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Implications of Trans-Pacific Partnership for the US Dairy Industry

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Abstract

The Trans-Pacific Partnership (TPP) agreement would reduce or eliminates tariff and nontariff barriers to trade and increase investment among the parties. Dairy exporting countries in the TPP, including the United States, will compete for market share. This study aims to investigate the possible change in dairy trade flows if the TPP agreement is enacted and the implications for the US dairy industry. An empirical trade simulation model is developed focusing on US dairy trade to analyze the potential impacts.

Keywords: Trans-Pacific Partnership (TPP), US dairy trade, Spatial Equilibrium Model

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Introduction

The Trans-Pacific Partnership (TPP) is an international trade pact that would be more comprehensive than the North American free-trade agreement, covering a greater scope of commerce and markets, comprised of more than 800 million people. The countries involved in the Trans-Pacific Partnership are the United States (US), Australia, Brunei Darussalam, Canada, Chile, Japan, Malaysia, Mexico, New Zealand, Peru, Singapore and Vietnam. The TPP agreement aims to reduce or to eliminate tariff and nontariff barriers to trade and to increase investment among the trading partners (Williams 2013).

The United States exported around 50% of its dairy products to TPP countries in 2014 in value terms (USDA-FAS 2015). Dairy trade was one of the delicate issues during the TPP negotiations (Fergusson et al. 2015). Several factors such as the bilateral trade history, the specific interests of the countries and previous trade agreements played an important role in the negotiation process. US domestic producers and policy makers were concerned about changing the balance in the export arena as it pertains to established markets for US exports. In addition, many stakeholders were interested in determining how the TPP would affect not only dairy exports out of the US, but also imports into the United States. The later interest is not covered in this particular study, but it gives a direction for a future study. This paper develops an empirical trade simulation model focusing on the US dairy trade to analyze the impact of different negotiation outcome scenarios for the TPP on the US dairy industry. The main dairy export destinations for the United States and its competitors from TPP countries are included in the analysis. To be able to foresee the implications of the TPP for US dairy industry we developed a baseline scenario for milk powder trade by the year 2020. Although the TPP aims to eliminate tariff rates for milk powder, we expect that some TPP countries would not eliminate the non-tariff barriers completely. For instance, Canada, Mexico and Japan negotiated to keep some of the tariffs and trade barriers (Suber 2016). Accordingly, we examined the effects of a 50% decrease from existing ad valorem rates which include non-tariff barriers; and an elimination of all tariff rates by the year 2020.

A spatial equilibrium model of the dairy industry is constructed and empirically specified in General Algebraic Modelling System (GAMS) (Samuelson 1952; Takayama and Judge 1971). Bilateral trade among important dairy exporting TPP countries (the United States, Australia, and New Zealand), and major dairy importing TPP countries (Canada, Japan, Malaysia, Mexico, and Vietnam) plus China, the European Union (EU-27) and the rest of the world (ROW) are selected for the analysis.

While this research focuses on the highest traded dairy product, milk powder, the model is applicable to other dairy products as well. Data analysis shows that past bilateral trade values influence current trade values, and future possibilities can be simulated using the latest trade data. It is expected that California and the pacific west coast dairy industry will be the biggest beneficiaries of this partnership because of their locational and infrastructural advantages. However, this study does not cover the possible impact of foreign investment advantages among TPP countries and the provisions on geographical indications due to the limitation of data available and model constraints. Comprehensive and sector-specific economic analyses help quantify the effects of alternative outcomes thereby providing the greatest value to the US dairy industry.

The paper is organized in the following way. We begin with a summary of the previous free trade agreements in the United States and the negotiated TPP agreement items on dairy trade. Next, the trends in dairy trade for TPP countries and the status of the United States within the TPP countries are discussed. Later, model specifications and the data are presented, followed by the demonstration of the simulation results and discussion. We conclude with a direction for future studies.

Trans-Pacific Partnership Negotiation Process and Dairy Trade

The negotiations for the latest free trade agreement, Trans-Pacific Partnership, started on March 5, 2010 in Melbourne, Australia. The United States joined the TPP negotiations in February 2008 (Fergusson et al. 2015). The agreement among eleven nations was finalized on October 5, 2015 in Atlanta, Georgia, United States. Prior to the agreement, the partners that now comprise TPP already made up 41% of US goods exports and 42% of US agricultural exports in 2014 (WITS 2015). The issues requiring political-level decisions focused on market access for key product categories with the highest tariff rates: electrical machinery, dairy, sugar, and textiles and apparel industries. The United States already has free-trade agreements with six of these TPP negotiating countries.

