The Transatlantic Trade and Investment Partnership:
The Potential Decrease in Food Quality in the European Union

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Abstract

The Transatlantic Trade and Investment Partnership (T-TIP) is a free trade agreement (FTA) currently under negotiation between the governments of the United States and the European Union. While certain regulations in other areas will likely be harmonized through convergence, the food and agriculture-related parts of T-TIP will be likely be a mutual recognition agreement (MRA). Significant problems with the National Organic Program (NOP) and the structure of the U.S. food production system itself are two issues within the food production chain in the United States that could lead to a decrease in the quality of food in the European Union after the implementation of the T-TIP, even if standards are maintained under an MRA. In this research, production to import ratios for 11 FTAs in combination with changes in domestic production and imports are analyzed. The analysis aims to determine the existence, or lack thereof, of a trend of imports of lower quality and cheaper food to countries with higher quality production systems. Findings include that ‘high quality’ countries entering into agreements with ‘low quality’ countries have the general effect of decreasing their domestic production to foreign import ratios over time, leading to less high quality food available in the domestic market. This trend is strongest for FTAs with the United States, and therefore, as supported by the analysis, is the best indicator of the T-TIP structure and it's likely market effects. Because of production conditions in the United States, implementation of the T-TIP will lead to an increase in imports of lower quality, cheap food to the European Union, which will result in a lowering of high quality domestically produced food available in the European market.

Keywords: Transatlantic Trade and Investment Partnership (T-TIP), United States, European Union, international political economy, free trade agreement, food trade, food quality, agricultural production
Introduction

The Transatlantic Trade and Investment Partnership (T-TIP) is a free trade agreement currently under negotiation between the governments of the United States and the European Union. A major area of negotiation is food and agriculture, which has historically been a disputed sector of trade between the two countries due to divergent regulations and standards. Some practices and production methods that are banned in the European Union are legal in the United States, and many E.U. consumers worry about downward harmonization of food standards, and therefore quality, to the U.S. level. Additionally, there are concerns in the United States over bacterial or microbial contamination, for example bovine spongiform encephalopathy (BSE), or mad cow disease, in food products imported from the European Union. This paper seeks to examine the potential effects on food quality following the implementation of the T-TIP. An analysis of previous trade agreements similar to the T-TIP with the United States, European Union and other OECD countries will provide insight into the possible outcomes of a U.S.-E.U. trade partnership. The paper will focus on industrial food/agricultural production methods used in the United States, how these methods lower not only the price of food, but also the quality, and how trade in these products affects relevant markets in partner countries. I will examine the argument that under bilateral trade regimes, cheap exports from countries with higher concentrations of industrial food operations tend to replace more expensive domestically produced food products of higher quality in the partner country. A trend such as this in previous agreements combined with the similar conditions and structure of the T-TIP would provide strong support for expecting analogous consequences upon implementation of the partnership. Conversely, if there is no evidence of this type of pattern in the outcomes of previous agreements, there would be less reason to expect such a consequence of T-TIP.
Background

Begun in July 2013, the T-TIP negotiations were intended to last for two years, however due to the number of disparities between the standards used by the two parties there is doubt that the agreement will be concluded in 2015. Although the number of bilateral trade agreements has been increasing over the last decade and a half (Baier & Bergstrand, 2007), and both the United States and European Union have standing agreements with various countries, the T-TIP is unique in both size and historical precedent. U.S.-E.U. trade represents nearly half of world gross domestic product (GDP), and a successful bilateral agreement between the two parties would create the largest free trade area that has ever been negotiated. Trade between the United States and European Union is already robust, but has the potential to further increase through elimination or reduction of still-existing formal and informal barriers (Akhtar and Jones, 2014a). Some of these barriers, such as the E.U. ban on genetically modified organisms (GMOs) and hormones in meat, have inspired heated disputes both between the two jurisdictions and in World Trade Organization (WTO) negotiations. The motivation behind the T-TIP is to eliminate tariffs and non-tariff barriers (NTBs), many of which take the form of differing regulations and standards affecting goods, such as those governing GMOs and hormones. Due to these issues and the fact that much of the content of the negotiations is undisclosed to the public the T-TIP is very controversial. Critics of the agreement are outspoken and it has engendered multiple large-scale protests in the European Union. Consumers have vocalized reservations about various aspects of the T-TIP, including how increased trade with the United States will affect food products available in the European market.

The T-TIP was first proposed by the High Level Working Group on Jobs and Growth, which was established to find ways to further increase trade and investment between the United
States and European Union to create jobs, spur economic growth and increase international competitiveness. Led by U.S. Trade Representative Rob Kirk and E.U. Trade Commissioner Karel De Gucht, the High Level Working Group was established by the Transatlantic Economic Council and recommended a trade agreement as the best option to accomplish the above-stated goals. An agreement of this kind would not only establish the largest trade area in the world, but would also reduce barriers to trade for the partner countries, increase cooperation, and provide the United States and European Union with the opportunity to resolve longstanding, divergent non-tariff barriers (NTBs) to trade (“EU-US High Level Working Group on Jobs and Growth”, 2013). While tariff levels are already low, at average applied ad valorem rates of 3.5% for imports to the United States and 5.5% for imports to the European Union, there are higher tariffs for certain types of products. These include dairy products, sugar, beverages and tobacco, and fish and textiles, as well as tariffs on agricultural goods, which are higher for E.U. imports from the United States than for U.S. imports from the European Union\(^1\) (Akhtar and Jones, 2014b).

Non-tariff barriers to trade are also critical subjects of T-TIP negotiations, and are most pronounced in agricultural areas. Discrepancies and differences in regulation regimes, mostly in the areas of sanitary and phytosanitary (SPS) measures and technical barriers to trade (TBT), have historically led to strenuous transatlantic trade disputes, and challenges to solidifying formal trade agreements. The subset of SPS and TBT measures that apply to food are in place to protect consumers and ensure that food imported into the country is safe to eat. For example, the

\[\begin{array}{ccc}
\text{Trade Flow} & \text{Simple Average Tariff} & \text{Trade-Weighted Average Tariff} \\
\text{U.S. to E.U.} & 13.70\% & 8.60\% \\
\text{E.U. to U.S.} & 4.70\% & 2.10\%
\end{array}\]

Tariffs are calculated at *simple average* applied rates by adding up the tariff code lines and dividing by number of lines. An *ad valorem* rate is applied as a percentage of the value of the product. *Trade-weighted averages* take amount of trade in each product into account, giving more weight to tariff code lines with larger import flows.

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\(^1\)
European Union currently bans the import of U.S. food produced or processed in certain ways, such as meat grown with hormones or chicken washed with chlorine. Additionally, various chemicals present in U.S. foods, such as ractopamine and peroxycacid, are banned in the European Union, as well as GMOs (Bureau et al., 2014).

While there are many areas under negotiation in the T-TIP discussions, this paper will concentrate on the effects of the agreement on food, and therefore on the agricultural and food production sectors of the two partners. Trade in food does not make up a large portion of total U.S.–E.U. trade, but has greatly increased over the past decade and is a significant area of T-TIP negotiations. From 1992 to 2012, E.U. food exports to the United States grew from $5.7 billion to $17.8 billion and U.S. food exports to the European Union from $9.7 billion to $12.1 billion. The European Union exports more processed products, such as beverages and snack foods, whereas the United States has greater exports of staple foods, for example tree nuts, animal feed, vegetable oil and bulk commodities, such as large quantities of cereal products (Grueff and Tangermann, 2013). Despite the relatively small proportion of aggregate trade that food makes up as compared to other sectors, eliminating relevant barriers is a key component for the two negotiating parties. Food companies on both sides of the Atlantic, mostly composed of agribusinesses, have dedicated significant amounts of time and money to ensuring that trade in food is liberalized as fully as possible through the agreement. The Corporate Europe Observatory, which tracks and publishes lobby groups involved in E.U. policy-making, compiled a list of companies that lobbied the E.U. Commission regarding all negotiation areas of the T-TIP from January 2012 to April 20132. Agribusinesses make up the largest group, totaling 113

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2 Lobby data was compiled from three sources: ‘contributions to the Commission’s public consultations on the agreement’, ‘registrations for the Commission’s civil society dialogue meetings on TTIP’, and a ‘list of “stakeholder meetings” on TTIP, provided in response to an access for information request’ (“Methodological Annex ‘Who Lobbies Most on TTIP?’.” n.d.).
lobbies out of 560. The fact that there are more agribusiness lobbies than any other group provides evidence that reaching a comprehensive agreement on provisions related to food is an extremely important component of the trade discussions.

The paramount obstacle to trade in agricultural products on both sides of the Atlantic stems from policy regulations aimed at protecting and providing complete information to consumers. One of the most historically divisive barriers is the dispute over meat containing growth hormones. Many U.S. meat producers administer hormones to animals to decrease the time it takes for them to grow to appropriate slaughter size. However, this practice is illegal in the European Union, and therefore inhibits meat exports from both the United States and European Union. U.S. meat exporters using these methods are hurt due to the regulations in the European Union, and because hormone-treated meat is cheaper than meat produced without hormones, E.U. meat exporters face a price disadvantage when selling products to the United States. Beef exports from the European Union to the United States are also banned, due to U.S. concerns over the presence of Bovine Spongiform Encephalopathy (BSE) in the meat. Similarly, the European Union currently has a ban on poultry imports from the United States because of the use of pathogen reduction treatments during post-production processing, for example, the washing of poultry with chlorine before packaging (Akhtar and Jones, 2014a). Another trade barrier is the E.U. ban on GMOs, which negatively affects U.S. exports of genetically modified bulk commodities, with the largest impact on the soybean industry.

