03**	**59,16**	**9,89**	**1,02**

Notes: Highlighted cells indicate the share of Mexican exports (%) in the given SITC-1 industry relative to total Mexican exports to the respective TPP12 partner Unhighlighted cells indicate the share of Mexican exports (%) to respective TPP12 partner relative to total Mexican exports to the world in the given SITC-1 industry

Table 4.B. *Mexico: Imports from TPP12 Partners at the SITC-1 Level, 2014*

SITC1 Code	0	1	2	3	4	5	6	7	8	9
	Food and live animals	Beverages and tobacco	Crude materials, inedible, except fuels	Mineral fuels, lubricants and related materials	Animal and vegetable oils and fats	Chemicals	Manufact goods classified chiefly by material	Machinery and transport equipment	Miscellaneous manufactured articles	Commod. & transacts. not class. accord. to kind
Australia	10,47	0,20	10,73	40,51	0,04	10,70	4,63	17,83	4,02	0,88
	0,29	0,10	0,65	0,67	0,01	0,13	0,05	0,05	0,06	0,05
Brunei	0,00	0,00	0,00	0,00	0,00	0,00	3,13	18,75	75,00	3,13
	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00	0,00
Canada	10,25	0,54	8,99	0,86	0,91	11,08	23,01	36,28	6,02	2,04
	5,10	5,04	9,89	0,26	6,24	2,51	4,19	1,94	1,63	1,90
Chile	37,69	2,60	13,86	0,01	0,75	14,45	25,77	1,98	2,29	0,61
	2,61	3,39	2,12	0,00	0,71	0,46	0,65	0,01	0,09	0,08
Japan	0,05	0,00	0,18	0,42	0,00	3,53	14,70	67,72	11,01	2,38
	0,04	0,08	0,36	0,22	0,06	1,40	4,68	6,34	5,21	3,88
Malaysia	0,28	0,00	0,55	0,12	0,46	1,07	2,49	88,61	3,53	2,88
	0,09	0,01	0,40	0,02	2,06	0,16	0,30	3,10	0,62	1,76
New Zealand	52,33	0,09	1,34	0,00	0,08	28,63	3,67	7,74	3,74	2,39
	0,90	0,03	0,05	0,00	0,02	0,23	0,02	0,01	0,04	0,08
Peru	4,12	0,00	8,42	71,08	0,08	3,31	5,82	1,63	4,61	0,92
	0,23	0,00	1,02	2,35	0,06	0,08	0,12	0,01	0,14	0,10
Singapore	0,58	0,01	0,12	0,00	0,04	8,34	2,14	79,45	8,19	1,14
	0,03	0,01	0,02	0,00	0,03	0,22	0,05	0,50	0,26	0,13
U.S.	8,11	0,20	3,05	13,72	0,36	13,57	15,33	35,96	7,79	1,91
	78,81	37,19	65,44	80,21	48,52	60,07	54,47	37,57	41,15	34,66
Vietnam	8,07	0,00	0,58	0,00	0,00	1,24	7,08	45,82	32,62	4,57
	0,84	0,01	0,13	0,00	0,00	0,06	0,27	0,51	1,84	0,89
World	**5,04**	**0,27**	**2,28**	**8,37**	**0,37**	**11,06**	**13,79**	**46,86**	**9,27**	**2,69**

Notes: Highlighted cells indicate the share of Mexican imports (%) in the given SITC-1 industry relative to total Mexican imports from the respective TPP12 partner Unhighlighted cells indicate the share of Mexican imports (%) from respective TPP12 partner relative to total Mexican imports from the world in the SITC-1 industry

Table 5. *Gravity Estimations with Year and Country (Exporter and Importer) Fixed Effects*