In the TPP context, the United States was also negotiating for improved access for its dairy products the restricted Canadian market, where US dairy exports are subject to 125% MFN tariff rates in 2013 (WITS 2015), and for an opportunity to eliminate some Mexican non-tariff barriers which increase the cost of shipping agricultural commodities (Yeboah et al. 2015).

The United States attempted to negotiate tariff rate reductions for US agricultural exports which would expand US market share. However, some concerns arise from the negative consequences of the TPP negotiations. For example, New Zealand gained an improved position for its dairy industry among TPP countries including the US market (Yeboah et al. 2015). Additionally, New Zealand negotiated for maintaining certain export arrangements for their state controlled enterprises such as Fonterra which controls over 90% of the milk supply in New Zealand. This could substantially affect both US domestic production and dairy exports.

As a result of the negotiations, Canada will keep their supply management program for dairy production. Japan has negotiated full exclusion (no additional access and no tariff reduction) for most dairy products for twenty-five years and sixteen years for grains (Doyle 2012). In the light of these developments, the negotiation process increased the importance of analyzing the price effects of the TPP; the reductions in tariffs; and the reduction in non-tariff barriers for dairy trade.

The number of empirical economic studies evaluating trade and welfare impacts of free trade agreements have increased gradually since the mid-90s when the World Trade Organization's Uruguay Round Agreement on Agriculture and North American Free Trade Agreement (NAFTA) were negotiated (Nicholson and Bishop 2004). Researchers have used various methods to evaluate trade agreements such as the gravity models, general equilibrium models, partial equilibrium supply-demand model, import demand model and VAR models (Yeboah et al. 2015; Zhu and Boskin 2013; Korinek and Melatos 2009; Zhuang et al. 2007; Susanto et al. 2007; Kandogan 2005; Kawasaki 2003; Casario 1996). Some national and international institutes have also developed their own models to evaluate the impact of trade agreements (OECD 1991; Roningen et al. 1991; FAPRI 1993; FAO 1995). However, these studies generally use aggregate data and do not focus on the specific products and/or bilateral trade.

There were studies that focus on the impact of free-trade agreements on the US dairy industry (Langley et al. 2006; OECD 2004; Bouamra-Mechemache and Requillart 2000; Van Bekkum et al. 2000; Cox et al. 1999; Lariviere and Meilke 1999). Several studies from different countries have been published analyzing the implications of the TPP on the dairy industry. For instance, Kuberka (2013) analyzed the effect of TPP on the US dairy trade, Rude and An (2013) on Canadian dairy sector, and Li and Whalley (2014) on Chinese dairy imports (although China is not a partner of TPP). However, these studies focused on certain issues and none analyzed the competition between exporting countries and/or simulated the impact of the TPP on exporting countries comprehensively.

Previous Dairy Trade Agreements for TPP countries and Newly Negotiated TPP Agreement

The United States has free trade agreements with six TPP member countries: Australia, Canada, Chile, Mexico, Peru and Singapore. These agreements have exceptions for tariff reduction or elimination in some goods. One of the earliest free trade agreements of the United States is NAFTA enacted in 1994. NAFTA lifted tariffs on the majority of goods from day one of the agreement for some commodities. Mexico and Canada, two of the largest dairy export destinations for the United States, eliminated all tariff and non-tariff barriers on their agricultural trade, with the exception of dairy.

Australia and New Zealand also have free trade agreements with some of the TPP countries. Particularly, the agreement among ASEAN countries enacted on January 1, 2010, which includes the following countries: Australia, Brunei, Myanmar, Malaysia, New Zealand, Singapore, the Philippines, and Vietnam. This agreement extensively eliminated or reduced the tariff rates between these countries.

The dairy sector was among one of the last subjects in the negotiation process because many countries did not want to reduce its tariff in attempt to protect their industries. On the other hand, New Zealand wished to open the market for its dairy products to the US and Canada. Overall, the US asked Canada and Japan to reduce their tariffs and provide an open trade agreement for its dairy products. In last-minute negotiations, Canada and Japan agreed to increase access to their tightly controlled dairy markets, allowing some American dairy products in, but New Zealand also persuaded the US to accept more of its milk products.

