Exporting United States' Whey Products to the Chinese Market

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Abstract

The objective of this research project was to determine the potential for the increase of U.S. whey exports to the Chinese market. The research was gathered from various locations including the United States Dairy Export Council as well as Euromonitor International. From this research the amount of whey that the US produces was compared with the amount of whey that China imports, then analyzed to determine the increased amount that can be exported by the US to China. An analysis of the current and historical situation for dairy products in China was also included to help determine the market potential in China. Based on China's tainted history of food safety and the increasing demand for their whey market, largely due to the demand for infant milk formula, the whey market in China is expanding and the United States has the supply to satisfy that expansion. Follow up work that can be done is to further research the role of competitors in this market and the increase in whey production both in the US and China.

Introduction

Whey, a product once regarded as waste and bothersome to deal with, is now regarded as a valuable and nutritious by-product of cheese making (USDEC, 2010). The sweet whey is taken after cheese making and can be further processed into whey powder, reduced-lactose whey, demineralized whey, whey protein concentrate (WPC), or whey protein isolate (WPI) (USDEC, 2010). Whey has several different applications and uses around the world. It can be used in baking, beverages, confectionery, dairy products, dry mixes, infant products, nutritional products, processed meats and seafood, seasonings and flavors, snacks, and animal feed (USDEC, 2010).

The global market for whey products is on the rise and continuing to grow through out the world due to its nutritious value and versatile uses. The global market with the largest demand for whey products is currently China (USDEC). China's massive population combined with their demand for higher quality and nutritious foods for their citizens creates an optimal situation for the United States' whey supply to be exported. Our objective is to determine the potential for the increase of whey exports to the Chinese market.

Historical Perspective

Due to China's 2008 melamine scandal, where infant formula was tainted with melamine, many Chinese people no longer trusted their own production and food facilities. The scandal came into view in January 2008 when it was discovered that infants who had been consuming Sanlu® brand baby formula began to develop

kidney problems (Ramzy, 2008 and Flynn, 2011). By September of the same year six infants had died and over 300,000 were sickened due to the melamine-tainted formula (Ramzy, 2008 and Flynn, 2011).

Melamine is a synthetic chemical used in plastics. It is derived from urea through either a high or low pressure process, and is used for purposes such as laminates, protective coatings, molding compounds, textile finishes, and paper coatings in the automotive, appliance, dinnerware, and furniture industries to name a few (NCBI, 2009). When added to milk or other food products, it can appear that the products contain an artificially high amount of protein (Ramzy, 2008).

The molecular formula of melamine is $C_3H_6N_6$ and the chemical structure can be seen in Figure 1 (NCBI, 2009). Melamine breaks down into carbon, hydrogen, and nitrogen according to the molecular formula. Of these elements, nitrogen is what causes melamine to give the false readings of protein. Nitrogen is composed of amino acids that make up proteins and, due to the high amount of nitrogen in melamine, the false appearance of high levels of protein is found in foods that have added melamine (WHO, 2008). The Chinese Administration of Quality Supervision, Inspection and Quarantine (AQSIQ) reported melamine levels of 0.09 to 6196.61 mg/kg found in dairy products (WHO, 2008).

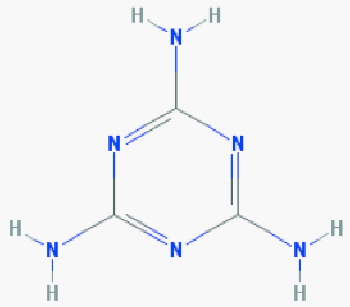

Figure 1. Chemical structure of melamine. Source: NCBI

Soon after the melamine scandal, the FDA came out with a report that stated the tolerable daily intake (TDI) of melamine as 0.63 mg/kg of body weight per day (WHO, 2008). The AQSIQ reported a wide range of melamine traces found in Chinese dairy products. As stated, amounts under 0.63 mg/kg of body weight per day are tolerable, but amounts greater than that are harmful when ingested, especially by an infant with low body weight. When amounts over the TDI of melamine are ingested, kidney failure, kidney stones, high blood pressure, urinary tract infection, anuria, renal failure, other kidney problems, and even death can occur (WHO, 2008).

Melamine was found in 22 out of the 109 producers of milk powder in China (Ramzy, 2008). After this scandal, people all throughout China simultaneously began buying strictly imported baby formula only (Flynn, 2011). According to an annual Consumer Food Security Confidence Report published by the Media Survey Lab at Tsinghua University and state-owned China Insight Magazine, 70% of Chinese do not believe that their food is safe, over 50% want food safety strengthened, and 53% are very concerned about food quality (Flynn, 2011).

The melamine scandal has many Chinese consumers doubting their country's food safety and quality, but dairy products in China are still valued as healthy and nutritious products. The demand for dairy products has increased in China and the Chinese people are making an effort to increase their supply of dairy products with new technologies. These include ultra-high temperature (UHT) pasteurization, the importation of dairy cattle and genetics from the United States, Canada, and Europe, and advanced nutrition and management skills (Fuller, 2004). The adoption of

more modern and efficient practices in China has helped to increase the productivity of dairy farming in China today.

Current and Projected Domestic Production

China's annual production of milk per year is currently at 35 million tons, compared to only 8.3 million in 2000 (China Dairy Ingredient Market, 2011). As previously mentioned, they have greatly improved their milk production with new technology and efficient practices, but it is still not enough to meet their growing demand and booming population (Blanc, 2011). As part of a long term plan from the Ministry of Agriculture in China, the dairy industry is planning to double milk production to 64 million tons by 2020, compared to its 35 million tons of current production (The Economic Times, 2012). China is also in the process of importing dairy cows to raise milk production within the country. The dairy cattle imports are mostly from New Zealand and Australia and were reported at 100,000 head in 2011 (The Economic Times, 2012). Since 2006, live cattle imports from North America and Europe have been suspended due to bovine spongioform encephalopathy or mad cow disease (The Economic Times, 2012).