A policy report on the T-TIP from the Directorate-General for Internal Policies in Brussels analyzed a likely hypothetical scenario, in which the restrictiveness of NTBs was cut 25% and there was full phasing out of existing tariffs either immediately or over a period of years. Under conditions such as these, the increase in E.U.-U.S. trade is predicted to be 40% with
larger gains in the agricultural sector, which offers the greatest potential for future trade creation given the relatively high levels of protection currently in place. Agricultural exports from the European Union are projected to increase by 56%, whereas exports from the United States are expected to increase by over 116%. Export opportunities would expand most for the European Union in the areas of red meat, white meat, sugar, dairy products, cereals, ‘other crops’ and fruits and vegetables. For the United States, trade creation is projected to be about twice as large as for the European Union, with the most affected products being dairy products, fruits and vegetables, white meat products, cereals, ‘other crops’, ‘other food products’ \(^3\) and beverages and tobacco (Bureau et al., 2014). However, these results are from a single study on the immediate predicted effects, which would most likely vary over time.

**Theory**

As discussed above, the differing food production and quality standards between the United States and European Union constitute a significant barrier to trade. Harmonization of these standards would follow the recent trend of increasing convergence to uniform standards between countries in order to facilitate trade and cooperation. It is estimated that around one third of international trade in goods is negatively affected by differing domestic standards (Büthe & Mattli, 2011), and E.U-U.S. food trade certainly falls into this category. However, harmonization can be a difficult goal to achieve because of the problems in reaching an agreement when standards differ widely between partners (Guzman, 2002). Because of long-standing differences in tariff levels and regulations between the European Union and United

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\(^3\) ‘Other food products’ include goods such as prepared fish and vegetables, flour, and juices.
States, as well as public opposition in the European Union, harmonization of standards through regulatory convergence seems too lofty an aim for the T-TIP negotiations.

Disparities in standards between the two countries exist due to both consumer preferences and the European Union’s employment of the “precautionary principle” in food-related matters. The precautionary principle is a strategy of banning a practice when it “may lead to morally unacceptable harm that is scientifically plausible but uncertain” (“The Precautionary Principle”, 2005). American food regulations were more precautionary than those in Europe until the 1990s, however due to change in public risk perceptions and most notably a European outbreak of Bovine Spongiform Encephalopathy (BSE), or mad cow disease, regulatory practices shifted. The European Union currently employs the precautionary principle when deciding on regulations regarding certain agricultural products, due to a concern over the lack of scientific consensus on their safety (Vogel, 2012). When setting standards and regulations, the European Union takes ‘other legitimate factors’, such as consumer concerns over safety, into account. The United States instead advocates a ‘science-based’ approach, which dictates that concerns that are not scientifically proven do not factor into regulatory discussions (Roberts & Unnevehr, 2003). This difference between the two countries affects regulations and standards regarding food, as the studies done on the safety of disputed production methods are inconclusive. Previous disagreements over trade issues surrounding products with differing standards provided part of the impetus for the T-TIP, however regulations concerning food are so dissimilar that negotiations would have to continue for many years to fully resolve these differences. There is also immense pressure from the European population advocating for the E.U. Commission not to compromise regulatory standards governing products such as hormone or pathogen-reduction treated meat and GMOs. Because of the uproar that these issues have caused, both former E.U.
Trade Commissioner Karel De Gucht and current Trade Commissioner Cecilia Malmström have publicly declared that the European Union will not import either product as a result of the T-TIP (Bermingham, 2014; Parkin, 2014).

While certain regulations in other areas will likely be harmonized through convergence, the large disparities in standards regarding food, as well as vocal European consumers, make it more likely that the food and agriculture-related parts of T-TIP will be a mutual recognition agreement (MRA) rather than complete harmonization of standards. Under an MRA, countries “commit to the principle that if a product or service can be lawfully sold in one jurisdiction, it can be lawfully sold in any other participating jurisdiction” (Nicolaidis and Shaffer, 2005, 264).

The United States and European Union have already negotiated two agreements based on mutual recognition concerning food in order to work around the disparate standards: the SPS agreement during the Uruguay round of WTO talks and a U.S.-E.U. Organic Equivalency Agreement. Since the T-TIP talks draw heavily on previous WTO rounds, it is likely that the provisions regarding food will resemble the Uruguay SPS agreement, but also include elements of the recently (2012) negotiated Organic Equivalency Agreement (Grueff and Tangermann, 2013). This agreement on organics makes it possible for U.S.-produced foods that are considered organic according to U.S. regulations to be generally sold as ‘organic’ in the European Union, and vice versa⁴ (“US-EU Organic Equivalency Arrangement”, 2015). Within a similar framework under the T-TIP, this means that the respective domestic standards would remain in current form, with inspections by E.U. and U.S. government officials conducted prior to products being traded. To ensure compliance with standards, import certificates would be included with traded products certifying that they were produced under all applicable rules and regulations. This type of agreement on

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⁴ Certain chemicals used on organic produce in the United States are still banned in the European Union, and the United States brought up a concern over antibiotics used in the European Union, therefore import certificates must be included with the products asserting these specific production methods were not used.
food would enable the products to be sold in both countries without the need for regulatory convergence.

The United States and European Union both have free trade agreements in place on which they will base negotiations, and the provisions of the T-TIP will likely resemble these previous arrangements, as well as past World Trade Organization agreements. When designing an agreement the United States generally uses the North American Free Trade Area (NAFTA) as a model, and includes virtually all agricultural products. Without an example agreement, the European Union is more flexible in negotiations, however it has generally excluded beef, dairy products and some fruits and vegetables from FTAs. E.U. agreements do not usually address agricultural subsidies, and in past WTO rounds there have been conflicts between the United States and European Union over their domestic support programs. Domestic support for crop production, especially in the United States, is a large contributor to the low price of food, and therefore both the United States and European Union have agreed to reduce these programs, however only the European Union has done so (Grueff and Tangermann, 2013).

In addition, more food production methods used in the United States are banned in the European Union than methods employed in the European Union are banned in the United States. Therefore, convergence of differing standards and practices would mean downward harmonization for the European Union, which would be inconsistent with its previous actions and statements of public officials, and an outcome to which E.U. consumers are very vocally opposed. Mutual recognition of food-related areas of the T-TIP would maintain separate standards while still allowing for creation of the partnership. Since two E.U. Trade Commissioners have assured the public there will be no downward harmonization, mutual recognition is the most likely approach for the sections under negotiation concerning food.
**Food Quality**

Mutual recognition of standards enforced through the inclusion of import certificates with goods would seem to solve the problem the European Union faces of downward harmonization to the U.S. level in food products. However, there are two issues with the food production chain in the United States that could lead to a decrease in the quality of food in the European Union after the implementation of the T-TIP, even if standards are maintained. First, significant problems have been reported with the National Organic Program (NOP) and the Agricultural Marketing Service (AMS), which are responsible for enforcement of standards for the production and handling of organic products. Issues include failure to resolve program complaints, failure to shut down non-compliant producers, lack of enforcement of pesticide residue tests, and having no required panel to review accreditation procedures, among others (“Audit Report”, 2005; “Oversight of the National Organic Program”, 2010). A mutual recognition agreement in the areas of T-TIP relating to food would likely be based on the US-EU Organic Equivalency Arrangement, which relies on competent enforcement of the NOP to manage food quality. There are enough issues with enforcement of organic production in the United States that U.S. organic food does not meet U.S. organic standards, which are deemed equivalent to those in the European Union. Since standards for non-organic food are higher in the European Union than in the United States, it is likely that there will be substantial difficulty maintaining the food quality expected by E.U. consumers under the T-TIP.

The second factor that could contribute to a decrease in food quality in the European Union under the T-TIP is the structure of the U.S. food production system itself. The system lowers both the price and quality of products in some of the United States’ largest food export markets, which include meat (poultry, beef, pork), fish, milk, eggs, cheese, and oils. The main
aspects of the U.S. food system contributing to this low priced and low quality food are industrial meat and fish production methods, the use of GMOs, and farm support provided by the United States government. These factors help food producers achieve economies of scale through maximization of output made possible by inexpensive inputs. The result is cheap food products, which would be beneficial if there were not a trade-off in quality. Aspects of quality can be tested for in the final product, however comprehensive testing would require strict enforcement, which does not seem likely (see above discussion on failures of the NOP). Products from the United States in the sectors mentioned above are produced cheaply, at low quality, and make up a significant portion of food export markets. This lower quality food, combined with the current negligent enforcement of the U.S. organic program, suggests that E.U. food would be replaced by lower quality U.S.-produced food. A greater number of U.S. food products could be present in the European Union that do not meet consumers’ current standards and expectations.

The use of GMOs, which are illegal in the European Union and widespread in the United States, is a critical aspect that supports the U.S. food system and contributes to low quality products. The E.U. trade commissioners involved in the negotiations have said that the European Union will not allow imports of GMOs. However, genetically modified (GM) crops are used to make oils and are also a main input in the U.S. meat production system. The first genetically modified crop was the soybean, introduced in 1996. From there the list grew to its current number of 27, which includes alfalfa, cotton, corn, wheat, papaya, tomato, tobacco, and others (Chassy, 2007). The most widespread GM food crops in the United States are soybeans and corn, and most GM crops are either Bt or glyphosate-resistant varieties. GMOs of the Bt variety have a gene from the toxic bacteria Bacillus thuringeiensis inserted, making the plant produce its own pesticide. Glyphosate resistant, or ‘Roundup ready’ soybeans are modified to be resistant to
Monsanto’s herbicide, which can then be sprayed on crop fields to kill weeds without the worry of killing the plants (Benbrook, 2012). By 2000, 54% of soybeans grown in the U.S. were GM crops, and this number increased to 92% by 2008. GM corn and cotton were also rapidly adopted and by 2008 accounted for 63% and 68% of total acreage, respectively (Mortensen, 2014). Some GM crops are used to make oils or other processed products, such as soybean oil and corn syrup. The majority of GM crops, however, end up in animal feed, which is sold to industrial meat producers. In the European Union, animals fed with GM crops do not have to be labeled as GMO, despite evidence of herbicide (glyphosate) residues in their meat, eggs, and milk (Chemnitz & Becheva, 2014). Because GM crops produce higher yields\(^5\) than conventional crops they are sold very inexpensively, and drive the price of U.S.-produced processed food and meat products down.