The TPP has given the United States an opportunity to acquire new markets for US dairy producers, however further in the future than desired. Although, New Zealand and Brunei eliminated all tariffs immediately, Japan will eliminate tariffs on cheese in sixteen years and whey in twenty-one years. Japan also established quotas for the imports of US dairy products (whey, butter, milk powder, and evaporated and condensed milk). In Vietnam, the tariffs are going to be eliminated within five years on dairy products. Canada eliminated the tariffs for whey and new duty-free tariff-rate quotas for cheese, fluid milk, butter, milk powders, and other dairy products. Malaysian tariffs have been eliminated on nearly all dairy products along with the tariffs on fluid milk that will be eliminated in fifteen years through quotas. Peru will eliminate tariffs by 2025 for all dairy products. Based on the significant outcomes of the TPP agreements for the dairy industry, this study uses simulations to determine the possible impacts of the latest agreement.

Trends in Dairy Trade among TPP Countries

The dairy product trade of TPP countries has more than quadrupled in the last two decades (WITS 2015). The total dairy product trade value of TPP countries accounts for $30.8 billion in 2014 where the total value is composed of dairy exports by TPP countries, $21.3 billion, and the imports by TPP countries, $9.5 billion (WITS 2015). The dairy trade among TPP countries was $13.2 billion 2014 (Figure 1). In percentage terms total dairy trade of TPP countries increased 108% from 2007 to 2014, whereas, the dairy trade within TPP countries only increased 94% during the same period.

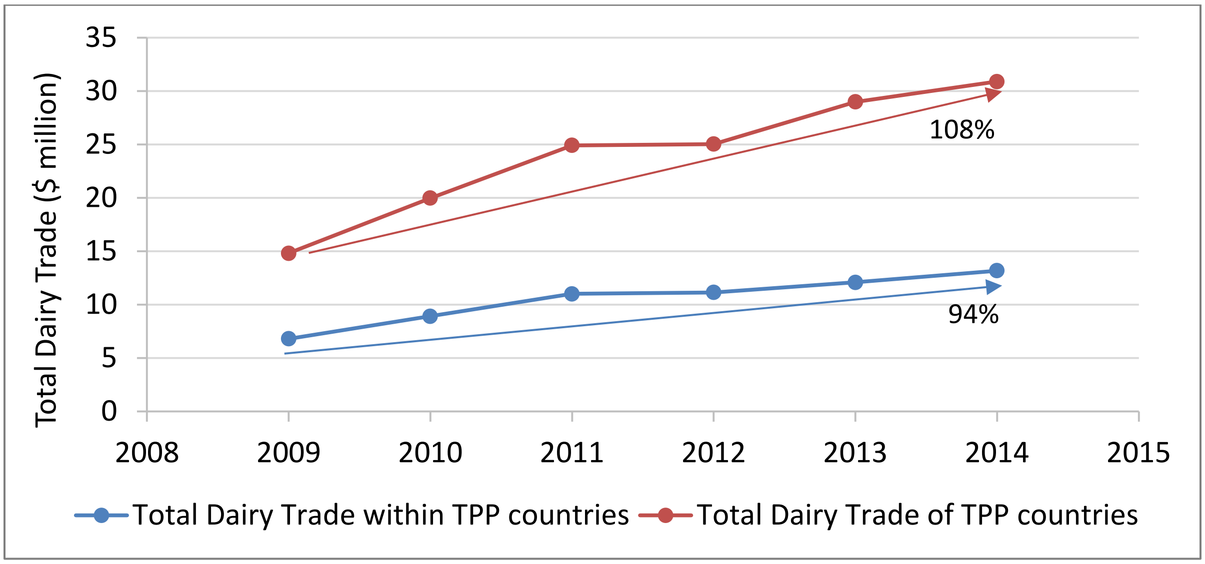

Figure 1. Total Dairy Trade of TPP countries, 2009 – 2014.
Note. Prepared by the authors using the data from WITS (2015).

The TPP partners made up 41% of US goods exports in 2014 (WITS 2015). In 2014, approximately 50% of the United States' dairy exports were destined to TPP countries. The dairy product exports value from the United States to TPP countries was $2.8 billion in 2014 which made up 42% of dairy exports among TPP countries.

Milk powder contributes most to US exports to TPP countries ($1.3 billion), followed by cheese ($0.9 billion), and whey ($0.5 billion) (USDA-FAS 2015). The top US export destinations for dairy, respectively, are: Mexico, Japan, Canada, Vietnam and Malaysia. The other two strong export competitors for US producers in dairy within TPP countries are New Zealand and Australia, with $2.6 billion and $0.9 billion worth exports, respectively (WITS 2015). Thus, these three dairy exporting countries will be expected to compete for the increased market share in the TPP countries (Figure 2). This study models the effects of TPP agreement on the equilibrium that would eventually be reached after the implementation of the recently forged agreement.

