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Global Dairy Trade: Where are We, How Did We Get Here and Where are We Going?

Peter Vitaliano

*Vice President, Economic Policy and Market Research, National Milk Producers Federation, 2101 Wilson Blvd.,
Suite 400, Arlington, VA 22201, USA*

Abstract

World trade in dairy products has grown in recent decades at rates that generally exceed demand growth in developed countries, which produce the majority of the world's dairy products. Data from the Global Trade Information Services (GTIS) online Global Trade Atlas trade data system and the United Nations Commodity Trade (UNcomtrade) Statistics Database show that total world dairy exports grew by 4.6% per year, on a milk equivalent basis, during 2010–2014 while total domestic consumption of dairy products in the United States grew by 0.9% per year during the same period, measured on the same basis (USDA/Economic Research Service 2016). The US dairy industry has participated significantly in this growth, increasing its exports from an estimated 5.3% of domestic milk solids production in 2002 to 15.5 % in 2013 and 15.3 % in 2014 (U.S. Dairy Export Council 2016). This article focuses on the factors contributing to this growth and discusses the current world dairy market situation and challenges the US dairy industry faces in an increasingly competitive export market environment going forward. It is intended to suggest some researchable questions that dairy economists and analysts might usefully examine to assist the industry's further progress in supplying the world's growing import demand for dairy products.

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^①Corresponding author: Tel: + 1. 703.243.6111
Email: P.Vitaliano: pvitaliano@nmpf.org

Demand Drivers

The expansion of world dairy trade has been primarily driven by growing demand in developing countries, as summarized in the following quote from an outlook report from the United Nations Food and Agriculture Organization (FAO 2003),

As incomes increase, demand for greater food variety grows. Demand for higher-value and quality foods such as meat, eggs and milk rises, compared with food of plant origin such as cereals. These changes in consumption, together with sizeable population growth, have led to large increases in the total demand for animal products in many developing countries, and this trend will continue.

This quote would be an apt characterization of dietary changes in developing countries at any time during at least the past two or three decades. That these trends will continue, and continue to have significant implications for developed countries such as the United States, is suggested by recent economic projections by the Brookings Institution and recent production forecasts by the National Milk Producers Federation (NMPF) from domestic and world milk production data reported by the USDA National Agricultural Statistics Service and the United Nations FAOSTAT database. These projections indicate that the United States' share of the world's middle class population, defined as households with daily expenditures between US \$10–\$100 per person, fell below its share of world milk production in 2011, and that the US share of world consumption spending will drop below its share of world milk production in 2026. By 2030, the United States is estimated to produce just over 11% of total world milk production while its population will include just 4.5% of the world's middle class and account for about 9% of middle class consumption spending (Kharas 2010; FAOSTAT 2016; USDA/NASS 2016). Consumption spending by middle class consumers is the primary source of demand for milk and dairy products internationally. Similar trends are affecting other developed countries that produce the majority of the world's dairy products for export.

The United States dairy industry has become increasingly aware of the importance of exporting its products over the past two decades, as it has evolved gradually from a previous focus on preventing low-cost, typically subsidized imports from undermining its now-discontinued Dairy Price Support Program. An early indication of this focus was the founding in 1995 of the US Dairy Export Council, with the mission to enhance demand for US dairy products and ingredients by securing access and assisting suppliers to meet market needs that facilitate sales. This emerging export focus was further sharpened in 2009 and 2011 with the release and refresh of a commissioned study by the Innovation Center for US Dairy, including research and analysis conducted with the support and assistance of Bain & Company (Bain & Company 2011). The key finding of the report was that:

Net import demand for dairy products would grow faster than net export supply through 2013, with demand growth coming primarily from developing economies in Asia, Latin America, North Africa and the Middle East. This will lead to a "latent demand gap" (global shortfall between consumption and production forecasts) of ~100,000 metric tons of dairy protein by 2013 (equivalent to ~7 billion pounds of milk). Importantly, the United States is a country that can be well positioned to capture the opportunity of filling the demand gap in the near term (10–15 years). Beyond this 10–15 year window of opportunity, new sources of low

cost supply will deliver significant quantities—thus, there is a need to take action to ensure that US industry builds a long-term competitive advantage to ensure its place in the global market.

This concept of a latent demand gap in world markets was reaffirmed by a refresh of the original study in 2011, which also reiterated the recommendation that the US dairy industry become a consistent exporter of milk and dairy products to the global marketplace.