A factor that does not directly contribute to the quality of food, but that keeps low quality food extremely inexpensive, is the U.S. farm support program. A large portion of this extensive and varied support system functions as subsidies, and reduces the price of agricultural commodities used in low quality food products. The United States subsidizes grains, oilseeds, cotton, sugar and dairy, among others, and provides different types of support. There are direct payments to farmers, crop insurance, and price supports in the form of government purchases and storage (Summer, 2008). Many of the GM crops are subsidized, sold below the cost of production, and support the meat industry through sale to confined animal feeding operations (CAFOs). Farm support also contributes to cheap U.S. agricultural exports, which have exceeded imports every year since 1970 (Hanrahan, 2013).

\(^5\) This is a statement of the current production situation, however GMOs are relatively recent innovations therefore future yields might be lower than those that are seen today.
CAFOs factor most into the low quality of food products produced in the United States, and are a key element involved in every product mentioned above with the exception of fish and oils. They are widespread in the United States, and while present in some E.U. countries, they are more highly regulated there than in the United States. According to a paper published by the CDC, “CAFOS are [animal feeding operations] that contain at least a certain number of animals, or have a number of animals that fall within a range and have waste materials that come into contact with the water supply” (Hribar & Schultz, 1). They are directly supported by the low cost of animal feed, which is 50 to 60% of the cost of raising an animal for meat, and the fact that animal feed is dirt-cheap allows these operations to flourish. Using pigs as an example, in 2001, around 70% of CAFOs contained over 2,000 animals, and around 55% contained over 5,000, and by 2004 the average southern CAFO contained 12,000 animals. Despite the increasing concentration there has been no growth in the total number of pigs produced in the United States (Gurian-Sherman, 2008), indicating that the use of CAFOs offers no benefit over pasture-based agriculture in aggregate production quantities for meat. Certain practices that are banned in the European Union and still in place in the United States include feeding growth hormones to animals, and using large doses of antibiotics as growth promoters (Thorne, 2006). The majority of U.S. antibiotics (70%) are fed to animals we subsequently eat, and this widespread administration is a major contributor to the development of antibiotic resistant bacteria. The increase in the occurrence of antibiotic-resistant infections signals that this is a serious problem, and CAFOs are a major culprit (Anomaly, 2009). Some of the chemicals that are legal in CAFO meat production in the United States include ractopamine and peroxyacid, which are illegal in the European Union. Ractopamine is a feed additive used to increase lean meat, and peroxyacid is used to clean poultry after slaughter (Chemnitz & Becheva, 2014). Certain types of animal
cages that are illegal in the European Union are also used in the United States (Thorne, 2006). A condition called Pale, Soft, Exudative (PSE) meat, which is seen in poultry, also stems from CAFO production. It is caused by lifetime heat stress, bad slaughtering conditions, and less diverse poultry lines, all factors that are present in production of poultry in CAFOs. Milk, eggs, and cheese also come from animals in CAFOs, which have the same issues surrounding them as those producing meat. Organically produced meat is nearly twice as expensive as industrially produced meat, and CAFOs are the reason that U.S. meat products are so cheap (Chemnitz & Becheva, 2014).

Intensive aquaculture, or fish farming, while not as detrimental to food quality as CAFOs, also has major issues associated with it. Some of the problems include less meat and beneficial fatty acids in farmed fish products, the administration of antibiotics during growth, mercury accumulation, and unsanitary conditions on the farm resulting from too many fish in one area. Almost everything a fish goes through in its life on a farm is a stressor, and because of this the fish cannot stay healthy until the time they are harvested. Fish farms are heavily concentrated, and often there is overcrowding leading to unhygienic conditions. It is also difficult to isolate sick and healthy animals from each other, so there is a high level of contamination. All of the above factors necessitate the administration of antibiotics, which are often included in the food, and can be transferred to humans who eat the final product. High levels of antibiotics in the fish and surrounding areas also contribute to the development of antibiotic-resistant bacteria, which can transfer to both humans and other terrestrial animals (Cabello, 2006). Fish in farmed ponds are fed ‘high quality artificial feeds’, which are fishmeal or oils produced from fish waste, liquefied unwanted fish, or heated by-products, such as bones, skins and heads (Arvanitoyannis, 2006). Some studies have found that farmed fish fed fishmeal or fish oils show higher
concentrations of heavy metals such as mercury in organs (Vigh, 1996), while others have found that raising fish in an aquaculture environment decreases mercury levels\(^6\) (Jardine et al., 2009). Due to overfishing the availability of fish used to make fishmeal and oils is decreasing, so many farms substitute crop oils, mostly made from rapeseed, in the feed. This decreases the cost to the farmer because of farm subsidies and the fact that many of the crops used to produce these oils are GM, and therefore have higher output per acre than non-GM varieties (see GMO discussion above). However, studies have shown that feeding non-fish oils can reduce the amount of beneficial fatty acids in the flesh of the fish (Bell et al., 2003). Fish farming is a relatively new method of producing fish, and sustainable farms, which integrate whole ecosystems into production, exist without many of the issues mentioned here. For this reason and the fact that there is less research available on fish farms than on CAFOs, farmed fish are less of an indicator of low quality food than the other products mentioned above.

Pesticides are used around the world as insect control when growing crops, and therefore are not a major component of the theory underlying a decrease in food quality in the European Union after the implementation of the T-TIP. However, they have detrimental effects on human health and are a factor in determining production quality in my analysis of previous FTAs. The term ‘pesticide’ covers a range of chemicals used to control animals and insects in crop fields, and includes insecticides, fungicides, herbicides, and rodenticides (Eddleston & Bateman, 2011). Pesticides are usually administered through widespread spraying, which covers the crop field but also other areas in the immediate vicinity. People living next to these fields breathe pesticides lingering in the air, which is known to have adverse effects on human health, including neurotoxicity and contributing to the development of cancer (Sugeng et al., 2013). Exposure to

\(^6\) Many of the studies claiming positive effects of fish farming have industry ties, so there is substantial difficulty in determining the overall quality of farmed versus wild-caught fish.
and use of pesticides has also been statistically correlated with symptoms of amyotrophic lateral sclerosis (ALS), particularly in men, dating back to the 1960s (McGuire et al., 1997). Some pesticides are more toxic than others, and most of the ones with the highest toxicity are only used in developing countries. However, pesticides can be absorbed through the gut, and therefore residues on food, as well as airborne exposure, can have effects on human health (Eddleston & Bateman, 2011). Since a large portion of the crops involved in the U.S. food system are GMOs, they therefore either contain or are sprayed liberally with pesticides (see GMO discussion above). Although GM crops will not be directly exported to the European Union, they are fed to animals produced for meat in the United States and are present in many U.S. food products, thereby making the issues with pesticides relevant.

**Research Design/ Methods**

Since the T-TIP has not been negotiated yet, and its effects are therefore impossible to analyze directly, this paper will evaluate existing FTAs between countries with economic and social conditions similar to those of the United States and European Union. Each agreement will be evaluated separately, and the partners involved classified as either ‘high quality’ or ‘low quality’ producers. I make no attempt to definitively rank the countries based on production quality, and instead rely on existing literature and Food and Agriculture Organization of the United Nations (FAO) data to evaluate relative production quality within each FTA.

I will examine the question, in free trade situations between a ‘high quality’ food producer and a ‘low quality’ food producer, do imports of lower quality, cheaper food to the ‘high quality’ country lead to domestic producers being driven out of the market? I predict that higher quality domestic producers are driven out of the market under these freer trade situations,
leading to a replacement of higher quality domestically produced food products with lower quality imported food products. The exports from the country with production conditions more similar to the United States, for example using GM crops for animal feed, having a high concentration of meat production occurring in CAFOs, etc., will be the independent variable of interest. Domestic production in the partner country will be analyzed as the dependent variable, as it would be extremely difficult to use food quality evaluations. In my analysis I will calculate the percent change in production to import ratios over time for each of the key products involved in the FTA, and evaluate this change along with the percent change in production and the percent change in imports for each food product over time. The food products within each FTA will be classified into one of 6 categories depending on the change in imports and exports for that product. The categories offer various levels of support for my hypothesis, as well as a more detailed understanding of the effects of the FTAs on products available in the domestic market of the ‘high quality’ country (see Appendix I). In this way, I can examine whether increasing exports from the country with lower production standards drives higher quality producers out of the domestic market. A decrease in domestic production in the ‘high quality’ country combined with an increase in exports from the ‘low quality’ country best supports my hypothesis, and is category 5 in my analysis. While a ratio analysis does not allow for the inclusion of control variables, I will qualitatively address external factors that could be influencing my data and analysis. A trend of replacement of higher quality domestically produced food with lower quality imported food between partners comparable to the United States and European Union would suggest that we would see a similar situation occurring after the implementation of the T-TIP.

7 Evaluations tend to differ between countries and are often performed at the local or regional rather than nationwide level.
Conversely, if no trend exists, or there is evidence of a different pattern, something entirely
different might be seen in the United States-European Union agreement.