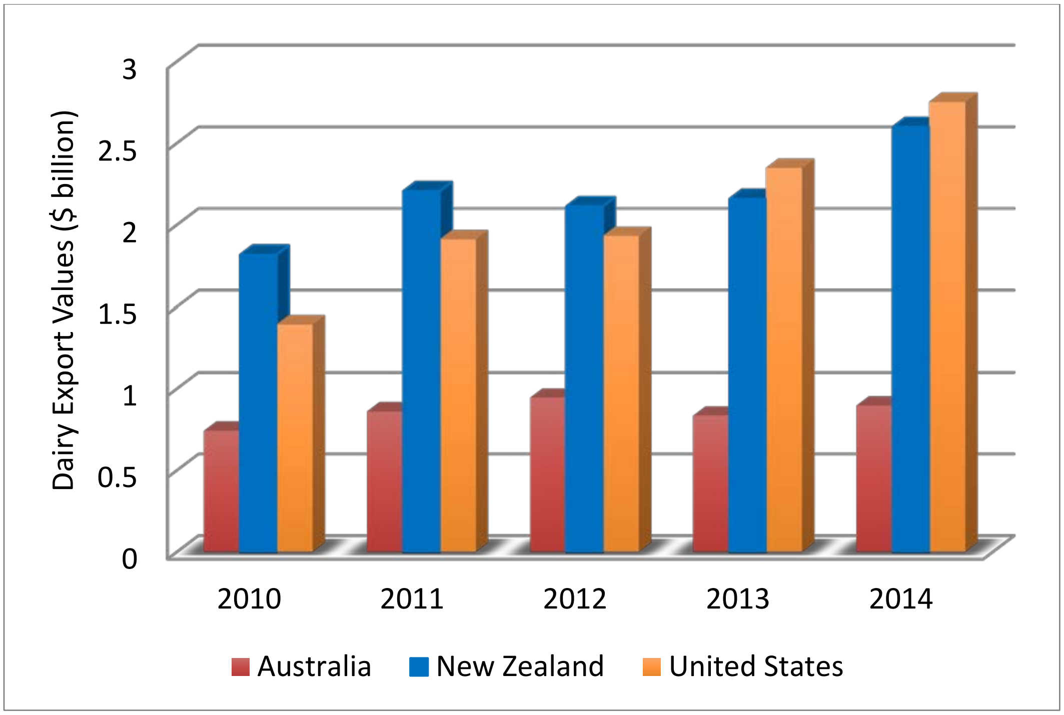

Figure 2. Largest dairy products exporters among TPP countries (Total trade)
Note. Prepared by the authors using the data from WITS (2015).

The domestic demand for milk in the TPP countries is highest in Mexico, Japan, and Canada, and China . When import figures and the production amounts are compared, we see a rapid increase in dairy demand for the emerging markets (i.e. Mexico, Vietnam, China, and Malaysia). In addition, the consumption of dairy products are also robust in Canada and Japan. Figure 3 shows that Mexico is the largest importer followed by Japan, Singapore, Malaysia, Vietnam and Canada (WITS 2015).