	(1)	(2)	(3)
ln Population$_{it}$	1.014***	1.025***	1.026***
	(0.070)	(0.070)	(0.070)
ln Population$_{jt}$	0.846***	0.854***	0.854***
	(0.052)	(0.052)	(0.052)
ln GDP per Capita$_{it}$	0.717***	0.714***	0.715***
	(0.026)	(0.026)	(0.026)
ln GDP per Capita$_{jt}$	0.810***	0.810***	0.810***
	(0.020)	(0.020)	(0.020)
ln Distance(avg)$_{ij}$	-1.298***	-1.302***	-1.303***
	(0.012)	(0.012)	(0.012)
Contiguity$_{ij}$	0.227***	0.253***	0.238***
	(0.045)	(0.044)	(0.046)
Common Language$_{ij}$	0.570***	0.569***	0.570***
	(0.019)	(0.019)	(0.0189)
Common Colonial History$_{ij}$	0.333***	0.335***	0.335***
	(0.031)	(0.031)	(0.031)
Common Legal Origins$_{ij}$	0.195***	0.193***	0.194***
	(0.015)	(0.015)	(0.015)
Both GATT/WTO Member$_{ijt}$	0.133***	0.128***	0.128***
	(0.023)	(0.023)	(0.023)
FTA$_{ijt}$	0.496***	0.584***	0.585***
	(0.021)	(0.022)	(0.022)
TPP-FTA$_{ijt}$		-0.522***	-0.551***
		(0.048)	(0.052)
NAFTA$_{ijt}$			0.219**
			(0.087)
Constant	-12.186***	-12.590***	-12.599***
	(1.580)	(1.581)	(1.581)
Avg. General FTA Effect	64%		
Avg. Extra-TPP FTA Effect		79%	79%
Avg. Intra-TPP FTA Effect		6%	
Avg. Intra-TPP FTA Effect (excl. NAFTA)			3%
Avg. NAFTA Effect			29%
R^2	0.80	0.80	0.80
No. of Observations	86,608	86,608	86,608

Notes: (1) The dependent variable is the natural logarithm of the exports from country *i* to country *j* in year *t*, i.e. ln Exports$_{ijt}$. (2) *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively. (3) Davidson and MacKinnon (1993) heteroskedasticity robust standard errors are in parentheses. (4) All specifications include country *i* and *j*, and year fixed effects that are jointly significant but are not reported for brevity. (5) Years covered are 1980-2015.

Table 6. *Gravity Estimations with Year and Bilateral Country Fixed Effects*

	(1)	(2)	(3)
ln Population$_{it}$	1.246***	1.251***	1.253***
	(0.058)	(0.058)	(0.058)
ln Population$_{jt}$	0.991***	0.995***	0.997***
	(0.041)	(0.041)	(0.041)
ln GDP per Capita$_{it}$	0.749***	0.748***	0.748***
	(0.021)	(0.021)	(0.021)
ln GDP per Capita$_{jt}$	0.814***	0.813***	0.814***
	(0.015)	(0.015)	(0.015)
Both GATT/WTO Member$_{ijt}$	0.228***	0.226***	0.225***
	(0.018)	(0.018)	(0.018)
FTA$_{ijt}$	0.331***	0.379***	0.379***
	(0.019)	(0.021)	(0.021)
TPP-FTA$_{ijt}$		-0.275***	-0.315***
		(0.036)	(0.037)
NAFTA$_{ijt}$			0.433***
			(0.052)
Constant	-28.641***	-28.797***	-28.850***
	(1.496)	(1.497)	(1.497)
Avg. General FTA Effect	39%		
Avg. Extra-TPP FTA Effect		46%	46%
Avg. Intra-TPP FTA Effect		11%	
Avg. Intra-TPP FTA Effect (excl. NAFTA)			7%
Avg. NAFTA Effect			64%
R^2	0.90	0.90	0.90
No. of Observations	86,608	86,608	86,608

Notes: (1) The dependent variable is the natural logarithm of the exports from country *i* to country *j* in year *t*, i.e. ln Exports$_{ijt}$. (2) *, **, and *** indicate significance at 10%, 5%, and 1% levels, respectively. (3) Robust standard errors are in parentheses. (4) All specifications include bilateral country *i-j*, and year fixed effects that are jointly significant but are not reported for brevity. (5) Years covered are 1980-2015.

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