I evaluated 13 FTAs from countries around the world over a period of around 20 years
each. In determining which agreements to include in my analysis I chose those FTAs between
countries and with qualities most similar to the United States and European Union, which limited
the target population of FTAs. I examined agreements with the United States and European
Union as partners first, and chose those made with other OECD countries. I then cross-referenced this list with a list of exporters of agricultural products, compiled from FAO data.
Since the United States and European Union both have well developed food systems and are exporters of agricultural commodities, I excluded countries with small agricultural bases, such as Japan and Korea, that do not face the same food issues as the T-TIP partners. I then removed the E.U. members and the United States from the list of OECD countries, and compiled a list of the FTAs those countries had concluded. Again cross-referencing this with the agricultural exporters, I ended up with a sample of 13 FTAs (see Appendix II), seven of which directly involve either the United States or the European Union. The timeframe of analysis chosen was from ten years before the date the FTA entered into force until the date that the tariff phase-out was completed, or the most recent year of available data. For example, the FTA between the United States and Chile entered into force on January 1, 2004 and the tariff phase-out completion was set for six years after that date. Therefore, my analysis of this FTA started in 1994 and ended in 2013, which is the year of most recent data available. Some of the time periods differed from this formula due to other influencing factors.8

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8 For example, the United States and Israel FTA entered into force in 1985, but a second agreement was concluded in 1996 that addressed NTBs. Therefore my range ended in 2006, and started in 1981 so as to include time before the first agreement was signed.
I chose the products included in the analysis based on which were central to negotiations and those that I have reason to believe are produced at different quality by the FTA signatories. This resulted in slight variation in products between the FTAs, and I therefore grouped all products into the broad classifications of meat, fish, cereal crops and products, dairy products and eggs, fruits, vegetables and nuts, and oils and animal fats. Sugar and wine were critical agricultural categories under negotiation for several of the FTAs, however since differences in production methods do not result in significant variation in quality (“Sorry, Raw Sugar Is No Better for You than Refined.”, 2015; Delmas & Grant, 2014), these products have been excluded from my analysis. All FTAs with the United States have the same product categories, which are those that would be involved in and classified under the T-TIP. These products are meat, fish, dairy and eggs, and oils and animal fats. I excluded cereal products from my analysis of the FTAs with the United States as many of these products contain GMOs, which the European Union has said it will not import from the United States. The import data came from the United Nations Comtrade database, and is reported in both kilograms (kg) and U.S. dollars (USD). I chose the ‘high quality’ country as the reporter, and my data is therefore imports (excluding those for re-export) from the ‘low quality’ country. Since each FTA involved a different time span, it was impossible to use the same trade codes for all of them. I based which trade codes I used off of the ‘data availability’ section of Comtrade, and used either Harmonized System (HS), or Standard International Trade Classification (SITC) codes, the former whenever possible. Some limitations of my import data are that some E.U. countries did not have data available before the 1990s, and Lichtenstein, which is a member of the European Free Trade Area (EFTA), was not included in the database. Also, for the European Union/ Mexico and United States/ Israel FTAs, nearly all of the relevant data was reported only in USD. Including data in USD, instead
of kg, would introduce many other external factors, as well as make my quantitative analysis inconsistent across the different agreements. As I would not be able to control for these external factors, nor would I want to use differing methods to analyze the agreements, despite their prominence these FTAs are inappropriate for this research project.

I developed a list of criteria to classify the quality of domestic food based on relevant academic literature on production methods (see above discussion on food quality), and used these benchmarks when researching the production quality of FTA partners. My determination of ‘high quality food’\(^9\) involved freshness, composition, contamination, production, and presence of GMOs, although this last criterion is difficult to evaluate and not always included due to their widespread presence in food. I used FAO data on agri-environmental indicators for the countries involved in the FTAs, which includes data on livestock concentration, pesticide use, and aquaculture production. I obtained this data for the year that the FTA entered into force and compared the starting production conditions in the two partner countries. Livestock is measured

\[
\begin{array}{|c|c|c|c|c|c|}
\hline
\text{Category} & \text{Criteria} & \text{Criteria2} & \text{Criteria3} & \text{Criteria4} & \text{Criteria5} \\
\hline
\text{Freshness} & \text{Looks and smells good} & \text{Production to shelf journey is not too long} & \text{No nutritive value lost in processing} & \text{No unnecessary additives} & \text{Will do no harm if eaten in moderation} \\
\hline
\text{Composition} & \text{Has nutrients} & \text{No pesticide (including herbicide) contamination} & \text{No hormone contamination} & \text{Minimal chemical content} & \\
\hline
\text{Contamination} & \text{No pesticide (including herbicide) contamination} & \text{No hormone contamination} & \text{Production methods open to public view} & \text{Not treated post-production} & \\
\hline
\text{Production} & \text{Human treatment of animals} & \text{Minimal processing} & \text{Production methods open to public view} & \text{Not treated post-production} & \\
\hline
\text{GMOs} & \text{No GMOs as far as possible} & & & & \\
\hline
\end{array}
\]
in number of heads of livestock per hectare of land (heads/ha), and a higher indicator of this type generally indicates lower production quality, as CAFOs have a large number of livestock concentrated into a small area. The rationale behind a higher livestock indicator signifying lower quality was that the more CAFOs a country had, the higher the livestock concentration indicator would be. Pesticide use is measured in total use of all pesticides reported per 1000 hectares of land (t/1000 ha), and although the active ingredients in pesticides vary, generally the higher this number the lower the quality of food, as pesticides are toxic to human health (see food quality, pesticides discussion above). The final indicator is aquaculture production, which I divided by total fish production to obtain the percentage of aquaculture in each country. Wild-caught fish production is distinct from that produced using aquaculture, and combined the two add up to total fish production. Aquaculture generally means fish farms, so again the higher this percentage, the lower quality of food. However, this is the least indicative measure of food quality, since some aquaculture occurs in the ocean, and not all fish farms indicate lower quality fish (see food quality, fish farms discussion above). While these agri-environmental indicators were helpful in determining production quality, I also used literature about both the FTAs and the countries themselves to determine which partner would be the exporting and which would be the importing country. I did this to gain a full understanding of production in the countries, and external factors that might skew the criteria chosen to determine relative food quality. For example, New Zealand has a high livestock indicator, which would imply low meat production quality. However, this country has a large number of sheep, and high production standards as compared to its FTA partners, therefore literature was also necessary to determine whether it was ‘high quality’ or ‘low quality’.
The production data in all products except fish came from the FAOstat database, and fish data came from FishStat, the FAO database on fisheries. Production data is reported in tons, and only through the year 2013. Because the values are in weight, I used the import trade quantity data reported in kilograms, rather than that reported in U.S. dollars, for my analysis so as to reduce the number of external factors that could influence it. The categories of production data do not exactly match the categories used in the import data, however I aggregated the data into broader categories that were the same between the two types of data. In the raw data there were products with values for some years and missing for others, so I left these products out of the aggregation, to avoid skewing my data over time. Since my analysis evaluates relative changes rather than the numbers as meaningful on their own, the disparity between the production and import categories does not influence my findings. The categories for both the production and import data remain the same, and therefore the analysis of relative changes over time are valid.

For my analysis, I will evaluate the ratio of production in the ‘high quality’ country to imports from the ‘low quality’ country in order to understand how these two metrics changed relative to each other during the course of the FTA. The percent change in this ratio over time provides information as to the relative values of production and imports, and what effect the conclusion of an FTA had on the ‘high quality’ country’s trade in specific products. I will evaluate the ratio based on whether it is increasing or decreasing, as it does not hold constant over time in any of the FTAs. I then use the percent change in the ratio in combination with percent change in imports and production to classify each food product into one of six categories. The category each food product falls under determines the specifics about what type of change is occurring over the span of time. I will report percent change as a rate (not multiplying it by 100); if this number is positive the values are increasing, and if this number is negative the values are
decreasing. If the ratio increases over the specified time range there are three scenarios that could be occurring, none of which support my hypothesis. First, there could be an increase in both production and imports, with production increasing at a faster rate. Second, there could be an increase in production and a decrease in imports. Third, a decrease in both production and imports could be occurring, with imports decreasing faster. If the ratio decreases, there could also be three possible situations occurring, all of which support my hypothesis. The first possibility is a decrease in both production and imports, with the former decreasing faster. This provides weak support for my hypothesis, and is an indication of an external factor influencing the numbers, possibly imports from a third country. However, it does mean that even if there is a third influencing factor, domestically produced higher quality goods are leaving the market faster than imports from the ‘low quality’ partner are. Overall, this indicates a greater presence of the imported lower quality goods in the market than the domestically produced higher quality goods.

Another scenario is an increase in production and an increase in imports, with imports increasing faster than production. This provides moderate support for my hypothesis and means that imports are replacing some production in the market, and some producers are driven out. As in the situation above, there are more lower quality imported goods available in the market than higher quality domestically produced goods. The last category, which provides the strongest support for my hypothesis, is a decrease in production and an increase in imports. Here, imports are replacing production, and driving a substantial number of domestic producers out of the market.

External variables not included in my analysis could also be having an effect on domestic production in the ‘high quality’ country, in addition to the influence of imports from the ‘low quality’ country. These variables include imports from countries not involved in the FTA, domestic demand, world food prices, and by association animal feed prices, oil prices, consumer
prices in both partner countries, the continued existence or elimination of anti-dumping and countervailing duties between the FTA partners, and any events that had an impact on world food production. For the ease of explanation, here the ‘low quality’ producer is designated as country A, and the ‘high quality’ producer as country B. I discuss some situations, but these variables have extremely far-reaching effects it would not be practical, nor fruitful, to describe every scenario. Imports to country B from third countries not involved in the FTA could be having an inverse affect on domestic production. As third country imports increase, they could be driving domestic production in country B down and vice versa, outside of or in addition to the effects of imports from country A. Domestic demand could be having a direct effect on production in country B, in that if demand increases or decreases, domestic production could be changing to match it. World food and animal feed prices would and do have many varying effects on world trade. As world food prices decrease, domestic demand in country B might go up due to cheaper products, which could lead to an increase in domestic production. It could also, however, lead to a decrease in domestic production in country B due to producers making less money on their sales and having to cut back. A decrease in animal feed prices could lead to an increase in domestic production in country B due to cheaper inputs, or an increase in imports from country A, possibly decreasing domestic production. An increase in world prices could have opposite effects than those mentioned above, along with many others. Oil prices have effects on domestic production of country B in that oil is an important input in food production, mostly due to machines requiring oil to run. An increase in oil prices could lead to a decrease in domestic production of country B, as producers cut back to afford the hike. A decrease in oil prices could lead to an increase in domestic production in country B as transporting and therefore exporting products becomes cheaper. An increase in consumer prices in country B could lead to
more domestic production as producers make more money, or less as demand in country B falls. A decrease could lead to a decrease in imports from country A as producers there move to a more lucrative market, which could increase domestic production in country B. The continued existence of antidumping and countervailing duties in country B could be supporting domestic production, and if removed could decrease this production as imports from country A become cheaper. The occurrence of natural disasters around the world could also have dispersed effects on other countries, thereby influencing domestic production in country B. Disasters could also occur in country B, which would directly influence domestic production.