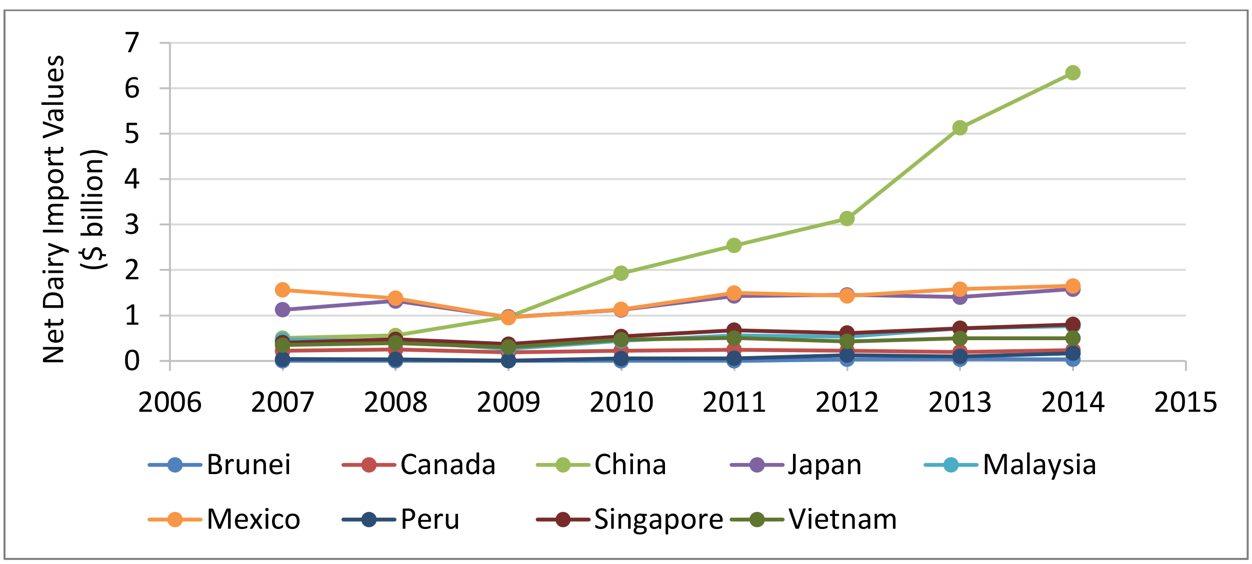

Figure 3. Net Total Dairy Imports among TPP Countries and China
Note. Prepared by the authors using the data from WITS (2015).

Model Specification

Model

A spatial equilibrium model of the dairy industry is constructed and empirically specified in GAMS (Samuelson 1952; Takayama and Judge 1971). Bilateral trade amongst important dairy exporting (the United States, New Zealand, and Australia) and importing (Japan, Malaysia, Mexico, Canada and Vietnam) TPP countries are selected for the analysis. China and Rest of the World are also included into model to compute the overall trade creation, destruction, or diversion impact of TPP agreement on dairy trade. This paper particularly focuses on the highest traded dairy product, milk powder. Following the formulation of spatial equilibrium model, we assume there are *i* export regions and *j* import regions. The demand in region *j* can be written by

$$Q_j = f(P_j, S_j)$$

where Q_j is the quantity demanded by region *j*, P_j is the price in region *j*, and S_j is the vector of demand shifters in region *j*. Next, the supply from export region *i* can be written by

$$Y_i = g(P_i)$$

where Y_i is the quantity supplied by export region *i*, and P_i is the export price in region *i*. Following Takayama and Judge, the inverse demand and supply functions, respectively, can be demonstrated as

$$P_j = h(Q_j, S_j)$$

and

$$P_i = k(Y_i).$$

Then, the optimization problem becomes

$$max \sum_{j=1}^{J} \int h(Q_j, S_j) dQ_j - \sum_{i=1}^{I} \int k(Y_i) dY_i - \sum_{j=1}^{J} \sum_{i=1}^{I} T_{ij} X_{ij}$$

$$\sum_{j=1}^{J} X_{ij} \leq Y_i \qquad \forall i = 1, \dots, I$$

$$\sum_{j=1}^{J} X_{ij} \leq Y_i \qquad \forall j = 1, \dots, J$$

$$Y_i,\ Q_i, X_{ij} \geq 0$$

where T_{ij} is the per unit transportation cost from region *i* to region *j*, X_{ij} is the quantity shipped from region *i* to region *j*. The optimal solution of the problem provides the quantity demanded in each import region and quantity supplied in each export region. The solution also allows the optimal flow of product from export regions to import regions.

We also impose an ad valorem tariff by modifying the optimization problem following Spreen (1997). Ad valorem tariff imposed by import region j is represented by AD_j and the price faced by importers in region j becomes

$$P_j = \widetilde{P}_j(1 + AD_j)$$

where $\widetilde{P}_j$ is the per unit price before the duty is paid. To be able to incorporate this relationship, we rewrite the equation as

$$\widetilde{P}_j = \frac{P_j}{1 + AD_j}.$$

To account for the impact of an ad valorem tariff, the first term of the objective function becomes

$$\sum_{j=1}^{J} \frac{P_j}{1 + AD_j} \int h(Q_j, S_j) dQ_j.$$

Data

The model requires five different data sets which include trade flow quantities and prices, import demand and export supply elasticities for the related countries, average ad valorem tariff rates imposed by importing countries, transportation cost from exporting countries to importing countries, and the present and forecasted country demographics for exporting counties as demand shifters. The United States, Australia, New Zealand and the EU-27 are defined as exporters while the others are considered as importers in the model.