China's current per capita milk consumption is just below 30 kg a year, while the world's average is 89 kg (The Economic Times, 2012). Even with China's milk consumption below average, their efforts to import dairy cows, and further improve their milk production, they will not be able to support their population and their increasing demand for the products.

In 2010, China imported 406,000 tons of milk powder, a record that is expected to reach 550,000 tons when the 2011 reports come out (Blanc, 2011).

The U.S. as an Exporter to China

U.S. whey protein exports in 2010 were 452,231,593 kg, up 29% from 2009. Sweet whey increased 23% to 252,650,950 kg. Whey protein concentrate (WPC) and other modified whey protein exports rose 41% to 182,344,132 kg, and whey protein isolate (WPI) increased 9% to 16,782,917 kg (USDEC). In 2010, the U.S. exported 55% of the whey proteins that it produced, and more than half of these 2010 U.S. whey exports went to China and Southeast Asia (USDEC).

The US has over 200 whey plants that manufacture the massive amounts of whey that are produced within the US, due to the fact that the US is one of the world's largest cheese producers. This, along with the country's quantity of land, our investments in research and development, and innovative thinking creates conditions where "the US whey industry is capable of unrestrained growth to meet consumer demand" (USDEC, 2010 Whey Overview).

The top five current major players in the world dairy market, based on company share percentages are derived from the Global Market Information Data (GMID) and are displayed in Table 1.

Table 1. Top 5 companies in global and Chinese dairy market

Dairy: World Top 5 Company Shares		Dairy: China's Top 5 Company Shares	
Others	33%	China Mengniu Dairy Co Ltd	21.8%
Private Label	14.8%	Others	18.9%
Danone, Group	5.9%	Inner Mongolia Yili Industrial Group Co Ltd	17.9%
Nestle SA	4%	Hangzhou Wahaha Group	9.9%
Kraft	2.8%	Bright Dairy Food Group Co Ltd	6.15

Current and Projected Product Demand in China

The U.S. exported the highest amounts of whey, in both volume and value, to China in 2011. Figure 2 displays the increase in value of whey in China from 2006 to 2011 as compared with the other top importing countries, Mexico and Southeast Asia.

As shown in Figure 2, China imported only $61,147,000 of dry whey in 2006 from the United States, and has steadily increased their whey imports to $148,820,000 as of 2011. Mexico has recently decreased their whey imports from the U.S., and Southeast Asia imported $119,849,000 of whey as of 2011. Southeast Asia's whey consumption is also on the rise, right behind China, due to their thriving infant formula market as well.

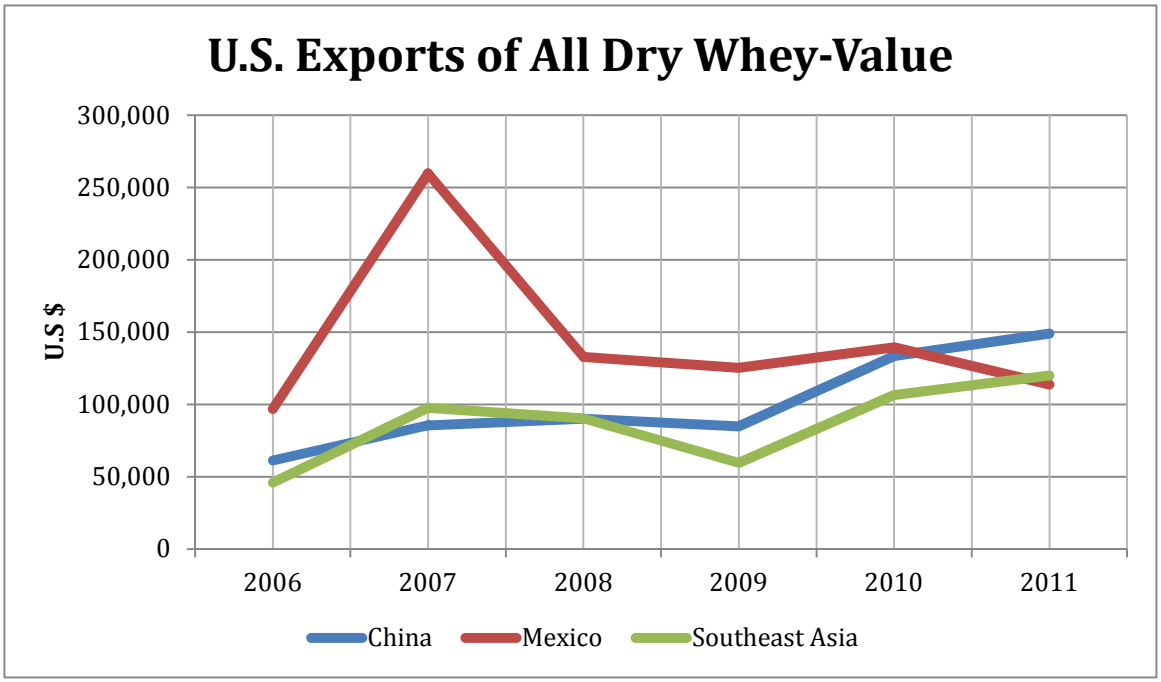

Figure 2. United States exports of all dry whey for value. Source: USDEC

Figure 3 shows the increase in volume of the top three importers of U.S. whey from 2006 to 2011. The top three countries in volume of whey imports are also China, Mexico and Southeast Asia. China leads the three countries with imports of 121,440 metric tons in 2011. Southeast Asia is also on the rising trend following China, as observed earlier, with imports of 85,819 metric tons in 2011. Mexico has been decreasing imports of whey with 49,698 metric tons in 2011.