Most recently, a new study from the Research Institute of the international investment bank Credit Suisse (2015) conducted a comprehensive review of existing research on the health effects of dietary fat consumption, on the basis of which it predicted that a major change in global food consumption behavior was underway, concluding that:

Globally, we expect fat to grow from the current 26% of calorie intake to 31% by 2030, with saturated fat growing the fastest and going from 9.4% of total energy intake to 13%. This implies that fat consumption per capita will grow 1.3% a year over the next fifteen years versus a rate of 0.9% over the last fifty years. We expect saturated fat to grow at 2% a year versus a historical rate of 0.6% a year. ... Among foods, the main winners are likely to be eggs, milk and dairy products, (cheese, yogurt and butter) and nuts, with annual rates of growth around 2.5–4%.

Consumption patterns in the United States are already reflecting this predicted shift. If these predictions are borne out globally, it will have major implications for world dairy trade patterns and US dairy exports.

Trade Policy Drivers

Policy changes have also facilitated growth in world dairy trade. The Uruguay Round of multilateral trade negotiations under the General Agreement on Tariffs and Trade (GATT), 1986–1994, established binding limits on the use of agricultural export subsidies and domestic agricultural support regimes, converted all non-tariff import restrictions on agricultural products to bound tariffs, established science-based disciplines on the use of sanitary and phytosanitary (SPS) measures as trade barriers, and created the World Trade Organization (WTO) as a more effective international institution to resolve trade disputes and conduct negotiations to further liberalize world trade rules. The Uruguay Round came into force during a time when many developed country governments were reevaluating the budgetary cost of their domestic and export subsidy policies toward agriculture, and dairy in particular. One result has been that use of direct dairy export subsidies, at least by developed countries, has virtually disappeared during the past decade or so. Shortly after the Uruguay Round Agreement on Agriculture was implemented, Canada attempted to circumvent the Agreement's export subsidy disciplines on dairy products by extending its dual-price, Special Milk Class program to include an export-dependent Special Class 5(e) price regime. The US dairy industry successfully challenged this program in two separate dispute settlement actions in the WTO in the late 1990s and early 2000s, which resulted in a WTO Appellate Body determination that this system constituted an export subsidy whose use was subject to the quantitative and monetary limits of Canada's commitments on export subsidies. The importance of this action stems not only from Canada's subsequent action to discontinue this program, but also because it prevented the European Union from adopting a

similar system that it was contemplating at the time. The adoption of export class pricing systems for dairy products would have had a substantial effect of undermining the WTO export assistance disciplines for dairy products because such systems would operate without government funding; they require only government action, which fortunately was sufficient for the WTO to determine that they were indeed export subsidies.

The WTO disciplines on dairy trade were much less complete with respect to tariffs, which remain high for most developed countries, and with respect to the Agreement on Sanitary and Phytosanitary Measures, given the significant level of misuse that continues for such measures. The Doha Round multilateral negotiations under the WTO was launched in 1999 with the purpose of strengthening these and other disciplines, but this effort has stalled in recent years. The WTO membership has greatly expanded since the conclusion of the Uruguay Round, in numbers of members but much less so in volumes of trade. The much larger number of players, the WTO's consensus-based decision-making, and the somewhat conflicting goals of further liberalizing world trade and using trade as a development strategy have all combined to make progress in the Doha Round agenda extremely difficult. Countries interested in further trade liberalization have naturally shifted their focus to bilateral and regional trade agreements. Such agreements are not only relatively easier to negotiate, but the WTO disciplines on their use are also very accommodating (negotiating a lower tariff in a bilateral trade agreement effectively impairs the benefit to WTO members who are not parties to the agreement of a tariff bound in the WTO at a higher level. WTO rules consider such arrangements beneficial if they cover substantially all trade but less so if they exclude major sectors of trade, as many do).

The first bilateral trade agreement that affected the US dairy industry was the North American Free Trade Agreement (NAFTA), which eliminated tariffs on trade in all dairy products between the United States and Mexico. Canada was a party to most portions of the NAFTA, but refused to make any market access concessions on dairy and poultry, sectors subject to strict supply-management controls in Canada. The NAFTA rules of origin treat Canadian dairy components as if they originated in a non-party to the NAFTA. NAFTA provided the first platform for the dairy industry to challenge Canada's strict import controls on dairy products. Under the earlier, and pre-WTO, US-Canada Free Trade Agreement, which was incorporated into the NAFTA, the United States and Canada agreed to eliminate all existing tariffs on bilateral trade in dairy products, but each retained the right to continue to apply their respective non-tariff market access restrictions to dairy products. These consisted of the import quotas imposed under the authority of Section 22 of the Agricultural Adjustment Act, for which the US had a waiver of applicable rules under the pre-WTO General Agreement on Tariffs and Trade (GATT), and Canada's import control list, which was sanctioned under GATT Article XI. Both the United States and Canada surrendered the ability to apply these non-tariff measures when they were converted to bound tariffs in the form of Tariff-Rate Quotas (TRQs) under the WTO Agreement on Agriculture. In the mid-1990s, the US dairy industry brought the first complaint under the dispute settlement procedures of Chapter Twenty of the then-new NAFTA, arguing that the prior agreement to eliminate all tariffs on dairy under the NAFTA/US-Canada FTA applied to Canada's new and egregiously-high tariffs on dairy in the WTO. The Arbitral panel convened to adjudicate the case ruled in favor of Canada, declaring that because Canada did not intend to eliminate its tariffs on US dairy imports when it reluctantly agreed to tariffication in the WTO agriculture agreement, the NAFTA disciplines did not require them to do so, regardless of the plain meaning of the text. The episode exposed the relative weakness of the NAFTA dispute