The model uses the export and import trade quantities and values for milk powder from 2010-2014 and simulates the impact of the TPP on milk powder trade by analyzing the industry before and after alternative outcome scenarios. The trade values and quantities for milk powder are collected from the World Bank – COMTRADE via World Integrated Trade Solution (WITS 2015). The milk powder data includes the aggregation of six digit HS classification for skim milk powder, sweet milk powder and non-sweet milk powder.

World Integrated Trade Solution software is also used to collect ad valorem import tariff rates transmitted from the UNCTAD Trade Analysis Information System (TRAINS) dataset (WITS, 2015). Import and export elasticities are collected from the Food and Agricultural Policy Research Institute (FAPRI) elasticity database and previous dairy demand and supply studies (FAPRI, 2015). The cost of transportation between two main trade ports for dairy trade is collected using an online tool called freight calculator[1].

Ports selected for export and import regions are: Wellington (New Zealand), Sydney (Australia), Long Beach (United States), Rotterdam (EU-27), Vancouver (Canada), Osaka (Japan), Port

[1] http://worldfreightrates.com/freight

Kelang (Malaysia), Mazatlan (Mexico), Hai Pong (Vietnam), and Qingdao (China). The transportation cost for the rest of the world is assumed to be the average transportation cost from exporting countries to other important ports in Europe, Africa, and Asia. Lastly, population, gross domestic product (GDP), GDP per capita, exchange rate (US/LCU) and time trend are included in the model as demand shifters.

Results

The trade outcomes of three alternative scenarios are analyzed in this study: a) baseline scenario by the year 2020 based on demand shifters; b) a 50% decrease in tariff rates; and, c) the elimination of all tariff rates by the year 2020.

In the baseline scenario, the model captures the trade flow at the equilibrium for the spatial equilibrium model. Table 1 shows the average applied ad valorem tariff rates imposed by net dairy importer TPP countries to net dairy exporter TPP countries in 2013. The method for calculating ad valorem tariffs follows the formulation in TRAINS (WITS 2015). Canada applies the highest ad valorem tariff followed by Mexico, Japan and the Rest of the World (ROW). Table 1 also indicates that Asian countries comparably apply low ad valorem tariff rates on dairy products.

Table 1. Average applied ad valorem tariff rates imposed by net dairy importer TPP countries to net dairy exporter TPP countries, 2013[a]

	Australia	**New Zealand**	**EU-27**	**United States**
Canada	131%	119%	131%	125%
Japan	24%	24%	22%	19%
Malaysia	1%	0%	0%	0%
Mexico[b]	50%	50%	63%	0%
Vietnam	7%	8%	7%	9%
China	10%	6%	10%	10%
ROW	18%	18%	25%	26%

Note. [a] Ad valorem tariff rates are collected from TRAINS dataset in WITS (2015). [b] Mexican ad valorem tariff rate shows 44% on US milk powder import. However, we used 0% tariff rates based on the experts' comments and the latest USDA-FAS publication on the TPP (USDA–FAS 2015).

The results from the spatial equilibrium model for the alternative negotiation outcomes are summarized in Tables 2–4. Simulation results for the 2020 baseline are compared with the actual trade flow quantity and the negotiation simulations are compared with the baseline results. For each alternative negotiation simulation, total import demand, total export supply and bilateral trade flows are reported.

The Impact of the TPP on Importing Countries

Table 2 presents results of the simulation of import demand quantities for selected TPP countries, China and the ROW. The baseline simulation results indicate that the total demand in equilibrium is increasing compared to actual trade flow for all the countries, except for Canada. Vietnam has the highest increase in import demand by 44% in baseline scenario by 2020, followed by China, ROW, Mexico, Japan, and Malaysia. The trade flow from Canada decreases 20% in the baseline scenario. The prospected growth in population and the economy of Vietnam and China made a significant impact on the increasing dairy products demand. The Canadian dairy demand decrease can be attributed to the insignificant population growth in Canada.

Based on the first scenario, if TPP negotiations decrease ad valorem tariff rates by 50% for each TPP country, the import demand of Canada increases more substantially than any other TPP countries by 17%. It is expected that there would be a substantial increase in Canadian import demand because of its protectionist ad valorem tariff rate applied on dairy exporting countries. The increase in demand based on the reduction in ad valorem tariff rates is low but significant for Japan–1.9%, and Vietnam–1.6% compared to the 2020 baseline scenario. Other TPP countries, China and the ROW do not show significant demand change at the baseline scenario.