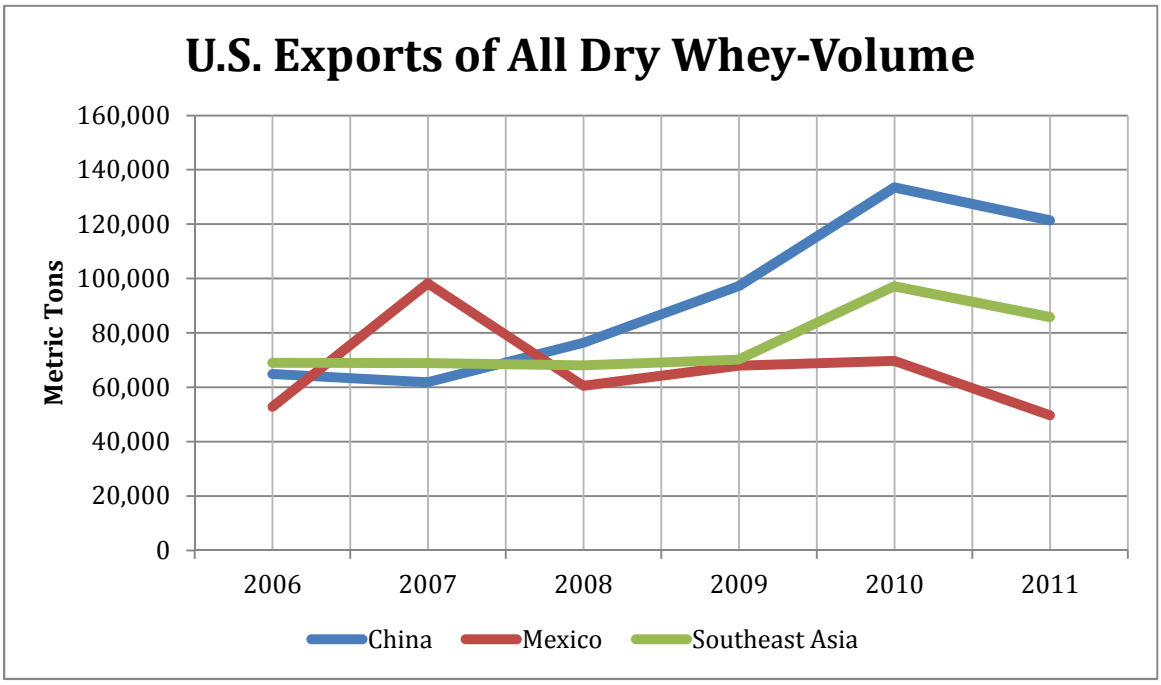

Figure 3. United States exports of all dry whey in volume. Source: USDEC

Infant formula market growing

China, the most populated country in the world and growing, has a current population of 1,337,821,800 (GMID, China). With this growing population, there is also a growing number of working mothers, urbanization, and an increase of wealth in China. Due in large part to this information, the Chinese infant milk formula market is on the rise.

China has one of the fastest growing markets of pediatric milk formula powder, accounting for the largest share in the global powder pediatric milk formula market by total retail sales volume in 2009, and pediatric milk formula powder products accounted for 69.9% of the milk powder market in China (Euromonitor International). In the milk formula market, powder formulas remain dominant in China compared to liquid formulas. A main reason for this is the doubt

the Chinese consumers still have toward their liquid milk market and insuring that their children's food is safe and of the best quality (GMID, Baby Food in China).

Infant milk formula continues to increase in China, due in large part to a growing number of working mothers. With mothers being gone at work for long periods of the day, it's standard practice to have their babies fed with milk formula products. This has increased milk formula sales by a 23% value growth in 2011 (GMID, Baby Food in China). Mothers want that convenience and quality of milk formula for their children while they are away from them.

As shown in Figure 4 below, the birthrate in China is not increasing, but is staying at a steady rate of 11.8 as of 2010 (GMID, China: Country Factfile). Even with the birth rate slowing, factors such as the growing economic wealth, urbanization, and an increasing number of mothers working, outweigh the slowing birthrate.

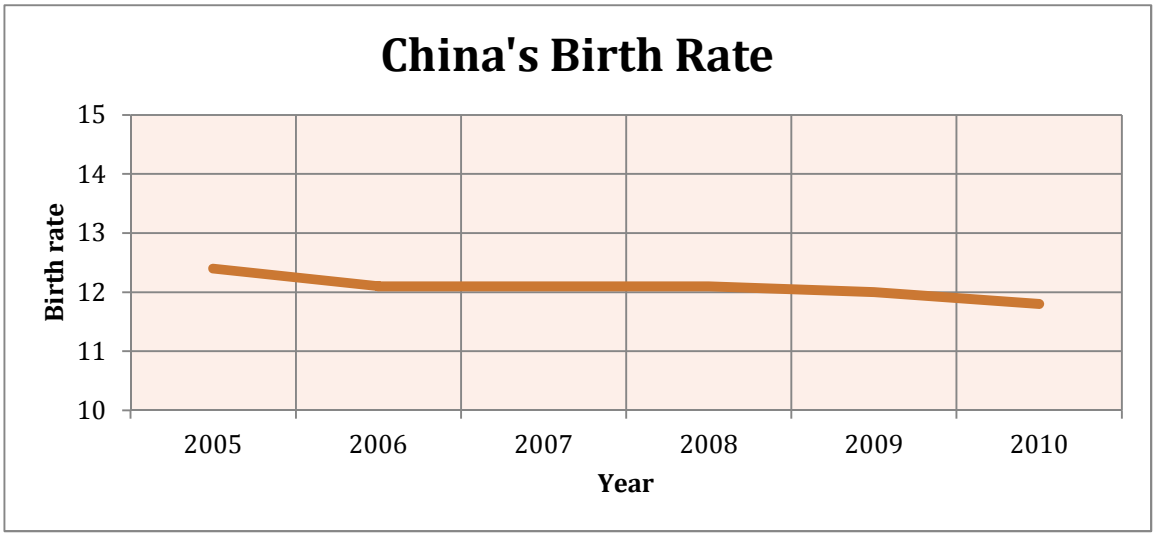

Figure 4. Birth rates in China. Source: GMID China: Country Factile

Milk formula powder, as a more expansive category can also be encompassed under the baby food category. Baby food is predicted to be the fastest growing category in global packaged food in the 2010 to 2015 time period, with an increase in compound annual growth rate (CAGR) of 6% (GMID Nestle SA). As of 2011, baby food in China showed a 22% value growth, with total sales surpassing $68 billion renminbi (RMB). A main reason for this increase is due to the increasing popularity of baby food in smaller cities and more rural areas (GMID, Baby Food in China).