settlement mechanisms, particularly the means of selecting arbitral panels, compared with the much stronger WTO dispute settlement rules and procedures.

The United States has subsequently entered into free trade agreements with an additional seventeen countries, primarily dairy-importing ones, under which tariffs on dairy trade have been, or will be eliminated. The most recent such agreement is the recently-concluded, as yet unratified Trans Pacific Partnership (TPP) agreement. Under the TPP, the US would both give and receive market access concessions, primarily with respect to TPP members New Zealand, Japan and Canada, the latter providing the first-ever such concessions that could benefit the US dairy industry.

Price Drivers

The world market had been a relatively unattractive place for US manufacturers and marketers of dairy products until approximately a decade and a half ago. Prior to then, world prices, and hence financial returns to dairy product exporting, were well below comparable prices and returns from sales in the US domestic market. Dairy policy in the United States has never relied heavily on regular use of export subsidies to deal with domestic dairy product surplus situations. Instead, the primary mechanism of US stabilization, or safety net policy, was market intervention through the Dairy Price Support Program to remove surplus products from US commercial markets and inventory them domestically until recovering prices permitted them to be sold back into commercial markets or diverted to non-commercial uses. During the later 1980s, the US Department of Agriculture did make extensive below cost export sales of the large stocks of dairy products it acquired under the Dairy Price Support Program in the late 1970s and early 1980s. The Congress enacted the Dairy Export Incentive Program (DEIP) in the mid-1980s, which the Department of Agriculture fully implemented in the late 1980s and early 1990s, but its use was always relatively small compared with the size of the US dairy industry.

The European Union had long faced the same domestic-world price difference, but, by contrast, chose to rely more heavily on export subsidies to manage its surplus milk production, with a smaller role assigned to domestic intervention and domestic storage of surplus products. As a result, European dairy companies have for a long time sold relatively large volumes of dairy products to other countries, and in the process have acquired extensive experience in exporting dairy products and built extensive export marketing networks, long before exporting dairy products was commercially viable without government assistance. When the Uruguay Round Agreement on Agriculture was fully implemented in 2000, use of export subsidies by all WTO members was limited to percentages of both product volumes and monetary outlays during a designated period during 1986–1988. Under the agreement, the EU was permitted to use by far the largest product volumes and expenditures to subsidize the export of dairy products, which it subsequently used to maintain its large dairy export sales volumes. However, as the decade of the 2000s progressed, EU governments reassessed the budgetary cost of financing those export volumes and began to curtail their expenditures for doing so. The last time the EU exported dairy products with direct government assistance was in 2009, as did the United States, which had long provided government export assistance to export dairy products primarily in response to the EU's use of the same. By that time, growing world demand for dairy products and diminishing use of export subsidies had resulted in a gradual rise in world prices for dairy products toward parity with the commercial cost of supplying those products by US and EU dairy companies.

During this time, the dairy industries in New Zealand and, to a lesser extent, Australia were generally able to maintain and grow their dairy exports without large-scale government expenditures, and were the early beneficiaries of the gradual improvement in world prices of dairy products over the past two decades.