The elimination of ad valorem tariff rates—the second scenario, also results in increases in the milk powder import demand of TPP countries. Canada shows the highest demand increase by 30% followed by Japan–3.5%, and Vietnam–3.1%. Similar to the previous scenario, we do not find any significant change in milk powder import demand of other TPP countries. We do not expect to see a change in tariff rates in China and the Row. The negotiated TPP agreement shows that Canada keeps their supply management and foreign quotas at 3.3% in dairy market over five years for TPP countries. Thus, by 2020, we do not expect to see any increase in import demands substantialized from the Canadian market.

Table 2. Simulated import demand quantities for selected TPP countries and other significant trade partners, in tons.

	2010–2014 Average	2020 Baseline	Change from Actual	50% Decrease in tariff Rates	Change from Baseline	0% Tariff Rates	Change from Baseline
Canada	5.17	4.33	-19.59%	5.22	17.15%	6.16	29.80%
Japan	30.35	33.40	9.15%	34.04	1.87%	34.61	3.49%
Malaysia	128.22	141.02	9.08%	141.03	0.01%	141.05	0.02%
Mexico	207.81	234.79	11.49%	234.81	0.01%	234.83	0.01%
Vietnam	118.44	209.78	43.54%	213.14	1.58%	216.57	3.14%
China	624.18	987.37	36.78%	987.36	0.00%	987.35	0.00%
ROW	2,942.28	3,599.33	18.25%	3,599.09	-0.01%	3,598.85	-0.01%

Note. [a] The average import demand quantities are calculated by authors using actual COMTRADE milk powder trade (WITS 2015). The quantities show the milk powder import demand from three TPP exporting countries.

The Impact of the TPP on Exporting Countries

The increase in milk powder demand results in an increase in milk powder supply. The simulation results show that the United States has the highest potential to increase actual milk powder supply, by 35%, to meet the increasing demand. This increase is attributed to the change in demand shifters such as population, gross domestic product (GDP), GDP per capita, exchange rate (US/LCU) and time trend for importing countries (Table 3). European Union, New Zealand and Australia, respectively, also increase their supply by 21%, 19% and 3%. Relative to the base scenario, we find that the increase in export supply is highest from Australia–0.11%, followed by the EU-27 and New Zealand–0.09%, and the United States–0.08%. In the same order, the elimination of tariff rates contributes to the export supply of Australia, New Zealand, the EU-27, and the United States, respectively, by 0.23%, 0.19%, 0.17%, and 0.17%.

Table 3. Simulated export supply quantities of net dairy product exporter TPP countries, in tons.

	2010–2014 Average[a]	2020 Baseline	Change from Actual	50% Decrease in Tariff Rates	Change from Baseline	0% Tariff Rates	Change from Baseline
Australia	241.35	247.74	2.58%	248.02	0.11%	248.31	0.23%
New Zealand	1,374.72	1,689.89	18.65%	1,691.48	0.09%	1,693.09	0.19%
EU-27	1,753.83	2,215.93	20.85%	2,217.85	0.09%	2,219.79	0.17%
United States	686.55	1,056.46	35.01%	1,057.34	0.08%	1,058.23	0.17%

Note. [a] The average export supply quantities are calculated by authors using actual COMTRADE milk powder trade (WITS 2015). The quantities show the total milk powder export supply.

The Impact of the TPP on Bilateral Trade

Lastly, we simulated the bilateral trade from milk powder exporting countries (Australia [AUS], New Zealand [NEWZ], the European Union [EU-27], and the United States [US] to importing countries (Canada [CAN], Japan [JAP], Malaysia [MAL], Mexico [MEX], Vietnam [VIET], China [CHI] and the ROW. This simulation shows the optimum trade partnership at equilibrium under the current trade conditions, transportation cost, prices, demand and supply of the countries. The simulation indicates that we have several optimum trade partnerships including from Australia to Japan, Malaysia, and the ROW, from New Zealand to Japan, China and the ROW, from the EU-27 to the ROW, and from the United States to Canada, Mexico, Vietnam and the ROW.