**Analysis**

Following is my analysis of 11 FTAs using the ratio method presented above, with the European Union/Mexico and United States/Israel FTAs not included (see limitations discussed above). These FTAs are Australia/Chile, Australia/New Zealand, Chile/Canada, Chile/Mexico, Chile/New Zealand, European Union/Chile, Mexico/European Free Trade Area, United States/Australia, United States/Canada, United States/Chile, and United States/Mexico. I evaluate each individually and then proceed to present overall conclusions. See Appendix IV for graphs.  

**Chile/Canada**

The Chile-Canada agreement was signed on December 5, 1996, and entered into force on July 5, 1997. It eliminated 69% of tariffs set by Canada and 44% of tariffs set by Chile.

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10 Graphs are displayed for product production and imports, and production to import ratios. Although production and import values are in different units (tons versus kg), I display them as such to show trend lines clearly.
immediately, with schedules for the rest between 5 and 17 years. For all tariffs with the exception of beef, sugar and milling wheat the phase out was 5 to 10 years. For these sensitive products the schedule was between 15 and 17 years. The agreement, like many of Canada’s others, was modeled on NAFTA, with provisions on investment, labor and environmental standards, and an exemption from eliminating antidumping measures. A study by the Canadian Agricultural Trade Policy Research Network found substantial trade creation for Chile’s exports to Canada due to the agreement. Canada’s exports to Chile, however, did not increase as much, and exports of food products actually decreased following the FTA, most noticeably in the cereals sector which accounted for 90% of exports (Malhotra & Stoyanov, 2008). It is likely that this difference occurred because of the relative sizes of the countries’ markets. Canada’s available market is much larger than Chile’s, and was therefore able to absorb foreign industrial and agricultural products. Main food exports from Canada to Chile were animal fats and oils, with more exports in industrial products. Key exports flowing from Chile to Canada were fish and fruits and vegetables. (“The Economic Impact of the Canada-Chile Free Trade Agreement”, 2013).

When examining relative production quality in these partner countries, all FAO indicators were higher for Chile than Canada. For livestock, the concentration in 1997 was 3.49 heads/ha for Chile and 2.51 heads/ha for Canada. Pesticide data for Canada was not made publicly available, however the indicator for Chile was 6.25, indicating a moderately high use of pesticides. The percentage of fish from aquaculture was only slightly different between the partners, at 5.4% of production for Chile and 4.7% for Canada (FAOSTAT; FISHSTAT). According to Bengoa (2013), farms in Chile have been increasingly replaced by export-oriented industrial operations. Major products exported from Chile and involved in this change include
fruit, wine, meat products, milk, tomato sauce, berries, and salmon. As demonstrated by Chile’s FAO country profile, it seems that some areas of the country rely on industrial farming while others have pasture or grass-fed meat production. Chile’s primary exports include poultry, pork and lamb, and it is a net importer of dairy products. Around 40% of the country is occupied by ruminant production systems, and one of the main agricultural industries is sheep production (Vera, 2015). Although Canada’s food production systems are privately owned, they depend on subsidies from the government to compete with the European Union and the United States. There is a large amount of rangeland for cattle, and small herd sizes. In 2007 the average beef herd was 61 cows, and 61% of beef farms had herds with less than 47 cows (McCartney, 2011). This indicates a lower proportion of CAFOs in Canada, which by definition highly concentrate a large number of animals in a small space.

For this FTA, Chile was designated the ‘low quality’ producer and Canada the ‘high quality’ producer, and the food products analyzed included fish, fruits and vegetables. The time range was from 1987 to 2012, and import data from Chile was reported in SITC Revision 2 codes. All ratios of production to imports increased over time, fish at a rate of .0513, fruit at a rate of 14.90 and vegetables at a rate of 5.938. The fish ratio corresponded to category 3, with a decrease in both production and imports. Both the fruit and vegetable ratios fell under category 2, showing an increase in production and a decrease in imports. Because of this positive change none of the ratios in the Canada/Chile FTA provide support for my hypothesis.

**Australia/New Zealand**

The agreement between Australia and New Zealand is called the Closer Economic Relationship Agreement (CER), and emphasizes the countries treating each other as extensions
of their own domestic markets. It took effect on January 1, 1983, and all tariffs and NTBs were removed by July 1, 1990, five years ahead of schedule. This FTA established an area that is comparable to the European Union in that it emphasizes full liberalization of trade and, as far as possible, the creation of a single market. Along some dimensions, it goes even further than the European Union framework, such as the lack of a judiciary or administrative body to resolve conflicts, instead relying on cooperation of the partners (Lloyd, 1995). The two countries have very similar economies despite differences in magnitude, and due to the difficulty and cost of transport by land in both countries it is for some parts of Australia easier to export to New Zealand than to sell to the distant parts of the domestic market, and vice versa. Despite existing integration, New Zealand had higher levels of protection than Australia before the agreement was concluded in the form of quantitative restrictions on imports, which were removed in 1990. This protection was due to a number of domestic industries potentially severely hurt by import competition, one of which was dairy products. Australian exports to New Zealand were greater than those flowing in the other direction, however exports from New Zealand increased after the agreement was concluded.

Agricultural goods are a large component of both markets, and special concessions for dairy, fruits and vegetables and sheepmeats were put in place. Major agricultural exports from New Zealand include dairy, temperate fruit, and vegetables, while those from Australia include tropical fruits, flours and grains, and other processed foods (Bollard, 1986). It is difficult to evaluate relative production systems in New Zealand and Australia, because both have similar high standards and export high quality food products. According to the FAO data from 1990\textsuperscript{11}, the livestock indicator was higher for New Zealand than Australia, at 5.12 heads/ha compared to .44 heads/ha. There was no data supplied for the Australian pesticide indicator, but New

\textsuperscript{11} 1983, the year that the FTA was negotiated, did not have production data from FAO available.
Zealand’s was relatively low at 2.14 t/1000 ha (FAOSTAT; FISHSTAT). Both had low percentages of aquaculture, which were 5.4% for Australia and 4.7% for New Zealand. In this case, the FAO data is misleading, as agriculture in New Zealand makes up 5% of GDP and 7% of employment, which is high compared to other OECD countries. Meat stocks are grass-fed year round, and there is substantial emphasis on sustainable fish and crop production (“New Zealand”, 2013). Australia has similar production conditions, however increasing population in peri-urban areas, where a significant percentage of food is produced, leads to conflicts between sustainable production and housing for land (Carey et al., 2011).

I classified Australia as the ‘low quality’ country and New Zealand as the ‘high quality’ country for this FTA, and fruits, cereal products, and dairy as the products. The time span was 1973 to 1993, and SITC Revision 1 codes were used for the import data. For fruit, the ratio fell under category 1, and increased at a rate of .4155 with increases in production and imports, production increasing faster than imports. The cereal ratio decreased at a rate of .9000 while production and imports increased, placing it under category 6. The dairy ratio also fell under category 6, and decreased at a rate of .9342. The latter ratios both provide moderate support for my hypothesis, and Australia’s food quality might be slightly lower than New Zealand’s. Overall, however, this FTA is not very convincing support for my argument due to the high quality production in both of the countries- a dissimilar scenario from T-TIP.

Chile/Mexico

The Chile- Mexico FTA was crafted using the NAFTA model, completed in 1998, and entered into force in 1999. It replaced a previous agreement between the two partners that was concluded in 1991 (Villarreal, 2012). As tariffs had already been largely eliminated by 1998 due
to the previous agreement, the new FTA contracted to eliminate the rest of trade barriers one year after the agreement came into effect. Certain products had longer trade barrier elimination schedules, or were excluded from the agreement altogether (O’Keefe, 1998). Quotas on apples were reduced and then eliminated in 2006, after which their trade was not subject to any barriers. The other exceptions to the immediate elimination of tariffs included seafoods (lobsters, prawns and shrimp), dairy products (evaporated milk and fresh and processed cheeses), grapes, grains (wheat, barley, and corn), wheat flour, malt, vegetable oils (soy, peanut, palm, olive, sun and coconut), sugar, and tobacco products. The agreement gave the countries the ability to negotiate tariff elimination in these products at a later date. In 2007, trade between the partners amounted to $625 million, with the majority of trade as imports from Chile. Mexico is a major trade partner for Chile, and some of the products traded include poultry, dairy, fruits, salmons, wines, edible offal, cream and cheese, and preserved fruits and vegetables. Over the course of the FTA the Chilean dairy sector grew considerably, with Mexico as a key export market and driving growth force. Top Chilean exports to Mexico include apples, grapes, Gouda cheese, condensed milk, chicken, and nectarines (Cortes, n.d.).

The FAO indicators for 1999 indicated higher levels of industrial production in Chile than in Mexico across all sectors. Livestock concentration was 3.93 heads/ha in Chile compared to 3.64 heads/ha in Mexico, and while there was no reported Mexican pesticide data, the indicator for Chile was 7.22 t/1000 ha, which is moderate to high. Aquaculture in Chile was 5.1% of total fish production, and in Mexico that number was 3.9% (FAOSTAT; FISHSTAT). From the discussion of the Chile-Canada FTA above, I knew that there was a high amount of industrial export-oriented production in Chile, and the FAO indicators supported this. Mexico seems to have widespread industrial production similar to Chile, however there is some study on
the attempt to change to more sustainable production due to climate change pressures (Appendini & Liverman, 1994). How far this has progressed is unknown however, and the production systems in the two countries remain relatively similar.