Current Competitive Situation

The period of significant growth of US dairy exports, of the gradually narrowing gap between world dairy product prices and corresponding domestic prices in the United States and the European Union, reached a crescendo in 2013 and 2014 when China experienced a significant shortfall in its growing domestic supply of milk and embarked on a program of massive purchases of dairy products, primarily whole milk powder, from export suppliers. Following the melamine contamination crisis of several years ago, China had been engaged in a large-scale effort to replace its fragmented, small farm-based milk production sector, with its weak quality controls, with a more centralized system of large farms and greater control over its supply chain. The change-over was slower than expected, as the new larger dairy farms were slow to gear up to efficient production and the influx of dairy cows from the exiting small dairy producers proved smaller than expected because high beef prices caused many of them to sell their cows for slaughter rather than to larger dairy farms. China's large dairy purchases occurred at a time when milk production in the United States, the EU and New Zealand was not growing, and the resulting supply-demand situation pushed dairy product prices to historic highs around the world. However, China severely scaled back its dairy purchasing in early 2014, after having acquired very substantial stocks. World dairy product prices almost immediately began a long slide to much lower levels, from which they have not yet recovered.

The depressed world dairy product price and trade situation of 2014–2016 represents something of a break or reset point in the evolution of world dairy trade. It represents the end of the “latent demand gap” period of demand-led export growth and the commencement of a period of heightened competition among export suppliers. The current world dairy trade situation is broadly described in the following excerpts from a recent joint outlook report from the Organization for Economic Cooperation and Development and the FAO (OECD–FAO 2015):

In real terms, prices for all agricultural products are expected to decrease over the next ten years, as on-trend productivity growth, helped by lower input prices, outpaces slowing demand increases. ... Demand will be subdued by per capita consumption of staple commodities approaching saturation in many emerging economies and by a generally sluggish recovery of the global economy. ...consumers (will continue) to diversify their diets by increasing their consumption of animal protein relative to starches. For this reason, the prices of meat and dairy products are expected to be high relative to the prices of crops. ... Exports of agricultural commodities are projected to become concentrated in fewer countries, while imports become more dispersed over a large number of countries. The importance of relatively few countries in supplying global markets for some key commodities increases market risks, including those associated with natural disasters or the adoption of disruptive trade measures. ... Exports of dairy products are projected to further concentrate in the four prime origins: New Zealand, the European Union, the United States and Australia, where opportunities for domestic demand growth are limited.

Trade data for the major internationally-trade dairy products from GTIS and UNcomtrade supports the OECD-FAO (2015) assessment that dairy exports will continue to concentrate, although more likely among the top three rather than the top four key players, as shown in the following table.

Table 1. Four key players in the global dairy trade

Share of Global Dairy Exports (ME)	2010	2011	2012	2013	2014
Australia	6.3%	5.6%	5.8%	4.9%	4.9%
EU-28 (extra-EU trade)	26.1%	26.1%	26.3%	24.5%	27.3%
New Zealand	25.6%	26.2%	27.9%	27.0%	28.9%
United States	15.7%	15.7%	15.0%	17.5%	17.7%
Subtotal, above four	73.7%	73.6%	75.0%	73.8%	78.8%
Total, all countries	100.0%	100.0%	100.0%	100.0%	100.0%

The United States and the European Union have both made major changes in dairy policies at about the time of the current transition in the world dairy trade situation. The US discontinued its long-standing Dairy Price Support Program and replaced it with the milk price-feed cost margin insurance program, the Margin Protection Program, in the 2014 farm bill. The events of 2009 demonstrated to the industry how fundamentally incompatible a purchase and inventory-based dairy policy is with an export growth-led marketing strategy. Following its slow decline as an export supplier of dairy products, and facing sluggish growth in its members' domestic economies, the ending in early 2015 of EU-wide milk production quotas and the embargo of its exports to Russia, the EU dairy industry has refocused on world markets. EU dairy companies, particularly those in northern Europe, have made major investments in processing capacity geared toward export markets and are actively seeking to increase their world market share. New Zealand has continued to grow its milk production and dairy exports, which represent most of its dairy production and a substantial fraction of the country's foreign exchange earnings.

These big three dairy exporters exhibit a variety of structural features and policies that affect their export competitiveness, the differences among which will likely be sharpened in the increasingly competitive world dairy markets going forward for the next several years.

In the United States, the Western states are more exposed to world dairy trade than those in the Midwest and the East, due to the relative mix of products that determine milk prices paid to producers in the different regions. Western states originate a substantial portion of US skim milk powder and other nonfat milk solids-based exports. The balance between supply and demand in the US dairy industry has usually been tighter on a milkfat component basis than on a skim solids one. Historically this has been balanced through sales of nonfat dry milk to the Commodity Credit Corporation under the Dairy Price Support Program. But over the past decade or so, skim solids-based products not needed to supply domestic market needs have increasingly been exported commercially. Exports of skim milk solids in all products increased from an estimated 6.7 % of domestic skim milk solids production in 2002 to 19.4 % in 2013 and 19.2 % in 2014. By contrast, exports of milkfat in all products increased from an estimated 1.8 % of domestic skim milk solids production in 2002 to 6.4 % in 2013 and 6.3 % in 2014. The steep

slide in world milk prices during 2014 and 2015 has particularly affected domestic nonfat milk solids component prices, which make up a larger proportion of the milk prices received by milk producers in the West, compared with their counterparts in the central and eastern United States.