There are several interesting results occurs when we run simulations on the first and second scenarios by changing the tariff rates. First, the results demonstrate that exports from Australia to Japan decline significantly with a 50% decrease in tariff rates in TPP countries, and the decline gets sharper with the elimination of the tariff rates. In turn, the increasing demand of Japan is compensated by the rise in imports from New Zealand. Second, Australia increases her exports to Malaysia and the ROW, and the tariff rate reduction or elimination positively impacts the exports from New Zealand to the ROW. Interestingly, the EU-27 benefits from the trade liberalization among TPP by exporting more to the ROW. The United States benefits highly from the reduction or elimination of tariff rates by exporting more milk powder to Canada and Vietnam. However, the tariff reduction or elimination does not impact exports to Mexico and the results show a reduction in US exports to the ROW.

Table 4. Simulated bilateral trade quantities by among selected TPP countries, in tons.

	2010-2014 Average[a]	2020 Baseline	Change from Actual	50% Decrease in Tariff Rates	Change from Baseline	0% Tariff Rates	Change from Baseline
AUS.CAN	0.10						
AUS.JAP	3.44	14.40	76.11%	14.39	-0.11%	14.34	-0.45%
AUS.MAL	14.05	141.02	90.04%	141.03	0.01%	141.05	0.02%
AUS.MEX	0.84						
AUS.VIET	4.39						
AUS.CHI	24.73						
AUS.ROW	0.19	92.31	99.79%	92.60	0.31%	92.92	0.65%
NEWZ.CAN	0.67						
NEWZ.JAP	44.75	19.00	-135.51%	19.65	3.31%	20.27	6.28%
NEWZ.MAL	3.78						
NEWZ.MEX	7.62						
NEWZ.VIET	17.59						
NEWZ.CHI	20.98	987.37	97.88%	987.36	0.00%	987.35	0.00%
NEWZ.ROW	1.66	683.52	99.76%	684.47	0.14%	685.47	0.28%
EU27.CAN	0.09						
EU27.JAP	522.75						
EU27.MAL	15.53						
EU27.MEX	19.44						
EU27.VIET	71.22						
EU27.CHI	40.84						
EU27.ROW	0.70	2,215.93	99.97%	2,217.85	0.09%	2,219.79	0.17%
US.CAN	4.31	4.33	0.26%	5.22	17.15%	6.16	29.80%
US.JAP	31.96						
US.MAL	7.60						
US.MEX	179.91	234.79	23.37%	234.81	0.01%	234.83	0.01%
US.VIET	25.36	209.78	87.91%	213.14	1.58%	216.57	3.14%
US.CHI	52.23						
US.ROW	0.39	607.57	99.94%	604.17	-0.56%	600.67	-1.15%

Note. [a] The average bilateral trade quantities are calculated by authors using actual COMTRADE milk powder exports (WITS 2015).

Conclusions

Dairy trade was one of the delicate issues in the TPP negotiations (Fergusson et al. 2015). Several factors such as the bilateral trade history, the specific interests of the countries and previous trade agreements played an important role in the negotiation process. US domestic producers and policy makers are concerned about a change in the balance in the exporting arena as it pertains to established US markets. In addition, all parties are interested in realizing how TPP would affect not just dairy exports out of the US, but also imports into the United States. The later interest was not covered in this particular study but gives a significant direction for future studies. This study simulates the possible tariff rate reduction or elimination on milk powder trade after the TPP in in place. The analysis includes main exporting countries, and selected TPP countries, China and the ROW as importers.

According to the finalized TPP negotiations, Canada will continue their domestic supply protection for dairy products with high ad valorem tariffs. This indicates that the United States would benefit little from TPP with regard to dairy product exports to Canada. The simulation results show that the United States would benefit from the TPP by increasing dairy product exports to Vietnam. However, this increase does not offset the decrease in exports to the ROW. Based on these simulations, the United States would have a limited advantage from the TPP agreement on milk powder exports. Australia can benefit by increasing their exports if they can promote more products to the ROW. The EU-27 will also have an advantage from the trade liberalization due to the TPP by exporting more dairy products to the ROW. The results demonstrate that New Zealand, the world's largest dairy exporter, can use this advantage to export more to the ROW and other TPP countries.

The results are sensitive to elasticities, transportation cost, and the structure of the partial equilibrium model. To be able to provide comparable results, future analysis may include sensitivity analysis on transportation cost and elasticities, and different spatial equilibrium models suitable for ad valorem tariffs. However, the analysis suggests that since the United States will not benefit from expanded access to the Canadian market after the TPP agreement is in place. Accordingly, the US should concentrate on opportunities in Vietnam, look to expansion opportunities in the Chinese market and search for new markets for dairy products to avoid potential trade diversion impacts resulting from the TPP agreement.

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