Despite the analogous production systems within the two countries, the FAO data indicates lower quality in Chile, so I classified it as the ‘low quality’ producer and Mexico as the ‘high quality’ producer. The time range was from 1989 to 2009, and food products evaluated were meat, fish, dairy, eggs and honey, and fruits, vegetables and nuts. For the import data I used the SITC Revision 2 codes, however Mexico did not import meat or dairy from Chile until 1994. The ratios for all products decreased in this FTA, and all fell under category 6, with both production and imports increasing but imports at a faster rate than production. The rate of decrease for meat was .9998, .9628 for fish, .8488 for dairy, and .7738 for fruits and vegetables. Each ratio by itself provides moderate support for my hypothesis that lower quality imports replaced higher quality domestically produced products. Taken together, the fact that this effect occurred over four product categories key to the FTA provides convincing support that domestically produced Mexican food products were replaced by imported Chilean products, however since the production systems are similar in the two countries, a broader claim about the impact on food quality would be unwarranted.

**Chile/New Zealand**

This FTA was signed in July 2005, and entered into force on November 8, 2006. Tariffs were already low and commodity exchange between the countries was minimal, but the agreement included provisions for the management of tariff preferences and reduction of NTBs. In New Zealand 67% of imports from Chile were already tariff free, and on May 1, 2006, tariffs
were removed on another 29% of imports, with all tariffs scheduled to be completely eliminated by 2015. In Chile, 89.3% of imports were tariff free when the agreement entered into force, and most tariffs are to be eliminated by 2015, with a 2017 date for more sensitive products (Evenett et al., 2009). New Zealand accounted for 0.09% of Chile’s exports, and Chile for 0.24% of New Zealand’s exports when the agreement entered into force. Chile expressed concern over imports from New Zealand hurting its dairy sector, as dairy is a relatively substantial agricultural market for both countries. Other contentious products were fruit, wine and fish, as all of these are also key agricultural markets. The composition of the similar sectors is, however, very different, with New Zealand relying on sustainable, pastoral production whereas Chile has industrial, export-oriented systems. Fonterra controls all the dairy production in New Zealand, and is a domestic, well-run company with high standards. In Chile, two foreign companies, Nestle and Soprole, control 43% of dairy production, increasingly pushing out small-scale producers. Similar disparities in production exist for fisheries, as there is strong emphasis on sustainable capture fishing in New Zealand, partially because of indigenous rights granted to the Maori people. In Chile, however, industrial aquaculture dominates, and weak oversight leads to lack of implementation of FAO standards and criticism from environmental organizations (Barton et al., 2007).

In 2006, FAO indicators showed a similarity between Chile and New Zealand in livestock and aquaculture, with around 5 heads/ha and 17% aquaculture for both. However, while New Zealand’s pesticide use was 2.41 t/1000 ha, Chile’s was 11.73 t/1000 ha, which is very high (FAOSTAT; FISHSTAT). For my analysis of this FTA Chile was operationalized as the ‘low quality’ producer and New Zealand as the ‘high quality’ producer, with the time examined spanning from 1996 to 2013. SITC Revision 2 codes were used for imports, and the
products analyzed were fish and fruit as there were no dairy imports reported. For the fish ratio, the rate of increase was 1.629, with an increase in production and decrease in imports. This falls under category 2, and opposes my hypothesis. For fruit, the rate of decrease was .5699, with an increase in production and imports, placing it under category 6. For this ratio, the rate of increase of imports was significantly higher than production (2.108 compared to .3365), so it provides moderately strong support for my hypothesis. Taken together, it is likely that since production standards are so widely different between the partners New Zealand took precautions to protect its domestic industries against cheap, low quality imports. However, the data supports the conclusion that there was a decrease in fruit quality in New Zealand following the FTA.

**Australia/Chile**

The FTA between Australia and Chile was signed on July 30, 2008 and entered into force on March 9, 2009. It covers goods, services, and investment, with all tariffs to be eliminated by 2015, except for an import tariff that Chile will retain of 6% on Australian sugar ("Australia-Chile FTA", n.d.). In 2007, bilateral trade amounted to $856 million USD and was rated as ‘moderate’ by the Australian government. The primary purpose of the FTA was to provide a starting point for Australia to increase economic activity in Latin America, and there were not many concerns over its implementation. The main concern came from Horticulture Australia, a group of fruit and vegetable growers, which expressed the view that the agreement would hurt Australian producers due to Chile’s low priced fruits and vegetables ("Australia-Chile Free Trade Agreement", n.d.)

I designated Australia as the ‘high quality’ country and Chile as the ‘low quality’ country based on FAO data and literature on the countries’ types of production discussed above. In 2009,
the FAO livestock indicator was 5.26 heads/ha for Chile, and .5 heads/ha for Australia. There was no data for pesticides in Australia, but the indicator for Chile was 12.49 t/1000 ha, which is very high (FAOSTAT; FISHSTAT). Australia’s aquaculture indicator was higher than Chile’s, at 27% compared to 19%, however it is more difficult to assess production quality based on fish farms (see food quality discussion above), and fish production is a significant sector of the Australian agricultural economy. Literature from the above-analyzed FTA between Chile and Canada touched on the spreading industrial production systems in the latter country, with fruit, wine, meat products, milk, tomato sauce, berries, and salmon among the products involved in the shift (Bengoa, 2013). Therefore, I can confidently say that Australia has higher quality food production than Chile.

The food products I selected for the analysis of the Australia/Chile FTA were meat products, fish, dairy, and fruit, which are all key export markets for Chile. The time frame for analysis was from 1999 to 2013, as production data is not available after that year. HS 1996 codes were used when collecting Australian import data, as this was the most recent categorization the two countries shared. Since Australia reported no imports from Chile in either meat or dairy during this time period, the ratios I analyzed were for fish and fruit. For fish, the rate of increase in the ratio was 89.0768, and there was a decrease in both production and imports, with imports decreasing faster than production. This falls under category 3, so the trade in fish between Australia and Chile does not support my hypothesis. For fruit, the ratio decreased at a rate of .8637, and there was an increase in both production and imports. The fruit ratio falls under category 6, and therefore provides moderate support for my hypothesis. One of the concerns brought up before conclusion of this FTA was that it would hurt the Australian horticulture industry due to cheap imports from Chile, and my data supports this claim. Since
Chile has lower quality production systems than Australia, including particularly high levels of pesticide use, I contend that higher quality fruit produced in Australia was replaced by lower quality fruit imported from Chile. This is a similar result to that of the Chile/New Zealand FTA, which is logical considering the similarities between Australia and New Zealand’s production systems.

**European Union/Chile**

The FTA between the European Union and Chile was signed on November 18th, 2002, entered partially into force on February 1, 2003 and fully into force on March 1, 2005. Tariff elimination started in 2003 for almost 100% of Chilean products, and the phase-outs happened immediately or at 4, 7, and 10 years. Quotas were established for sensitive products such as beef, pig, sheep and poultry. The agreement was the first to include provisions for animal welfare, such as slaughter and transport (“The EU-Chile Free Trade Agreement”, 2013), likely because of the proliferation of industrial meat production in Chile. Key E.U. exports during the negotiations included processed food products and agricultural items, while important exports from Chile were mostly dominated by manufactures. The European Union had high import protection for declining sectors such as processed food and agricultural products, and insisted on using its own rules of origin (Francois et al., 2005).

The FAO indicators for the European Union and Chile for 2003 were significantly higher for the latter country in every area except aquaculture. Since the data on the European Union was not available in an aggregate form, I averaged the data from all the members in 2003 and used that number as my comparison. For livestock, Chile had 4.31 heads/ha while the European Union had .81 heads/ha. There was no data for the European Union regarding pesticides, but Chile’s
indicator was 9.42 t/1000 ha, which is relatively high. The European Union had 20.6% aquaculture while Chile’s value was 13.6% (FAOSTAT; FISHSTAT). At this point in the analysis I can confidently say that Chile’s food production system is highly industrialized, however the European Union is harder to evaluate since the various countries have different production standards. Industrial meat production and agriculture is more widespread in some E.U. countries than others, but the Common Agricultural Policy (CAP) covers all members. The CAP includes provisions for the number of days an animal must be outside, policies to increase organic production, and decreasing environmental harm from production, among others (“European Union”, 2013), which suggests a general high level of production quality.

In light of the above information, I designated Chile as the ‘low quality’ producer and the European Union as the ‘high quality’ producer for this FTA. The range of years started in 1993 and went through 2013, with meat, fish, dairy products and eggs, and fruits and vegetables as the products. The codes I used for this FTA were SITC Revision 1. The ratios decreased for meat and fish, but increased for dairy and eggs, and fruits and vegetables. The rate of decrease for meat was .9120, with an increase in production and imports, placing it under the category 6 grouping. The rate of decrease for fish was .7287 with a decrease in production and increase in imports; therefore this ratio can be operationalized as category 5. For dairy and eggs, the rate of increase in the ratio was 158.56, with an increase in production and a decrease in imports, placing it under category 2. For fruits and vegetables the rate of increase was .1025, with increases in production and imports, locating it within category 1. Within this FTA analysis both meat and fish support my hypothesis, with fish as the stronger situation. Dairy and fruits and vegetables do not support my hypothesis, fish providing the stronger substantiation. Even though
dairy and fruits and vegetables do not support my hypothesis, I can still legitimately claim that food quality decreased in the European Union overall.

**Mexico/European Free Trade Area**

The European Free Trade Area (EFTA) is composed of Iceland, Lichtenstein, Norway and Switzerland, and the FTA between these countries and Mexico was signed in 2000 and entered into force in 2001. It was the first FTA that the EFTA concluded with an overseas partner, and included provisions on national treatment and market access for goods, agriculture, rules of origin, and safeguards. Tariffs on Mexican exports to the EFTA became duty free upon the agreement entering into force, and tariffs on EFTA goods to Mexico were phased out in the first 6 years (Villarreal, 2012). Agricultural products were one of the largest sectors of Mexican exports, in products including coffee, honey, fruits and vegetables.