The major global baby food companies in the market, reported in Figure 5, are derived from Nestle SA company profile (GMID Nestle SA). The figure shows the top ten companies with their retail value sales for the years 2005 to 2009. Nestle SA, Danone, and Mead Johnson are shown as the highest three companies with retail value sales ranging from $3,000 to $9,000 million. These companies also have high compound annual growth rate (CAGR). Nestle SA is reported at just below 20% CAGR, while Danone, Groupe has nearly 60% CAGR (GMID Nestle SA), showing the annual growth of the market and increase in sales over the 2005 to 2009 years.

The market has grown significantly and is projected to keep up the growth for 2010 to 2015 with a CAGR of 6% overall (GMID Nestle SA), making it the fastest growing category in global packaged food.

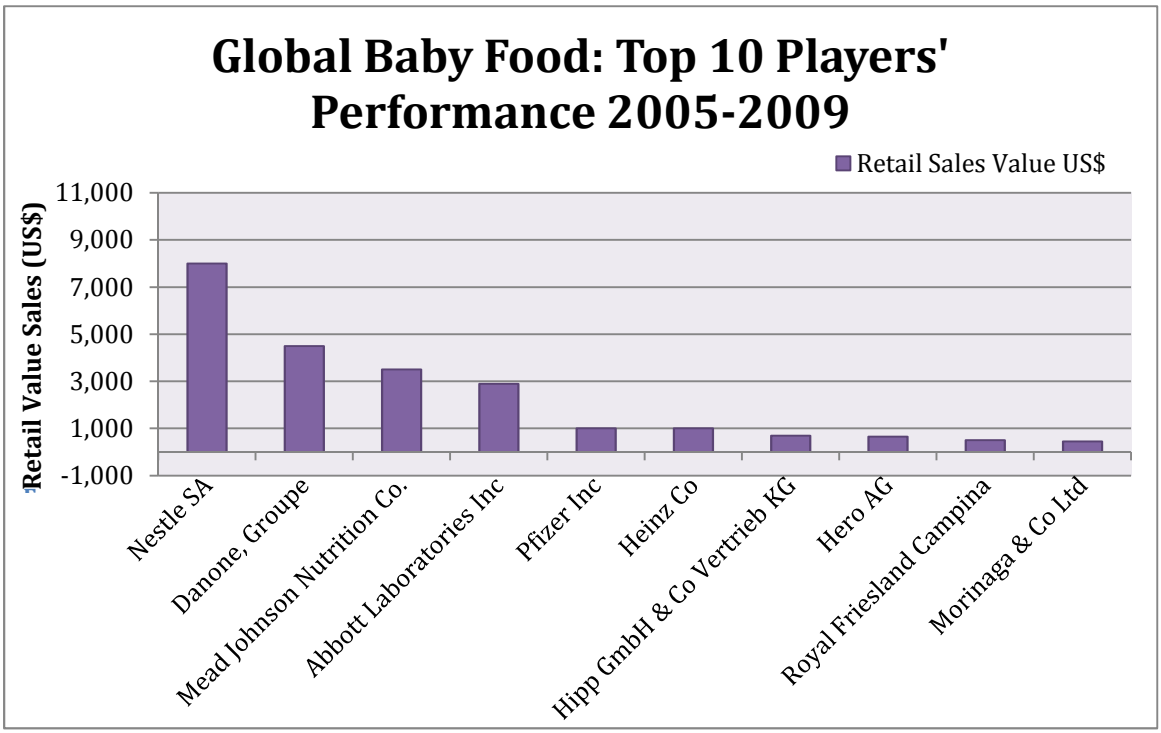

Figure 5. The top ten major players in baby food sales. Source: Nestle SA

The Asia Pacific region accounted for 36% of the global retail value sales of baby food in 2010 (GMID Nestle SA). This growth is caused by a rising demand for nutrition and convenience throughout the region. During the recent economic global downturn, the baby food category has proven to be resilient. This is due to a low level of private labels moving into the market, as well as the importance of baby nutrition to parents (GMID Nestle SA). There has also been a high amount of consolidation between baby food companies that are seeing the potential of the rapidly growing baby food market. In 2007, the top two global players in the baby food market consolidated with other companies; Nestle purchased Gerber, while Danone purchased Royal Numico (GMID Nestle SA). Then in 2009 Pfizer became the

fifth largest player in the baby food market after they purchased Wyeth's (GMID Nestle SA). As we saw in Figure 2, Nestle is the top player in the baby food market, with Danone as the second, and Pfizer as the fifth. This is due in large part to the fact that each of those companies has consolidated in the recent years, in order to strengthen and expand, in the growing baby food market.

The Asia Pacific region is "the most attractive baby food market" according to Nestle SA's company profile. With their growing economy and rising disposable income, as mentioned earlier, the region displays not only a high demand for more industrially processed food and baby food, but also for more convenience (GMID Nestle SA). China specifically, is the largest and fastest growing baby food market within the Asia Pacific region with a predicted CAGR of 17% between the years 2010 to 2015 (GMID Nestle SA).

Compared to any other product under the baby food category, milk formula is the highest value product. From 2006 to 2011, the milk formula category has grown in value by $43,315.61 million RMB, more growth than any other category in baby food (GMID, Baby Food in China). Within milk formula there are four sub categories consisting of standard, follow-on, toddler, and special baby milk formula. All together, these milk formula categories make up the $62,140.84 million RMB value of the milk formula market as of 2011. The comparison of all categories under baby food is derived from Euromonitor International and is shown in Table 2.