The somewhat regionally-divergent price impacts of world dairy trade in the United States will prove temporary as world prices recover. By contrast, regional differences within the European Union are more fundamentally structural and will have longer-lasting effects in the more globally-exposed EU dairy industry going forward. Milk production in the Northern tier of EU member-states will grow at the expense of more southern parts of the EU dairy industry in the post-milk production quota marketing environment. The New Zealand South Island, which has experienced relatively rapid milk production growth in recent years, but at higher cost, has been more heavily affected by the drop in world prices.

There are substantial policy differences among the three dominant world dairy exporters that will play a key role in determining the outcome of their intensifying competition in the current world dairy trading environment. In New Zealand, Fonterra Co-Operative Group Ltd., formed by the merger of the previous state export monopoly New Zealand Dairy Board and the two largest domestic dairy cooperatives, continues to handle the overwhelming majority of the country's dairy exports and thereby avail itself of the price pooling power and flexibility that such a commanding share of national exports confers. But the country lacks a domestic market of the scale which allows the US and the EU to buffer the impact of low world prices. Both the EU and New Zealand have long used policies and strategies to keep exports flowing during periods of surplus milk production as opposed to building domestic inventories of dairy products at such times. The United States, as previously discussed, is a relative newcomer to the marketing strategy of avoiding building inventories during periods of price weakness and instead ensuring that product continues to flow to international buyers during such periods. Discontinuing the Dairy Price Support Program represented an important step in this evolution, but other policy issues remain.

Most milk in the United States is subject to price pooling under federal and state milk marketing orders. Under marketing orders, pooled milk is subject to minimum pricing at price levels which largely reflect its value when manufactured into products sold at domestic prices. Export sales often require pricing that is competitive with that of other export suppliers at the importer's point of purchase rather than with other sellers in the US domestic market. Competitive prices can differ in these two different markets, particularly for cheese, butter and other milkfat products, of which the US exports a relatively small share of its total production and for which the US supplies a relatively small share of total world exports. It is for this reason that the US industry developed the voluntary Cooperatives Working Together (CWT) program, which has provided assistance to US exports of cheese, milkfat and whole milk powder since 2003.

By contrast, milk marketed in the European Union is not subject to regulated minimum prices and market-wide pooling. The large EU dairy companies, both cooperative and proprietary, therefore have a relatively greater degree of internal pricing flexibility in their competition with US exporters. EU companies do not have to pay for milk used to produce products for export at a price equivalent to domestic product prices; they only have to pay an average price for milk sold in all markets that is competitive with other EU milk buyers and processors, many of whom are also competing in world markets for additional sales. Over the past year or two, this has resulted

in EU dairy companies paying lower prices for milk than US companies, but increasing their market share in the major US export markets for butter and cheese, at the expense of US sales. This is essentially what happened to the US dairy industry, only in much more dramatic fashion, in 2008 and 2009.

Most of the milk produced in New Zealand is sold in product form outside the country and is therefore priced effectively at world market levels, particularly the majority of the country's milk that is marketed by Fonterra. Accordingly, milk prices received by New Zealand dairy farmers have been much lower than prices received by either US or EU dairy farmers during the current world price slump. Fonterra prices milk to its producers under an annual pooling arrangement internal to the company. Sales at the margin can be made at virtually any price but the resulting revenue constitutes a very small portion of the season average of all such sales, which constitutes the final price paid to its producers at the end of the season, or final payout. During periods when world dairy product prices are not particularly depressed, this system, like the payment systems in the European Union, can provide both decent payouts to New Zealand farmers as well as great flexibility for maintaining or increasing market share in dairy importing countries in competition with US dairy exporters.

Final Remarks

The United States dairy industry is embarking on a new, and more challenging phase of its heretofore successful evolution into one of the top players in the global dairy industry. It has made substantial commitments to becoming a reliable supplier of high quality dairy products to world markets, and it has made substantial adjustments to marketing programs and to policies in order to do so. But to maintain and expand that role, the industry, and its individual players, will have to intensify further that commitment and to continue to examine and adjust those programs and policies to enable them to do so.

The community of US dairy economists and analysts has played a relatively minor role in the first phase of this development, to date. But there is a very rich set of researchable questions that this community should see as its responsibility to address, to more actively provide insights into, and to facilitate, the industry's next phase.

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