The FAO statistics were relatively analogous between the EFTA and Mexico, despite the two jurisdictions having very different production standards. For livestock, the indicator was 4.87 heads/ha for the EFTA, and 4.19 heads/ha for Mexico. In pesticides, the indicator was 1.40 for the EFTA and 2 for Mexico, and percent aquaculture was 5.2% for Mexico and 9.9% for the EFTA (FAOSTAT; FISHSTAT). However, the EFTA was not an available entity within the indicator data, so I averaged it across the four countries. Also, the EFTA is made up of countries with fish as a significant industry, so perhaps that influenced the aquaculture percentage. It is strange that overall the indicators show the EFTA as having the more industrial production system, as the literature finds the opposite situation to be true. Although in the past Mexico had a relatively large proportion of non-industrialized food production, the conclusion of FTAs, among other factors, decimated the Mexican domestic food system run by smallholders. After NAFTA,
family-owned farms were replaced by low quality food companies such as Smithfield Foods (Marin & Tovar, 1996), which shifted Mexico towards industrialized food production.

The EFTA has to comply with E.U. standards to trade within the European Economic Area, and from research on the previous FTAs I have seen that Mexico has a high proportion of industrialized food production with many large U.S. producers operating there. Therefore, I selected the EFTA as the ‘high quality’ country and Mexico as the ‘low quality’ country for this FTA. The time period was 1991 to 2011, and the codes used were SITC Revision 3. The products evaluated were coffee and fruits and vegetables, since I am not including sugar in my analysis (see discussion above). The EFTA does not produce any coffee, so the only ratio to evaluate for this FTA is for fruits and vegetables. The rate of decrease of this ratio was .5705 with an increase in both production and imports. Imports, however, increased at a much greater rate than production, 1.770 as compared to .1899. This ratio falls under category 6, and because it supports my hypothesis I can claim that higher quality fruits and vegetables produced in the EFTA were replaced by lower quality fruits and vegetables imported from Mexico.

**United States/Australia**

The United States-Australia FTA entered into force in 2005, and eliminated most tariffs immediately with the rest phased out over 10 years. There was apprehension about agriculture on both sides of the agreement, namely that its conclusion would harm domestic industries. A 2003 report by ACIL Consulting for the Australian National University’s (ANU) Research School of Pacific and Asian Studies stated that the FTA would have a negative impact on Australian farmers, and the United States was worried about overburdening dairy support after the FTA due to imports from Australia. Australia desired access to the U.S. sugar, dairy and beef markets,
which enjoyed relatively high levels of protection. The United States wanted duties on imports of U.S. goods to be removed in order to have greater access to the Australian market (Schott, 2004). There were also concerns about the SPS provisions that Australia had in place, and how they would affect trade. Upon conclusion of the FTA, imports from the United States increased across all sectors in Australia, due to the elimination of high trade barriers. For the United States, there was an increase in imports in agriculture, food, beverages and tobacco, textiles and services (Brown et al., 2005).

The FAO indicators for livestock were 5.97 heads/ha for the United States and .48 heads/ha for Australia, illustrating a substantial difference in production practices. There was no compiled data for Australia in pesticides, but the U.S. indicator was 2.39 t/1000 ha. In aquaculture, Australia had the higher indicator, with 15.3% compared to 6.4% in the United States (FAOSTAT; FISHSTAT). Based upon this information, that from the previously analyzed FTAs with Australia, and the discussion of U.S. food production methods (see food quality discussion above), I classified Australia as the ‘high quality’ producer and the United States as the ‘low quality’ producer. The time range selected was from 1995 to 2013, HS 1992 codes were used for the import data, and the products were meat, dairy and eggs, fish, and oils and animal fats. I kept these products constant across all FTAs that I evaluated with the United States, because these are likely the key products that would be involved in the T-TIP. For this FTA, both the meat and dairy ratios decreased, while the fish and oils and animal fats ratios increased. The rate of decrease for meat was .9928, and there was an increase in production and imports, substantially larger for imports than for production. The increase in the rate for meat imports was 184.15 and the increase in production rate was .3423. For dairy, the rate of decrease was .8419 again with an increase in imports and production at rates of 5.789 and .0733, respectively. Both
of these ratios fall under category 6 and support my hypothesis. The rates for fish and animal fats, however, did not support my hypothesis, and their rates of increase were 1.016 and 25,85 respectively. Both involved a decrease in imports and increase in production, which fall under category 2 and directly contradict my hypothesis. However, since two of the ratios supported my hypothesis, and they were for industries, which have low production quality in the United States, I can claim that overall food quality in Australia went down.

**United States/Mexico**

The FTA between the United States and Mexico, which was added on to the US-Canada FTA to create NAFTA, entered into force in 1994. Before the agreement, Mexico accounted for more than 8% of U.S. trade, and tariffs on most Mexican goods were already low (Schott, 2004). Some tariffs were eliminated immediately, and others were phased out over a period of 5 to 15 years, along with quotas and import licenses. The agreement included provisions requiring countries to eliminate NTBs in agriculture, either through conversion to tariff-rate quotas or to ordinary tariffs, both of which were phased out over a 15 year period. Half of agricultural trade became fully liberalized when the agreement went into effect and the sensitive products, which required longer phase-outs, included sugar, corn, dry beans, frozen concentrated orange juice, winter vegetables, and peanuts. The agreement also included provisions allowing countries to implement tariff rates in effect at the time the agreement was entered into force if imports reached a ‘trigger level’ set by the government (Villarreal, 2012).

From previous discussions of production practices in Mexico and the United States, Mexico has the better production system, and is moving towards a more sustainable food production environment. The FAO data from 1994 supports this, as all indicators were higher for
the United States than for Mexico. The livestock indicator was 4.8 heads/ha for the United States compared to 3.4 heads/ha for Mexico, and aquaculture production was 6.6% for the United States whereas Mexico was 2.6%. There was no pesticide data available for Mexico, and the indicator was 2.31 t/1000 ha for the United States (FAOSTAT; FISHSTAT).

From the combination of the above-analyzed literature discussing Mexico’s shift towards more sustainable production and the United States’ higher FAO indicators, I designated the United States as the ‘low quality’ producer and Mexico as the ‘high quality’ producer for this FTA. It was evaluated from 1984 to 2010, products were the same as in other U.S. FTAs (meat, fish, dairy and eggs, oils and animal fats), and SITC Revision 1 codes were used. All ratios decreased for this agreement, with increases in both production and imports, placing all food product ratios in the category of category 6. The rate of decrease was .9073 for meat, .7483 for fish, .7322 for dairy and eggs, and .3881 for oils and animal fats. My hypothesis is supported for all product categories in this FTA, and I can concretely claim that food quality in Mexico went down after NAFTA entered into force.

United States/Chile

This agreement entered into force in 2004, with elimination of most tariffs occurring immediately. Tariffs for sensitive agricultural products were phased out over a period of between 4 and 12 years, mostly through gradual reduction of quotas. There was concern in this agreement over the effect importing Chilean agricultural products might have on U.S. markets, and the United States had high barriers to agricultural imports. Since the liberation of agricultural trade is usually not included in FTAs with the United States, the major parts of the agreement were in other areas. Antidumping and countervailing duties were not addressed, and the United States
stood firm in its decision to not allow Chile to export salmon tariff-free. Major U.S. exports to Chile included capital goods, machinery and components, vehicles, aircraft, medical instruments, and plastics and organic chemicals, while those from Chile to the United States included copper, fruits, fish, lumber, wine, and some chemicals. There was no harmonization of environmental or labor standards, but rather mutual recognition with maintenance of domestic practices (Weintraub, 2004).

Since the United States and Chile both have industrialized food production, it is somewhat difficult to evaluate high versus low quality for this FTA. Both countries produce a high proportion of their food products in concentrated operations, with relatively low enforcement of existing food standards. The FAO data from 2004 for the United States and Chile presents a similar picture between the two countries, with the only significant difference in pesticide use. For the livestock indicator, the United States had 5.86 heads/ha whereas Chile had 4.65 heads/ha, which is not a large difference. In pesticides, however, Chile was higher than the United States, at 5.08 t/1000 ha compared to 2.5 t/1000 ha. Percent aquaculture was again similar, at 10.9% for the United States and 12% for Chile (FAOSTAT; FISHSTAT). Although both have relatively low production quality, the terrain in Chile makes industrial crop farming more difficult than in the United States, which is one of the reasons Chile relies more heavily on production of meat for export. Also, only the northern parts of Chile rely heavily on concentrated production, whereas the southern areas have grass-fed animals year round (Vera, 2015).

Due to the factors discussed above, the United States was assigned as the ‘high quality’ country and Chile as the ‘low quality’ country for this FTA. The years evaluated were 1994 to 2013, and products were the same as above (meat, fish, dairy and eggs, oils and animal fats), with HS 1992 codes used. The ratios decreased for all products except for oils and animal fats,
with varying changes in production and imports. The rate of decrease for the meat ratio was 
.9805, with increases in production and imports, imports at a much greater rate than production 
(101.89 compared to 1.0006), falling under category 6. For the fish ratio, the rate of decrease was 
.9841, with a decrease in production and increase in imports, making this ratio part of category 5. 
The rate of decrease for dairy and egg was .8714, with increases in production and imports, again 
a category 6. Oils and animal fats had a rate of increase of .0730, with increases in both 
production and imports, categorizing it under category 1. All products in this FTA except for oils 
and animal fats support my hypothesis, and I can validly claim that higher quality domestically 
produced food products in Chile were supplanted by lower quality imported products from the 
United States.

**United States/ Canada**

This FTA was signed in 1988 and was entered into force on January 2, 1989. It 
eventually joined the United States- Mexico FTA to become the North American Free Trade 
Agreement, however the two were concluded separately. Tariffs between the United States and 
Canada were low to begin with and were phased out over a ten-year period (Townsend, 2007). In 
the 1980s, flows between the United States and Canada made up the greatest percentage of world 
trade, and most products crossed borders duty free or at tariff levels below 4%. Trade creation 
for Canada was estimated at between 4 and 7%, and did not significantly increase further once 
Mexico entered into the agreement due to the low levels of trade between Canada and Mexico. 
The agreement included labor and environmental provisions, however they were relatively weak 
and did not have many effects (Andresen, 2006).
In the previous discussions on the production systems in both the United States and Canada, I determined that Canada has less industrialized, and therefore higher quality, methods of food production than the United States. The FAO data from 1989 supports this, as all indicators were higher for the United States than for Canada. The livestock indicator for the United States was 4.01 heads/ha, while that for Canada was 2 heads/ha, and the pesticide indicators were 2.14 t/1000 ha and 0.57 t/1000 ha, respectively. For aquaculture, the United States had 6.4% production and Canada had 2.0% aquaculture production (FAOSTAT; FISHSTAT).