Table 2. Sales of Baby Food by category: Value 2006-2011

$RMB million	2006	2007	2008	2009	2010	2011
Dried Baby Food	2,145.03	2,628.92	3,260.92	3,918.95	4,561.79	5,363.00
Milk Formula	18,823.23	25,675.14	32,515.73	41,351.59	50,942.89	62,140.84
-Standard Milk Formula	5,683.23	7,721.98	9,227.22	11,458.88	14,412.51	17,505.77
-Follow-on Milk Formula	6,052.48	8,072.58	10,115.97	12,858.15	15,067.23	18,022.45
-Toddler Milk Formula	7,087.52	9,880.58	13,075.47	16,910.48	21,303.15	26,402.44
-Special Baby Milk Formula	-	-	97.07	124.08	160.00	210.18
Prepared Baby Food	231.41	294.89	378.51	467.22	579.13	730.38

Companies are looking for new and more innovative ways to keep pushing milk formula, even expanding to toddler milk formula. Toddler milk formula is currently pushing the milk formula market ahead as companies are searching to expand the demographics for milk formula and increase sales (GMID Nestle SA). Toddler milk formula, as of 2011, has the largest value of $26,402.44 million RMB according to Table 2, and had the most growth from 2006 to 2011 in the milk formula category. Toddler milk formula has the highest predicted CAGR for 2010 to 2015 in the baby food category at just over 10% (GMID Nestle SA).

Consumers doubting their country's food safety

As mentioned earlier, Chinese consumers still doubt their country's food safety, specifically milk formula, after the 2008 melamine incident. Four hundred and twenty six dairy companies, which make up 40.1% of the dairies in China, had their licenses revoked in 2011. China's General AQSIQ announced this news at the beginning of the year just months after they had ordered 533 dairy companies to cease production during nation-wide audits (The China Perspective, 2012). The fact that still many Chinese dairy processors are violating rules and regulations does not help to change citizen's perspective on their food safety for themselves and their children. Many people will continue to buy imported products, seeing as they cannot trust the Chinese processors. Major Chinese dairy companies such as Mengniu, where high levels of carcinogens were recently found in their products, are being boycotted by the people of China (The China Perspective, 2012). The people in China are buying their products from other countries in fear of consuming unsafe food from their own country.

Growing number of supermarkets in China to reach rural population

A majority of Chinese people buy their dairy products from supermarkets, and there are currently a rising number of supermarkets in China (Fuller, 2004 and GMID Consumer Lifestyles). The demand for baby food in the Chinese markets is rising as the supermarkets are moving into more rural areas. The local consumers are health conscious and particular when it comes to purchasing milk formulas, and they prefer higher priced formulas because they view it as a guarantee of a higher quality product (GMID Nestle SA). Combined with the increase in wealth among

Chinese, and their one child policy, parents do not hesitate when ensuring that they buy the best quality products for their babies (GMID, Baby Food in China).

Supermarkets account for 71% of baby food sales (GMID Baby Food in China). With the growing number of supermarkets in more rural areas and this being the primary location for milk formula purchases, milk formula sales will continue to increase as they become more available to those in rural areas.

In China, the authorities have not encouraged the advertising and promotion of breast milk, and have even banned any labeling that includes slogans such as "close to breast milk" in order to promote the use of breast milk for new born babies (GMID, Baby Food in China). Despite the encouragement for breast milk, manufacturers still advertise milk formula by showcasing its benefits for improving babies' immune systems and offering a balanced nutrition (GMID, Baby Food in China.) Advertising for milk formula is now actually increasing in China due to growing competition in the market. Manufacturers have been advertising aggressively through TV, magazines, the Internet, and outdoor advertising (GMID, Baby Food in China). The ban against using specific phrasing associated with infant milk formula is encouraging heavier advertising campaigns to arise for infant milk formula. The companies are becoming more aggressive in their advertising strategies, and pushing their product, which has the potential to cause an opposite affect than what the government intended. Heavy advertising, along with new supermarkets growing throughout China, helps to promote milk formula, while making it more available to Chinese consumers.

More wealth in China

The rising disposable income, contributed in part to the fact of more mothers working within China, is also helping to support the demand of milk formula. Asia Pacific has the highest predicted growth for annual disposable income as shown in Figure 6, depicted from Nestle SA company profile. With only North America at a distant second, China has over a $2,500,000 predicted annual disposable income growth from the years 2010 to 2015. China also leads each region in compound

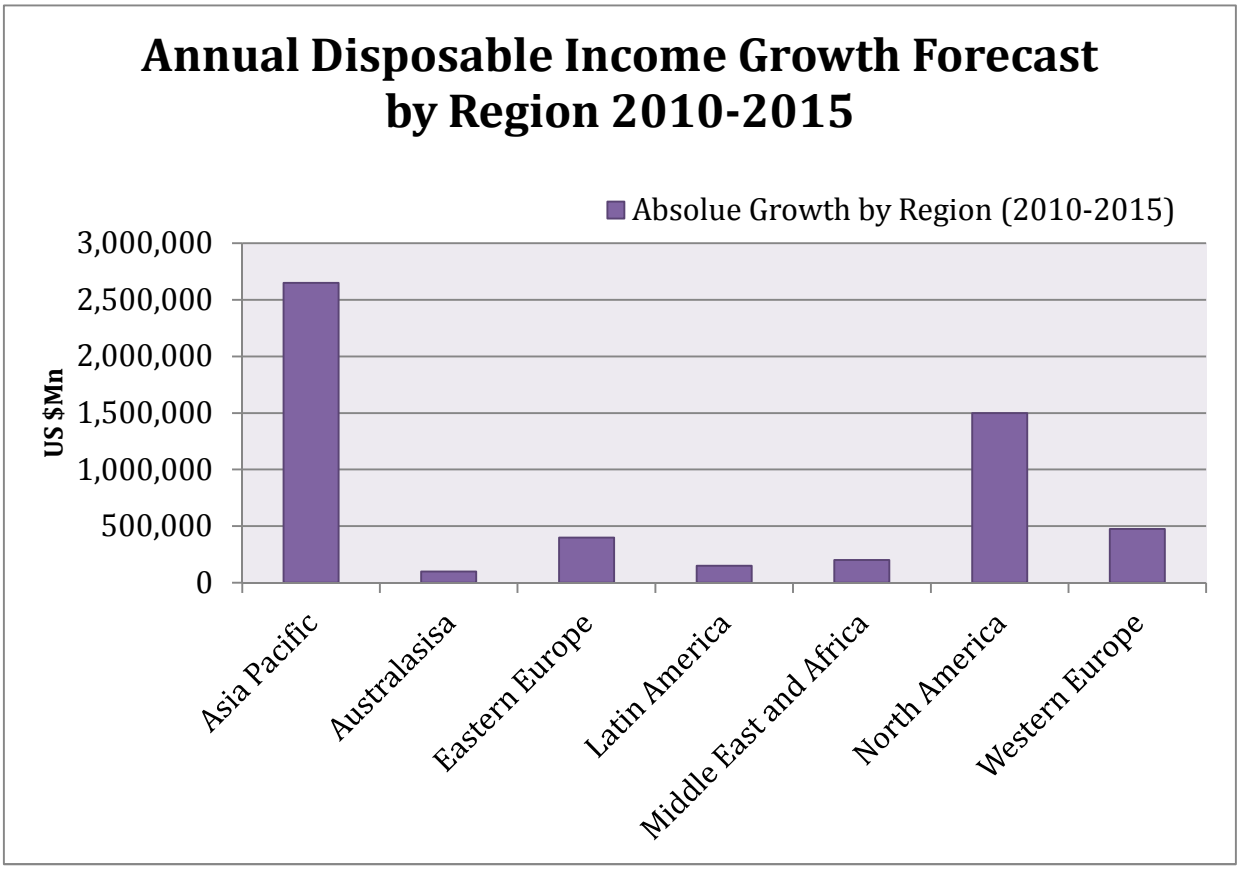

Figure 6. Annual disposable income growth for 2010 to 2015. Source: Nestle SA

annual growth rate (CAGR) for the years 2010 to 2015 at nearly 5% CAGR, while Easter Europe came in second with not quite 4% CAGR (GMID Nestle SA).

With the increasing trend of double income families and the benefits of milk formulas as a substitute for a working mother's breast milk, the Chinese market has a wide acceptance towards infant milk formula (Dutch Trader, 2011). The infant formula milk powder market is expected to continue its growth in response to the increasing demand for pediatric milk formula, and the higher average retail prices for pediatric milk formula products, along with macro-economic factors such as increasing urbanization, rising disposable income levels and the rising number of working mothers (Euromonitor International).

Process of Exporting Products Internationally

With the United States' availability of whey products, and China's need for whey products, the U.S. can capitalize on the opportunity of gaining market shares and exporting whey to the growing Chinese industry. The process of exporting and importing international products includes many steps and regulations. The regulations and documentations may seem overwhelming, but the key is to break the steps down into simpler and straightforward terms.

The first step is to identify the requirements of the exporting country, in our case the United States. The U.S imposes these requirements for several reasons including national security, control of products in short supply, compiling export statistics, administration of export laws, protection of endangered species, and to protect U.S. export markets by ensuring product quality of specific exports (USDA,

2010). Among other certificates, the main certificate required by the U.S. is the Shipper's Export Declaration (USDA, 2010). The standards for dry whey provided by the United States Department of Agriculture are determined on the basis of flavor, physical appearance, bacterial estimate, Coliform count, milkfat content, moisture and scorched particle content (USDA, 2000). The whey must be U.S. Extra grade and is required to posses a slight bitter, fermented, storage, and utensil flavor, along with a definite feed and weedy flavor (USDA, 2000). The physical appearance required to meet U.S. Extra Grade standards include a uniform color, reasonably free flowing, slight pressure in lumpiness, and practically free of visibly dark particles (USDA, 2000). The laboratory analysis standards can be seen in Table 3 and include maximum count of 30,000 standard plate count (SPC) per gram, a maximum Coliform count of 10 per gram, a maximum milkfat content of 1.5 percent, and maximum moisture content of 5.0 percent, and a maximum scorched particle content of 15.0 mg (USDA, 2000).

Table 3. United States standards for dry whey Source: USDA

Laboratory Tests	U.S. Extra Grade Maximum Standards
Bacterial estimate; Standard plate count; per gram	30,000
Coliform count; per gram	10
Milkfat content	1.5%
Moisture content	5.0%
Scorched particle content	15.0mg

Optional tests that are not required by the United States, but may be performed if requested by the receiver of the product include protein content and alkalinity of ash (USDA, 2000).

The second step is to identify the requirements of the importing country, in our case China. Importing countries, such as China, require documents for reasons of administration of their import laws, assessment of taxes, and protection from hazardous pests and diseases (USDA, 2010). Import countries will generally require documents that include commercial invoices, bill of lading, phytosanitary certificate, veterinary health certificate, packing list and certificate of origin (USDA, 210). In this case China also requires that there be a minimum protein level of 7 percent, as well as a benzoic acid-free certificate from the manufacturer (Sandra Benson, 2012). Benzoyl peroxide is not an approved bleaching agent in China so the manufacturer must prove that the whey was not bleached (Sandra Benson, 2012).

The third step would be to obtain the proper documents needed from the exporting and importing countries to carry through with the trade. Specific documents that are required are the commercial invoice, packing list, certificate of analysis, certificate of origin, which is from the manufacturer and should be notarized by a notary public with a stamp from the chamber of commerce, and an Agricultural Marketing Service (AMS) sanitary certificate (Sandra Benson, 2012).