The United States was the ‘low quality’ producer and Canada the ‘high quality’ producer for this FTA, with the time evaluated from 1979 to 1999. Food product categories, the same for all FTAs with the United States, were meat, fish, dairy and eggs, and oils and animal fats, with SITC Revision 2 codes used. All ratios decreased for this FTA, however because of difference in production and imports across food products, they provide varying degrees of support for my hypothesis. The rate of decrease for the meat ratio was 0.6745, with increases in both production and imports, yet imports at a greater rate than production. This ratio therefore falls under category 6, and provides moderate support for my hypothesis. For the fish ratio, the rate of decrease was 0.8103, with a decrease in production and an increase in imports. This ratio falls under category 5, providing strong support for my hypothesis. The rates of decrease for dairy and eggs and oils and animal fats were 0.6218 and 0.4921, respectively, with increases in production and imports for both products. They are therefore also categorized under category 6, and provide the same level of support for my hypothesis as meat. Overall, since all ratios decreased for this FTA and one involved a decrease in production combined with an increase in imports, the United States-Canada agreement provides very strong support for the claim that food quality went down in the ‘high quality’ country.
**Discussion**

To determine whether entering into the T-TIP with the United States will have an effect on food quality in the European Union, I analyzed existing FTAs to determine whether a trend of this type exists. I aimed to evaluate whether countries with higher quality food production systems entering into FTAs with lower quality food producers has an effect on the quality of food in the former’s domestic market. I analyzed production to import ratios for 11 FTAs in combination with changes in domestic production and imports to determine the existence, or lack thereof, of a trend (see Appendix III). I found that ‘high quality’ countries entering into agreements with ‘low quality’ countries has the general effect of decreasing their domestic production to foreign import ratios over time. This means that in the domestic market of the ‘high quality’ producer, better quality domestically produced food is replaced with worse quality food imported from the ‘low quality’ producer. This trend was most significant in FTAs with the United States; all four of the agreements analyzed showed decreases in the production to import ratios across most food products. Applying these findings to the likely, and expected, T-TIP framework, I conclude that entering into the agreement will have the effect of lowering the food quality in the European Union through replacement of high quality domestically produced products with low quality imported ones.

Ratios decreased for all of my agreements except one, the FTA between Chile and Canada. The other FTAs provided varying levels of support for my hypothesis, but under each of them, the change in ratios provide support for my hypothesis in at least half the food products analyzed, and often over half. Category 6, which provided moderate support for my hypothesis, was most often seen in my data. Multiple food products fell under this category in 10 out of 11 FTAs, with the exception of the one that did not show a decreasing ratio. This category signified
a decrease in the ratio, with an increase in production and imports, imports at a greater rate than production. Although an increase in imports and production would initially seem to be a benefit of an FTA, if imports increase at a significantly greater rate than production, domestic producers are still being driven out of the market. Category 5 provided the strongest support for my hypothesis, and was the case in which the ratio decreased, production decreased, and imports increased. Although a counterintuitive outcome of a country entering into an FTA, this situation was seen in three of the agreements, for one food product in each. This is significant because a decrease in domestic production due to foreign imports is not a desired result for a country entering into an FTA. Two of these FTAs were with the United States (US/Canada and US/Chile), and had the United States classified as the ‘low quality’ producer. The third FTA for which a result fell under category 5 was between the European Union and Chile, with the European Union operationalized as the ‘high quality’ producer. All together, the category 5 situations have substantial implications for the manifestation of a similar effect after the T-TIP enters into force.

In the FTAs with the United States, two out of four showed decreases across all food products (US/Canada and US/Mexico), one showed decreases for three out of four (US/Chile), and one for two out of four (US/Australia). These FTAs provide very strong support for my hypothesis that domestically produced higher quality food was replaced by lower quality imported food, which I can also confidently say has a high potential for occurring in agreements with the United States. Since the current FTAs with the United States are the best indicators of future U.S. FTA structures, the fact that my hypothesis was better supported by these FTAs provides convincing evidence for my claim about change in food quality following the implementation of the T-TIP. The FTAs with the United States had the most food products
possible in my analysis (4), and therefore the highest chance that fewer of the ratios would show a decreasing trend. The fact that they all showed a decrease, and furthermore a decrease in four out of four food products for two of them, provides strong, significant support for my hypothesis. Also, category 5, which represents the greatest decrease in availability of high quality domestic food, occurred in two out of four FTAs with the United States. This occurrence strengthens the validity of the claim that the T-TIP will decrease food quality in the European Union upon implementation.

Overall, my data analysis provides strong support for a trend of decreasing domestic food quality after entering into an FTA with a low quality producer. Furthermore, this trend was strongest for FTAs with the United States, and therefore is able to be extrapolated to the T-TIP between the United States and the European Union. Because of production conditions in the United States, implementation of the T-TIP will lead to an increase in imports of lower quality, cheap food to the European Union, which will result in a lowering of high quality domestically produced food available in the European market.
**Conclusions**

If food quality were the only issue involved here, the significance of my findings might be regarded as limited to the concerns and preferences of consumers. However, the production methods I have discussed here have effects not only on the quality of the food, but on the environment, human health, and social justice. Discussing all of these externalities was beyond the scope of this research paper, however much more can be written about the far-reaching effects of spreading low-quality food around the world and economically rewarding associated production methods. Many of the studies claiming no differences in health effects of food produced using low-quality versus high-quality methods are funded by the companies making ever greater profits as these products and methods spread across the globe. Furthermore, the environmental and social justice externalities resulting from U.S. food production methods alone are enormous and should not be ignored. Through this research, I have shown that the T-TIP is likely to result in a decrease in food quality in the European Union, but have not discussed the other implications of industrial-production operations growing in size, capacity, and share of the international market. The European Union emphasizes its support for environmental sustainability, demonstrated through the inclusion of animal welfare provisions in trade agreements and the CAP, as well as the commitment to reduction in fossil fuel usage, to name a few policies. Thus, entering into the T-TIP with the United States goes directly against E.U. consumers’ interests, the promises made by political elites, and the goals the European Union is working towards in the realm of environmental preservation. Food quality, albeit very important and worthy of attention, is just one aspect of an agreement that will have substantial, far-reaching negative effects if it is concluded.
References


### Appendix I

<table>
<thead>
<tr>
<th>Category</th>
<th>Ratio</th>
<th>Production</th>
<th>Imports</th>
<th>Rate</th>
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<td>Increase</td>
<td>Increase</td>
<td>Production changes faster than imports</td>
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<td>Category 2</td>
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<td>Increase</td>
<td>Decrease</td>
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</tr>
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<td>Category 3</td>
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<td>Decrease</td>
<td>Increase</td>
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<td>Category 6</td>
<td>Decrease</td>
<td>Increase</td>
<td>Increase</td>
<td>Imports change faster than production</td>
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</table>

**Category 1**: Ratio increases, production and imports increase, production at a faster rate than imports. Provides no support for my hypothesis.

**Category 2**: Ratio increases, production increases and imports decrease. Provides no support for my hypothesis.

**Category 3**: Ratio increases, production and imports decrease, imports at a faster rate than production. Provides no support for my hypothesis.

**Category 4**: Ratio decreases, production and imports decrease, production at a faster rate than imports. Provides weak support for my hypothesis.

**Category 5**: Ratio decreases, production decreases and imports increase. Provides strong support for my hypothesis.

**Category 6**: Ratio decreases, production and imports increase, imports at a faster rate than production. Provides moderate support for my hypothesis.
## Appendix II

<table>
<thead>
<tr>
<th>Countries Involved in FTA</th>
<th>Codes Used</th>
<th>Date Entered Into Force</th>
<th>Years of Interest</th>
<th>Food Products</th>
<th>Notes</th>
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<tbody>
<tr>
<td>Australia/ Chile</td>
<td>HS 1996</td>
<td>3/6/09</td>
<td>1999-2014</td>
<td>Meat, salmon, dairy, fruit</td>
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<td>1973-1993</td>
<td>Fruit, cereal products, dairy</td>
<td>tariffs eliminated in 1990</td>
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<tr>
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<td>1987-2012</td>
<td>Fish, fruit, vegetables</td>
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<td>1984-2010</td>
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### Appendix III

<table>
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<th>FTA</th>
<th>Occurrence of Ratio Decrease</th>
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<th>Total</th>
<th>Category</th>
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<td>category 3, category 6, category 1, category 6</td>
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<td>category 6, category 2</td>
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<td>Mexico/ EFTA</td>
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<td>category 6, category 6</td>
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Appendix IV

Chile/ Canada Production and Imports

Chile/ Canada Ratio
Australia/ New Zealand Production and Imports

Australia/ New Zealand Ratios
Chile/ Mexico Production and Imports

- Meat Production
- Fish Production
- Dairy Production
- Fruit/ Vegetable Production
- Meat Imports
- Fish Imports
- Dairy Imports
- Fruit/ Vegetable Imports

Chile/ Mexico Ratios

- Meat Ratio
- Fish Ratio
- Dairy, Eggs, Honey ratio
- Fruits, Vegetables, Nuts Ratio
United States/ Mexico Production and Imports

- Meat Production
- Fish Production
- Dairy Production
- Oils and Animal Fats Production
- Meat Imports
- Fish Imports
- Dairy Imports
- Oils and Animal Fats Imports

Weight

Year

United States/ Mexico Ratios

- Meat Ratio
- Fish Ratio
- Dairy and Eggs Ratio
- Oils and Animal Fats Ratio

Ratio (production/imports)

Year