A more step-by-step process provided by the Merchant's Custom House includes a break down of the overall process required, from obtaining the documents to the arrival of the product. These steps are as follows: 1. Customs regulations, 2. Documentation and compliance, 3. Packing and shipping, 4.

Transportation and insurance, 5. Freight forwarding, 6. Arrival and release, and 7. Duties and taxes.

Risks Associated with Exporting Products Internationally

Risks are associated with any and all business endeavors. Some risks that can be associated with exporting products to an international market include volatility of the market, the importer becoming self-sufficient or deciding to import from another supplier, and fluctuations in the value of the market to the importer.

The US is not the only supplier of whey products to the Chinese market, and a risk that they face is competitors such as the European Union, Australia, and New Zealand. These are also suppliers that export whey products to China and can optimize on the chance to increase their exports while China's demand is increasing. The US only just surpassed the EU15 in 2010 by a difference of 44,563 more metric tons of whey exports to China (USDEC, China Dairy Ingredient Market). Before 2010 the EU15 had been exporting the greatest amount of whey products to China since 2000 (USDEC, China Dairy Ingredient Market).

Dairy manufacturers have the option to change their supplier as well. Wahaha, the fourth largest player in China's dairy market, announced in 2009 that it would import infant formula from the Netherlands, and VV Food and Beverage reported it was going to enter the infant formula market and be importing products from Australia (USDEC, China Dairy Ingredient Market).

Another risk comes in the form of China itself being proactive as their Ministry of Agriculture makes long term plans to double their milk production by

2020 (The Economic Times, 2012). China is also working to grow their infant milk formula by investing in their own companies. Recent investments include the government of Xinjiang reporting a 5 Year Plan, which includes the development of premium infant formula products by the local dairy industries (USDEC, China Dairy Ingredient Market). Shenyang Huishan Dairy, in Liaoning Province, North-East China, invested $364 million in farms and infant formula manufacturing in 2009, and Yili reported an investment of $42.3 million to build a plant in Tianjin to focus on infant formula with a capacity of 45,000 metric tons (USDEC, China Dairy Ingredient Market). These examples, along with several more show China's initiative to improve and expand their dairy industry. Even if China is able to double their milk production, or they are investing to expand their dairy industries, they would still need to be importing products from their suppliers, but the imports would obviously decrease. If only a slight decrease in imports, this still poses a threat to suppliers shipping their product to China.

Projections and Discussion

Combined, the supporting reasons for China continuing to increase their demand for whey products, and the United States' capability to support that demand, the projections for an increase of United States' whey exports to China is not only realistic, but also optimal for both countries involved.

Figure 7, shows the total amount of whey products that the US has produced from the years 2006 to 2011, compared to the total amount of whey that they exported to China during the same time period. As shown, the total US production

has fluctuated ever so slightly during this time, with 458,050 metric tons produced as of 2011. The total amount of whey products exported to China has steadily increased from 2006 to 2010, with a minor slip down from 2010 to 2011. As of 2011, the US exported 121,440 metric tons of their 458,050 total metric tons produced that year to China. That is 26.5% of the total whey that the US produced that year. The graph shows that as the whey market in China has increased over time, the United States has been able to export a higher share of their whey products produced each year to that growing market. The US has the capabilities and capacity to continue to increase their whey exports and to capitalize on gaining more of that share as the market further increases.

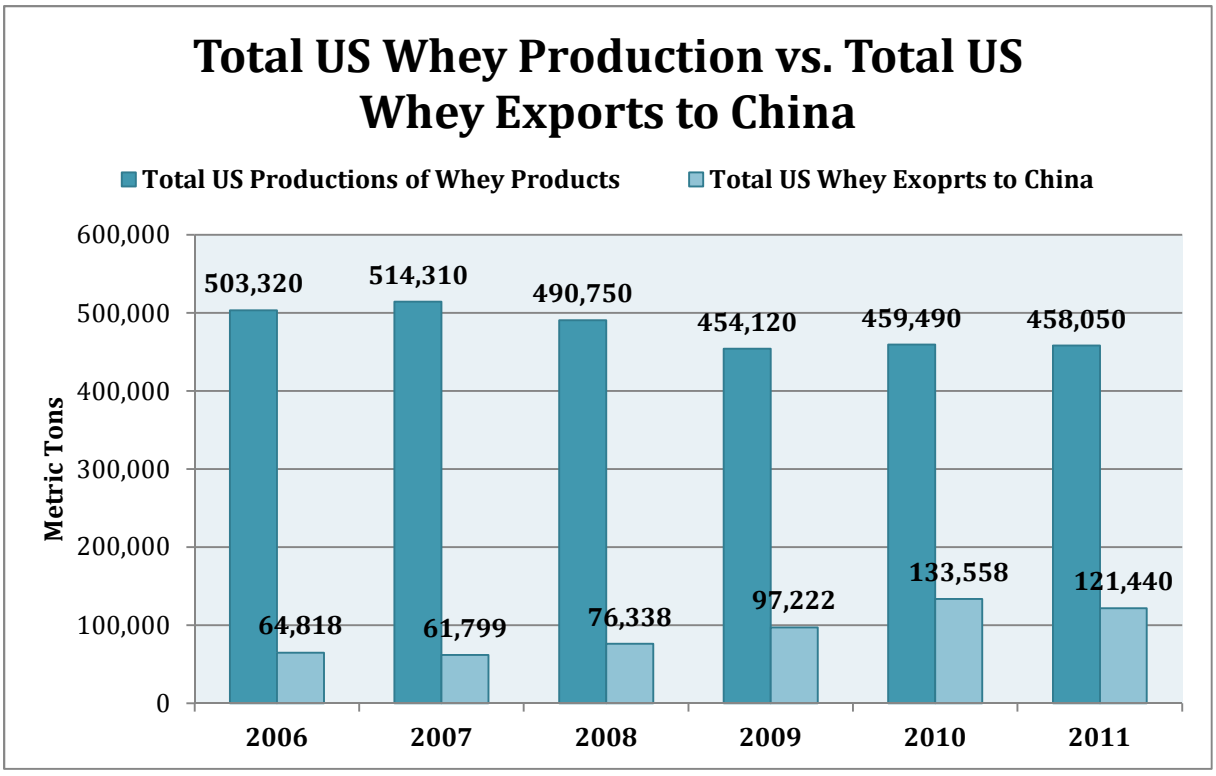

Figure 7. Total US whey production compared to total US whey exports. Source: USDEC and Gould, 2011

As shown in Figure 8 below, China's imports of whey products has fluctuated over the past five years, but with an end result of 100,016 metric tons of increased imports from the years 2006 to 2009, and then slightly dropping to 262,931 metric tons of import as of 2010. Compared with the United States total whey exports, which have steadily increased over the past years, and are currently up to 133,558 metric tons of whey exports that go exclusively to China. The difference between China's 2010 total imports of whey and what the United States exported to China is a difference of 129,373 metric tons. As of 2010, the US supplied just over 50% of China's whey imports, and has the opportunity to gain an even higher share of China's whey import market as it grows.

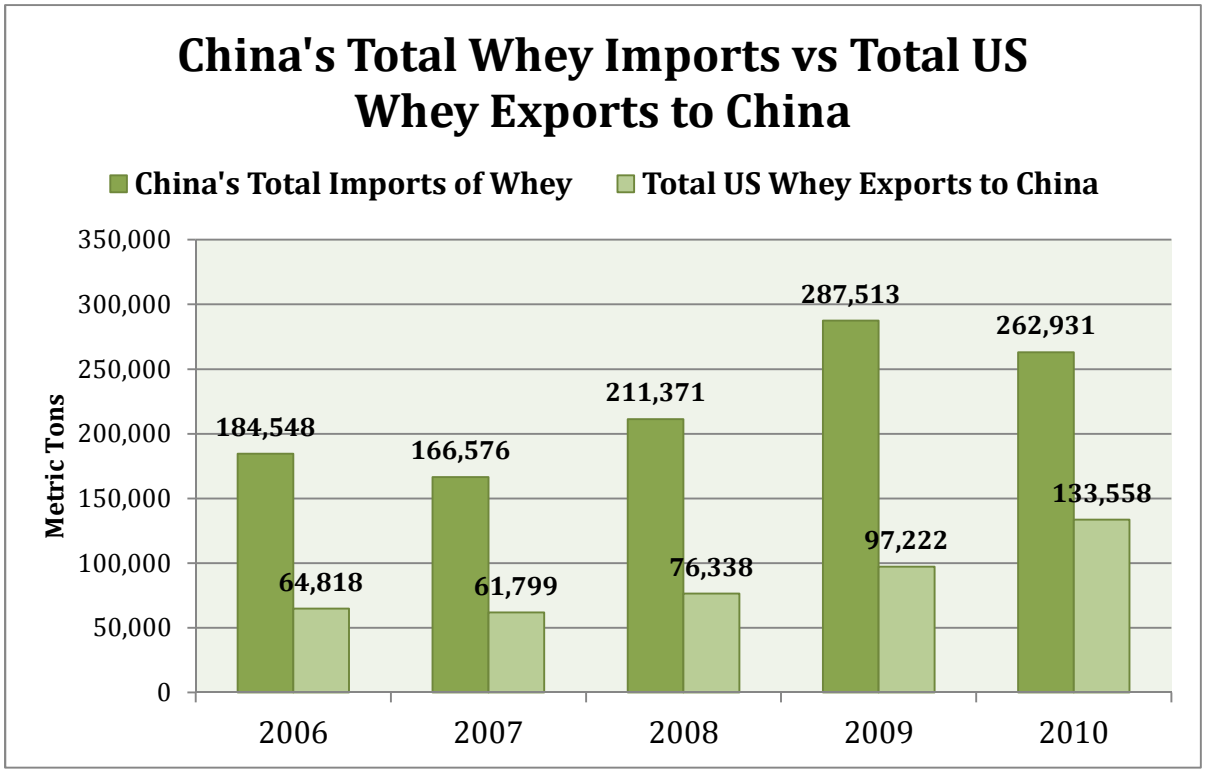

Figure 8. China's total whey imports compared to the US' total exports to China. Source: USDEC

The United States has a competitively priced whey market, as well as a sufficient and consistent supply of whey to export to China (USDEC, China Dairy Ingredient Market), but if they are to gain that available whey market, as it grows in China, they need to compete with the other suppliers. They can do this, among many other strategies, by grasping a strong understanding of the Chinese market, through acquiring a stronger market service, technical support, commitment and investment on marketing in China, and customizing their product for Chinese consumers (USDEC, China Dairy Ingredient Market). Customizing the United States product to specifically meet the needs of the consumers in China will give the US a huge advantage in the whey market. For example, having the flexibility to produce a dry or wet blend, or a combination of the two, so they can tailor the product to the customers needs will allow the US to capitalize on an area of the growing whey and infant formula sectors (USDEC, China Dairy Ingredient Market).

Conclusion

In conclusion, the amount of whey that the US produces is more than ample to supply the increasing demand that China possesses. As China continues to increase their imports of whey products, the US can increase their exports of whey to China and grow with the market. As reported, China's milk production is also on the rise but will not be able to sustain their population's demand for dairy products. China hopes to be at 64 million tons by 2020, and even if they are able to meet that goal they will still need to be importing whey powders and other dairy products at that time. As of 2010, China was importing 262,931 metric tons of just whey

products and that number will only continue to increase. A goal of 64 million tons by 2020 still doesn't even come close to the amount of dairy products that China will be demanding at that time. There is a great and lasting potential for the United States to not only continue to supply whey products to China, but to increase that whey supply to China as both industries expand.

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